

Southeast Area Transportation and Land Use Study

Fiscal Impact Analysis

draft technical memorandum

prepared for

The Nashville Area Metropolitan Planning Organization

prepared by

Cambridge Systematics, Inc.

with

Gresham, Smith, and Partners

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date

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1.0 Introduction

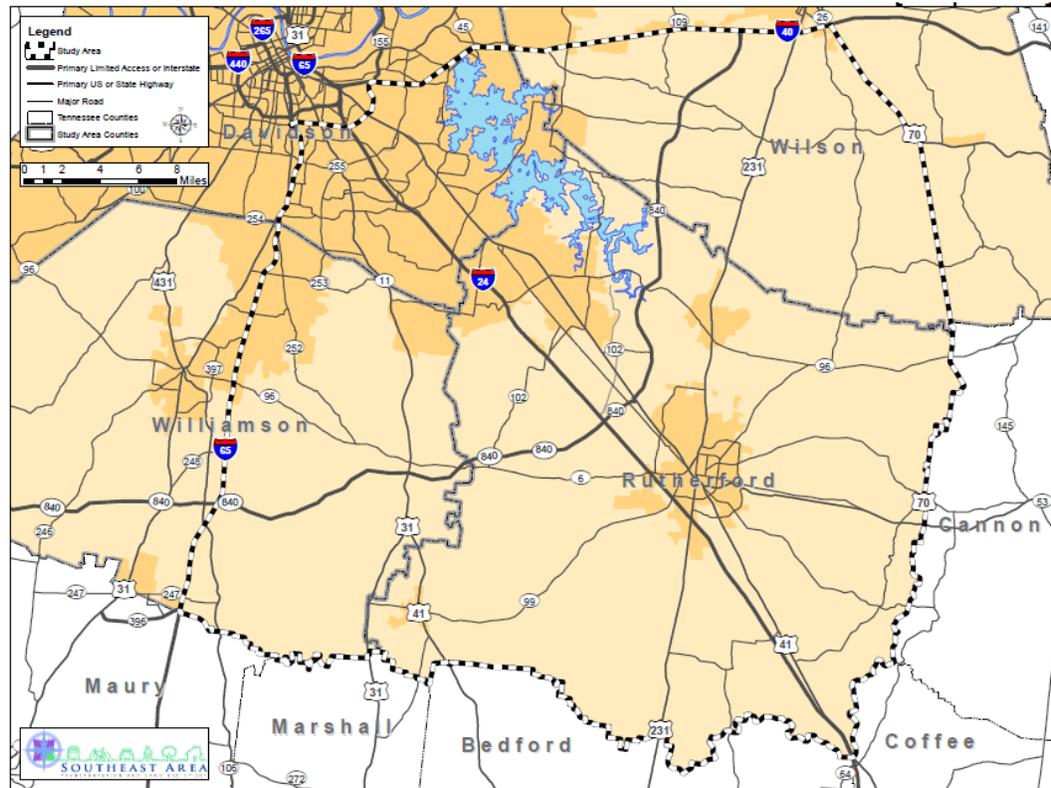
Fiscal impact analysis examines the effect of land use development or redevelopment on recurring public costs and revenues. It tallies the financial effects of a planned development pattern by considering the costs and revenues such facilities would generate if they were completed and operating today. Fiscal impact analysis is driven largely by the cost and revenue implications derived from population and/or employment change associated with different development scenarios. These changes are broadly defined as residential and/or nonresidential entrance into, or departure from, a community.

Tallying and comparing costs and revenues of various development scenarios are significant parts of fiscal impact analysis. Costs can include operating expenditures (e.g., government administration, police, fire, education) and capital outlays incurred by a public jurisdiction (e.g., water/sewer, transportation, or communications infrastructure). Revenues often counted in a fiscal impact analysis include county, municipal and school district own source (local) contributions (taxes, charges, and miscellaneous revenue) and state and Federal intergovernmental transfers.

For the Southeast Area Transportation and Land Use Study, Cambridge Systematics (CS) developed a Fiscal Impact Analysis Model (FIAM) to generate estimates of revenues and costs associated with alternative development scenarios for the southeast portion of the Nashville Metropolitan Planning Organization (MPO) planning area. The southeast section of the MPO planning area includes all or parts of four counties – Davidson, Williamson, Rutherford, and Wilson. The complete four-county area is referred to as “the study region” throughout this document. The more specific “study area” within this study region is reflected in Figure 1.1. The study area is bounded by Interstate 65 to the west, Interstate 40 to the north and east, and is bisected by Interstate 24. It includes the entirety of Rutherford County; portions of Davidson, Wilson, and Williamson Counties; and five municipalities – Murfreesboro, Smyrna, La Vergne, Eagleville, and Nolensville.

The FIAM estimates the costs and revenues associated with land use change. It compares alternative development patterns within a jurisdiction and analyzes the fiscal impacts of specific development scenarios. The FIAM produces estimates of potential future local expenditures and revenues at an aggregate, and per residential unit scale, for each jurisdiction and the study region as a whole. The analysis uses local data sources to estimate revenue and the demand for broad categories of services that are likely to result from the proposed development scenario.

Figure 1.1 Southeast Study Area



Following is a summary of the approach used to develop the FIAM and conduct the fiscal impact analysis. This approach was first applied for a 2012 base year and a 2040 Trend land use scenario. Results for both are included in Section 6.0. The FIAM will also be applied to three alternative land use/transportation scenarios that will be developed and analyzed as part of the Southeast Study.

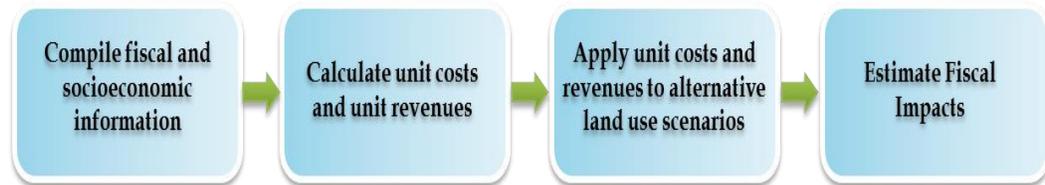
1.1 ESTIMATING THE FISCAL IMPACT OF GROWTH

The FIAM was developed using an average-cost approach¹. In this approach, average unit costs to provide basic public services across a core set of expenditure categories are applied to future population and employment estimates to generate an estimate of future, local expenditures. Local sales tax and property tax revenues are estimated using future square footage assessments for commercial and residential land use within each jurisdiction. Projected

¹ The Average Cost Method is most often used in fiscal impact analysis. Costs assigned to new development are based on the average cost of providing the service per unit (today) times the number of new service units. *Fiscal Impact Analysis: Methods, Cases and Intellectual Debate*, Kotval and Mullin, September 2006.

revenues are then compared against projected expenditures to estimate the net fiscal impact to a local jurisdiction. Figure 1.2 presents the general approach to the fiscal impact analysis.

