Local Fiscal Impact Model Application for ET Plus

Guidebook

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January 2014

Sustainability Indicators: Locally Generated Fiscal Impact Model (LFIM) Application

Overview

The research team at the University of Texas at Austin developed a model to evaluate the fiscal impacts of various development scenarios that can be linked as an application to the Envision Tomorrow scenario planning system. This fiscal impact tool is based on specific detailed data developed at the local jurisdiction level (city governments, school districts, and public utility districts). Some data needed to support our local fiscal impact model (LFIM) are derived from national data sources (e.g. U.S. Census), but a majority of the needed baseline information is derived directly from local budget documents, property appraisal data, and service surveys from local government departments.

The LFIM may be characterized as a bottom up approach to estimating a development project's potential fiscal impacts, rather than a top down approach in which national or county level data are attributed to lower level jurisdictions. As such, developing the baseline data for the LFIM application is fairly labor intensive. It requires careful evaluation of numerous local budgets and documents from special districts, as well as interviews and feedback from local financial managers and service providers. The LFIM model provides local planners with a very basic indicator of potential fiscal impacts from various development scenarios delineated in the Envision Tomorrow system. It is a means to compare the tax revenues and expenditure demands associated with "business as usual" development with one or multiple alternate development scenario(s). However, the results of the LFIM application are rough approximations, and a more careful, project specific assessment is needed to generate more precise estimates of fiscal effects. Furthermore, as with any model estimating local fiscal impacts, it is critical to clearly understand the assumptions and limitations of the model and estimates.

In this guidebook we review enduring challenges in fiscal impact assessment and then review the basic structure of the LFIM model application for Envision Tomorrow Plus (ET+). We use a case example of a fiscal impact assessment on a hypothetical scenario for Austin, Texas using ET+ inputs. Readers may find it useful to access the spreadsheet

model referenced in this guidebook to understand how results are generated and how this application works in the context of the ET+ software.

Basic LFIM Framework

The LFIM framework is primarily based on an average cost/land use approach to fiscal impact assessment. This approach is widely used and referenced in the literature (Burchell et al., 1994; Kotval and Mullin, 2005; Edwards and Huddleston, 2010; Bise, 2011). This average cost fiscal impact method essentially assumes that the cost of servicing new residents, workers and school attendees will be similar to the average costs of servicing existing populations. The average cost estimates are then multiplied by the increased number of residents, workers, or K-12 school attendees that would be generated by a new development. Current budget numbers are used to determine, for example, that the per-resident cost of providing police services to existing residents is $163 per year. If a new development brings in 1,000 new residents, the cost of providing police services to the development's residents is estimated to be $163,000 per year. Average per capita and per worker numbers are also used to calculate the revenues that would be generated by a new development for some categories of revenue. However, property tax revenues, sales tax revenues, and a handful of other revenue categories are estimated more directly or using different estimating techniques, which are explained in greater detail in later sections of this guide.

The LFIM model further assumes that different land uses (residential, commercial, agricultural, or vacant land) have distinct revenue generation characteristics and distinct demands for various types of public services. Developments with assorted land use mixes will have different overall costs (service demands) and revenue generating characteristics. The fiscal impacts by land use mix are estimated by attributing specific revenue streams and expenditure demands to specific land use categories.

In our local fiscal impact model (LFIM) we develop, where possible, specific information about the service location (land use) where a public service is delivered. These expenditures are allocated out to residential and non-residential land use categories by where the public services is delivered (by, for example, determining what share of police calls are to residential or non-residential land uses and splitting police budgets attributed to residential and non-residential uses according to these shares). Some expenditure and tax streams are attributable only to one category of land use (e.g. schools are an expenditure demand of

residents in various residential land use types while sales taxes are generated at point of sale only by commercial, primarily retail land uses).

Finally, for more general services, or services where the service destination cannot be determined, we use an allocation rule percentage (ARP) formula to allocate expenditures and revenues by land use category. Where expenditure and revenues are attributable to multiple land uses and where direct evidence of allocation shares is not available, a general formula or allocation rule percentage (ARP) is used:

$$\text{ARP} = \left(\frac{\textit{Approased property value of land use}}{\textit{Total appraised property value in jurisdiction}} + \frac{\textit{Number of parcels by land use}}{\textit{Total parcels in jurisdiction}} + \frac{\textit{Square footage built by land use}}{\textit{Total developed square footage in jurisdiction}} \right) / 3$$

We choose this ARP formula because it suggests that general city expenditures and revenues attributable to all land uses can roughly be allocated based on land and building improvement value, number of parcels by land use, and by square footage of structures by land use (suggesting a level of habitation and service demand). In the LFIM model we use as much information about land use values and characteristics to derive the general ARP as is commonly available from most local tax appraisal districts (Edwards, 2000). However, model users can use a different ARP formula by making simple changes to the baseline spreadsheet.

Once tax revenues and expenditures in a jurisdiction are allocated to specific land uses, the allocated amounts are divided by current residents (residential development) and employees (non-residential development) in a jurisdiction to derive per capita and per worker average cost multipliers. A detailed explanation of the allocation formulas and per capita, per worker, and per-student (in the case of school district fiscal impacts) multipliers is provided in the detailed guide to the LFIM provided below.

Theory and Debates:

The argument for fiscal impact analysis of development is that it allows for an explicit understanding of fiscal effects of various development patterns and land uses so these effects may be considered in planning, zoning, and project development decision making. There are three operative methodologies commonly used to estimate fiscal impacts: case study approaches, marginal cost methods and average cost methods.

The case study approach is in many ways preferable; however, it is labor intensive and unique to each project. It normally involves detailed discussions with developers, public officials, and service providers in various city departments. While case study approaches incorporate more detailed and specific knowledge, errors can occur because data and allocations shares are in many cases based upon the judgment of local actors. In addition, some participants may have a vested interest in reporting revenues or service demands associated with their areas of operations (Edwards and Huddleston, 2010, p. 26). The case study method is not viable for producing a more general fiscal impact model to be used as an application to Envision Tomorrow or other planning information software systems.

Marginal cost methods are preferable in jurisdictions where there is either slack infrastructure and service capacity (e.g. a "shrinking city") or full capacity utilization or deficiencies in capacity given standards of service (e.g. a fast growing exurban community). However, marginal cost approaches to fiscal impact assessment are also very labor intensive and often require case study type analyses of specific developments (Kotval and Mullin, 2005).

Average cost methods are appropriate for jurisdictions where service capacities bear a close relationship with service demand. The LFIM utilizes an average cost method, but we allow the user to make several important adjustments that can improve the model's accuracy to account for local conditions or unique characteristics of specific developments.

Fiscal impact analysis of any type must be viewed as a rough analytical framework to assess the potential fiscal effects of different development patterns and land use mixes. There are numerous possibilities for potential error (Stern and Stuart, 1980; Siegal et al., 2000; Soup, 2002). A general allocation formula, or ARP, may not be an accurate measure of tax generation and service demand for certain revenue streams and services (like police, fire, and utilities). For example, an over- or underestimate of the residential share could generate significant errors (Edwards and Huddleston, 2010). In addition, the population in a specific development may be quite different than the overall population in a jurisdiction (e.g. may have high income elderly or lower income college age residents), resulting in the revenue generation and service demands that may be distinct from average multiplier measures. It is also important to recall that the underlying state and local tax framework can have a large effect on fiscal impacts for a

particular jurisdiction. Where sales taxes are an important local revenue source, commercial, and particularly retail development, would tend to yield surpluses. When there are local "city" income taxes, the residential component of a development may generate more revenue (in the form of property taxes plus household income tax revenue).

