



GROVE APARTMENTS
TRAFFIC IMPACT ANALYSIS

Marysville, WA



11/23/2022

Prepared for: NAN Homes, LLC
4726 72nd Street NW
Marysville, WA 98270

November 2022



November 23, 2022

NAN Homes, LLC
4726 72nd Street NW
Marysville, WA 98270

Subject: Grove Apartments

The intent of this assessment serves to provide a Trip Generation Assessment for a proposed apartment complex comprising 16 multi-family dwelling units in the city of Marysville. A description of the proposed project is provided below.

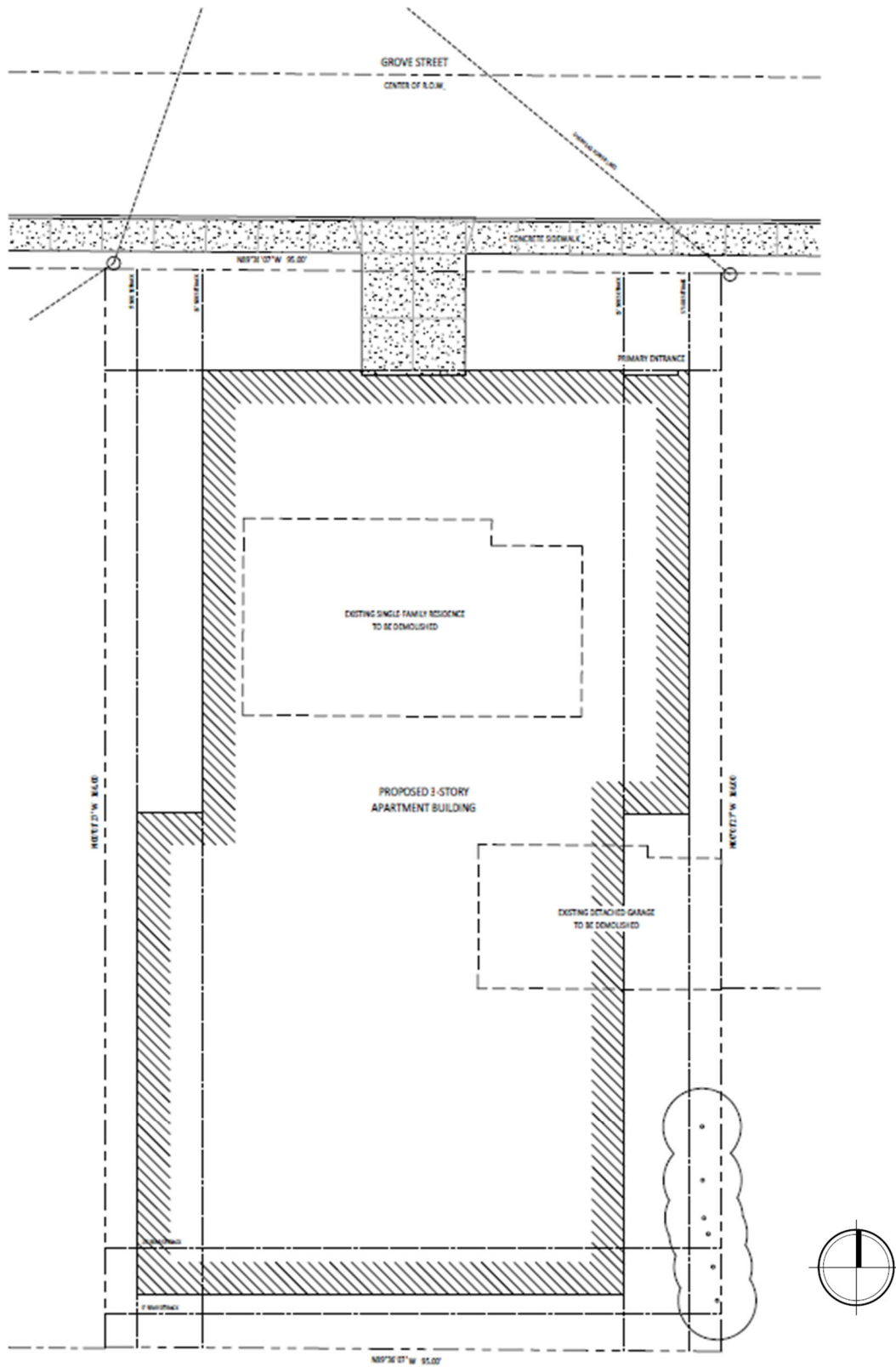
PROPOSED PROJECT

Grove Apartments proposed to construct 16 multi-family dwelling units located in the city of Marysville. The subject site, with an address of 4726 Grove Street, comprises 0.41-acre tax parcel #: 30052800108700. One single-family structure exists on-site, which is to be demolished prior to new construction. The subject site is bordered to the north by Grove Street. Access to the site is proposed via one driveway extending south from Grove Street. Surrounding land use is primarily residential and institutional development. Figure 1 below provides an aerial vicinity image of the surrounding roadway system. A site plan illustrating the overall project configuration is presented in Figure 2.

Figure 1: Aerial Vicinity



Figure 2: Site Plan



TRIP GENERATION & DISTRIBUTION

Trip generation is defined as the number of vehicle movements that enter or exit the respective project site during a designated time period such as the PM peak hour or an entire day. The magnitude of the anticipated vehicle trip generation for the proposed project was derived from the Institute of Transportation Engineers (ITE) publication, *Trip Generation*, 11th Edition. The proposed land use utilized for analysis is defined under ITE's Land Use Code (LUC) 220 - Multifamily Low-Rise. Dwelling units were used as the input variable and ITE average rates were used in determining trip ends. Table 1 below summarizes anticipated vehicular movements for the average weekday daily trips (AWDT) and the AM and PM peak hours.