Figure 1.2 Fiscal Impact Analysis Framework



Step 1: Define local socioeconomic conditions and determine the categories of local public revenue and spending to be included in the analysis. As part of the first step in developing the FIAM, CS worked with the Nashville MPO and the local jurisdictions within the study area to define local socioeconomic characteristics and the primary local public and revenue expenditure categories to be included in the analysis. These typically include education, public safety, public works, judicial services, health and human services, solid waste and stormwater services, and parks and recreation. As part of this step, CS administered a survey of local budget officials. The purpose of the survey was to better understand the local budgeting process. A copy of the survey is included as Appendix A. The information obtained through the survey was used, in combination with analysis of the most recent Comprehensive Annual Financial Report (CAFR) from each of the local governments within the study area, to determine appropriate expenditure and revenue categories for the analysis.

Step 2: Calculate average unit costs for each of the public revenue and expenditure categories. Average unit costs and revenues were calculated by dividing total costs and revenues across each of the revenue and expenditure categories defined in Step 1 (compiled from local CAFRs) by total number of units (population, students, employees, etc.) in the base year for each jurisdiction in the study area. Average unit costs and underlying socioeconomic data were documented in a technical memorandum and routed to each jurisdiction in the study area for review and comment. This technical memorandum is included as Appendix B.

Step 3: Calculate Future Revenue and Expenditure Impacts Given Projected Land Use Conditions. Average unit costs and unit revenues calculated from the base year were applied to projected socioeconomic conditions under a 2040 Trend scenario to calculate projected revenues and expenditures over the study horizon.

- **Costs.** The average cost approach assumes that the current cost of serving current residents and businesses will be similar to the cost of serving new and future developments. Costs assigned to future developments were

based on the current average cost of providing the service per unit times the number of new service units.

- **Revenues.** A per-service unit method was used to determine the revenue factors for local option sales tax and charges for service revenues. Service population was used for estimating average charges for public services, and square footage of retail was used for generating average local option sales tax estimates. The square footage of retail captures both local spending and employee-based spending impacts and allocates the revenues relative to physical retail concentrations. This captures revenue impacts that can change over time based on retail development patterns. Property tax revenues were based on a more detailed average revenue approach, which considered the average value of properties in the market.

Step 4: Estimate the fiscal impact arising from alternative growth scenarios.

The Trend scenario assumes continued trends in population and employment allocation. The results of the FIAM for the Trend scenario will serve as the base with which to compare alternative land use scenarios. With each alternative scenario, the change in land development patterns and resulting densities will trigger a change in the primary variables of the FIAM and enable an estimate of local future fiscal impacts compared to baseline (2040 Trend) conditions. The primary variables of the FIAM, sensitive to land use change include:

- Share of population and jobs, relative to other jurisdictions in the study area;
- Number of single-family units;
- Number of multifamily units;
- Residential square footage; and
- Nonresidential square footage.

This technical memorandum describes the methodology used to develop the FIAM that will be used to evaluate the fiscal impacts of alternative land use scenarios for the Southeast Area Transportation and Land Use Study.

2.0 Disclaimer

The FIAM developed by CS is a sketch-level planning tool that tallies the financial effects of alternative development patterns on local government budgets over a 2040 planning horizon.

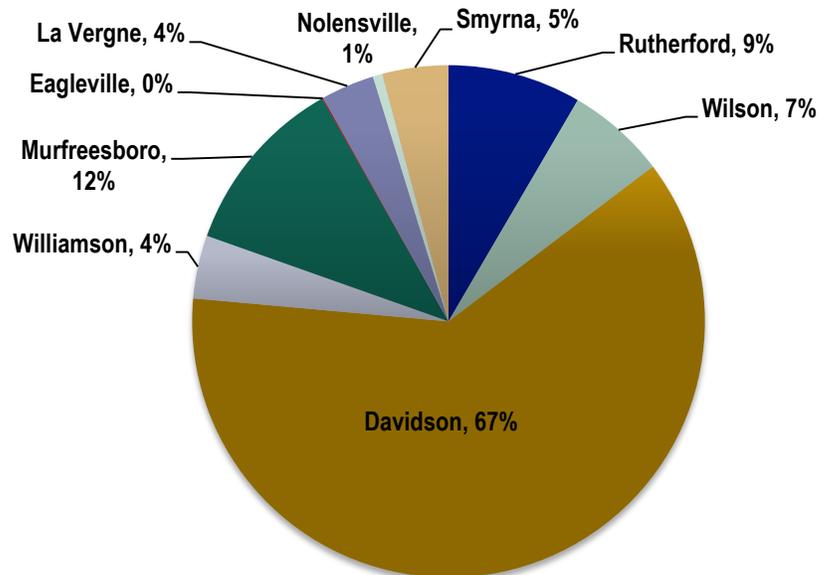
The model and results presented in this technical memorandum are intended to be used for planning purposes and are not adequate to be used for financial planning or budgeting purposes. This analysis does not reflect all the potential fiscal impacts to the jurisdictions in the study area given various land use development patterns; rather it focuses on capturing aggregate revenue and expenditure growth trends given projected population and employment densities and distributions across the study area.

The FIAM approach is based on judgments and assumptions that may differ materially from actual future results. Changing these assumptions (such as property market values or assessment ratios) would change the results accordingly. Results included herein are provided as a baseline for which to compare different land use scenarios. In addition, the methodology presented here is, by its nature, an average cost analysis. Wherever possible, costs and revenues were allocated proportionally to residential and nonresidential development.

3.0 Base Year Socioeconomic Characteristics

In 2012, the total population in the four-county study region was 1,002,358². Metro Nashville-Davidson County is the most populated jurisdiction, with a population of 618,880 people in 2012. The City of Murfreesboro in Rutherford County is the jurisdiction with the second largest population, with approximately 114,000 residents in 2012. The City of Eagleville in Rutherford County is the smallest jurisdiction, with an area of 3 square miles and a population of 616 people. Tables 3.1 and 3.2 provide more detailed information for each of the jurisdictions, including current demographic, socioeconomic, and land use characteristics.

Figure 3.1 Share of Existing Population by Jurisdiction



Source: ACS, 2010-2012.

² Reflects population for Metro-Nashville Davidson County, unincorporated portion of Rutherford, Wilson, and Williamson counties, and the municipalities within the study area (Eagleville, La Vergne, Murfreesboro, Nolensville, and Smyrna).

According to the 2010-2012 American Community Survey (ACS), of the total 490,489 housing units in the study region, about 71 percent are single family homes (detached and attached) and 29 percent are multifamily structures. Nonresidential development, measured in square footage, is divided among commercial, office, and industrial uses. Office development occupies the greatest number of square feet (51 percent of total), with retail and industrial area accounting for 28 percent and 21 percent, respectively, of the total (Table 3.1).

Table 3.1 Existing Land Development in Southeast Study Region

Land Use	Current (Percentage)
Residential (housing units)	490,489
Single Family	349,864 (71%)
Multifamily	140,625 (29%)
Nonresidential Building Space (square feet)	298,281,480
Retail	82,770,700 (28%)
Office	151,908,620 (51%)
Industrial	63,602,160 (21%)

Sources: Residential – 2010-2012 American Community Survey (ACS); and Nonresidential – Nashville MPO Community Viz Model, 2012.

