Oklahoma City 2050 Growth Scenarios:
Cost Analysis

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planokc | ECONorthwest

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ECONorthwest specializes in economics, planning, and finance. Established in 1974, ECONorthwest has four decades of experience helping clients make sound decisions based on rigorous economic, planning and financial analysis.

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1 Executive Summary

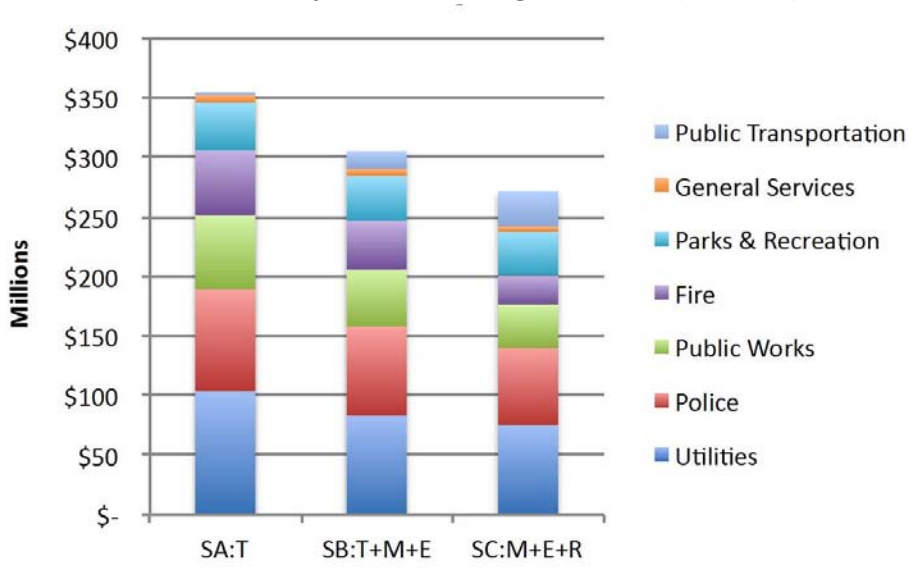
The purpose of this report is to evaluate the impact of development patterns on the costs of growth for Oklahoma City. A development *pattern* includes the location of new development, its density, building types, and mix of uses. It does not include the *amount* of new development. The "costs of growth" include both the capital and operating expenditures associated with providing infrastructure and public services for new development. Our analysis looked four decades into the future, by which time Oklahoma City is projected to have gained approximately 312,000 new residents and 172,000 new jobs. We found that a spread-out development pattern would likely cost the City tens of millions of dollars more each year than a more compact development pattern. Similarly, the difference in costs of infrastructure for private developers would total in the billions of dollars over 40 years.

The costs of growth were evaluated for three land use scenarios, presenting a range of development choices. Each scenario uses the same amount of population and jobs, while illustrating a different potential development pattern:

- **Scenario A: Trends**. This scenario models the status quo. It shows a development pattern that resembles observed trends from the past 20 years. Characteristics of this scenario include large amounts of new low-density, non-contiguous development (i.e. "leapfrog" development), continued decline and abandonment in currently challenged areas of the urban core, and no focus on efficiency in the provision of City services.
- **Scenario B: Trends + Market + Efficiency**. This scenario deviates from historical tendencies to reflect changing market trends that support somewhat higher-density development closer to the city center, as well as input from City departments on areas of the City that could be served most efficiently. This scenario was informed by recent citizen and stakeholder input, including a Housing Market Study. Characteristics of this scenario include new contiguous development (i.e. non-leapfrog) focused around nodes and corridors, increased transit, and a limited amount of infill development. This scenario still shows some population loss in the urban core.
- **Scenario C: Market + Efficiency + Revitalization**. This scenario was intended to illustrate the most efficient growth scenario for providing public services, based on a central principle that more compact development is more efficient to serve. This scenario, like Scenario B, also reflects consumer preferences as identified in the Housing Market Study. Characteristics of this scenario include even more infill, even more transit, and more focus around nodes and corridors than in Scenario B. This scenario shows no population loss in the urban core.