Fiscal Impact Analysis: A "Handle With Care" Decision Making Tool

Fiscal impact analysis gives policy makers and citizens important information about the potential fiscal implications of various choices about how to zone, build, and develop in a community. However, people who use and study fiscal impact modeling advise caution and a transparent delineation of the assumptions and potential sensitivities intrinsic to this method (Kotval and Mullin, 2005; Edwards and Huddleston, 2010). The results derived from any fiscal impact estimate "connote" potential outcomes. They do not reflect a precise accounting of the outcomes across a ten or twenty year period in which some developments are built-out and completed.

The results of fiscal impact assessments can usefully inform development decisions and policy making, but they should not be used to definitively drive choices. Choosing to develop a community to primarily maximize positive fiscal impacts generated by a fiscal impact model reflects poor decision making. In most jurisdictions in the U.S., building very expensive housing (high property tax yield) for young professionals or older households (fewer children requiring school facilities) with a large retail component (high sales tax yield) would maximize fiscal gains from development. Development choices driven largely by fiscal outcomes have been labeled "fiscal zoning" by some scholars and practitioners (Rohan, 2013; Cervero and Duncan, 2004). In the context of scenario planning, a full range of community needs must be carefully considered. Similarly, the full range of scenario performance indicators (in addition to fiscal indicators) should be evaluated to help guide development choices that will meet a range of community needs and improve a locale's quality of life.

We will give a description of the key LFIM components and estimating procedures and then follow with a "step-by-step guide" to developing the baseline and estimating fiscal impacts for various scenarios in the Envision Tomorrow framework. Several methods through which the user can better customize the model and estimating procedures to account for a development's specific characteristics will then be outlined.

Estimating the Fiscal Impacts of Various Developments: (Basic Tax and Revenue Allocations by Land Use Type and Per Resident and Per Worker Multipliers)

As noted, the LFIM is essentially an average cost, average revenue multiplier model. Current City, School District, and Public Utility expenditure and revenue streams are estimated for a base year (2011 in our example below) using local budget documents. Next, the local taxing jurisdiction's property and tax appraisal data for the base year is assembled to estimate effective property tax rates and, in some cases, to derive allocation formulas to distribute revenue and expenditures to various land use types (residential, non-residential, and agricultural and vacant land). Once revenues and expenditures are distributed to the land use types, per-capita and per worker average costs are derived for various expenditure and revenue types (for each jurisdictional authority: City, School District, and Public Utilities).

Revenue Estimation

Property Tax Revenues

In most cities and school districts, property taxes are the largest single source of local revenue. However, the way that property taxes are assessed on residential and commercial properties varies significantly across states and localities (Mikesell, 2012). Property appraisal standards are different—in some states and local jurisdictions, property owners are only taxed on a portion or percentage of their property's appraised value, while in other locales the full appraised value is subject to the property tax rate. In addition, states and localities differ in terms of exemptions, credits, and abatements (e.g. homestead exemptions or credits, old age or veteran exemptions, circuit breakers, etc.). As a result of this very heterogeneous system, we use a simple and direct technique in the LFIM to account for the difference between the statutory property tax rate and the effective rate on the actual appraised value of property in a jurisdiction.

We first estimate total property tax revenue in the base year received by the city and school district and divide it by the total appraised value of the property in the jurisdiction. This yields what we label an "effective property tax rate". This effective rate is then multiplied by the value of new residential and commercial property developed in an Envision Tomorrow (ET+) scenario, or project value totals, generated from ET development types to estimate city and school district property tax revenues:

Property Tax Revenue from Envision Tomorrow Scenario =

$$\left(\frac{Annual\ property\ tax\ revenue\ in\ jusisdiction\ (City,School\ District)}{Total\ appraised\ value\ of\ property\ in\ jurisdiction}\right)$$ x Total Project Value from ET Scenario

These revenues are allocated to the land use categories based on the value of residential development or non-residential development generated in the ET scenario (project value totals).

Sales Tax Revenues

Sales tax revenues are an important source of revenue for city governments. Like property taxes, how sales taxes are levied, what goods and services are subject to taxation, and how they are re-distributed to local jurisdictions varies across states. Sales taxes are generated and accounted for on a "point of sale basis". If revenues are generated by sales at a commercial establishment located in a specific jurisdiction, the jurisdiction receives the local portion of the sales tax revenues of the establishment. Thus, sales taxes are tied to commercial activities/land uses, but the sales taxes generated vary widely according to the type of commercial activity and the taxable sales generated by that activity (e.g. retail and restaurant establishments will generate more sales tax per employee than an insurance office).

To estimate sales taxes likely to be generated by the commercial activity in an ET scenario we first obtained the total sales tax revenue from city budget documents for the base year. We then used a "sales tax calculator" to estimate sales tax revenue per employee for six non-residential uses:
Retail;
Office;
Industrial;
Education (Private);
Lodging;
All Other.

The sales tax calculator uses total sales subject to tax in the local jurisdiction by industry (from the state taxing authority- in the case of our example, the Texas Comptroller of

Public Accounts[1]). This was then aggregated into the six industrial/land use categories above. The ratio of total sales subject to taxation in an industry in the jurisdiction divided by total sales subject to taxation in the jurisdiction was used allocate the annual city sales tax revenues to the six industry/land use categories above.

We then used industry employment data taken from the U.S. Census-Longitudinal Employer-Household Dynamics for the local jurisdiction (city).[2] This industrial employment data was likewise aggregated into the six industry/land use categories above. We then divided each industry category's total local sales tax by the industry category's total employment to calculate an estimate of the per worker annual sales tax revenue for each of the six categories.

The annual sales tax per employee derived in our sales tax calculator was multiplied by the total employment by six non-residential categories estimated in the ET+ development types to estimate local sales tax revenue yielded with different ET+ project development scenarios.

Other City Non-Tax Revenues

In city jurisdictions there are a number of additional revenue sources that support city services (such as Franchise Fees, Fines, Forfeitures, Penalties, License Fees, Permits & Inspection Fees, Charges for Services, Interest, Other income, etc.). The version of the LFIM model presented here aggregates other city revenues into four categories:

Licenses and Fees
Charges for Services
Other Miscellaneous Revenue
Net Transfers from Balances and Interest Income

Each city jurisdiction will have slightly different categories and the user must aggregate revenues into these categories based on their knowledge of city revenue sources. In the case of net transfers from balances, the user must be careful about including net

[1] Data on sales subject to tax by local jurisdiction for Texas from Texas Comptroller of Public Accounts, https://ourcpa.cpa.state.tx.us/allocation/HistSales.jsp

[2] Date on employment by industry in local jurisdiction, U.S. Department of Commerce, US Census Bureau, - Longitudinal Employer-Household Dynamics, http://lehd.ces.census.gov/, local employment data for 2011.

transfers from public utilities. In the Austin case example, utility transfers were considered as the difference between utility revenues and expenditures and show up as a surplus in the utilities budgets. They could also be accounted for as a positive net transfer from the utility to the City general fund in the "other city revenue" category, but they should not be double counted when arriving at net fiscal balances. Net transfers should also include a year to year change in overall city balances. For example, if a city decreased its overall net budget balance by $10 million between the prior fiscal year and the end of the current fiscal year, this should be included as a positive change in net balances and be included in this category. This balance change reflects unspent revenues from the prior year that are used to finance current year spending. Typically, interest income is reported in city budgets as a discrete category.

These revenues in the "other city non-tax" categories are allocated to residential and non-residential land use categories in our example using the allocation rule percentage (ARP) formula detailed above (p. 2). The rationale is that these fees, charges, and other revenue sources come from residents and business establishments in rough proportion to the land value and land use characteristics in the jurisdiction's ARP. For instance, fees for building permits, which are added to the "Licenses and fees" category, are likely to be related to residential and non-residential activity, making the APR a reasonable proxy to allocate licenses and fees revenues to the various land uses.

Once these revenues are allocated to land use categories using the ARP formula, the total City Non-Tax Revenues allocated to residential uses are divided by the number of residents and the total allocated to non-residential uses are divided by the number of workers. This generates an estimate of the per-resident and per-worker revenues. These per resident and per worker revenues are multiplied by the total number of residents and total employment in the ET+ development types (for a particular scenario) to estimate local non-tax revenue yielded by different ET+ project development scenarios.