Table 3.2 Key Jurisdictional Characteristics

	County Government ¹				Municipal Government				
	Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	La Vergne	Nolensville	Smyrna
Area (square miles) ²	511	583	526	574	56	2.5	25.2	9	29.7
Population ³	84,318	62,904	618,880	40,024	114,038	616	33,777	6,096	41,705
Employment ³	130,518	30,103	301,589	19,035	54,593	263	15,489	2,676	19,971
Single Unit Homes ³	28,107	20,862	164,579	14,231	28,699	270	9,963	1,765	11,744
Multifamily Homes ³	829	549	103,608	257	15,355	26	1,027	15	3,991
School Enrollment	38,883	15,570	79,212	33,000	7,034	0	0	0	0
Median Sale Price, Single Family Units ⁵	\$140,000	\$180,000	\$161,000	\$300,000	\$148,000	\$136,000	\$112,000	\$260,000	\$142,000
Median Sale Price, Multi Family Units ⁵	\$105,000	\$153,000	\$133,630	\$225,000	\$106,560	\$95,200	\$84,000	\$208,000	\$113,600
Median Sale Price, Non-residential space (per square foot) ⁵	\$137	\$100	\$116	\$185	\$144	\$137	\$90	\$110	\$125
Property Tax Rates (per \$100 assessed property valuation) ⁶	\$2.4652	\$2.5704	\$4.04	\$2.3100	\$1.2703	\$0.7512	\$1.0000	\$0.1500	\$0.7595
Property Tax Rates – USD (per \$100 assessed property valuation) ⁶			\$4.66						
Local Sales Tax Rate ⁶	2.75%	2.25%	2.25%	2.25%	0.00%	0.00%	2.75%	0.00%	0.00%
Retail Space ⁷	271,894	240,517	52,977,278	1,000,072	8,968,328	29,606	899,244	105,667	2,769,572
Office Space ⁷	1,034,711	384,906	104,334,666	1,874,123	13,563,906	66,823	1,586,411	183,857	4,145,754
Industrial Space ⁷	369,600	382,268	37,069,563	424,905	6,689,684	127,047	4,319,926	25,000	5,947,095
Total Nonresidential ⁷	1,676,206	1,007,691	194,381,507	3,299,100	29,221,918	223,476	6,805,582	314,524	12,862,421

¹ Except for Metro-Nashville Davidson County, all county characteristics are non-inclusive (i.e., they do not reflect municipal totals for their respective municipalities).

² 2010 Census.

³ ACS, 2010-2012.

⁴ Local input.

⁵ See *Property Tax Revenues* section for assumptions.

⁶ Tax Assessors Office/TN Comptroller.

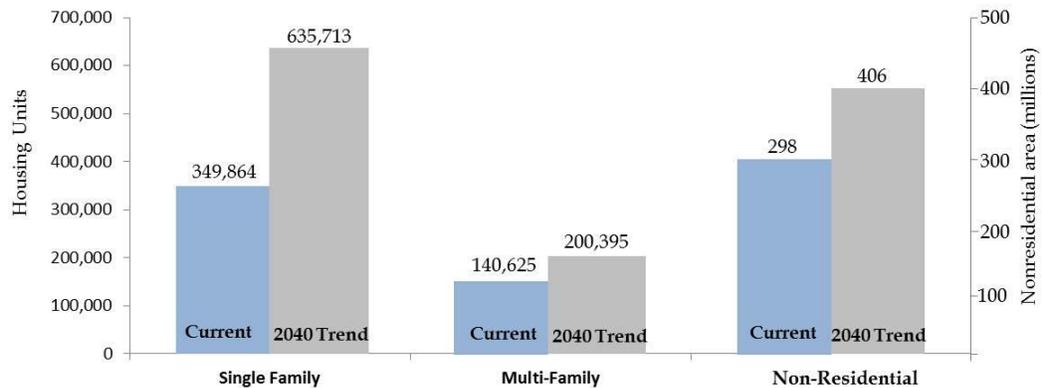
⁷ Nashville MPO Community Viz Model, 2012 .

4.0 Projected Growth, 2040

Woods and Poole economic forecasts used by the Nashville MPO for regional planning purposes project that the population in the study region will increase from approximately 1 million in 2012 to 1.6 million in 2040, an average annual growth of 1.7 percent. The greatest percentage increase in population growth is expected to occur in Eagleville, Nolensville, and Williamson Counties (Table 4.1). Similarly, the number of jobs in the study region is projected to increase from approximately 600,000 in 2012 to about 1,000,000 in 2040, an average annual growth of 2.2 percent. The largest increases of jobs will occur in Nolensville, Murfreesboro, and Williamson Counties.

It is estimated that the additional housing demand in the region will be 345,640 units, with 83 percent being single family units and 17 percent multifamily units. This growth increases the actual number of dwellings from 490,489 to 836,108 in 2040 (Figure 4.1). The supply of nonresidential space will increase from the current 298 million square feet to about 406 million square feet in 2040, resulting in a total increase of 36 percent. Table 4.1 summarizes the anticipated growth by jurisdiction.

Figure 4.1 Anticipated Growth by Property Type (2012 to 2040)



Source: Growth assumptions - Nashville MPO Community Viz Model, 2012 to 2040

Table 4.1 Anticipated Growth by Jurisdiction (2012 to 2040)

		County Government ¹				Municipal Government				
		Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	La Vergne	Nolensville	Smyrna
Demographic (2)										
Population	Current	84,318	62,904	618,880	40,024	114,038	616	33,777	6,096	41,705
	2040	181,092	110,203	764,377	136,254	254,387	6,961	45,526	38,451	90,015
	CAGR	2.8%	2.0%	0.8%	4.5%	2.9%	9.0%	1.1%	6.8%	2.8%
Employment	Current	130,518	30,103	301,589	19,035	54,593	263	15,489	2,676	19,971
	2040	134,929	30,904	602,655	71,944	157,035	525	21,125	12,416	38,336
	CAGR	0.1%	0.1%	2.4%	4.9%	3.8%	2.5%	1.1%	5.6%	2.4%
Student Enrollment	Current	38,883	15,570	79,212	33,000	7,034	0	0	0	0
	2040	83,510	27,277	97,835	112,342	15,691	0	0	0	0
	CAGR	2.7%	2.0%	0.8%	4.5%	2.9%	-	-	-	-
Land Use (2)										
Single-Family Units	Current	28,107	20,862	164,579	14,231	28,699	270	9,963	1,765	11,744
	2040	63,667	42,868	195,786	50,054	77,152	2,679	13,904	13,859	27,206
	CAGR	2.9%	2.6%	0.6%	4.6%	3.6%	8.5%	1.2%	7.5%	3.0%
Multifamily	Current	829	549	103,608	257	15,355	26	1,027	15	3,991
	2040	2,303	717	139,875	358	20,686	46	1,562	84	7,078
	CAGR	3.7%	0.9%	1.1%	1.2%	1.1%	2.1%	1.5%	6.3%	2.1%
Retail	Current	271,894	240,517	52,977,278	1,000,072	8,968,328	20,606	899,244	105,667	2,769,572
	2040	659,387	286,899	63,315,356	3,318,508	18,194,109	59,099	1,318,033	554,248	4,574,138
	CAGR	3.2%	0.6%	0.6%	4.4%	2.6%	3.8%	1.4%	6.1%	1.8%
Total Nonresidential	Current	1,676,206	1,007,691	194,381,507	3,299,100	29,221,918	223,476	6,805,582	314,524	12,862,421
	2040	2,380,253	1,855,287	236,961,452	11,345,268	50,161,859	278,533	8,530,965	1,680,148	16,261,690
	CAGR	1.3%	2.2%	0.7%	4.5%	1.9%	0.8%	0.8%	6.2%	0.8%