Exhibit ES1 shows annual costs of growth for seven core City departments. These are the departments whose costs were assumed to be materially affected by development patterns. The results are significant. Almost across the board, we found the costs of the City's core services and infrastructure to be more expensive in the lower-density scenario. Given the anticipated amount of growth by the year 2050, **Scenario A would cost the City $81.8 million more per year than Scenario C.**

Exhibit ES1. Oklahoma City costs of serving new development (operations and capital)



Source: ECONorthwest

Exhibit ES2 shows the total capital costs for the City to serve new development for each scenario, including the cost of financing. Scenario C would require far less investment in new infrastructure such as fire stations, roads, and pipes, resulting in a total cost of about two-thirds the cost of Scenario A. The combined annual debt service payments for all this new infrastructure would be $70.4 million per year in Scenario A, compared to $46.4 million per year in Scenario C.

Exhibit ES2. Oklahoma City total capital costs to serve new development

Department	Capital costs to serve new development		
	Scenario A	Scenario B	Scenario C
Fire Department	$ 138,300,000	$ 98,200,000	$ 53,000,000
General Services	$ -	$ -	$ -
Parks and Recreation	$ 410,600,000	$ 374,200,000	$ 349,800,000
Police Department	$ -	$ -	$ -
Public Transportation	$ -	$ 6,900,000	$ 13,800,000
Public Works	$ 606,200,000	$ 437,400,000	$ 324,900,000
Utilities	$ 253,600,000	$ 216,500,000	$ 187,000,000
Total	$ 1,408,700,000	$ 1,133,200,000	$ 928,500,000
Percent Difference from Scenario A	0%	-20%	-34%

Source: ECONorthwest

Note that Exhibit ES2 only shows the City's share of capital costs for new development. **Low-density, spread-out development has high costs of growth for the private-sector as well.** Scenario A: Trends would require over 4,300 new lane miles, and almost 2,000 miles of water and sewer pipes. While the City would fund a portion of these costs ($1.4 billion shown in ES2), private developers would cover a larger portion of the costs, totaling $5.4 billion over 40 years. This is double the private-sector capital costs of $2.6 billion forecast for Scenario C.

Exhibit ES3 shows the annual operating costs to serve new development for each of the seven core City departments for each scenario. New development through the year 2050 is forecast to increase the City's annual operating expenses by 48% for Scenario A, compared to 38% in Scenario C. Overall, Scenario A would cost the City $57.6 million more per year for operations than Scenario C.

Exhibit ES3. Oklahoma City operations cost of serving new development

Lines of Business	FY 2049-50 (2013$) Scenario A	Scenario B	Scenario C
Fire Department	$ 47,706,796	$ 35,799,142	$ 22,215,511
General Services	$ 6,527,367	$ 5,713,102	$ 4,711,358
Parks and Recreation	$ 19,711,015	$ 19,380,438	$ 19,115,678
Police Department	$ 85,456,969	$ 74,933,487	$ 64,879,511
Public Transportation	$ 543,083	$ 14,584,219	$ 28,626,066
Public Works	$ 31,818,091	$ 25,953,344	$ 19,951,913
Utilities	$ 90,798,302	$ 72,120,805	$ 65,498,368
Total	**$ 282,561,624**	**$ 248,484,537**	**$ 224,998,405**

Source: ECONorthwest

Exhibit ES4 combines both annual operating and capital costs for each department, showing the difference for Scenarios B and C from Scenario A. With the exception of Public Transportation, every department would have higher costs in Scenario A than Scenario C. That includes 118% higher costs of growth for Fire, 73% higher costs for Public Works, 38% higher costs for Utilities, and 32% higher costs for Police.