Utility Revenues (if Publicly-Owned)

The LFIM considers public utilities in assessing the fiscal effects of development scenarios. If electric, gas, water, or wastewater utilities are privately owned they are not incorporated in the fiscal estimates. In our case example, the City of Austin owns its

electric, water, and wastewater utilities so the revenues and expenditures of these utilities are considered in the fiscal impact estimates.

Utility revenues are generated by customer billings and other charges. Utility revenues for the base year (2011) were taken from utility and city budget documents. Total annual revenues for the water, wastewater, and electric utilities were derived for Austin public utilities.

In the case of water and wastewater revenues, these were allocated to residential and non-residential land use categories by the water and wastewater consumption totals by land use type. While consumption shares may not equate to the revenue shares due to different charge and volume adjustments, this allocation method seemed more accurate than alternatives such as the ARP ratio because it was more directly tied to the consumption shares of the utility service. In the case of electric utility revenues, a study of actual revenues from utility bills by land use category was used to allocate utility revenues by land use type.

Once the public utility revenues are allocated by land use/activity type, residential utility revenues are divided by the number of residents and non-residential utility revenues are divided by the number of workers to estimate per resident and per worker utility revenues. These per resident and per worker revenues are multiplied by the total number of residents and total employment in the ET+ development types (for a particular scenario) to estimate public utility revenue generated by different ET+ project development scenarios.

School District Revenues

Property taxes constitute a majority of revenues that finance K-12 education. Transfers from the state and federal government constitute the other major revenue sources for public school districts. These federal and state transfers are not directly accounted for in the LFIM. The basic underlying assumption is that per student federal and state transfers will accrue to new students generated by new developments in the ET scenarios. The school districts also receive a small share of revenue from fees (such as food charges and charges for facility use and contributions).

We allocate school property tax revenues to land uses by the new property value and direct property taxes generated by the residential and non-residential components of

the ET scenario (project value totals, see above). We then multiply the new property value in an ET scenario for residential and non-residential development by the effective school tax rate:

$$\left(\frac{Annual\ property\ tax\ revenue\ in\ School\ District}{Total\ appraised\ value\ of\ property\ in\ District}\right)$$ **X** Total Project Value from ET Scenario for Residential and Non-Residential

For "all other" school district revenues we allocate by land use categories using the ratio:

$$\left(\frac{Approased\ value\ of\ property\ in\ land\ use\ category}{Total\ appraised\ vaue\ of\ property\ in\ jurisdiction}\right)$$

The driver of revenues and services for school districts is the number of students. We, therefore, calculate other revenue on a per student basis by dividing other revenue by the number of students in the district (or city). This creates a per student multiplier for other revenues which is then multiplied by the number of students estimated within the new residential population in an ET scenario. To estimate the number of students associated with a given ET scenario, we simply use the ratio of students per resident in the school district.

In our City of Austin case example, 96 percent of the students in the Austin Independent School District (AISD) reside within the City limits. Therefore, we can assume that district and city school taxes and students per resident mirror the city tax and student base. However, in suburban or exurban jurisdictions, school districts may span multiple city jurisdictions. In these cases, the total property tax revenue in the district must be adjusted, as well as the student-resident ratio. This adjustment can be based on school district documents (that delineate the city residency of students across a district) and/or resident population ratios (e.g. the share of total residents in a city jurisdiction/total residents in school district).

Property, Sales, and Per Resident, Worker, and Student Revenue Estimates in Preferred Scenario Tab

The revenue streams calculated as property tax yields from new development and as per resident, per worker, and per student multipliers are allocated into three categories on the preferred scenario tab in the LFIM spreadsheet and connected to ET+.

All City property tax revenues, sales tax revenues, and other city non-tax revenues associated with an ET scenario are calculated and added to the "City Revenue and Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab.

All Utility revenues (publicly owned) associated with an ET scenario are calculated and added to the "Public Utility Revenue Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab.

All School District property tax and all other revenues associated with an ET scenario are calculated and added to the "K-12 Revenue Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab.

Expenditure Estimation

City Operating Expenditures

The City jurisdiction's expenditures for ongoing operations within various spending categories likely to be associated with a new development scenario are estimated from city budget documents. Operating expenditures are allocated to residential and non-residential land use categories by the allocation rule percentage (ARP) formula or by drawing upon more direct evidence of service demand by activity/land use categories from secondary data sources.

Table 1, below, details the allocation methods used to distribute city operating funds between activity land use types. We use the Allocation Rule Percentage (ARP) to distribute City operating funds to residential and non-residential land use categories, except in the case of public service expenditures (Police, Fire EMS). Using the APR to allocate spending in these categories is a judgment the user can amend when utilizing the LFIM. A number of fiscal impact studies employ a different allocation scheme. In some studies, Parks and Recreation and Library services are viewed as activities that are primarily consumed by citizens in their role as residents, as opposed to workers in commercial activities (see Edwards, 2000). In our judgment, people consume these services in their role as both residents and workers—businesses may use library resources for research or marketing, or use parks for company sponsored events. We therefore use the general APR to allocate these expenditures across activity/land use categories.

Table 1 – Allocation of City Operating Budget Expenditures to Land Use Categories

Operating Budget Activity	Activity/Land Use Allocation Method
General Administration	Allocation Rule Percentage
Community & Development Services	Allocation Rule Percentage
Transportation (Streets & Other)	Allocation Rule Percentage
Public Health & Human Services	Allocation Rule Percentage
Parks and Recreation	Allocation Rule Percentage
Libraries	Allocation Rule Percentage
Police	911 Call Data Base
Fire	911 Call Data Base
EMS	911 Call Data base

In the 911 data base, the address and land use type of each service call is recorded. In the case of Police, Fire, and EMS, we utilized 911 call records as a proxy to allocate these services across activity/land use categories.

Once city operating expenditures are allocated to the land use categories via the ARP and 911 call record data ratios, total operating expenditures allocated to residential uses are divided by the number of residents and the total operating expenditures allocated to non-residential uses are divided by the number of workers to estimate per resident and per worker expenditures. These per resident and per worker expenditures are multiplied by the total number of residents and total employment in the ET+ development types (for a particular scenario) to estimate the operating costs associated with different ET+ project development scenarios.

City Capital Expenditures

It can be challenging to derive a clear estimate of City capital expenditures that incorporates annual outlays and interest payments on debt financed capital spending. As noted at the beginning of this report, an average cost approach to fiscal impact assessment implicitly assumes that a particular development will not generate "excess" demands on the existing infrastructure or service capacities. Average cost methods are appropriate for jurisdictions in which service capacities bear a close relationship with service demand (i.e. growing at modest rates). If public capital services (streets, sewers,

police facilities, etc.) are being fully utilized, new residents and workers associated with a major new development may trigger "above average" capital expenditures to build new facilities.

In LFIM we use annual capital expenditures from City capital budgets plus annual payments on outstanding city debt (payments for debt service) as the baseline to derive additional capital expenditures that may be associated with new development. We argue that this is a reasonable estimating technique, even for fast growing jurisdictions (such as the Austin case study used here). The rationale is that current capital spending and interest payments on outstanding debt are reasonable measures of the capital demands in a growing city. City growth tends to remain stable over a number of years and the current spending plus annual interest payments embodies current and prior growth trends. It would be anticipated that average per resident and per worker annual capital spending and interest payments on debt would be higher in a fast growing city due to the need to consistently expand capital facilities.

It is still possible, however, that the marginal costs to provide capital services for a major new development are different than average costs. Users of the LFIM are encouraged to consult with City finance staff to evaluate estimates of capital spending.