¹ Except for Metro-Nashville Davidson County, all county characteristics are noninclusive (i.e., they do not reflect municipal totals for their respective municipalities).

² Growth assumptions - Nashville MPO Community Viz Model, 2012 to 2040

5.0 Fiscal Impact Analysis Methodology and Key Assumptions

The methodology discussed in the following sections was developed to provide quantitative comparisons of the relative fiscal impacts that could result from alternative land use scenarios. The FIAM provides a planning-level estimate that, while not appropriate for budgeting purposes, is useful in assessing whether a proposed development strategy is likely to increase or ease pressure on the local operating budget in a jurisdiction when the proposed alternative is compared to a baseline scenario. Key assumptions of the model include:

- **It focuses on a selected group of local revenues and expenditures.** The analysis is solely focused on the jurisdiction's general fund expenditure and revenue items that: 1) represent a substantive component of the overall local budget (70 percent or more of total local revenues or expenditures), and 2) are likely to be affected by the regional policies and growth trends. General Fund costs and revenues that are relatively small or are operated on a cost-recovery basis are excluded from the analysis.
- **It excludes capital costs.** Expenditures made for infrastructure and other public improvements were not included in this analysis (e.g., roads, extensions of water and sewer lines).
- **It focuses on the impacts of land use change.** The fiscal analysis assumes that current levels of public service provisions will continue in the future. It focuses on the relative changes in revenues and costs that would result from land use change (and associated changes in density and mix of uses). The primary land use variables within the FIAM that trigger fiscal impacts include share of population and employment relative to other jurisdictions in the study area, number of single-family units, number of multifamily units, residential square footage, and nonresidential square footage.
- **It only focuses on local dollars.** The model does not incorporate state or Federal impacts into the calculation (i.e., intergovernmental transfer of funds from state/Federal general (or other) fund sources to local jurisdictions is not reflected). Removing intergovernmental fund transfers focuses the revenue and expenditure impacts of various land development scenarios on local budgets, and helps to isolate fiscal trends that local governments can more directly influence through the local-level decision-making process.

5.1 FISCAL CATEGORIES

The fiscal impact analysis emphasized a select group of local government own-source revenues and expenditures. Based on the review of most recent CAFRs for each of the local jurisdictions, the following categories were recommended for consideration in the FIAM (Table 5.1).

Table 5.1 Local Expenditure and Revenue Categories Reflected within Fiscal Impact Analysis Model

Expenditure Categories	Revenue Categories
<ul style="list-style-type: none"> • General Government • Justice • Police • Fire • Public Health • Public Works³ • Education • Recreation 	<ul style="list-style-type: none"> • Property Taxes • Local Option Sales Tax • Charges for Services

This list was reviewed and finalized in consultation with the MPO and the local jurisdictions within the study area. These expenditure and revenue categories account for the vast majority of the local government spending and receipts. Tables 5.2 and 5.3 reflect data collected from the latest CAFRs, supplemented with information received from local jurisdictions. Collectively, these categories comprise at least 70 percent of total local revenues and 70 percent of total local expenditures within each jurisdiction. Revenue sources, such as the wheel tax, the hotel/motel tax, and the business tax, were excluded since they represent a small share of local revenues. The major revenue source across all jurisdictions is property taxes. On average, this source comprises about 40 percent of county revenue, when compared to total local revenue available, and approximately 30 percent of municipal revenue.

³ Includes road and bridge maintenance.

Table 5.2 Average Expenditures by Local Government (Reflects Local Expenditures Only)

Expenditure Category ¹	County Government				Municipal Government				
	Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	La Vergne	Nolensville	Smyrna
General Government	\$16,681,499	\$11,419,882	\$120,291,000	\$20,752,042	\$13,209,846	\$257,901	\$2,554,500	\$514,562	\$7,798,430
Justice	\$6,756,409	\$4,854,145	88,469,000	\$4,655,311					
Sheriff's Dept./Police	\$17,913,140 ²	\$7,564,475 ²	\$240,000,000	\$6,346,419 ²	\$23,143,603	\$65,158	\$5,010,000	\$486,811	\$9,443,614
Fire	\$928,000 ³	\$773,585	\$154,191,000	\$472,536	\$14,758,812	\$41,921	\$1,912,000	\$130,000	\$8,314,635
Public Health	\$18,913,482	\$3,253,673	\$123,569,000	\$10,039,571					
Roads/Public Works	\$10,234,997	\$9,743,829	\$148,106,500	\$11,500,610	\$16,937,768	\$17,320	\$2,522,000	\$245,032	\$4,659,782
Education	\$378,533,774	\$156,041,930	\$868,524,000	\$357,651,742	\$59,985,468	\$0	\$0	\$0	\$0
Recreation					\$12,655,903	\$54,901	\$1,017,000	\$130,000	\$4,595,331

¹ Average expenditures from 2011 and 2012 CAFRs.

² Sheriff's Department expenses.

³ Rutherford County, 2013/2014.

Table 5.3 Average Revenue by Local Government (Reflects Local Revenue Only)

Revenue Source ¹	County Government				Municipal Government				
	Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	La Vergne	Nolensville	Smyrna
Charges for Services	\$69,157,000	\$11,848,666	\$153,420,000	\$65,977,686	\$14,523,875	\$69,045	\$2,053,000	\$1,512,756	\$7,183,177
Property Tax	\$138,170,959	\$68,415,060	\$785,037,000	\$168,602,845	\$35,960,922	\$120,090	\$5,932,500	\$314,837	\$10,074,590
Local Sales Tax	\$42,289,794	\$15,741,776	\$269,700,500	\$37,741,184	\$31,124,392	\$120,313	\$3,573,500	\$519,449	\$9,123,040

¹ Average revenues from 2011 and 2012 CAFRs.