Exhibit ES4. Oklahoma City annual cost of serving new development (operations and capital costs): difference from Scenario A: Trends

Department	Scenario A Annual Costs of Serving New Development	Difference from Scenario A: Scenario B	Scenario C
Fire	$ 54,600,000	$ (14,000,000)	$ (29,600,000)
Utilities	$ 103,600,000	$ (20,700,000)	$ (28,700,000)
Public Works	$ 62,100,000	$ (14,200,000)	$ (26,200,000)
Police	$ 85,400,000	$ (10,500,000)	$ (20,500,000)
Parks & Recreation	$ 40,200,000	$ (2,100,000)	$ (3,600,000)
General Services	$ 6,600,000	$ (900,000)	$ (1,900,000)
Public Transportation	$ 600,000	$ 14,300,000	$ 28,700,000
Total	$ 353,100,000	$ (48,100,000)	$ (81,800,000)

Source: ECONorthwest

Key implications from the analysis include:

- **Continuation of recent development patterns would be costly for the City.** Development patterns have the ability to significantly impact City costs. In nearly every category, we found the costs of the City's core services and infrastructure to be more expensive in the lower-density, less integrated scenario.

- **Low-density, less integrated development is also more costly for private developers**. The City is not the only entity that will bear the costs of inefficient land use patterns. Private developers have a huge financial stake in how the city grows. Although the City maintains almost all the streets, sewer pipes, and water mains in the city, private developers pay to build most of these facilities themselves.
- **Change is needed to avert high costs of growth.** Oklahoma City has historically seen development spread out in a casual, spontaneous manner. These past development patterns have put a burden on the City budget, and if these trends continue, the costs of services and infrastructure will continue to rise. To avert these high costs of growth, a change is needed. The City needs to be thoughtful and strategic about where development happens, recognizing some areas and development patterns are more affordable to serve than others.

Plan**okc** is an opportunity for residents of Oklahoma City to make a choice about what type of City they want to live in, and what type of City they want to leave for their children. This choice will be influenced by many factors including length of the daily commute, impact on the environment, and access to places to live, work, and shop. Another important factor that should be included in the decision is the fiscal impact to the City. How do development patterns influence the cost of city services and infrastructure? This report shows that the cost savings for more compact and mixed land use patterns are substantial. If more efficient development patterns are pursued, these savings could be reinvested in other important urban amenities like transit, parks, or public safety. It is up to city residents and workers to decide how to balance these fiscal impacts and potential investments in urban amenities as they plan for the future of their city.

2 Framework

2.1 Purpose

This study was conducted to evaluate how different land use patterns in Oklahoma City might lead to different costs for the City to build infrastructure and provide public services. The analysis is meant to inform the plan**okc** process, currently underway. Plan**okc** is a long-range comprehensive plan, with the goal of ensuring a healthy environment, community, and economy for residents of Oklahoma City.

Ultimately, plan**okc** will identify: 1) where new development should occur, 2) in what mix of uses, and 3) at what levels of density. These three variables are what we mean when we talk about "land use patterns" or "development patterns."

2.2 Why is it important?

When planning the future development of Oklahoma City, residents have to consider a long list of factors: the length of their commute, proximity to shopping and entertainment options, the type of housing they find most desirable, etc. Another factor that is important to consider in the planning process is the cost of development. If one land use pattern is more expensive to serve than another, it may influence the choices that Oklahoma City residents make.

Our analysis found that land use patterns can have a relatively large impact on the cost of services and infrastructure, both for the public and private sectors. A spread-out development pattern would likely cost the City tens of millions of dollars more each year than a more compact development pattern. Similarly, the difference in costs of infrastructure for private developers would total in the billions of dollars over 40 years.

Paying attention to the costs of different development patterns can help residents of Oklahoma City create a more cost-efficient City in the future, allowing for better infrastructure, services, and amenities.