City annual capital spending and interest payments were allocated to activity/land use types by a ratio derived from the operating budget totals. We assume here that capital spending is linked to providing ongoing city services. Hence total capital and interest payments are allocated to the various activity/land use types by the following formula:

$$\left(\frac{Total\ City\ operating\ expenditures\ by\ land\ use\ type}{Total\ City\ operating\ expenditures}\right)$$ x Total City Annual Capital and Debt Service Payments

Once annual capital and interest spending are allocated to the land use categories by the above formula, total capital and interest expenditures allocated to residential uses are divided by the number of residents and the total capital and interest expenditures allocated to non-residential uses are divided by the number of workers. This estimates the city capital expenditures per resident and per worker. These per resident and per worker expenditures are multiplied by the total number of residents and total employment in the ET development types (for a particular scenario) to estimate the capital costs associated with different ET project development scenarios.

Utility Expenditures (if Publicly-Owned)

The LFIM considers public utilities operating and capital expenditures for water, wastewater, and electric utilities (in the Austin case the electric utility is owned by the city). Utility expenditures for operating and capital for the base year (2011) were taken from utility and city budget documents.

In the case of water and wastewater expenditures, these were allocated to residential and non-residential activity/land uses by the total water and wastewater consumption totals by land use type. Again, expenditure shares may not precisely equate to consumption shares, but it is reasonable to assume that utility spending can be proxied by consumption shares. In the case of electric utility expenditures, utility bill payments by land use/activity category are used to allocate utility expenditures by land use type.

Once public utility expenditures are allocated by land use/activity type, residential utility revenues are divided by the number of residents and the total allocated to non-residential uses are divided by the number of workers. This estimates utility expenditures per resident and per worker. These per resident and per worker expenditures are multiplied by the total number of residents and total employment in the ET+ development types (for a particular scenario) to estimate public utility spending associated with different ET+ project development scenarios.

It is crucial to note that the utility revenue and expenditure estimates the LFIM outlined here are intrinsically tied to current average consumption or use of the utility service (e.g. gallons of water, kWh of electricity per resident or worker). If the new development (or ET+ scenario) is more efficient in terms of water use, wastewater generation, or electricity consumption, revenues and expenditures for utilities will be less than average. Many public utilities generate surpluses that are reincorporated in city operating budgets. This means that utility revenues per unit exceed expenditures, and reduced consumption will tend to lower the total "surplus" revenues generated by a public utility and transferred to the city. This relationship will depend on the structure of utility charges, particularly the extent to which utility revenues are "bundled" or strongly tied to overall consumption levels. These relationships are not incorporated directly into the LFIM utility revenue and expenditure estimates.

School District Expenditures

Operating costs and capital expenditures for the school district are derived from school district budget documents. The allocation of school district expenditures is simple because schools (K-12) are seen as a purely residential service. Residents in a certain area send their children to public schools. If a jurisdiction housed only businesses and no residents, there would be no need for K-12 facilities in this jurisdiction. Most land use based fiscal impact models assume that education expenditures are associated with the residential activity/land use category (even though non-residential activities contribute to school revenues through property tax payments). All K-12 public expenditures are therefore allocated to the residential land use category.

We calculate total school district capital and operating expenditures on a per student basis by dividing total spending by the number of students in the district (or city). This creates a per student expenditure multiplier which is then multiplied by the number of students estimated within the new residential population in an ET+ scenario. To estimate the number of students associated with a given ET+ scenario, we simply use the ratio of students per resident in the school district.

Again, in the case of a school district that spans multiple jurisdictions, the user must adjust expenditures as well as the student-resident ratio. This adjustment can be based on school district documents (that delineate the city residency of students across a district) and resident population ratios (e.g. the share of total residents in city jurisdiction / total residents in school district).

Per Resident, Per Worker, and Per Student Estimates in Preferred Scenario Tab

All City expenditures for operating and capital associated with an ET scenario are calculated and added to the "City Revenue and Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab.

All Utility expenditures (publicly owned) associated with an ET scenario are calculated and added to the "Public Utility Revenue Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab.

All School District expenditures associated with an ET scenario are calculated and added to the "K-12 Revenue Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab.

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Step-by-Step Guide to LFIM Model

Creating the Baseline (for LFIM Envision Tomorrow Application)

Those using the LFIM as an application to the Envision Tomorrow scenario planning system must first derive baseline data for their jurisdictions. This is a step-by-step guide on building the baseline data for the LFIM. The spreadsheet incorporating the baseline data can be viewed in the "Baseline" tab on the Austin, Texas Case Example spreadsheet.

Step 1: Enter Resident Population and Worker Estimates for Fiscal Year. The first task is to enter an estimate of the city's population and workforce for the year from which the city, utility, and school district budget data is derived. In our example, the jurisdictional budget year is FY 2011, which includes three months from the first quarter of 2010 and nine months from calendar year 2011. The population estimate from the U.S. Census (American Community Survey) for the City of Austin is 795,518 for 2010 and 820,610 for 2011. These can be entered in the pink shaded boxes. We multiply the 2010 total by .25 and the 2011 total by .75 to calculate the FY 2011 resident population (in unshaded box).

To estimate the resident worker numbers for the City of Austin for FY 2011, we used the U.S. Census, Longitudinal Employer-Household Dynamics application to estimate resident workers for 2010 and 2011 (http://lehd.ces.census.gov/). These are entered into the pink boxes. We again multiply the 2010 total by .25 and the 2011 total by .75 to calculate the FY 2011 resident worker population. These estimates form the basis for per resident and per worker average cost estimates in the LFIM.

Baseline Profile: Austin City	
Effective Year	**Fiscal Year 2011**

People	**Figure**
Population 2010	**795,518**
Population 2011	**820,610**
Population FY 11	814,337
Resident Workers 2010	**573,947**
Resident Workers 2011	**608,323**
Resident Workers FY 11	**599,729**

Step 2: Enter Property and Appraisal Data for Jurisdiction Data on parcels, square footage, and total appraised value (land plus improvement value), can be obtained from most appraisal districts. To build the baseline, the user must enter this date (pink areas in the box, below).

Next, enter the total City property tax revenue and total school district (ISD K-12) property tax revenue derived from budget documents in this area of the baseline spreadsheet. This revenue is allocated to the land uses by the ratio of appraised value of a land use/total appraised value. The effective property tax rates for City property taxes and school (K-12) are then calculated.

Appraisal Data and Property Tax Rate Estimates

Land-Use/Building Type	Parcel units	Square Feet	Total Appraised Value	General Fund Property Taxes Allocation Formula	Education ISD K12 Property Taxes
Residential	**170,461**	**431,379,256**	**$49,628,149,695**	**$225,548,240**	$457,381,403
Nonresidential	9,651	**205,982,657**	**$20,444,167,689**	**$92,913,922**	$188,416,900
Agriculture/ Vacant Land	15,164	**772,183**	**$6,977,857,241**	**$31,712,716**	$64,309,110
Total***	195276	638,134,096	$77,050,174,625	$350,174,878	$710,107,413
	For Services & Other Revenues	For Property Tax Allocation		Effective Tax Property Tax Rate City	Effective Tax Property Tax Rate K-12
Property Tax Allocation Residential (%)	73.10%	64.41%		0.45%	0.92%
Property Tax Allocation -Non -Residential (%)	21.25%	26.53%		0.45%	0.92%
Property Allocation- Agriculture/ Vacant Land(%)	5.65%	9.06%		0.45%	0.92%

In addition, the ARP (with the formula explained above) is calculated for Services and Other Revenues.

Step 3: Enter City Sales Tax Revenue for Fiscal Year

The next step is to enter City sales tax revenues for the fiscal year (pink). Note that all City sales taxes are allocated to non-residential activity/land use. Per worker sales tax revenue for six types of commercial activity are derived using the sales tax calculator (explained above).