5.2 COSTS AND REVENUE FACTORS

Costs

The FIAM was developed using an average cost approach for estimating current costs to provide public services. The average cost approach is a method often used in fiscal impact analysis. It assumes that the current cost of serving current residents and businesses will be similar to the cost of serving new and future developments. Costs assigned to future developments are based on the current average cost of providing the service per unit (e.g., per household, student, or employee) times the number of new service units. The two methods used for calculating average costs were:

1. **Service population.** The service population is defined as the universe of individuals that generate impacts (i.e., residents and employees). Accepted practice in fiscal impact analyses⁴ is to define the service population as 100 percent of residents residing within a jurisdiction plus one-half of the employees who work at firms located within the jurisdiction. This metric is intended to reflect that local employment contributes to a jurisdiction’s daytime population, thereby, increasing demands for certain governmental services. An example calculation is provided in Table 5.4.

$$\text{Service Population} = \text{Population} + \text{Employment} * 0.5 \quad \text{Equation 1}$$

2. **Per Service unit.** This method relies on average jurisdictional costs per unit (e.g., person, pupil, dwelling units).

Table 5.5 presents the average unit costs for each of the expenditure categories, calculated by combining the appropriate service unit with the average expenditures in Table 5.2.

Table 5.4 Example Service Population Calculation – Rutherford County

General Government Cost	\$16,681,499
Resident Population*	84,318
Employees	130,518
Employee Factor	0.5
Service Population	149,577
Unit Cost – General Government	\$112

*Indicates population count of unincorporated county.

⁴ Fiscal Impact analysis of three development scenarios in Nashville-Davidson County, TN, Smart Growth America, April 2013; Fiscal Impact Analysis of Housing Element Update for the City of Menlo Park, California, BAE Urban Economics, April 2013.

Table 5.5 Average Unit Costs by Jurisdiction

Expenditure	Estimating Unit	County Government				Municipal Government				
		Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	La Vergne	Nolensville	Smyrna
General Government	Service Population	\$112	\$146	\$156	\$419	\$93	\$345	\$62	\$69	\$151
Justice	Service Population	\$45	\$62	\$115	\$94					
Police	Service Population	\$120	\$97	\$312	\$128	\$164	\$87	\$121	\$65	\$183
Fire	Service Population	\$6.2	\$9.92	\$200	\$10	\$104	\$56	\$46	\$17	\$161
Public Health	Resident Population	\$224	\$52	\$200	\$251					
Roads/Public Works	Service Population	\$68	\$125	\$192	\$232	\$120	\$23	\$61	\$33	\$90
Education	Students	\$9,735	\$10,022	\$10,965	\$10,838	\$8,528	\$0	\$0	\$0	\$0
Recreation	Resident Population					\$111	\$89	\$30	\$21	\$110
Service Population Calculations										
General Population		84,318	62,904	618,880	40,024	114,038	616	33,777	6,096	41,705
Employees		130,518	30,103	301,589	19,035	54,593	263	15,489	2,676	19,971
Employee Factor		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Service Population		149,577	77,956	769,675	49,542	141,335	748	41,522	7,434	51,691

Revenues

Charges for Services and Local Sales Taxes

A per-service unit method was used to determine the revenue factors for local option sales tax and charges for service revenues. Service population was used as the unit for estimating average charges for public services and square footage of retail was used as unit for generating average local sales tax estimates (Table 5.6). The square footage of retail captures both local spending and employee-based spending impacts and allocates the revenues relative to physical retail concentrations, capturing revenue impacts that can change over time based on retail development patterns.

Table 5.6 summarizes average revenue factors for each jurisdiction for service charges and local option sales tax.

Property Tax Revenues

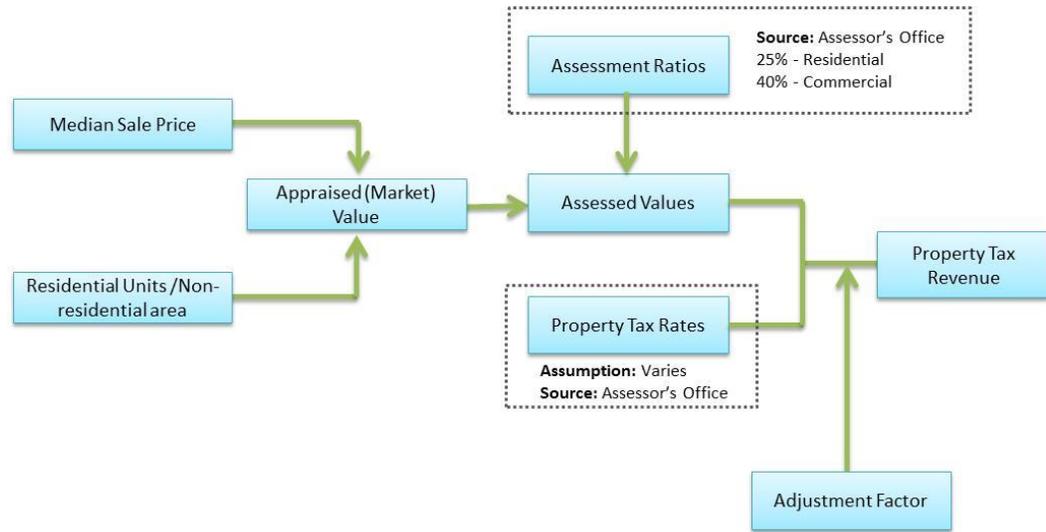
A modified average revenue approach was used for estimating property tax revenues. The revenue streams generated from this source vary significantly depending on the property types and the value of these properties in the market. The methodology reflects assumptions used by the Nashville tax assessors' office,⁵ coupled with general assumptions about property values. Figure 5.1 shows the general approach.

⁵ Assessor of Property, Metro Nashville-Davidson County, Tennessee.

Table 5.6 Revenue Factors by Jurisdiction

Revenue	Estimating Unit	County				Municipality				
		Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	La Vergne	Nolensville	Smyrna
Charges for Services	Service Population	\$462	\$152	\$199	\$1,332	\$103	\$92	\$49	\$203	\$139
Local Option Sales Tax	Square Footage Retail	\$156	\$65	\$5	\$38	\$3	\$4	\$4	\$5	\$3

Figure 5.1 Property Tax Revenues General Approach



Appraised (Market) Value

Market values for residential units were estimated based on historical sales in the region using Zillow as a source, a home and real estate web site. Zillow’s database contains information about median sales prices since 2008 for all the jurisdictions currently under study, except for Eagleville. Monthly data from 2010 and 2012 was compiled, and the average of the median sale prices was computed (Figure 5.2). The median sale price in Eagleville was determined based on the average price in the other cities of the county. Custom factors were determined for each jurisdiction to estimate the selling price of multifamily homes using Zillow’s database and professional judgment. The analysis of the data reflect that, on average, multifamily units sell for 23 percent less than single family units.

