Summary

To obtain approval, new development may be required to provide or fund localized transportation improvements necessary to mitigate impacts to adjacent rights-of-way or the overall transportation system. Such improvements typically include dedication of right-of-way (ROW) or other easements, as well as capital improvements, and may be imposed at various stages of the development process: zoning, subdivision, and site plan.

This document provides guidance for ensuring that required improvements are "reasonably related" and "roughly proportionate" to the estimated impact of proposed development, consistent with state law and well-established legal principles. After summarizing the applicable law and the City's general approach to compliance, this guidance document provides detailed direction for using the "Proportionality Worksheet" to compare estimates of transportation demand resulting from proposed development with the transportation supply improvements required by the City.

Legal Basis for Rough Proportionality

Two landmark U.S. Supreme Court decisions – *Nollan vs. California Coastal Commission (1987)* and *Dolan vs. City of Tigard (1994)* – established the basic rule that conditioning development approval on dedication of land constitutes an unconstitutional "taking" of property unless the dedication is *reasonably related* and *roughly proportionate* to the impacts of development on the community.

These legal principles, often called "nexus and proportionality," were further developed in subsequent cases, including the Texas Supreme Court's decision in *Flower Mound vs. Stafford Estates* (2002) and, most recently, the U.S. Supreme Court's decision in *Koontz v. St. Johns River Water Management Dist.* (2013). Following are a few of the more important precedents:

- Rough proportionality applies to payment of regulatory fees, in addition to land dedications. Basically, whenever a permit is conditioned on a *land use exaction*—i.e., the giving up of land or money—it must be roughly proportionate to a development's likely impacts.
- An "individualized assessment" is required to determine rough proportionality. Precise mathematical calculation is not necessary or always possible, but staff must "show its work" in determining the amount of ROW or fee in-lieu required for development approval.
- Impacts to an overall transportation *system*, as opposed to just localized areas, may be accounted for in determining rough proportionality.

In addition to court decisions, state legislatures around the country have adopted statutes related to rough proportionality. In 2005, the Texas Legislature amended the Local Government Code to require that a professional engineer retained by the city approve proportionality determinations for required land dedications and infrastructure costs. The law also authorizes developers to appeal proportionality determinations to the city council.

City of Austin's Development Process

The City of Austin makes various requirements from developers for transportation-related improvements as a condition of development approval, as prescribed in Chapters 25-6-51 and 25-6-55 of the City's Land Development Code. These requirements fall under two basic policies in Code: border streets and traffic mitigation. The City's border street policy authorizes staff to require dedication or reservation of right-of-way (ROW) and/or construction or fees in lieu for street(s) adjoining the proposed development. The amount of ROW and street construction, per the border street policy, is determined by the adopted thoroughfare criteria in the City of Austin's *Austin Metropolitan Area Transportation Plan* (AMATP or Transportation Plan) and Transportation Criteria Manual (TCM), an approved collector plan, or an established capital improvement project. The City's traffic mitigation policy authorizes staff to require ROW, construction, and/or fees in lieu "to offset the traffic effects generated by the proposed development". Traffic mitigation measures are typically identified by Neighborhood Traffic Analysis or Traffic Impact Analysis.

Because state and constitutional law require that these requirements be roughly proportional to the impact of the development, the City of Austin and Travis County use a basic spreadsheet tool to estimate the proportional impact of a proposed development upon the transportation system. This tool is to be used to verify that requirements are appropriately scaled and comply with the law. Approximately 30 cities throughout Texas now take the same approach to checking rough proportionality. The City of Austin, together with Travis County, contracted with a transportation consulting firm, Kimley-Horn, who has developed similar tools for most of these Texas cities, to develop a Proportionality Worksheet and basic methodology for complying with HB 1835.

Use

Sections 25-6-51 and 25-6-55 of the City's Land Development Code authorizes the City Manager to require reservation or dedication of right-of-way (ROW), construction or fees in lieu of roadway improvements, and/or construction or fees in lieu to mitigate traffic impacts of a proposed development.