Sales & Excise Taxes

Source	Taxable Sales
Sales Tax Revenue (City)	$148,274,599
Sales & Excise Tax Rate, City only	
Sales Tax Revenue -Non-Residential	$148,274,599
Population and Workers	
Per worker (general)	$247.24

Step 4: Enter Non-Tax City Revenue

Using City budget documents, aggregate non-tax revenue into the following four categories. The ARP is used to allocate non-tax revenue to land use categories, and per resident and per worker revenue estimates are derived.

Non-Tax Revenue					
Source	Non-Tax Revenue	Revenue Allocation Residential	Revenue Allocation Agriculture Open Space	Annual Revenue per Resident (Residential	Annual Revenue per Worker (Non-Residential)
Licenses and fees	**$206,860,000**	$151,216,461	$11,682,540	$185.69	$73.30
Charges for Services	**$163,797,000**	$119,737,033	$9,250,532	$147.04	$58.04
Other Miscellaneous Revenue	**$71,435,000**	$52,219,607	$4,034,334	$64.13	$25.31
Net Transfers from Balances and Interest Income	**$129,534,699**	$94,690,993	$7,315,548	$116.28	$45.90
Total	**$571,626,699**	$417,864,094	$32,282,954	$513.13	$202.56

Step 5: Enter Utility Revenues and Allocation Data

Using Utility and City budget documents, estimate the total revenue for public utilities. In the City of Austin case, we enter revenues for Water, Wastewater, and Electric utilities.

Utilities						
Utility Revenue (water wastewater)						
Revenue	Total Revenue	Revenue Allocation Residential	Revenue Allocation Non-Residential	Revenue Allocation Agriculture Open Space	Revenue Per Resident - Residential	Revenue Per Worker-Non-Residential
Water Revenue	**$238,658,961.00**	**$145,096,918**	**$76,310,253**	**$17,251,789.92**	$178.18	$127.24
Waste Water Revenue	**$190,252,868.00**	**$122,079,334**	**$59,366,235**	**$8,807,299.45**	$149.91	$98.99
Electric Utility	**$1,248,500,000.00**	**$539,531,258**	**$708,968,742**	**0**	$662.54	$1,182.15
Storm Water	**$0.00**				0	0
Total Utility Revenue	**$1,677,411,829.00**	**$806,707,509.87**	**$844,645,229.76**	**$26,059,089.37**	$990.63	$1,408.38
	Gallons	Allocation Share				
Water Use -Residential Customers	**29,558,376,700**	**60.80%**				
Water Use -Non-Residential Customers	**15,545,521,200**	**31.97%**				
Water Consumption Other Users	**3,514,443,400**	**7.23%**				
Total Water Consumption	**48,618,341,300**	**100.00%**				
Waste Water Consumption Residential Users	**16,486,769,800**	**64.17%**				
Waste Water Consumption Non-Residential Users	**8,017,388,500**	**31.20%**				
Waste Water Consumption Other Users	**1,189,422,600**	**4.63%**				
Total Wastewater Consumption	**25,693,580,900**	**100.00%**				
Electric Consumption Residential Users*	**417,138,413**	**43.21%**				
Electric Consumption Non-Residential Users*	**548,138,947**	**56.79%**				
Electric Consumption Other Users*	**0**	**0**				
Total Electric Consumption	**965,277,360**	**100.00%**				

In the case of water and wastewater revenues, these were allocated to residential and non-residential land use categories according to the total water and wastewater consumption by land use type. In the case of electric utility revenues, a study of actual revenues from utility bills by land use category was used to allocate utility revenues by land use type.

Once these allocations were made per resident and per worker, utility revenues are calculated.

Step 6: Enter Students, Residents in District, School Property Tax, and Other Revenues

In this section of the baseline tab spreadsheet, we first enter the number of students in the district, the number of district students residing in the city jurisdiction, and the residents in the school district. A key outcome of these entries is an estimate of the aveage student per school district resident (.13 students per school district resident in the Austin case study). This will be used in the preferred scenario spreadsheet to estimate the number of students associated with new residents in a ET development

Education							
Students	85,273						
Estimated Students in Austin City	81,509						
Residents in School District	636,113						
Students Per Resident	0.13						
Residential Square Feet per Student	5,292						
K-12 Revenue	Amount	Per Student	Revenue Allocation Residential	Revenue Allocation Non-Residential	Revenue Allocation Agriculture Open Space	Annual Revenue per Student (Residential)	Annual Revenue per Student (Non-Residential)
Property taxes	$710,107,413	$8,712	$457,381,403	$188,416,900	$64,309,110	$8,712.01	$2,311.61
Property tax rate							
State & Federal	$239,164,553	$2,934					
All other revenue	$12,513,555	$154	$8,862,624	$3,650,931	$0	$108.73	$44.79
Costs							
Total Expenditures	$961,785,521	$11,799.75					

scenario.

Schoool district property taxes are entered in Step #2 above, but the user enters state and federal revenues received by the school district and "All other" school district

revenue here. As noted above, funds transferred from the state and federal governments do not enter into the local fiscal impact analysis in the LFIM. All other revenue is distributed to activity land use types through the ARP ratio. Per student multipliers are then devevoped for school property taxes and "All other" revenue.

Step 7: Enter City Operations Spending By Budget Category

Data on the City operating budget is entered (in the pink cell areas) based upon City budget documents. In this case, we use the ARP to allocate operating funds by activity land use type for all operating funds, excluding public safety (Police, Fire, and EMS). In these public safety categories, 911 call record data was used as a proxy to allocate these services across activity/land use categories. We entered the share of calls by land use in the pink cells (below the budget numbers) and these ratios were used to allocate total spending to the activity/land use categories for public safety operating expenditures. Once the allocations are made for all the categories per resident and per worker, multipliers are derived and form the basis for operating costs for new residents and workers associated with ET development scenarios (in the Preferred Scenario tab).

Community Operations and Capital Expenditures Maintenance Profile
Non-capital revenue and expenditures

Operations and Maintenance (excludes capital projects)	Annual Budget	Revenue Allocation Residential	Revenue Allocation Non-Residential	Revenue Allocation Agriculture Open Space	Annual Expenditure per Resident (Residential)	Annual Expenditure per Worker (Non-Residential)
General administration	**$84,583,238**	$61,831,083	$17,975,266	$4,776,888	$75.93	$29.97
Community & Development Services	**$31,631,308**	$23,122,762	$6,722,150	$1,786,397	$28.39	$11.21
Transportation (Streets & Other)	**$1,665,385**	$1,217,411	$353,920	$94,054	$1.49	$0.59
Public Health & Human Services	**$40,375,162**	$29,514,595	$8,580,356	$2,280,211	$36.24	$14.31
Parks and Recreation	**$42,997,948**	$31,431,874	$9,137,739	$2,428,334	$38.60	$15.24
Libraries	**$25,759,664**	$18,830,539	$5,474,333	$1,454,792	$23.12	$9.13
Police	**$248,108,562**	$128,470,613	$100,930,563	$18,707,386	$157.76	$168.29
Fire	**$126,202,312**	$67,581,338	$48,714,092	$9,906,881	$82.99	$81.23
EMS	**$47,198,621**	$25,246,542	$18,903,048	$3,049,031	$31.00	$31.52
Sub Total	$648,522,200	$387,246,758	$216,791,468	$44,483,974	$475.54	$361.48
Police Response to Residential Location (%)	51.78%					
Police Response to Non-Residential Location(%)	40.68%					
Police Response to Other Location (%)	7.54%					
Fire Response to Residential Location(%)	53.55%					
Fire Response to Non-Residential Location (%)	38.60%					
Fire Response to Other Location (%)	7.85%					
EMS Response to Residential Location (%)	53.49%					
EMS Response to Non-Residential Location (%)	40.05%					
EMS Response to Other Location (%)	6.46%					

Step 8: Enter Annual City Capital Expenditures and Interest Payments on Debt

Annual Capital Improvement Expenditures for City Departments and annual Debt Service payments on city debt are added to estimate annual capital expenditures for the City (in pink cells).