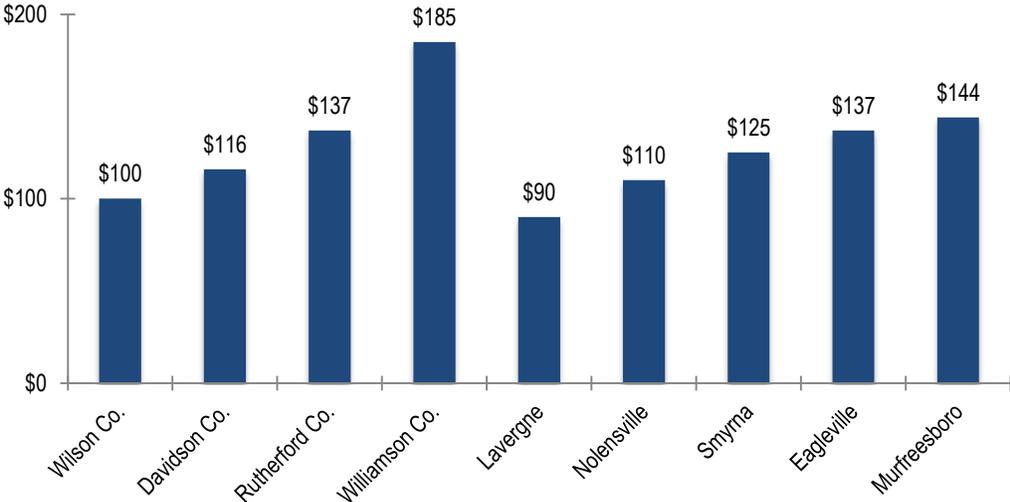
The value of commercial space was estimated using current listings from LoopNet and Market Hill Homes, well-known commercial real estate web sites. The median selling price per square foot was calculated for each jurisdiction (Figure 5.2).

The median sale prices are multiplied by the prospective number of residential units and square footage of nonresidential area for each future land use scenario.

Figure 5.2 Median Sale Price of Single Family Units by Region
Thousands of Dollars



Figure 5.3 Median Sale Price of Commercial Space
Dollars per Square Foot



Assessed Value

The assessed values were determined by multiplying the appraised value by the assessment ratios. The assessment ratio for each property class is established by Tennessee Constitution:

- 25 percent for residential properties, and
- 40 percent for commercial/industrial properties.

The property tax rates vary for each county and municipality. Metro Nashville-Davidson County has the highest tax base. In addition, Metro has a tiered property tax rate and tiered service-level depending on the location. The General Service District (GSD) encompasses the entire Nashville-Davidson County and pays a base tax rate of \$4.04 per \$100 assessed property valuation. The Urban Service District (USD) has an additional tax rate of \$0.62 for an enhanced level of service for some services. For base year revenue purposes, the properties (and nonresidential square footage) that are enclosed by the USD limits were estimated based on the ratio of the USD and GSD area. The USD area currently is 35.6 percent of the GSD.

Adjustment Factor

An adjustment factor was calculated to calibrate property tax revenues generated using this methodology against property tax revenues reported in the local CAFRs. These factors were applied to total assessed values under the Trend scenario, and will be applied to the total assessed values resulting from alternative land use scenarios, for property tax revenue estimates.

Table 5.7 Property Tax Revenue Adjustment Factors

Jurisdiction	Adjustment Factor
Metro Nashville-Davidson County	0.94
Rutherford County	0.92
Williamson County	0.93
Wilson County	1.10
Murfreesboro	0.90
Eagleville	0.73
La Vergne	1.09
Nolensville	1.62
Smyrna	1.13

6.0 Fiscal Impact Results

Fiscal impact results for the Trend scenario are presented below for the study region, and for each individual jurisdiction within the study area. Results are presented in relation to base year expenditures and revenues. As indicated in the base year, there is a gap in local revenues and expenditures with local expenditures exceeding local revenue availability. This is seen for the study region collectively, and for each jurisdiction within the study area, with the exception of Nolensville. This local funding gap is currently being filled through a combination of state and Federal monies.⁶

A key component of the FIAM will be to determine how various land use development patterns not only impact total revenues and expenditures, but how they contribute to closing the local funding gap (i.e., by bringing local revenue sources more in line with local expenditures). Gap results can be indicative of how land use development can improve or exacerbate local reliance on somewhat (increasingly) unstable state and Federal funding sources to provide local public services.

6.1 STUDY REGION RESULTS

For the study region, the Trend scenario yields an average revenue increase of 62 percent and an average expenditure increase of 80 percent. The study region as a whole is seeing revenue benefits associated with increased charges for services due to the increasing service population, but not as strong an increase in the much more dominant – and more stable – property tax revenue source. Expenditures are rising at a more consistent rate across expenditure categories, given the consistent impact of population and jobs across most expenditure categories (i.e., most expenditure types will feel the impacts of population and employment growth to the same degree), unlike revenue categories. The exception is educational expenses, which are tied proportionally to population increase.

⁶ Outside of locally generated revenue, local jurisdictions primarily obtain revenue from state and Federal sources. Other sources can include reimbursements and grants from other organizations. Specific state and Federal sources vary across local jurisdictions, with only a few sources commonly seen across various budgets. Common sources that account for a noticeable portion of the budget include Alcoholic Beverage/Mixed Drink Tax, TVA Gross Receipts, and State Highway Maintenance. Other sources which can account for a noticeable portion of a local government’s budget, but are not necessarily seen across multiple jurisdictions can include Cable Franchise Fees, Public Transportation Grant, State Sales Tax, and Health Department Program.

Despite the slight density increase from the base year to 2040 Trend (Table 6.1), the development pattern associated with the Trend scenario is reflecting a continued, unbalanced revenue and expenditure baseline; i.e., local expenditures exceeding local revenues. This is resulting primarily from a fairly homogenous mix of land uses dominated by single-family residential units. With expenditures growing at a faster rate than revenue, a net negative fiscal impact is expected under the Trend scenario, compared to base year conditions.

Table 6.1 Fiscal Impact – Study Region

	Base Year	Trend 2040	Percentage of Increase
Residential Units*	405,877	659,934	63%
Non-residential area (sq.ft.)*	249,792,425	329,505,455	32%
Developed Area (acres)	336,620	541,058	61%
Residential Density (residential/acres)	1.21	1.22	1%
Non-residential Density (sq.ft./acres)	742	609	-18%
Revenue (millions)			
Property Tax	\$1,213	\$1,861	53%
Sales Tax	\$410	\$655	60%
Charges for Services	\$326	\$638	96%
Total Revenues	\$1,948	\$3,154	62%
Expenditures (millions)			
General Government	\$193	\$341	76%
Justice	\$105	\$158	51%
Police	\$310	\$481	55%
Fire	\$182	\$274	51%
Public Health	\$156	\$233	50%
Public Works	\$204	\$333	63%
Education	\$1,821	\$3,510	93%
Recreation	\$18	\$41	122%
Total Expenditures	\$2,989	\$5,371	80%
Net Revenue			
Net Revenue (millions)	-\$1,040	-\$2,217	
Per Residential Unit	-\$2,563	-\$3,360	
% Gap	35%	41%	

*unincorporated stats

6.2 JURISDICTIONAL RESULTS

In the base year scenario, there is a funding gap for each local jurisdiction, except Nolensville, with local expenditures exceeding local revenue. This gap currently is being addressed through a combination of state, Federal, and/or other monies. The results of the FIAM show a variety of fiscal impacts associated with the 2040 Trend scenario at the jurisdictional level, with some jurisdictions showing an increase in this local funding gap (expenditures increasing at a faster rate than revenue), and others showing a decrease in the gap (with revenue increasing at a faster rate than expenditures). Ultimately, the gap shown for the 2040 Trend is what will be used to compare future alternative land use scenarios against to determine net fiscal impacts of alternative development patterns.