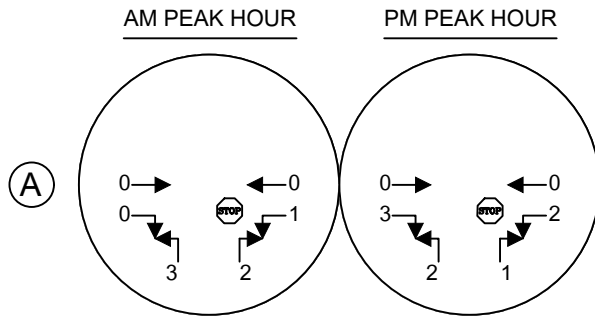
Table 1: Project Trip Generation

Land Use	Size	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Multi-Family Low-Rise (LUC 221)	16 dwelling units	108	1	5	6	5	3	8

Approximately 108 average weekday daily trips can be anticipated as a result of the proposed development with 6 AM (1 inbound/5 outbound) and 8 PM (5 inbound/3 outbound) peak hour trips.

As illustrated via ITE data, the proposed development does not generate more than 10 peak hour trips. As such, city of Marysville Traffic Impact Analysis (TIA) thresholds are not met.

The proposed development's weekday peak hour trip distribution & assignment is illustrated in Figure 3 on the following page. Distribution percentages were based on the City's Trip Distribution Maps.



AM PEAK HOUR TRIPS
INBOUND: 1 VPH
OUTBOUND: 5 VPH
PM PEAK HOUR TRIPS
INBOUND: 5 VPH
OUTBOUND: 3 VPH



HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GROVE APARTMENTS
WEEKDAY PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 3

INTERLOCAL AGREEMENT ANALYSIS

New development in the city of Marysville is subject to potential traffic mitigation measures through an interlocal agreement (ILA) with Snohomish County. Therefore, a comprehensive trip distribution effort was performed for the proposed Grove Apartments whereby trip dissemination was illustrated out to approximately three peak hour trips. Figures A and B, attached in the appendix, illustrate development-generated directional AM and PM peak hour trips, respectively. Road sections with planned improvements in the project area, as outlined in the County's *Transportation Needs Report (TNR), Appendix D*, are outlined within the figures.

As illustrated, no TNR Appendix D improvements are impacted by three or more development-generated directional peak hour trips. As such, the proportionate share amount to Snohomish County is calculated to be zero. All associated ILA worksheets have been attached in the appendix. Lastly, no key intersections are found to be impacted by 3 or more peak hour trips, as illustrated in the attached figures.

CONCLUSION

The proposed Grove Apartments development consists of 16 multi-family dwelling units in the city of Marysville. The subject site, with a site address of 4726 Grove Street, is situated on 0.41-acre tax parcel #: 30052800108700. Access to the subject site is proposed via one new driveway extending south from Grove Street, which borders the development to the north. Based on ITE data, the project is estimated to generate 108 average weekday daily trips with 6 trips occurring in the AM peak hour and 8 trips in the PM peak hour.

Based off a trip distribution analysis, no TNR Appendix D improvements are impacted by three or more development-generated directional peak hour trips. As such, the proportionate share amount to Snohomish County is calculated to be zero. Moreover, the development does not generate more than 10 peak hour trips and the City's thresholds requiring further traffic analysis are not met.

Based on the findings of this report the following mitigation is proposed for the Grove Apartments project:

1. Pay Traffic Impact Fees (TIF) as required by the city of Marysville. Exact fees would be calculated and assessed by the City upon review of the traffic study.

No other mitigation is identified at this time. Please call if you require anything further.

Sincerely,

Aaron Van Aken, P.E., PTOE

Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

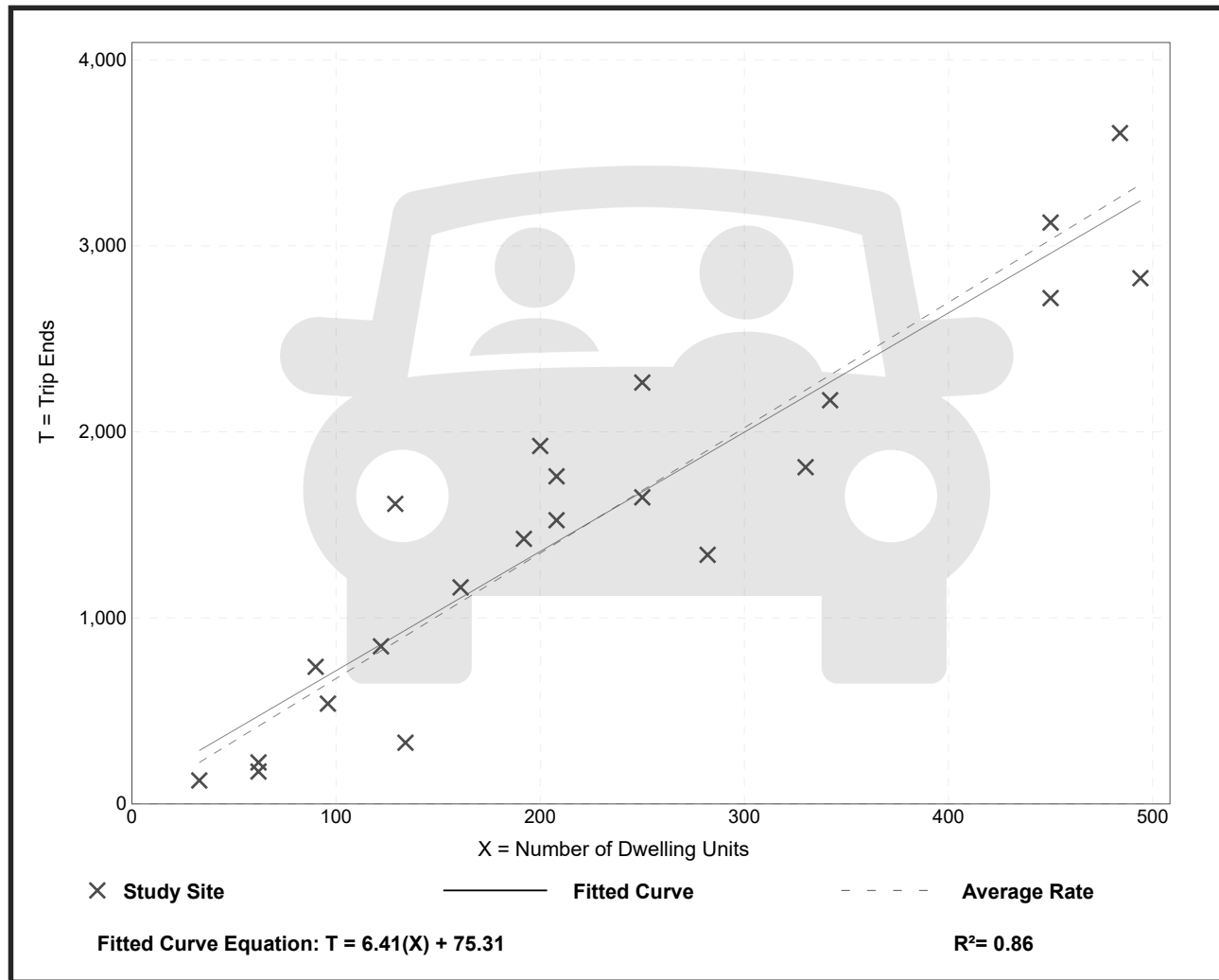
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Trip Gen Manual, 11th Edition