City Current Capital Spending and Debt Service	Annual Budget	Expenditure Allocation Residential	Expenditure Allocation Non-Residential	Expenditure Allocation Agriculture Open Space	Annual Expenditure per Resident (Residential)	Annual Expenditure per Worker (Non-Residential)
Capital Improvement Spending	**$403,900,000**	$241,177,504	$135,017,851	$27,704,645	$296.16	$225.13
Annual Debt Service	**$208,709,000**	$124,624,698	$69,768,360	$14,315,941	$153.04	$116.33
Total Current Capital Spending	**$612,609,000**	$365,802,202	$204,786,212	$42,020,586	$449.20	$341.46

City annual capital spending and interest payments were allocated to activity/land use types by a ratio derived from the operating budget totals. Total Capital Improvement Spending and Annual Debt Service are allocated to the various activity/land use types by the following formula:

$$\left(\frac{Total\ City\ operating\ expenditures\ by\ land\ use\ type}{Total\ City\ operating\ expenditures}\right) \text{ x Total City Annual Capital Improvement Spending and Debt Service Payments}$$

Once annual capital and interest spending are allocated to the land use categories by the above formula, total capital and interest expenditures allocated to residential uses are divided by the number of residents and the total capital and interest expenditures allocated to non-residential uses are divided by the number of workers. This estimates the city capital expenditures per resident and per worker. These per resident and per worker expenditures are multiplied by the total number of residents and total employment in the ET development types (for a particular scenario) to estimate the capital costs associated with different ET project development scenarios.

Step 9: Enter Expenditures for Public Utilities

Annual expenditures from utility and city budget documents are entered (in the pink cells).

In the case of water and wastewater expenditures, total expenditures were allocated to residential and non-residential activity/land use by the total water and wastewater

consumption totals by land use type (see ratios in Step 5 above). In the case of electric utility expenditures, utility bill payments by land use/activity category are used to allocate utility expenditures by land use type.

Utilities Expenditures	Annual Budget	Expenditure Allocation Residential	Expenditure Allocation Non-Residential	Expenditure Allocation Agriculture Open Space	Cost Per Resident (Residential)	Cost Per Worker-Non-Residential
Water	**$227,412,638**	138,259,518	72,714,286	16,438,834	$169.78	$121.25
Wastewater	**$181,287,566**	116,326,579	56,568,715	8,392,272	$142.85	$94.32
Energy	**$1,072,900,000**	463,646,846	609,253,154	0	$569.36	$1,015.88
Stormwater	**$0**	0	0	0	0	0
Total Utilities	$1,481,600,204	$718,232,943	$738,536,155	$24,831,106	$881.98	$1,231.45

Once public utility expenditures are allocated by land use/activity type, residential utility revenues are divided by the number of residents and the total allocated to non-residential uses are divided by the number of workers. This estimates the utility expenditures per resident and per worker. These per resident and per worker expenditures are multiplied by the total number of residents and total employment in the ET development types (for a particular scenario) to estimate public utility spending associated with different ET project development scenarios.

Step 10: Enter School District Expenditures

Budget data from the local K-12 school district should be entered. Only total local capital and operating expenditures are considered in the LFIM. All K-12 expenditures are allocated to the residential activity land use category. Total local expenditures for operating and capital are divided by the number of students to calculate a per student cost. This is then used to estimate school expenditures associated with ET+ development scenarios.

Education	Annual Budget - Local Expenditures	Expenditure Allocation Residential	Expenditure Allocation Non-Residential	Expenditure Allocation Agriculture Open Space	Annual Expenditure per Student
Total Local Expenditures Capital and Operations	$722,620,968	$722,620,968	$0	0	$8,866
Total Expenditures Federal and State	$239,164,553				$2,934
Total Expenditures	$961,785,521	$722,620,968	$0	0	$11,800

Summary Table

A summary table of all City, Utility, and School Revenues and Expenditures is provided at the end of the Baseline spreadsheet tab. This tab should be reviewed as a check on overall tax and budget numbers. The overall budget for all jurisdictions should be in rough balance (not more than one percent in surplus or deficit) because most local jurisdictions cannot run significant annual budget deficits.

Summary Per Capita/Per Worker Revenues and Expenditures	Annual Budget - Local Expenditures	Total Residential Uses	Total Non-Residential	Allocation Agriculture Open Space	Annual per Resident	Annual per Worker	Annual per Student
Total City Revenues Capital and Operations	$1,070,076,176	$643,412,334	$362,668,172	$63,995,670	$790	$605	$0
Total Utilities Revenue Capital and Operations	$1,651,352,740	$806,707,510	$844,645,230	$26,059,089	$991	$1,408	$7
Total Local School District Revenues Capital and Operations	$722,620,968	$466,244,027	$192,067,831	$64,309,110	$573	$320	$8,866
Total Local Revenues	$3,444,049,884	$1,916,363,870	$1,399,381,233	$154,363,870	$2,353	$2,333	$8,866
Total City Expenditures Capital and Operations	$1,261,131,200	$753,048,960	$421,577,680	$86,504,560	$925	$703	$0
Total Utilities Expenditures Capital and Operations	$1,481,600,204	$718,232,943	$738,536,155	$24,831,106	$882	$1,231	$0
Total Local School District Expenditures Capital and Operations	$722,620,968	$722,620,968	0	0	$887	$0	$8,866
Total Local Expenditures	$3,465,352,372	$2,193,902,870	$1,160,113,835	$111,335,667	$2,694	$1,934	$0

Running Envision Tomorrow Scenarios: (The Preferred Scenarios Tab)

Once the baseline data for the LFIM is entered, the user is prepared to link the LFIM with the Envision Tomorrow Scenario planning system (ET+). In the Austin case example, we link to ET+ via the Building Prototype Summary sheet in ET+. To run the LFIM to determine the fiscal impacts of various scenarios, the following information must be added by the user and obtained from the ET scenario:

Data Added by User

The LFIM user must add a discount rate to estimate the present value of the stream of revenues and expenditures over the life of the project. In our Austin case example, we select a 3.5% discount rate. However, the user should consult with local government finance personnel to determine the discount rate used locally to evaluate capital improvement projects and should add this rate into cell B-10 of the Preferred Scenario spreadsheet tab. In addition, the user should add an estimate of the project life (the

period over which the project will last and/or its fiscal impacts will be considered) in cell B-11. In the Austin case example we use a 20 year project life estimate.

Table 2: Data Added By User in Preferred Scenario Spreadsheet Tab

Data Added by User (Preferred Scenario Spreadsheet Tab)	Cell Number (Preferred Scenario Spreadsheet Tab)
Discount Rate	B-10
Project Life (years)	B-11
Annual City Sales Tax Per Employee –Retail	G-21
Annual City Sales Tax Per Employee –Office	G-22
Annual City Sales Tax Per Employee –Industrial	G-23
Annual City Sales Tax Per Employee –Education (Private)	G-24
Annual City Sales Tax Per Employee –Lodging	G-25

In addition, the user must add an estimate of annual city sales tax per employee. In the Austin case example, these estimates were generated by the sales tax calculator (described above). Again, in the Austin case example, the sales tax per employee is estimated for five non-residential activity/land use types (retail, office, industrial, education (private), and lodging) and added to cells G-21 through G-25 in the Preferred Scenario Spreadsheet tab.

Data Added Through Links with Envision Tomorrow Building/Development Prototype Summary Sheet

The remainder of the "input" data necessary to run a LFIM fiscal impact estimate on ET+ scenario developments must be drawn from the ET+ Building/ Development Type spreadsheet for a specific scenario. The following data must be added via links to the ET+ spreadsheets (see Table 3 below).