The local financial gap is critical to emphasize in the context of long-range transportation and land use planning, given growing travel demand and mobility needs in the context of declining Federal and state transportation revenue⁷. Given current revenue trends, it is expected that the share of local burden for transportation capital, operations and maintenance costs will increase over time. The associated land use implications are important as modifying land development patterns can significantly impact transportation, and other, infrastructure needs and costs. While not reflected in this analysis, it is assumed that over the study horizon, a greater proportion of capital costs will need to be picked up locally, adding to the pressure on the local revenue gap.

Tables 6.2 to 6.10 show the comparison of revenues and costs for base year conditions and 2040 Trend conditions. Revenues and expenditures are expressed in 2012 dollars.

⁷ Highway Trust Fund (HTF) revenue has been in decline for over a decade. According to both the U.S. Department of Transportation (USDOT) and the Congressional Budget Office (CBO), spending in 2014 will exceed revenues for the Highway Account of the HTF. A funding shortfall in July 2014 is expected. Because the Highway Trust Fund cannot incur negative balances and has no authority to borrow additional funds, the USDOT is expected to begin to implement cash management strategies once the balance in the highway account goes below \$4 billion. These strategies may include less frequent, or even partial, reimbursements to states for transportation outlays. <http://www.dot.gov/highway-trust-fund-ticker>

Table 6.2 Rutherford County

	Base Year	Trend 2040
Residential Units	28,936	65,969
Developed Area (acres)	65,637	114,483
Density (residential/acres)	0.44	0.58
Total Revenues (millions)	\$250	\$479
Total Expenditures (millions)	\$450	\$941
Net Revenue (millions)	-\$200	-\$462
Per Residential Unit	-\$6,924	-\$7,000
% Gap	45%	49%

Table 6.3 Davidson County

	Base Year	Trend 2040
Residential Units	268,187	335,661
Developed Area (acres)	134,826	146,304
Density (residential/acres)	1.99	2.29
Total Revenues (millions)	\$1,208	\$1,501
Total Expenditures (millions)	\$1,743	\$2,265
Net Revenue (millions)	-\$535	-\$765
Per Residential Unit	-\$1,995	-\$2,278
% Gap	31%	34%

Table 6.4 Williamson County

	Base Year	Trend 2040
Residential Units	14,488	50,412
Developed Area (acres)	39,075	69,009
Density (residential/acres)	0.37	0.73
Total Revenues (millions)	\$272	\$756
Total Expenditures (millions)	\$411	\$1,404
Net Revenue (millions)	-\$139	-\$648
Per Residential Unit	-\$9,601	-\$12,857
% Gap	34%	46%

Table 6.5 Wilson County

	Base Year	Trend 2040
Residential Units	21,411	43,586
Developed Area (acres)	74,047	127,438
Density (residential/acres)	29%	34%
Total Revenues (millions)	\$96	\$171
Total Expenditures (millions)	\$194	\$334
Net Revenue (millions)	-\$98	-\$163
Per Residential Unit	-\$4,561	-\$3,748
% Gap	50%	49%

Table 6.6 Eagleville

	Base Year	Trend 2040
Residential Units	296	2,724
Developed Area (acres)	408	4,771
Density (residential/acres)	0.73	0.57
Total Revenues (millions)	\$0.3	\$1.5
Total Expenditures (millions)	\$0.4	\$4.3
Net Revenue (millions)	-\$0.1	-\$2.8
Per Residential Unit	-\$432	-\$1,036
% Gap	29%	65%

Table 6.7 La Vergne

	Base Year	Trend 2040
Residential Units	10,990	15,466
Developed Area (acres)	4,413	5,275
Density (residential/acres)	2.49	2.93
Total Revenues (millions)	\$12	\$16
Total Expenditures (millions)	\$13	\$18
Net Revenue (millions)	-\$1	-\$2
Per Residential Unit	-\$133	-\$106
% Gap	11%	9%

Table 6.8 Murfreesboro

	Base Year	Trend 2040
Residential Units	44,054	97,838
Developed Area (acres)	10,650	42,834
Density (residential/acres)	4.14	2.28
Total Revenues (millions)	\$82	\$169
Total Expenditures (millions)	\$141	\$322
Net Revenue (millions)	-\$59	-\$153
Per Residential Unit	-\$1,341	-\$1,566
% Gap	42%	48%

Table 6.9 Smyrna

	Base Year	Trend 2040
Residential Units	15,735	34,284
Developed Area (acres)	5,668	22,811
Density (residential/acres)	2.78	1.50
Total Revenues (millions)	\$26.4	\$47.2
Total Expenditures (millions)	\$34.8	\$73.7
Net Revenue (millions)	-\$8.4	-\$26.5
Per Residential Unit	-\$536	-\$773
% Gap	24%	36%

Table 6.10 Nolensville

	Base Year	Trend 2040
Residential Units	1,780	13,994
Developed Area (acres)	1,896	8,133
Density (residential/acres)	0.94	1.71
Total Revenues (millions)	\$2.3	\$14.2
Total Expenditures (millions)	\$1.5	\$9.1
Net Revenue (millions)	\$0.8	\$5.1
Per Residential Unit	\$472	\$365
% Gap	-56%	-56%

A. Southeast Transportation and Land Use Study- Fiscal Impact Discussion Guide

Cambridge Systematics (CS) is part of a team conducting a study of alternative development scenarios for the Southeast Area for the Nashville Metropolitan Planning Organization (MPO). As part of that effort, we will be examining the fiscal impacts arising from alternative land use scenarios and we need your assistance in better understanding your budgeting process and performance standards for providing local public services.

First, can you briefly describe your budgeting process?

For operations?

For capital improvements?

Is there a different process for specific departments?

How are budget needs forecast?

Do you currently have department-specific performance measures for the following services and, if so, how do they factor into the budgeting process?

General government

Justice (county only)

Police

Fire

Public health (county only)

Public works (to include transportation and traffic)

Education

Recreation (municipal only)

How do you forecast future revenue?

Are there any local studies you are aware of that define potential alternative funding or finance models for your jurisdiction (e.g., Impact Fees, TIFs, TADs)? If so, can you provide study documentation?

For capital investments, do you generate estimates of year of need? If so, can you describe the process?

In general, are there departments currently operating below desired performance metrics?

Are there any operating above those standards? If so, does this represent excess capacity?