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Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

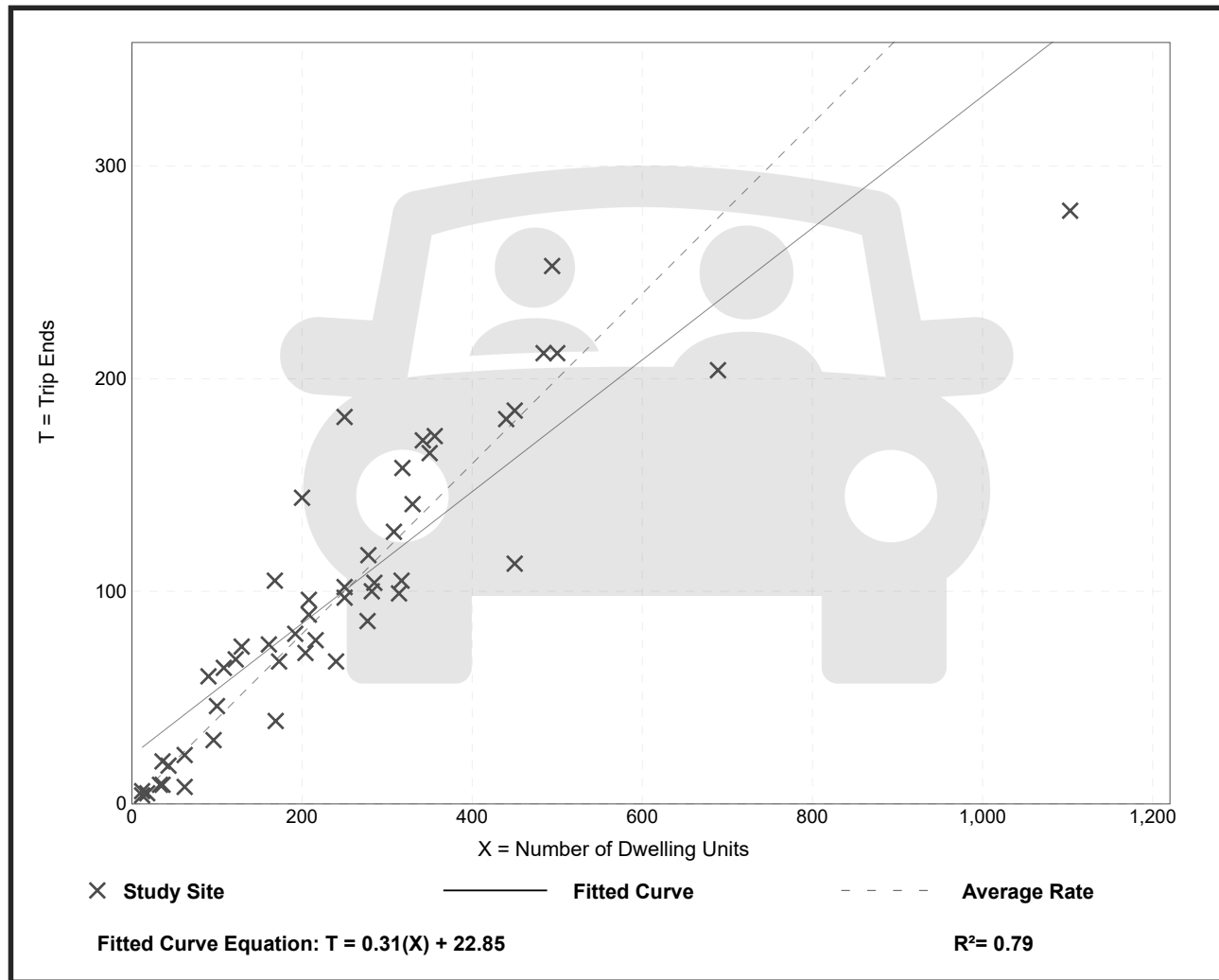
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 49
 Avg. Num. of Dwelling Units: 249
 Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



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Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