The requirements for ROW, easements, and capital improvements, as described above, must be checked for compliance with the principle of Rough Proportionality. As requirements may be made at various stages during the development application process, including zoning, subdivision, and site plan, credit for prior requirements will be applied towards updated, revised, or subsequent requirements. The type(s) and extent(s) of requirements of ROW or capital improvements are generally identified based upon the existing or planned street sections and alignments included in the AMATP, a collector plan, a capital improvement project, and/or by the traffic mitigation measures as recommended by Neighborhood Traffic Analysis or Traffic Impact Analysis. In some cases easements may be required in place of ROW due to lower cost, planned use, or other circumstances. In the context of Rough Proportionality, these requirements constitute the "transportation supply."

The "transportation demand" of the proposed development is estimated based upon the planned use(s) for the subject property. If at the time of application the developer does not yet have or does not provide planned use(s) for the subject property, estimation of demand will be based upon the most

intense use(s) as allowed by zoning and any other entitlement(s). Transportation demand will be estimated based on land use-specific trip generation rates or equations from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th edition*, the proposed or potential intensity of development, and the length of trips associated with the identified land use type(s).

Rough Proportionality is checked using the "Proportionality Worksheet" according to the methodology described below.

If the requirements are within 5% of the estimated demand generated by the proposed project, they will be required as a condition of the application. In the event that the requirements of the developer are determined to be greater than the estimated impact of the proposed project, the City will reduce its requirements accordingly.

Proportionality Worksheet Methodology

The "Proportionality Worksheet" is a straightforward Microsoft Excel spreadsheet tool that estimates transportation demand and supply according to standard transportation engineering and planning practices. While the tool was developed jointly by the City of Austin and Travis County, this guidance addresses only the City's application of "Rough Proportionality." This guidance is expected to evolve over time as the City applies the tool to a wide variety of development projects/circumstances.

The actual check for Rough Proportionality for a specific development case/project is performed in the "Proportionality" tab of the worksheet. This is the only tab that the user needs to complete. The other tabs, as outlined below, provide lookup data or perform supporting calculations that are used as inputs for the Proportionality Worksheet.

The Proportionality Worksheet has five (5) primary tabs:

- **User Guide** – brief descriptions of each section of and various inputs to the "Proportionality" tab.
- **Proportionality** – the primary calculation worksheet with following five (5) sections:
    - *Development Information* – basic project information, including development name, developer/applicant name, legal description of the property, case/plan number, and submittal date.
    - *Analysis Type* – peak period for analysis and trip generation estimation method.
    - *Transportation Demand* – estimation of automobile traffic generated by the proposed development based on land use type(s), intensity, adjusted trip rates, internal capture rates, trip lengths, and notes/assumptions. The impact of the demand is quantified in units of estimated average cost per vehicle mile.
    - *Transportation Supply* – estimations of localized transportation system improvements, consisting of roadway supply, ROW dedication, and other improvements required by the City of the developer. The supply is quantified in units of cost.
    - *Supply/Demand Comparison* a summary of the impact of the demand in dollars compared to the total value of the required transportation supply in dollars. If the

required supply is within 5% of the estimated demand, than the improvements are considered roughly proportional.

- **Land Use Chart** -- a consolidated table by land use category of trip generation characteristics adapted from the *ITE Trip Generation Handbook (2nd Edition)* and used for demand estimation in the Proportionality tab. Sources used to develop the Model Trip Length contained in the Land Use Chart are indicated for each land use type and include the *2005 Austin Activity Travel Survey (AATS)*, *2009 National Household Travel Survey (NHTS)*, and Kimley-Horn estimated values based on the *2005 AATS, 2009 NHTS*, and data from similar Texas metropolitan areas.
- **Summary of Roadway Costs** -- a summary table of the estimated per mile capital costs, including roadway and ROW construction, as well as allowances for typical engineering and administration costs (i.e. 'soft' costs), by street type and size. Costs are based on current City of Austin bid tabulations.
- **Pay Items –** a look up table for construction component costs.
- **Detailed Roadway Costs Sheets** – tabs for each street type that calculate per mile construction and soft costs.

Transportation Demand

Development Information

This section simply provides the basic descriptive information for the particular development case being checked for Rough Proportionality. The user inputs the development name, applicant, legal description (lot, block), case number, and date. This information can be found in the development case file.