B. Technical Memorandum - Review of Local Data

Memorandum

TO: Michael Skipper

FROM: Tracy Selin, Roberto Alvarado

DATE: January 24, 2014

RE: Summary of Base Year Revenues and Expenditures, Potential Metrics for Fiscal Impact Analysis – Southeast Area Transportation and Land Use Study

Cambridge Systematics (CS), as part of a team, is conducting a study of alternative development scenarios for the Southeast Nashville region for the Nashville Metropolitan Planning Organization (MPO). As part of the study we will be examining the fiscal impacts arising from alternative land use scenarios. We have completed a review of local Comprehensive Annual Financial Reports (CAFR) for each of the nine jurisdictions in the study area to better understand the local-level budgeting process and performance standards for providing local public services. This memo summarizes local revenue and expenditures research (exclusive of state and federal revenue contributions) and provides a list of expenditure metrics that will be used to analyze the fiscal impact of future development scenarios for the study area.

Currently, there are several data gaps based on our initial research – highlighted in red in tables below. **We would greatly appreciate if you can work with your local jurisdictions to help us compile the remaining information and to review other data reported. We would also like to confirm with each of the four county governments (Rutherford, Wilson, Davidson, and Williamson) that the statistics included in Table 1 are inclusive of municipal governments, or not. It is unclear from our CAFR and online review.**

Please provide feedback by Friday January 31. This will allow us to stay on schedule with reporting performance impacts of the Trend Scenario for the study.

Thank you in advance for your assistance. Some additional detail on the data in this memo is provided below:

Table 1 summarizes key characteristics of the jurisdictions included in the study area. These characteristics include:

- Population
- Land Area
- Law enforcement officers
- Housing units
- School enrollment population

Tables 2 summarizes the average costs incurred by local governments for each of the fiscal categories to be analyzed. These categories include:

- General Government
- Justice
- Police and Fire
- Public Health
- Roads/Public Works
- Education
- Recreation

Table 3 summarizes the average revenues generated from the three main revenue sources for each of the jurisdictions.

The proposed expenditure metrics are summarized in Table 4. These were developed by combining the information from Tables 1 and 2. The information to develop these metrics were compiled from the each local jurisdiction's CAFR, the US Census website, and from State and Local government websites.

Table 1. Key Jurisdictional Characteristics

	County Government				Municipal Government				
	<i>Rutherford</i>	<i>Wilson</i>	<i>Davidson</i>	<i>Williamson</i>	<i>Murfreesboro</i>	<i>Eagleville</i>	<i>Lavergne</i>	<i>Nolensville</i>	<i>Smyrna</i>
Population, 2010	262,604	113,993	626,684	183,182	108,755	604	32,588	5,861	39,974
Population, 2012	274,454	118,961	648,295	192,911	114,038	616	33,777	6,096	41,705
Square Miles	619	583	504	583	55	2	25	7	30
Law Enforcement Officers	178	240	Need input	Need input	229	2	51	2	76
Housing units, 2011	103,913	46,168	285,020	69735	45,500 (1)	279 (1)	11,612	1,908 (1)	15,787
School Enrollment, 2012	38,883	15,570 (2)	79,212	33,000 (2)	7,034	0	0	Need input	0
Population Density, 2012	443	204	1,286	331	2,060	293	1,351	819	1,409

Notes:

(1) 2010 statistics

(2) Assumed 2012. Not clear in the County School websites.

Table 2. Average Expenditures by Local Government (Reflects Local Revenue Expenditures Only)

Expenditure Category	County Government				Municipal Government				
	Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	Lavergne	Nolensville	Smyrna
General Government	\$16,681,499	\$11,419,882	\$120,291,000	\$20,752,042	\$13,209,846	\$257,901	\$2,554,500	\$514,562	\$7,798,430
Justice Sheriff's Dept./Police	\$6,756,409	\$4,854,145	88,469,000	\$4,655,311	\$23,143,603	\$65,158	\$5,010,000	\$453,524	\$9,443,614
Fire	\$17,913,140 (2)	\$7,564,475 (2)	Need Input	\$6,346,419 (2)	\$14,758,812	\$41,921	\$1,912,000	\$70,823	\$8,314,635
Public Health	\$928,000 (3)	Need Input	\$154,191,000	\$472,536	\$18,913,482	\$3,253,673	\$123,569,000	\$10,039,571	
Roads/Public Works	\$10,234,997	\$9,743,829	\$148,106,500	\$11,500,610	\$16,937,768	\$17,320	\$2,522,000	\$245,032	\$4,659,782
Education	\$62,399,722	\$26,207,130	\$868,524,000	\$63,204,482	\$59,985,468	0	0	Need Input	0
Recreation					\$12,655,903	\$54,901	\$1,017,000	Need Input	\$4,595,331

Notes:

(1) Average expenditures from 2011 and 2012 CAFR's.

(2) Sheriff's Department expenses

(3) Rutherford County, 2013/2014

Table 3. Average Revenue by Local Government

Revenue Source	County Government				Municipal Government				
	Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	Lavergne	Nolensville	Smyrna
Charges for Services	\$69,157,000	\$11,848,666	\$153,420,000	\$65,977,686	\$14,523,875	\$69,045	\$2,053,000	\$1,512,756	\$7,183,177
Property Tax	\$77,091,000	\$35,835,741	\$785,037,000	\$72,528,637	\$35,960,922	\$120,090	\$5,932,500	\$314,837	\$10,074,590
Local Sales Tax	\$1,627,000	\$6,281,708	\$269,700,500	\$1,284,870	\$31,124,392	\$120,313	\$3,573,500	\$519,449	\$9,123,040

Notes:

(1) Average revenues from 2011 and 2012 CAFR's.

(2) Include Governmental Activities only

Table 4. Metrics for Estimating Local Public Expenditures

Expenditure	Metric	County Government				Municipal Government				
		Rutherford	Wilson	Davidson	Williamson	Murfreesboro	Eagleville	Lavergne	Nolensville	Smyrna
General Government	\$/capita	\$61	\$96	\$186	\$108	\$116	\$419	\$76	\$84	\$187
Justice	\$/capita	\$25	\$41	\$136	\$24					
Sheriff/Police	\$/capita	\$65	\$64	Need input	\$33	\$203	\$106	\$148	\$74	\$226
Sheriff/Police	\$/officers	\$100,636	\$31,519	Need input	Need input	\$101,064	\$65,158	\$98,235	Need input	\$124,258
Fire	\$/capita	\$3	Need input	\$238	\$2	\$129	\$68	\$57	\$12	\$199
Public Health	\$/capita	\$69	\$27	\$191	\$52					
Roads/Public Works	\$/capita	\$37	\$82	\$228	\$60	\$149	\$28	\$75	\$40	\$112
Roads/Public Works	\$/housing unit	\$98	\$211	\$520	\$165	\$372	\$62	\$217	\$128	\$295
Education	\$/student	\$1,605	\$1,683	\$10,965	\$1,915	\$8,528	Need input	Need input	Need input	Need input
Recreation	\$/capita					\$111	\$89	\$30	Need input	\$110
Recreation	\$/housing unit					\$278	\$197	\$88	Need input	\$291