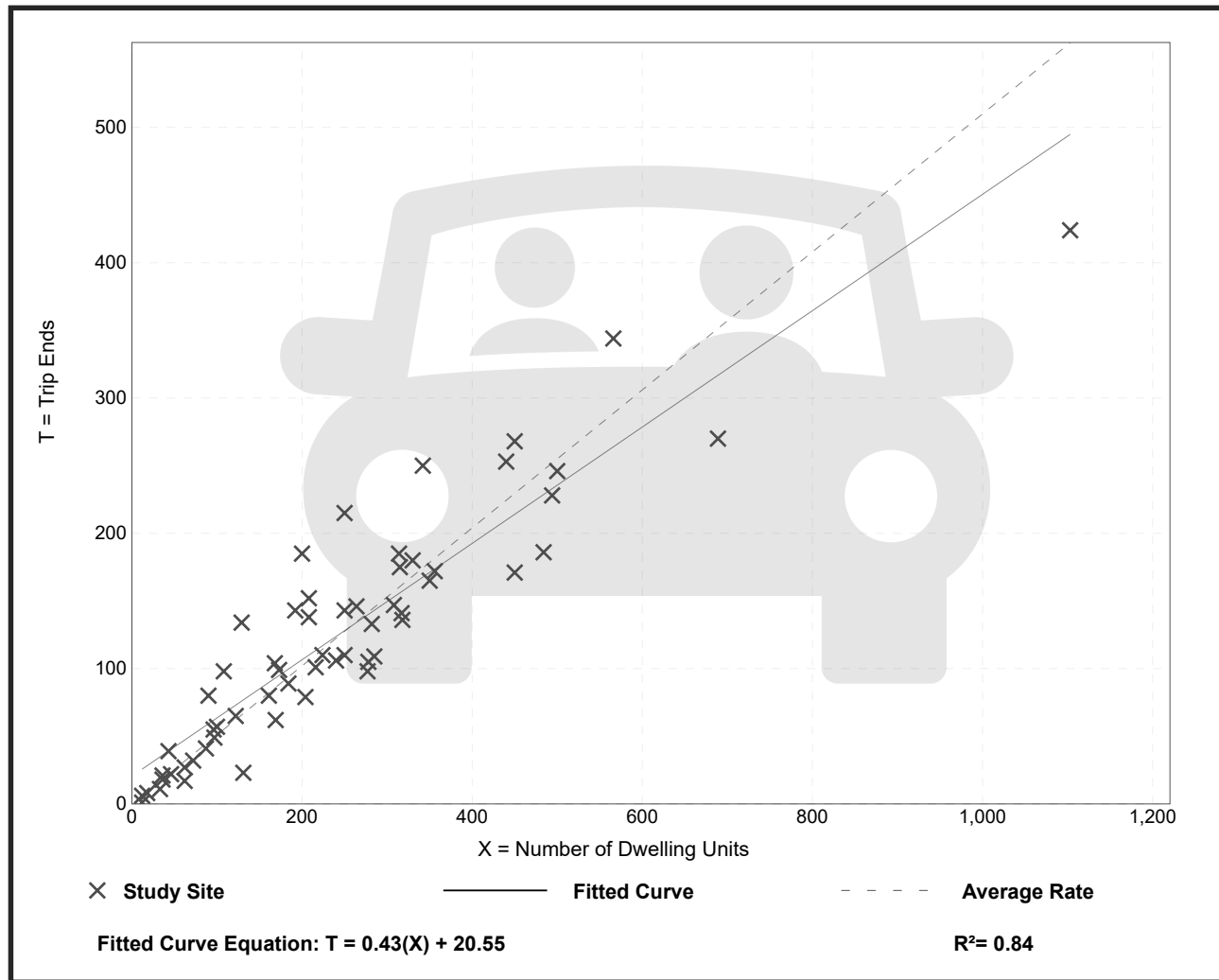
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 59
 Avg. Num. of Dwelling Units: 241
 Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

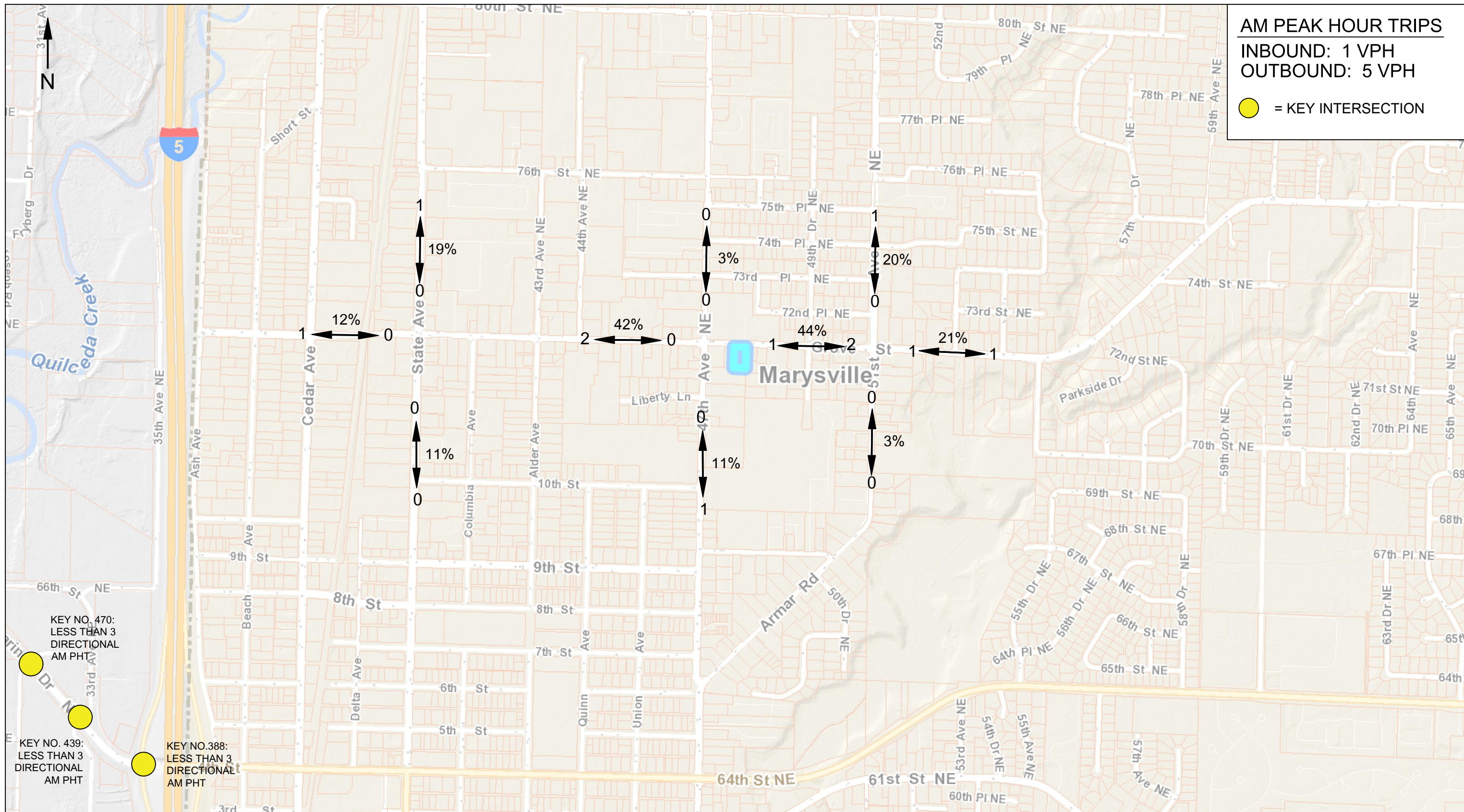
Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