In order for City staff to perform a Rough Proportionality check, the following additional information is needed if not already contained in the development case file:

- Prior dedications of ROW, if applicable, with proof of dedication (i.e. warranty deed, recorded plat, etc.).
- Prior payments of any fees associated with transportation improvements by the current proposed project's developer (i.e. sidewalk fiscal, boundary street fiscal, etc.).
- Identification of restrictive covenants or easements
- *For zoning and non-residential subdivisions without proposed uses*, the most intense land use allowed under zoning.

Analysis Type

A) Peak Period to Analyze – The Rough Proportionality assessment allows a development to be analyzed according to either the AM peak or PM peak period. The default period is the PM peak, which is typically when traffic is at its highest level and additional development has the greatest impact.

B) Trip Generation Method – The trip generation method selects how the peak hour trip rate is determined from the Land Use Chart tab, by linear rate or regression equation, according to the *ITE Trip Generation Handbook (2nd Edition)*. When regression equation is selected, the rate is derived from the land use-specific fitted curve (i.e. regression) equation from the *ITE Trip*

Generation Manual (9th Edition). The worksheet will automatically default to a linear rate if the regression equation results in a negative value or is not available (see Peak Hour Trip Rate below).

Demand

To estimate the traffic demand generated by a proposed development, nine (9) inputs are required. These are labeled (A-H) below. The user will need to enter three (3) of the inputs: for Land Use Type (A), Intensity (C), and Internal Capture Rate (E).

A) Land Use Types – The user should select the appropriate land use type(s) for the development from the categorized drop-down list. The worksheet allows for up to eight (8) individual land uses for the subject project. This drop-down list contains a majority of the land use types from the *ITE Trip Generation Manual (9th Edition)* that are supported by a significant number of historical samples.

Details for each of the land use types on the list are included in the Land Use Chart tab. If the desired land use for the subject development is not on the list, the user should choose a similar land use. If a separate trip generation study was performed, the user should select a substitute land use with a similar trip generation rate as that from the study after receiving permission from the City.

If a specific land use type is not provided by the developer, the user should select the most intense use allowed under the subject property's zoning, unless another appropriate use is agreed upon between the developer and the City. If a different land use is identified later in the development application process, an amended Rough Proportionality check will be made.

B) Development Unit – The development unit is the smallest unit of measure for a given land use type. The most common development unit is 1,000 SF GFA (square feet of gross floor area). Other units include, dwelling units, beds, rooms, acres, stalls, etc. The development unit will autofill based on the Land Use Chart according to the selected land use type.

C) Intensity - Enter the number of development units, or intensity, based upon the size of the development. For example, a 50,000 square foot building would have an intensity of 50 (ie, 50,000 SF/1,000 SF GFA = 50).

D) Peak Hour Trip Rate - The peak hour trip rate is the estimated number of trips per hour per development unit generated by a given land use type. The peak hour trip rate will autofill based upon the selected trip generation method and the land use type entered previously and according to the *ITE Trip Generation Manual (9th Edition)*. Pass-by reduction rates, if applicable for the selected land use type, are applied to the trip generation estimate if supplied by the applicant and follow recommended practice per the *ITE Trip Generation Handbook (2nd Edition)* (see Land Use Chart). When regression equations are used (as per the selected analysis

method), the rate is derived from the equation at the given intensity. When the equation results in a negative value, the rate reverts to the linear method and the cell will be shaded blue. For uses without a regression equation, the linear rate is used and the cell will be shaded gray.

E) Internal Capture Rate – Internal capture is the amount of trips generated by a given land use type that stay within the development, rather than beginning or ending only within the development. The internal capture rate column allows for a reduction in the number of vehicle trips generated by a mixed use development due to internal capture. This reduction is typically used when a study, such as a Traffic Impact Analysis (TIA), has been prepared for the proposed development supporting a particular internal capture rate according to guidance in the *ITE Trip Generation Handbook (2nd Edition)*. Following consultation with Development and Transportation staff, other industry-accepted references may be cited to support the use of internal capture rates for mixed use developments. The internal capture rate does not have to be filled in for the worksheet to operate. It will default to 0%.