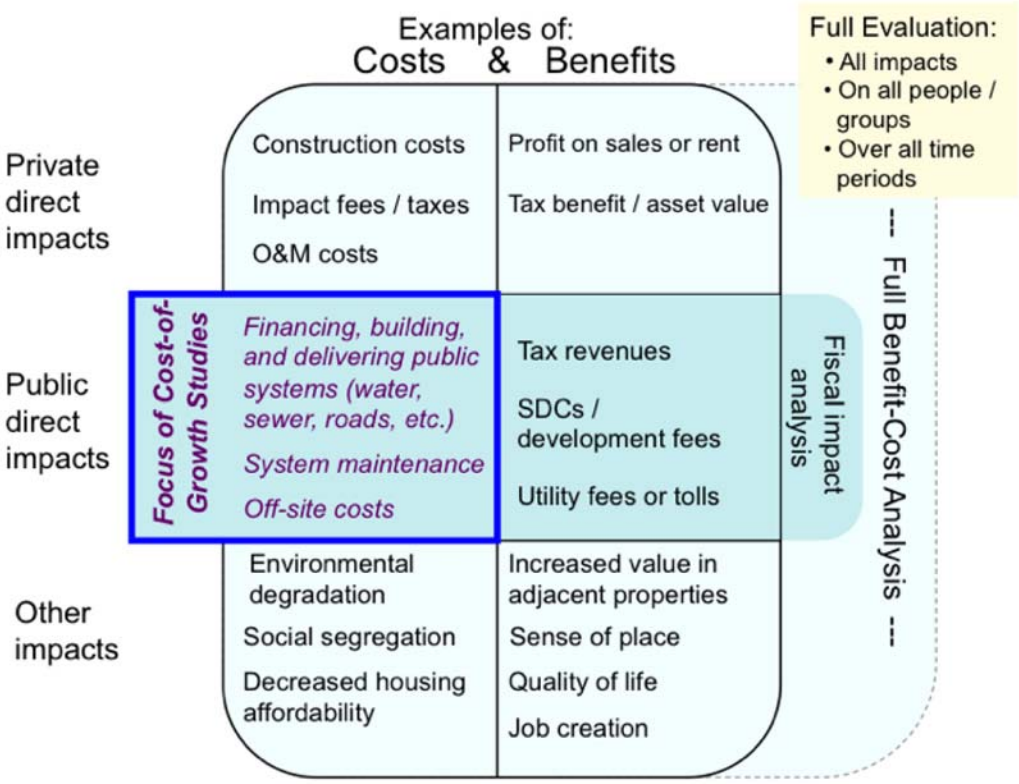
2.3 Why was it challenging?

In many ways, this was a pioneering project in the study of the costs of growth. Similar efforts have been conducted in numerous places across the world, but we have not seen any studies that look so specifically at the impact of land use patterns, and so comprehensively at operating and capital costs for a city the size of Oklahoma City. Because this was a groundbreaking project, there were many challenges that needed to be overcome. Some of those challenges included:

What to include in the study?

Exhibit 1 shows a framework for understanding costs and benefits of any action (like new development). Development can bring with it both costs and benefits for private parties, the public sector, and others. Evaluating the full scope of these impacts (all six boxes shown in Exhibit 1) is called a benefit-cost analysis. However, a benefit-cost analysis would be a huge undertaking for a project of this magnitude. Thus, it was decided to limit our approach to just a subset of these impacts.