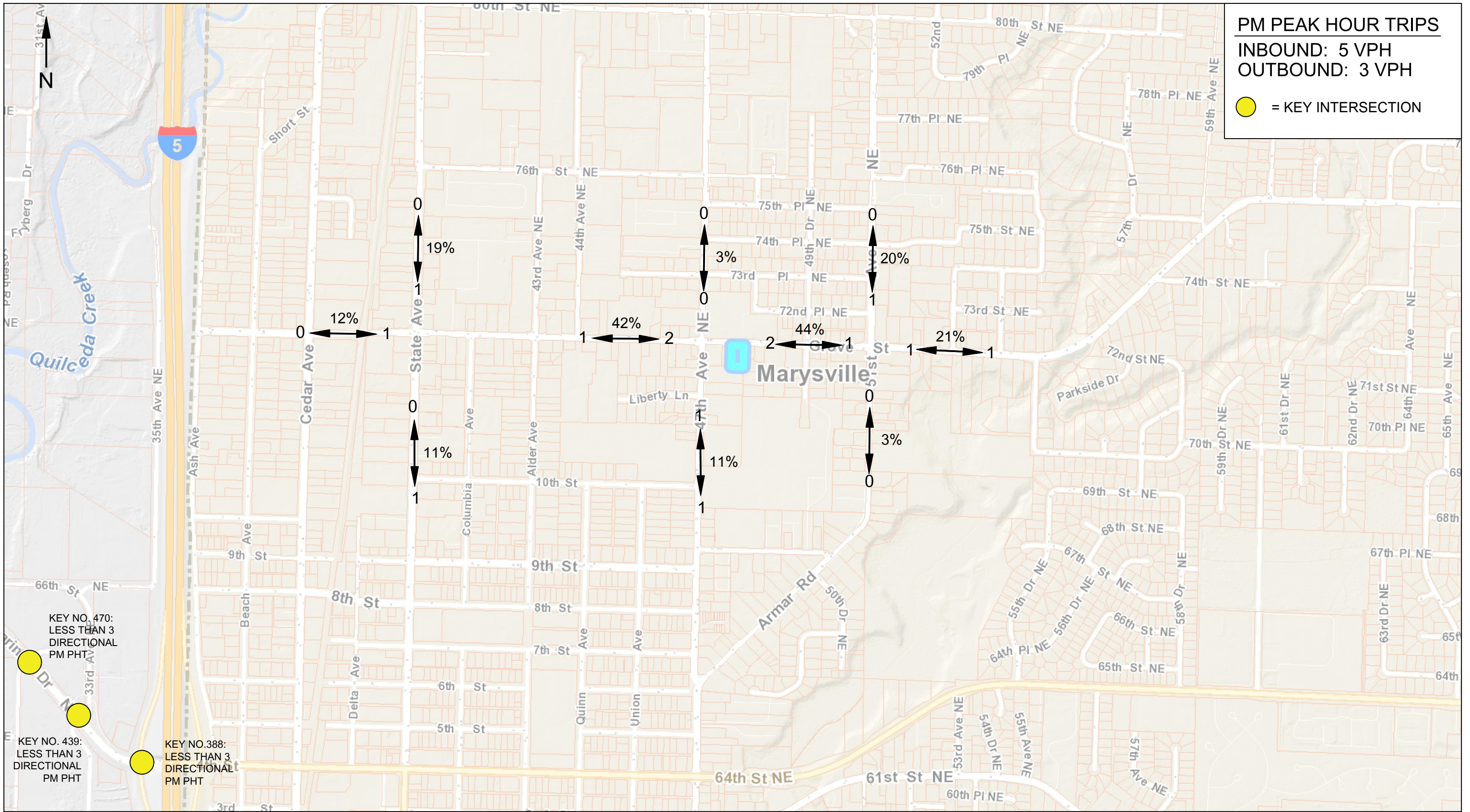
Data Plot and Equation



Trip Gen Manual, 11th Edition

Institute of Transportation Engineers





**Snohomish County Traffic Worksheet and Traffic Study Requirements
for Developments in the City of Marysville**

Snohomish County government, through an interlocal agreement (ILA) with the City of Marysville, may request traffic mitigation measures from any new development in the city that impacts roads in the unincorporated county. The City will impose the requested mitigation to the extent that the City determines that the mitigation is reasonably related to the impacts of the development. To determine the impacts, and to determine reasonable mitigation measures, the City of Marysville requires a traffic study from any development in the city that may have impacts on county roads. This ‘traffic study’ may be as simple as completing sections one and two of the county traffic worksheet below, or having a professional traffic engineer conduct a formal traffic study consistent with the requirements in section three below.