F) Adjusted Trip Length – Because this application of Rough Proportionality is for *localized* improvements to the transportation system, the trip length from G) below is automatically adjusted to a standard length of 1.5 miles. This adjusted length provides both developers and the City with a reasonable and uniform trip length for use in demand calculations that accounts for the inherent variability of actual trip lengths due to real world geographic, topographic, and network conditions. The average trip length from the Land Use Chart is 6.9 miles, which correlates to a length of 3.45 miles actually attributable to the subject development, as noted below in G). Therefore, a static, or 'flat', trip length of 1.5 miles is considered reasonable and conservative.

G) Trip Length - The trip length is the distance traveled by trips generated per land use type by the proposed development along the roadway network and within the City's full purpose jurisdiction. The trip length autofills based upon the selected land use type entered previously and according to the Land Use Chart, which includes trip lengths developed from the *2005 Austin Activity Travel Survey (AATS)*, *2009 National Household Travel Survey (NHTS)*, and Kimley-Horn estimated values based on the *2005 AATS, 2009 NHTS*, and data from similar Texas metropolitan areas

The trip length is automatically reduced by 50% in order to attribute the trip to the subject development only. Because all trips have an origin and destination, as well as a producer and attractor, the subject development is therefore considered 'half-responsible' for the trip. This accounts for trips that are re-directed to the subject development, but would have occurred anyway. For example, a new drycleaner would not necessarily attract an entirely new set of trips, but would redirect trips already being made to other drycleaners.

Trip lengths to/from land uses within the same development will be different. For example, a gas station may have a shorter trip length than an adjacent retail development.

The trip length value(s), however, is NOT USED in the demand calculation and is provided for reference only. Refer to F) above.

H) Demand - The demand in units of vehicle miles (one vehicle traveling one mile) is calculated based on information previously entered (demand = trip rate x internal capture rate x trip length). The demand is the resulting number of vehicle miles estimated to be generated by each land use type during the peak hour, when the impact is greatest.

I) Impact of Development - This monetized impact of development is calculated based on the transportation demand in vehicle miles and the estimated average cost per vehicle mile of roadway in Austin, including costs for construction, engineering and administration, and right-of-way. The estimated average cost per vehicle mile is calculated for each roadway classification on the Summary of Roadway Costs tab. Detailed costs and assumptions, including typical quantities and unit prices for each roadway type are included at the back of the Worksheet. The current (April 2015) estimated average cost for Austin / Travis County is $2,275 per vehicle mile.

Land use types not included in the Land Use Chart, for which supporting trip characteristic data is available, can be entered manually in the bottom two rows of the Demand section on the Proportionally Worksheet. A user will need to manually enter land use type, development unit, intensity, peak hour trip rate, and trip length.

Impact of Demand Placed on Thoroughfare System

The total estimated value of the proposed development's impact to the transportation system is estimated in terms of cost per vehicle mile. The total impact is compared to the total transportation supply required by the City of the developer below in the Supply / Demand Comparison.

Transportation Supply

To estimate value of the transportation supply required by the City of the developer, the user completes the applicable supply sections for Roadway Supply, Other Improvements, and Right-of-Way (ROW) Dedication. Each of the supply cost calculations is described below.

Roadway Supply

Roadway supply calculations account for the full cost of a typical street section (according to classification) including, pavement, curbs, earthwork, drainage, ADA ramps, sidewalks, bike facilities (where applicable), pavement markings, lighting, landscaping, and engineering and administration. The following items are entered into the Proportionality tab to estimate the cost of the roadway supply exaction:

- **Roadway Name** – Name of the off-site (typically boundary) roadway required to be constructed or funded.
- **Classification** – Enter the *ultimate* classification of the roadway as per the *Austin Metropolitan Area Transportation Plan* (AMATP or Transportation Plan), an approved collector plan, or an

identified capital improvement project. In the event that the roadway is not defined in any approved plan mentioned above, the user should select an appropriate classification based upon professional engineering judgment.