Exhibit 1. Costs of growth in the context of all benefits and costs

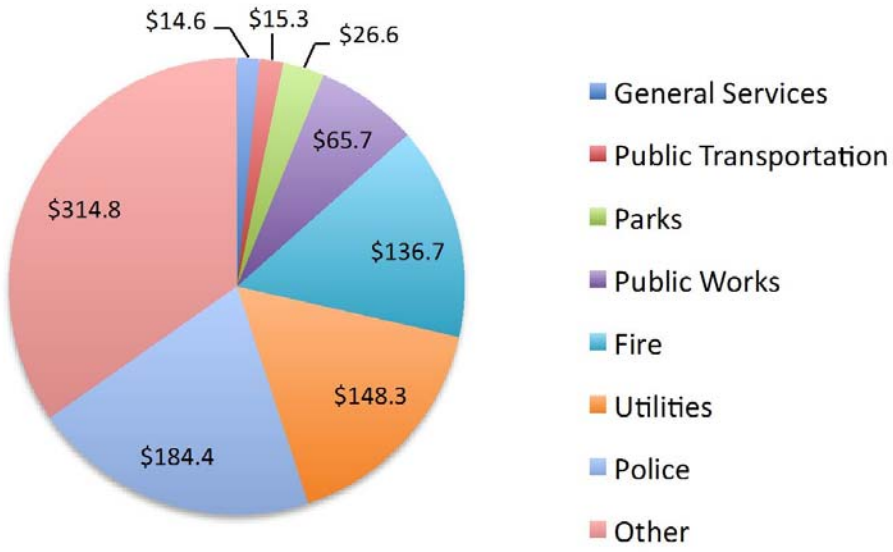


Source: The Oxford Handbook of Urban Economics and Planning, Chapter 31"Fiscal Impact Analysis and the Costs of Alternative Development Patterns." Lorelei Juntunen, Gerrit-Jan Knaap, and Terry Moore. 2011.

Two important decisions were made early in this project: to focus the analysis on the impacts to the City, and to focus on the costs of growth. Focusing on the City allowed us to drill down into the specifics of each City department likely to be impacted by different development patterns, looking at each line item in their operating budgets, and talking to department heads about the infrastructure investments needed to serve development in each scenario. Specifically, we focused on the following seven departments:

- Fire
- General Services
- Parks
- Police
- Public Transportation
- Public Works
- Utilities

Exhibit 2. Oklahoma City Annual Operating Expenditures, FY 2012-13



Calculated by ECONorthwest with data from Oklahoma City Adopted Budget: 2012-13

We refer to these seven departments as "core City services." Collectively, the core City services account for roughly two-thirds of the City's total annual operating expenses. The remaining one-third of the City budget is comprised of more than two-dozen other City departments. These departments are not included in our analysis, because they are either small (like the Planning Department), or not likely to be affected by development patterns (like the Zoo), or both (like the Auditor, City Clerk, etc.).

Although the report focuses on these specific City costs, our analysis did uncover some important differences in private-sector infrastructure costs (like the costs of building new roads to serve growth), and later in this report we identify private-sector costs for roads, water, and

sewer facilities. These are, however, only examples of impacts on the private-sector, and not a thorough analysis of all private-sector costs and benefits.

Our analysis also focused on costs rather than revenues. The primary source of operating revenue for the City is sales tax. In general sales tax revenue is affected by the number of people living, working, and visiting the City, and the income level of those people. This study is concerned with development patterns, which do not include the number, or income level of people in Oklahoma City, and therefore are not expected to have a significant impact on City sales tax and other revenues. It is possible that different development patterns may be more or less attractive to different demographic groups, which means that different development patterns could cause changes in the amount or composition of growth, but this potential affect was not included in our analysis. Note that there may still be some revenue impacts to the City, and we describe these potential implications later in this report, but not with the same level of detail as we describe the differences in costs.

When reading this report, it is important to remember that the analysis is incomplete. We have attempted to provide a detailed look at how development patterns affect the costs of the City of Oklahoma City. There are many financial and economic impacts to other private- and public-sector parties (such as school districts) that are not included in our analysis. In short, this analysis should be considered a study of the costs of growth on the City and not a thorough benefit-cost analysis.

Patterns of growth vs. amounts of growth

When different growth scenarios are evaluated, it is common to confuse impacts from the *amount* of growth or *composition* of growth with impacts from the *patterns* of growth. The amount of growth includes the number of residents and jobs. The composition of growth includes the demographic characteristics of those residents and employees (for example, income levels, age, and ethnicity). The pattern of growth includes the location of new development, its density, building types, and mix of uses.