- If a development generates less than ten peak-hour trips and the applicant chooses Option A for mitigation payment (standard payment by percent of county impact fee), then the applicant will generally only have to fill out the first two sections of this traffic worksheet and complete a mitigation offer (see section four).
- However, if a development generates more than ten peak-hour trips, or if the applicant chooses Option B for mitigation payment (comprehensive impact analysis), then the applicant will have to fill out the first section of this worksheet, complete a separate traffic study consistent with the requirements in section three, and complete a mitigation offer (see Section Four).
- Applicants should submit all documents *to the City* as part of their initial submittal.
- Traffic study requirements for impacts on county roads are based on the County’s traffic mitigation ordinance (Chapter 30.66B) and the city/county ILA. At the end of this document find references to the county contacts and county web site (sources for many of the documents related to traffic mitigation).
- Following review of the documents submitted, the County may request supplemental information and analysis as necessary to determine the impacts of the development in accordance with the city/county ILA. The City will require the proposed development to submit the supplemental information and analysis to the extent that the City determines that it is necessary to determine the impacts of the development.

Section One (1) Worksheet General Information

1. Name of Proposed Development Grove Apartments
City Development File Number (if known) _____

2. Name, Address and Phone Number of Applicant Benjamin Semenyuk 425-268-8172
NAN Homes, LLC 4726 72nd St NE Marysville, WA 98270

3. Development Site Address 4726 Grove St

4. Is it a residential or commercial development? Residential

5. Description of Development (size and specific type) 16 multi-family dwelling units within one building

6. How many new vehicle trips are expected to be generated by the proposed development? (For many common types of developments this information can be provided by the city or the county. For more complex developments trip generation may have to be determined under section three below)
6 AM Peak Hour 8 PM Peak Hour 108 Average Daily Trips (ADT)

7. Proportionate Share Impact Mitigation: All applicants have two options in determining the amount of their traffic mitigation payment:
____ For determining the amount based on a percentage of the county fee go to section two.
X For determining the amount based on a comprehensive traffic study go to section three.

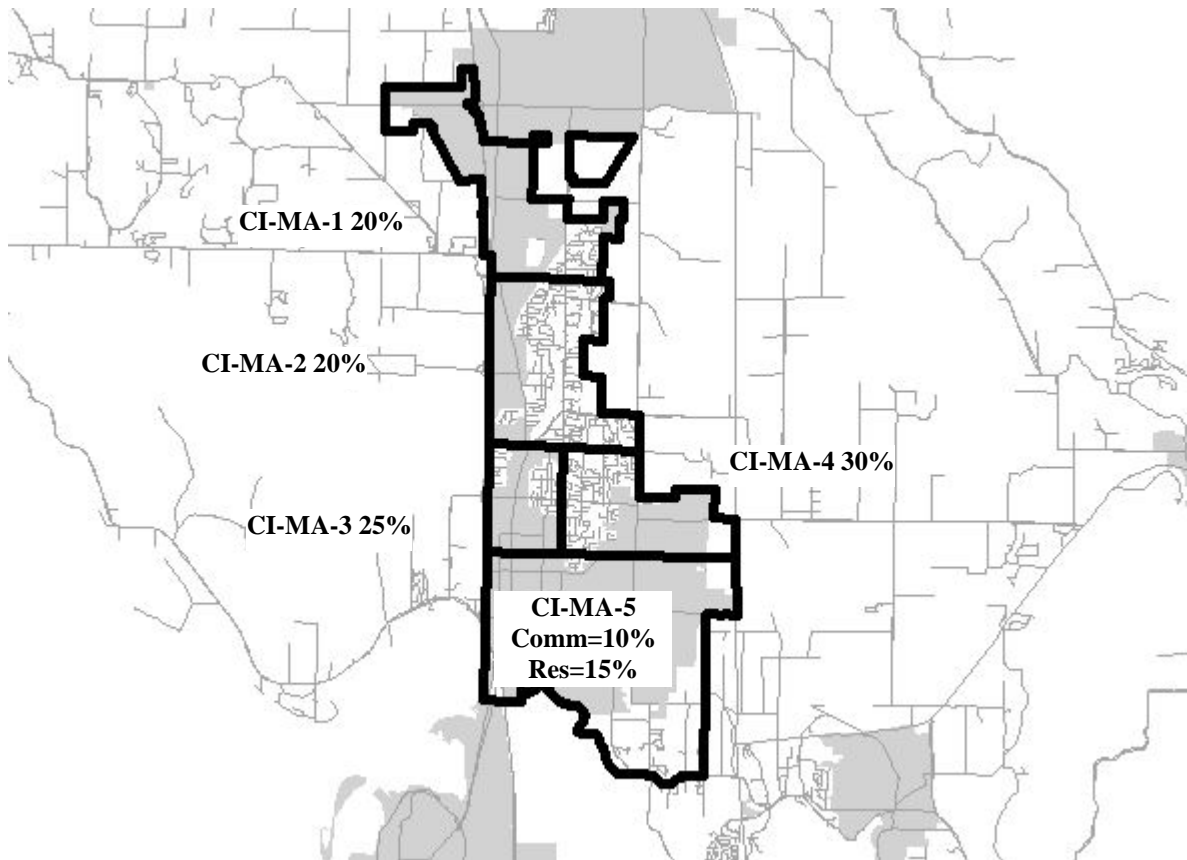
Section Two (2) Proportionate Share Determined by Percentage of County Impact Fee

2(a) Calculation of Payment Amount

1. Standard default estimated percentage of trips impacting the City streets based on subareas (See below) _____ % or 2. Other Percentage: (Note: See author’s qualifications in section three below.) Estimated percentage of trips impacting county roads from attached trip distribution: _____ %

Sub-Area ID #	* City Subarea Description	Residential Developments	Commercial Developments
CI-MA-1	North of 136th ST SE.	20%	20%
CI-MA-2	North of 100th ST NE and South of 136th ST SE.	20%	20%
CI-MA-3	North of 76th ST NE, South of 100th ST SE, and West of 51st AV NE.	25%	25%
CI-MA-4	North of 76th ST NE, South of 100th ST SE, and East of 51st AV NE.	30%	30%
CI-MA-5	South of 76th ST NE.	15%	10%

* Note: Boundaries are either street centerlines or imaginary extensions of street centerlines in places where the actual streets do not exist.