- **Roadway Length** – Enter the overall length in feet for the roadway construction or mitigation fees required by the City.
- **Number of Thru Lanes** – Enter the number of lanes for the roadway construction or mitigation fees required by the City. This section or Other Improvements (below) can be used for turn/acceleration/deceleration lanes.
- **Supply Cost Estimate** – The roadway supply cost estimate calculated based on the Summary of Roadway Costs tab according to the roadway classification, length, and number of lanes. This field will autofill once the previous four (4) columns are complete.
- **Supply Cost Estimate OR Detailed OPCC** – This is the final cost for each roadway used in the Roadway Supply Subtotal. This field defaults to the Supply Cost Estimate but can be overridden if a more detailed or project-specific cost estimate is available (i.e. an Engineer's Opinion of Probable Construction Costs, OPCC).

In the event that the developer is only required to construct or fund only a portion of a typical roadway section (e.g. sidewalk constructed previously) the user may scale the comprehensive Supply Cost Estimate using the Number of Thru Lanes value or, if an actual cost is known, the user enters a negative cost in the Other Improvements table of the Supply Section to deduct those items from the Total Supply amount.

Other Improvements

Other improvements required, such as sidewalks, intersections, etc., are entered in this section. Enter the location, a general description of the improvements, and an estimated cost to construct or fund the required improvements.

Right-of-Way Dedication

Enter the name of the roadway corridor for which right-of-way dedication is required. Enter a general description of the right-of-way being dedicated. Enter the estimated cost of the right-of-way being dedicated.

The estimated cost of right-of-way will be calculated by dividing the total market value of the subject property by the property square footage, then multiplying the resulting value per square foot times the right-of-way area required. The total market value is based on the Travis County Appraisal District (TCAD) or Williamson County Appraisal District (WCAD) market values before any reductions for the year of most recent appraisal.

When a public access easement is required, rather than a right-of-way dedication, 70% of the TCAD/WCAD market value is used.

Prior Dedications / Improvements

'Credit' for prior dedications and/or improvements provided by *the same applicant* during prior application(s), can be included in the supply calculations. Supporting information about the prior supply contributions must be provided by the applicant. The value of the prior contributions will be calculated based on *current* ROW values and construction costs according to the procedures outlined above.

Total Value of Supply Added to Thoroughfare System

The total value is calculated by adding the Roadway Supply Subtotal, the Other Improvements Subtotal, and the Right-of-Way Dedication Subtotal. The total supply is compared to the total estimated transportation impact of the proposed development below in the Supply / Demand Comparison.

Supply / Demand Comparison

This section performs the cost comparison of the vehicle miles of transportation supply required of the developer to the estimated demand generated by the proposed development. The calculation uses a +/- threshold of 5% to account for uncertainty – the 'rough' in rough proportionality. There are three (3) possible outcomes and *determination language* is automatically generated by the Worksheet for each one:

- **Supply > Demand** -- the improvements required of the developer EXCEED the project's demand (by more than 5%); therefore they are not roughly proportional.

  Based on the results of this rough proportionality analysis, the value of capacity (supply) provided by the proposed development exceeds the anticipated impact of demand it places on the system. Given these assumptions, only ___% of the value of capacity supplied can be attributed to the proposed development. Therefore, the roadway improvements are NOT roughly proportional to the impact of demand placed on the system (i.e. the applicant is adding more capacity than needed to support their development).

- **Supply = Demand** -- the improvements required of the developer EQUAL the project's demand; therefore they are roughly proportional.

  Based on the results of this rough proportionality analysis, the value of capacity (supply) provided by the proposed development roughly equals the anticipated impact of demand it places on the system. Therefore, the roadway improvements are roughly proportional to the demand placed on the system (i.e. the applicant is adding roughly the same amount of capacity as what is needed to support the development).

- **Demand > Supply** -- the project's demand EXCEEDS the improvements required of the developer (by more than 5%); therefore the improvements required are justified.

  Based on the results of this rough proportionality analysis, the anticipated impact of demand on the system exceeds the value of capacity (supply) provided by the proposed development. Given these assumptions, the anticipated impact of demand of the

development exceeds the value of capacity supplied by approximately ___%. Therefore, the roadway improvements required by the City are justified (i.e. the applicant is adding less capacity than needed to support their development).