Table 3: Data Added By User in Preferred Scenario Spreadsheet Tab

Data Added by Links to ET Spreadsheet	Cell Number (Preferred Scenario Spreadsheet Tab)
Residential Units (Housing Units from Scenario development)	B-17
Total Residents (# of Residents from Scenario development)	C-17
Total Residential Sq. Footage (Sq. Feet Residential from Scenario development)	D-17
Total Residential Land Plus Improvement Value (Total Project Value for Residential from Scenario development)	G-17
Total Non-Residential Sq. Footage (Sq. Feet Retail from Scenario development)	B-21
Total Non-Residential Sq. Footage (Sq. Feet Office from Scenario development)	B-22
Total Non-Residential Sq. Footage (Sq. Feet Industrial from Scenario development)	B-23
Total Non-Residential Sq. Footage (Sq. Feet Education-Private from Scenario development)	B-24
Total Non-Residential Sq. Footage (Sq. Feet Lodging from Scenario development)	B-25
Total Employees (Retail from Scenario development)	C-21
Total Employees (Office from Scenario development)	C-22
Total Employees (Industrial from Scenario development)	C-23
Total Employees (Education-Private from Scenario development)	C-24
Total Employees Lodging from Scenario development	C-25
Total Non-Residential Land Plus Improvement Value (Total Project Value for Retail from Scenario development)	D-21
Total Non-Residential Land Plus Improvement Value (Total Project Value for Office from Scenario development)	D-22
Total Non-Residential Land Plus Improvement Value (Total Project Value for Industrial from Scenario development)	D-23
Total Non- Residential Land Plus Improvement Value (Total Project Value for Education-Private from Scenario development)	D-24
Total Non-Residential Land Plus Improvement Value (Total Project Value for Lodging from Scenario development)	D-25

In the Austin case example, we entered the user data and linked to a scenario development spreadsheet generated by ET. In this scenario example (Dev Type tab) on the LFIM Austin spreadsheet, we have the following linked inputs:

Data Added by Links to ET Spreadsheet	Cell Number (Preferred Scenario Spreadsheet Tab)
Residential Units (Housing Units from Scenario development)	1,474
Total Residents (# of Residents from Scenario development)	5,060
Total Residential Sq. Footage (Sq. Feet Residential from Scenario development)	2,371,077
Total Residential Land Plus Improvement Value (Total Project Value for Residential from Scenario development)	$330,953,876
Total Non-Residential Sq. Footage (Sq. Feet Retail from Scenario development)	949,431
Total Non-Residential Sq. Footage (Sq. Feet Office from Scenario development)	1,376,981
Total Non-Residential Sq. Footage (Sq. Feet Industrial from Scenario development)	
Total Non-Residential Sq. Footage (Sq. Feet Education-Private from Scenario development)	
Total Non-Residential Sq. Footage (Sq. Feet Lodging from Scenario development)	141,090
Total Employees (Retail from Scenario development)	949
Total Employees (Office from Scenario development)	5,508
Total Employees (Industrial from Scenario development)	
Total Employees (Education-Private from Scenario development)	
Total Employees Lodging from Scenario development	122
Total Non-Residential Land Plus Improvement Value (Total Project Value for Retail from Scenario development)	$214,714,715
Total Non-Residential Land Plus Improvement Value (Total Project Value for Office from Scenario development)	$308,821,957
Total Non-Residential Land Plus Improvement Value (Total Project Value for Industrial from Scenario development)	
Total Non- Residential Land Plus Improvement Value (Total Project Value for Education-Private from Scenario development)	
Total Non-Residential Land Plus Improvement Value (Total Project Value for Lodging from Scenario development)	38,380,457

In this scenario example we have a high value, mixed use development with 5,060 residents and 6,850 workers (primarily in a large office park component).

LFIM Scenario Results

Once the required data is added by the user and via links with ET, the LFIM will then automatically calculate the fiscal impacts of a scenario (in the Preferred Scenario spreadsheet tab). Net fiscal impacts are calculated for the City, the Public Utilities, and the School District.

Scenario Fiscal Impacts - City

All City property tax revenues, sales tax revenues, and other city non-tax revenues associated with an ET scenario are calculated and added to the "City Revenue and Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab. All City operating and capital expenditures associated with the new residential and non-residential development are estimated in the "City Revenue and Cost Analysis Operating and Annual Capital" table as well.

The summary table for City fiscal balances is reported (below) in in the Preferred Scenario spreadsheet tab (Cells A-66 through D -74):

City Revenue-Cost Analysis Operating & Annual Capital	Preferred Estimate, Direct Value Property Tax, Per Resident Per Worker Basis for other Taxes and Expenditures		
	Residential	Non-Residential	Net Total
Annual Revenues	$4,100,734	$5,438,878	$9,539,613
Annual Expenditures	$4,679,482	$4,625,272	$9,304,754
Revenue/Cost Ratio	0.88	1.18	1.03
Net Revenue (Cost)	-$578,747	$813,606	$234,859
Analysis Period, Years	20.00	20	
Cost of Capital @	3.50%	3.50%	3.50%
Present Value of Net Revenue (Cost)	-$8,225,388	$11,563,301	$3,337,912

In the Austin case example, this development generates $9,539,613 in annual revenues and $9,304,754 in expenditure demands to service the new residents and businesses (workers). This yields a net annual surplus for the City of $234,859 (close to a balance). The table provides a Revenue/Cost ratio—in this case: 1.03. Over the full 20 year project period this development scenario would yield present value (discounted at 3.5%) net revenues equaling approximately $3.34 million. A positive net balance for the City in

this scenario is not surprising given the high proportion of non-residential development. In many U.S. jurisdictions, non-residential development yields greater revenues than required expenditures to provide services, while residential development demands greater public expenditures than it contributes in revenues. Indeed, with a relatively high property value development scenario such as this, it is surprising that the positive balance is not greater as a result of the high ratio of commercial development.

The relatively low positive balance from this particular scenario is in part explained (and compensated for) by the fact that the City's public utilities do generate additional positive balances that are subsequently used to support City operating activities. This is reveled in utilities impact table that follows.

Scenario Fiscal Impacts - Public Utilities

All Utility revenues (publicly owned) and capital and operating expenditures associated with this ET development scenario are calculated and added to the "Public Utility Revenue Cost Analysis Operating and Annual Capital" table on the Preferred Scenario spreadsheet tab (Cells A-93 through D-102).

Public Utility Revenue-Cost Analysis Operating & Annual Capital	Preferred Estimate - Per Resident, Per Worker Basis		
	Residential	Non-Residential	Net Total
Annual Revenues	$5,012,918	$9,266,890	$14,279,809
Annual Expenditures	$4,463,133	$8,102,732	$12,565,865
Revenue/Cost Ratio	1.12	1.14	1.14
Net Revenue (Cost)	$549,785	$1,164,159	$1,713,944
Analysis Period, Years	20	20	20
Cost of Capital @	3.50%	3.50%	3.50%
Present Value of Net Revenue (Cost)	$7,813,768	$16,545,494	$24,359,262

Public utilities in this Austin case (water, wastewater, and electric) generate a significant fiscal surplus. In this scenario, the development generates $14,279,809 in annual utility revenues and $12,505,865 in expenditures to provide utility services to the new residents and businesses (workers). This yields a net annual surplus for the City of $1,713,944. The table provides a Revenue/Cost ratio estimate of 1.14. Over the full 20 year project period this development scenario would yield present value (discounted at

3.5%) net revenues from utilities equaling approximately $24.4 million. A positive net balance for the scenario is expected as the public utilities owned by the City of Austin generate a surplus that is transferred to the City. It is not unusual for public utilities to spin off revenues to their owners (in this case the City of Austin). These transfers are seen as a rational compensation for not paying property taxes to a city (which would be the case with a private utility company that pays property taxes and other revenues to their host city). When city and public utility fiscal balances are considered together, this City of Austin scenario development would generate an attractive positive fiscal balance.