3. Development New Average Daily Trip Generation (ADT) _____

4. Type of Development (Residential or Commercial) _____

5. County Commercial Fee Rate \$ _____ 6. County Residential Fee Rate \$ _____

(Note: Consistent with county code and the ILA, developments pay the rate in effect at the time of their submittal. As of 07/13/11 the rates were \$39 for commercial developments and \$46 for residential developments. Through ordinance, the County Council can change these rates at any time, so consult with the County or look at Snohomish County Code 30.66B.330 to find the latest fee rates.)

7. Calculation of Proportionate Share Impact Mitigation

$$\frac{\text{#1 or #2 above: \% of trips}}{\text{\% of trips}} \times \frac{\text{#3 above: ADT}}{\text{ADT}} \times \frac{\text{#5 or #6 above: Fee Rate}}{\text{Fee Rate}} = \$ \text{proportionate share mitigating payment}$$

2(b) Determining whether or not an additional traffic study is necessary

Will the development generate more than 10 peak-hour trips *or* are there other impacts that need to be addressed (e.g., level of service, safety, or access and circulation)

No. Skip section three and go to section four.

Yes. Read the introduction to section three and skip to section 3(b).

Section Three (3) Traffic Study Requirements

Introduction: This section outlines requirements for traffic studies for impacts on County roads. If an applicant chooses (or is required) to complete a traffic study, then it should be submitted along with this worksheet and a mitigation offer. (Note on Author's Qualifications: A traffic study under this section must be conducted by an engineer licensed to practice in the state of Washington with special training and experience in traffic engineering and, preferably, membership in the institute of transportation engineers. For individuals/firms not on the City's approved list, the developer will provide, with the traffic study, the credentials of the individual or firm performing the traffic study certifying compliance with these qualifications.)

3(a) Proportionate share impact mitigation based on comprehensive traffic study

1. Development's Trip Generation and Distribution. Determine the PM peak-hour trip generation and distribution for the development consistent with Section 3(b) below.
2. Impacted Improvements. Determine which of the road sections with planned improvements in the county's impact fee cost basis (Transportation Needs Report Appendix D) are impacted by three or more development-generated *directional* PM peak hour trips (PM PHT).
3. Current Counts. For each impacted improvement, provide current traffic counts to determine the PM PHT.
4. Reserve Capacity. Determine "reserve capacity" for each impacted improvement by subtracting the current PM PHT from the maximum service volume (MSV) for the existing facility. Reserve capacity is set to zero if current PM PHT exceeds the MSV. For MSVs see County DPW Rule 4224.
5. New Capacity. New capacity is the incremental increase in PHT that could be accommodated with the planned improvement. Determine the new capacity of each impacted improvement by subtracting the current MSV from the future MSV after the improvement.
6. Chargeable Capacity. For each impacted improvement, add the reserve capacity to the new capacity.
7. Final Adjusted Cost. Find the cost of each impacted improvement and make any adjustments used by the County for tax credits (see Transportation Needs Report Appendix D).
8. Capacity Cost per Peak-Hour Trip. For each impacted improvement, determine the capacity cost per PM PHT by dividing the final adjusted improvement cost by the chargeable capacity.
9. Traffic Impacts. From step one above, take the *total* number of PM PHT (in both directions) impacting each planned improvement.
10. Proportionate Share. For each impacted improvement, determine the proportionate share impact mitigation by multiplying the capacity cost per peak-hour trip by the number of PM PHT impacting the improvement.

3(b) Trip Generation and AM and PM Peak Hour Trip Distribution and Assignment

Calculate AM, PM and Daily trip generation consistent with the ITE Trip Generation Handbook and Snohomish County Public Works Rule 4220. Determine the trip distribution and assignments consistent with the County's document titled "Format for Trip Distributions"(available at County web site, see below).

- Within the developments transportation service area (TSA) the distributions will be carried out to each key intersection at which the approach or departure volumes on any leg have three (3) or more peak hour trips. Get the most current list of key intersections on the web site described below. Trips should be distributed onto the road system as it is expected to be in six years.
- The distribution should be a schematic map showing the broad distributions of trips in terms of percentages on different roads. Show all City boundaries.
- The assignment should be a schematic map with the impacted key intersections identified by ID# and turning movements for each shown in separate diagrams on the same page or on different pages. The assignment should also be presented in tabular form listing each intersection by intersection ID#, and the number of trips at each movement.

3(c) Additional Analysis for Developments Generating More Than Fifty (50) Peak Hour Trips

For large developments (i.e., those generating more than 50 peak-hour trips), the County may request mitigation for impacts on the level of service of County roads, documented safety locations (the County calls such locations “inadequate road conditions” or “IRCs”), and access or circulation. The traffic study requirements below are intended to disclose impacts. Based on this information the County may request through the City that the applicant provide additional information showing possible mitigation measures. If any off-site improvements were needed for mitigation the County would work with the applicant to determine requirements for right-of-way, construction plans, right-of-way use permits, construction/maintenance bonds, and other issues.

Impacts on Level of Service (LOS) of County Arterials

Contact Snohomish County Public Works for the most current list of arterial units in arrears and critical arterial units. Identify any arterial units in arrears or critical arterial units impacted by three or more directional peak-hour trips.

Impacts on Inadequate Road Conditions

Contact Snohomish County Public Works for a list of the current IRCs. Identify any IRCs impacted by three or more peak-hour trips. Note: Unlike LOS impacts in which at least three or more peak hour trips have to be added in one direction to require disclosure (e.g., 3 westbound), for IRCs, any three peak hour trips added to IRC locations are considered an impact for which disclosure is necessary (e.g., 2 westbound plus 1 eastbound).

Impacts on Access or Circulation

The County may request improvements to existing roads to provide safe and efficient access and/or circulation. In some instances, the County may request provisions for future County roads identified in the Comprehensive Plan or in Small Area Transportation Studies. If so, the County will request specific additional information through the City.