Scenario Fiscal Impacts - Public Schools

All School district property tax and all other revenues, as well as the expenditures to serve additional K-12 students associated with an ET scenario, are calculated and added to the "K-12 Revenue Cost Analysis Operating and Annual Capital" table on the Preferred Scenario tab (Cells A-131-D-139).

K-12 Revenue-Cost Analysis Operating & Annual Capital	Preferred Estimate - Direct Property Value Plus Per Student Estimate for (K-12)Basis		
	Residential	Non-Residential	Net Total
Annual Revenues	$3,120,630	$5,207,767	$8,328,396
Annual Expenditures	$6,013,966	$0	$6,013,966
Revenue/Cost Ratio	0.52		1.38
Net Revenue (Cost)	-$2,893,336	$5,207,767	$2,314,430
Analysis Period, Years	20	20	20
Cost of Capital @	3.50%	3.50%	3.50%
Present Value of Net Revenue (Cost)	-$41,121,263	$74,014,878	$32,893,615

This scenario development generates a significant fiscal surplus for Austin's K-12 public school district. The development generates $8,328,396 in annual school district property taxes and $6,103,966 in expenditures needed to provide K-12 services for the children anticipated in this scenario. This yields a net annual surplus for the school district of $2,314,430. The table provides a Revenue/Cost ratio estimate of 1.38 for public schools. Over the full 20 year project period this development scenario would yield present value (discounted at 3.5%) net revenues from utilities equaling approximately $32.9 million. A positive net balance for public K-12 schools in this scenario is explained by two factors. First, the high commercial component of this development means that substantial school property taxes are generated by commercial activity, with no direct

demand for school district spending. Second, the Austin Independent School District has a relatively low student/resident ratio. This is due to the age demographics of the City, with an above average share of the population not in peak child bearing years.

Overall Fiscal Balance for Scenario Development (City, Utilities, and Public Schools)

The final table in the Preferred Scenario tab combines the fiscal impact numbers for the City, Utilities, and the School District (Cells A-144—D-152). It provides an overall estimate of the fiscal impacts from an ET scenario development. It gives a very general assessment of the fiscal implications of various development scenarios.

Aggregated Revenue-Cost Analysis all Jurisdictions/Functions - Operating & Annual Capital	Preferred Estimate - Direct Property Tax , Other Per Resident, Per Worker by Sector With Per Student for(K-12)Basis		
	Residential	Non-Residential	Net Total
Annual Revenues	$12,234,282	$19,913,535	$32,147,818
Annual Expenditures	$15,156,581	$12,728,004	$27,884,585
Revenue/Cost Ratio	0.81	1.56	1.15
Net Revenue (Cost)	-$2,922,298	$7,185,532	$4,263,233
Analysis Period, Years	20	20	$20
Cost of Capital @	3.50%	3.50%	3.50%
Present Value of Net Revenue (Cost)	-$41,532,884	$102,123,673	$60,590,789

In this particular development scenario for the City of Austin, the overall results from the LFIM are strongly positive. The small negative balances associated with residential activities/land uses are compensated for by very strong positive balances on the non-residential side. Because the scenario in this example had a very large non-residential component, this result is consistent with expectations for a city like Austin that relies on property and sales taxes and public utility revenues.

In this scenario development all three jurisdictional categories generate $32,147,818 in revenues from all sources and $27,884,585 in expenditure demands. This yields a net annual surplus for the combined units of $4,263,233. The aggregated Revenue/Cost ratio equals 1.15, suggesting that for every $1.00 of expenditure demands (costs), this development generates $1.15 in revenues. Over the full 20 year project period, this

development scenario would yield present value (discounted at 3.5%) net revenues for all the local jurisdictions (City, Utilities and Schools) of almost $60.6 million.

Possible User Adjustments

The LFIM's spreadsheet format allows for a number of adjustments and "customizations" by the user. It is important to recognize that the results are most sensitive to the user inputs and inputs from the ET scenario building or development prototype data. Users should be careful to ensure the development costs (which form the basis for property tax revenue estimates in the LFIM) are appropriate for the specific locale/jurisdiction. If project costs are high on a per sq. foot/acre basis, this will exaggerate the revenues for a new development. Likewise, if they are too low, this will lead to an underestimate.

We noted at the beginning of this guidebook that average cost models of fiscal impacts are very basic assessments of the fiscal effects of specific development scenarios. The results of fiscal impact assessments can usefully inform development decisions, but if more detailed and specific analysis is needed (for example, estimating tax revenue increments for a Tax Increment Financing District), more in depth study of a particular project is warranted.

There are certain changes that can be made by the user that may better link the LFIM estimates to particular characteristics of the project.

Modeling Redevelopment Scenarios

The LFIM framework is most readily applicable for "greenfield" type development or redevelopment projects where all new land and improvement values are closely linked to a particular development scenario. If the project involves redevelopment that eliminates existing residential or commercial properties (that pay current taxes and support existing residents and workers), care must be taken when using the basic LFIM model. A very careful assessment of the particular project area should be conducted with local officials before using the basic LFIM detailed here.

If the goal of the LFIM estimates is to compare the fiscal effects of two development scenarios that will occur in an area that is already fully or partially developed, the basic LFIM might be useful for a base comparison (even though the specific totals or balance may not account for existing properties or services). Because not fully accounting for

existing conditions would be a characteristic in each proposed scenario, a comparison may be useful.

Another approach that might be considered in making make fiscal estimates of redevelopment scenarios is to just consider the improvement, or the project value, of new building construction, not the value of the land in the project area were redevelopment is occurring. In this way existing land values will be removed from each alternative scenario under the assumption that land values are already valued and yielding property tax revenue in the existing (pre-development) condition. The comparison is then based on the project value of the new building that will occur in each scenario, not "new or additional" land value.

An approach that would likely yield a more accurate estimate of a redevelopment case in which there is substantial pre-existing commercial and residential development would be to run the existing conditions as a "scenario" in the Preferred Scenario spreadsheet tab. This approach would involve estimating the current values (pre-redevelopment project) and entering them into the preferred scenario spreadsheet as per table 3 above. This would provide an estimate of current property values, residents, workers, and revenue and expenditure demands pre-development. Various redevelopment scenarios could then be run and compared to the current levels. This may be a better gauge of the fiscal impacts of new development under various redevelopment scenarios.

Testing with Different Allocation Ratios

In the basic LFIM we use a particular allocation ratio or allocation rule percentage (ARP) to allocate revenues and expenditures by activity and land use categories**.** In the model we use as much information about land use values and characteristics to derive the general ARP as is commonly available from most local tax appraisal districts. Model users can use a different ARP formula by making simple changes to the baseline spreadsheet.

	For Services & Other Revenues	For Property Tax Allocation
Property Tax Allocation Residential (%)	73.10%	64.41%
Property Tax Allocation -Non -Residential (%)	21.25%	26.53%
Property Allocation- Agriculture/ Vacant Land(%)	5.65%	9.06%

To change the allocation formula the user can make a change in the formulas in the baseline tab spreadsheet (For Services & Other Revenues, Cells B22- B24 on the baseline tab).

Development with Unique Demographic Characteristics

As noted above, the average cost approach used in the LFIM assumes that the population in the new development will be similar to the population in the jurisdiction. For many developments this will not be the case (a specific development might attract a different share of elderly residents or families than the jurisdiction's average). If this is the case, the revenue generation and service demands (particularly for K-12 schools) may be distinct from average multiplier type measures. In the basic LFIM, an easy yet important adjustment can be made to account for the impact on a school district if a scenario has a unique demographic character.

In the Preferred Scenario tab the user can change the default number of school attendees per resident. In the basic model, this is simply the ratio of K-12 attendees to residents in the school district. If the user knows that the scenario development is likely to have a residential profile that would yield fewer numbers of students (elderly) or greater numbers of students (larger multi-or single family units), a change can be made to cell E-17 in the Preferred Scenario spreadsheet.