Section Four (4) Traffic Mitigation Offer to Snohomish County

The applicant should complete a traffic mitigation offer to Snohomish County that summarizes the mitigation identified in the county traffic worksheet and any additional traffic study. This will facilitate timely review of the development and processing of the application. The form to use for the mitigation offer is titled “Traffic Mitigation Offer to Snohomish County.” This form is typically provided to all applicants along with this traffic study checklist. In addition, copies are available from the county contacts or the Snohomish County web site shown below.

Additional Information

County Web Site

Snohomish County Public Works has a web site with many documents related to traffic studies and mitigation requirements for developers. From the Snohomish County Home Page go to:

Departments/Public Works/Divisions/TES/ProgramPlanning/3066B

County Contacts

- Elbert Esparza, Snohomish County DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201, (425) 388-3184, elbert.esparza@snoco.org

Traffic Mitigation Offer to Snohomish County

The applicant completes part one and submits it to the City with a completed county traffic worksheet. The City completes part two and sends it to the County. The County completes part three and sends it back to the City.

Part One to be completed by Applicant

<p>Basic Development Information</p> <p>Name of City in which development is located _____</p> <p>Name of Proposed Development _____</p> <p>City Project File Number (if known) _____</p> <p>Name of Applicant _____</p> <p>Address of Applicant _____</p>																													
<p>Proportionate Share Calculation: Choose Option A or B</p> <p><input type="checkbox"/> Option A: Based on a percentage of the County's adopted impact fee (attach traffic worksheet.)</p> <p>1. The applicable percentage of the County's fee: _____%</p> <p>2. Net New Average Daily Traffic: _____ADT</p> <p>3. The adopted County impact fee for this development: _____\$/ADT</p> <p>4. Total Proportionate Share Amount: \$_____</p> <p><input type="checkbox"/> Option B: Based on a comprehensive traffic study (attach traffic worksheet and traffic study)</p> <p>_____ No road improvements are impacted. Hence, proportionate share amount is zero (\$0).</p> <p>_____ The following road improvements are impacted. The calculation of proportionate shares is summarized below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">List by Names/Description the Impacted County Projects (attach other pages if necessary)</th> <th style="width: 10%;">County Project ID#</th> <th style="width: 15%;">PHTs Impacting Project</th> <th style="width: 15%;">Capacity Cost per PHT</th> <th style="width: 20%;">Proportionate Share Obligation per Impacted Project</th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">4. Total Proportionate Share Amount (sum of obligations for each impacted project)</td> <td>\$_____</td> </tr> </tbody> </table>					List by Names/Description the Impacted County Projects (attach other pages if necessary)	County Project ID#	PHTs Impacting Project	Capacity Cost per PHT	Proportionate Share Obligation per Impacted Project	1. _____					2. _____					3. _____					4. Total Proportionate Share Amount (sum of obligations for each impacted project)				\$_____
List by Names/Description the Impacted County Projects (attach other pages if necessary)	County Project ID#	PHTs Impacting Project	Capacity Cost per PHT	Proportionate Share Obligation per Impacted Project																									
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3. _____																													
4. Total Proportionate Share Amount (sum of obligations for each impacted project)				\$_____																									
<p><input type="checkbox"/> Trip Distribution and Assignment if required</p> <p>If required, attach AM and PM peak-hour trip distribution and assignment. Attach traffic worksheet showing whether or not it is required and traffic study.</p>																													
<p><input type="checkbox"/> Mitigation of other impacts if required for developments generating more than 50 Peak-Hour Trips</p> <p>Mitigation of Impacts on Level of Service</p> <p>_____ No impact or not applicable _____ Mitigation as described in attached traffic study.</p> <p>Mitigation of Impacts on Inadequate Road Conditions</p> <p>_____ No impact or not applicable _____ Mitigation as described in attached traffic study.</p> <p>Mitigation for Impacts on Access or Circulation</p> <p>_____ No impact or not applicable _____ Mitigation as described in attached traffic study.</p>																													
<p><input type="checkbox"/> Written Offer</p> <p>The Applicant hereby voluntarily agrees to pay the total proportionate share amount shown above for impacts of the proposed development on the capacity of Snohomish County roads and provide mitigation of all other impacts as indicated above and described in attached documents.</p> <p>BY: _____ Date: _____</p> <p>Signature by Authorized Official of Applicant or Authorized Representative</p> <p>Print Name and Title _____</p> <p><i>Instructions to Applicant.</i> Submit this Offer, a completed county traffic worksheet, and any other attachments to the City with your initial application or send directly to Contact.pwCMS@snoco.org.</p>																													

Part Two: To be completed by the City

Receipt of Written Offer and attachments by City and routing to County

Name of Proposed Development _____
City Project File Number _____
Date Received _____
City Staffer Assigned to Project _____
Address _____
Phone _____

Instructions to City. Send this offer and all attachments to Contact.pwCMS@snoco.org

Received by: _____
_____ Date: _____
Initialed by City Staffer _____ Print Name and Title _____

Part Three: To be completed by Snohomish County

Receipt of Offer and attachments by Snohomish County and routing back to City

Name of Proposed Development _____
City Project File Number _____

Received by: _____
_____ Date: _____
Initialed by County Staffer _____ Print Name and Title _____

Snohomish County Mitigation Request to City

Snohomish County has reviewed the traffic study worksheet and mitigation offer submitted by the applicant and has determined as follows:

Snohomish County requests that the City impose the mitigation offered above as a condition of approval for the Development. Snohomish County agrees to accept changes in the mitigation payment amount shown above resulting from TDM or lot-yield adjustments approved by the City.

Snohomish County requests that the City require additional supplemental information to adequately evaluate the proposed development's impacts.

The information requested is shown in the notes below.

By: _____ Date: _____
Signature by Authorized County Staffer _____ Print Name and Title _____

Routing Back to City

Instructions to County Send this offer and all attachments to the City Staffer shown in Part Two above.

Sent by: _____
_____ Date: _____
Initialed by City Staffer _____ Print Name and Title _____

Notes