Our analysis looks only at the pattern of growth, assuming that the amount and composition of growth in Oklahoma City is a given. That means that differences in our scenarios aren't the result of different assumptions regarding the number of housing units, or the income level of these households. Some similar studies on the costs of growth ascribe different incomes or spending patterns to different land use patterns, which then results in impacts on government revenues. The conclusions of those studies are not necessarily right or wrong, but they do not isolate the fiscal impacts of development patterns. For our analysis, we have done our best to focus on the factors that the City can influence through land-use planning.

How to deal with time?

The planning horizon for plan**okc** extends through the year 2050 (36 years from the date this report was written). A cost of growth study that spans four decades presents challenges for how to best present its findings. These challenges include projecting the timing of new development, estimating future inflation rates, compensating for future technological innovations, or

changing demographic trends. In short, we do not have a crystal ball to forecast the future, and all of these issues exist, independent of the City's decisions on land use patterns. For our analysis, we've dealt with these issues by using an "overnight" approach. We assumed that all of the growth occurs simultaneously. In other words, if we woke up tomorrow and found the City built out to its 2050 potential, what would be the cost of the infrastructure to accommodate that new growth, and the annual operating cost to provide City services?

What level of service?

A key principle of the analysis was to hold the level of service constant. But that is often easier said than done. For example, what measure should we hold constant for public transit? Is it the number of buses per capita? Or is it the number of buses that the City has today? For parks, is it the acres of park per capita citywide? Or is it ensuring that all residential areas are within a 15-minute drive of a community park? In many cases, there were no obvious answers. We worked with City staff to identify potential measures of level of service for each department, and came to consensus on measures that made the most sense for this analysis. These assumptions are noted throughout the report.

3 Methods - How did we do it?

The methods used in the analysis can be summarized into five basic steps:

1. Develop growth scenarios
2. Identify base-year costs
3. Forecast growth in operating expenses
4. Estimate capital costs
5. Review and revise with City staff

3.1 Develop growth scenarios

The City developed three growth scenarios that were used in this analysis, as well as related elements of plan**okc**. The scenarios were developed using Envision Tomorrow ("ET") software, allowing the City to allocate future development to hypothetical buildings in locations all across the City. The City started with a base case forecast of the number of new residents and employees that are expected by the year 2050, and then created three scenarios showing how the expected growth in residents and employees could be allocated across the City, illustrating a range of development patterns.

The Envision Tomorrow process for creating scenarios worked by first dividing up the city into a fine network or grid of cells called a "polygrid." Each of the over 2,300 cells in the polygrid is referred to as a "polygrid cell." The base case conditions for each polygrid cell were recorded, including the population, employment, land use and amount of vacant or redevelopable land. The City then "painted" each polygrid cell with one of many possible "development types," which describe the types and mixture of new buildings that would occur on the vacant and redevelopable land. Each development type has detailed assumptions on the specific mix of buildings that would develop within it, based on hypothetical building prototypes in Envision Tomorrow. Each of these building prototypes has clearly documented assumptions on the number of households, population, jobs, water consumption, vehicle miles traveled, and dozens of other variables.

After the entire polygrid was painted with different development patterns, the Envision Tomorrow model was run. It calculated the growth in each of variable for each polygrid cell. This provided the City with a detailed map, showing where growth in population and employment and various other factors would occur throughout the City.

3.2 Identify base-year costs

The 2012-13 City Budget was used to identify base-year costs. We identified annual operating costs for each line item of the core City services. This includes seven departments, organized into 33 "lines of business," comprised of 124 individual line items. Exhibit 3 shows a breakdown of the core City services operating budget for 2012-13. The total annual operating budget for

core City services was $591.5 million.[1] Police, Utilities, and Fire represent almost 80% of the total core services operating budget.

Exhibit 3. Oklahoma City core services, annual operating budget, FY 2012-13 ($ millions)

Department	Operating Budget	FTE
Fire	$ 136.7	943
General Services	$ 14.6	75
Parks & Recreation	$ 26.6	196
Police	$ 184.4	1,331
Public Transportation	$ 15.3	26
Public Works	$ 65.7	393
Utilities	$ 148.3	745
Total	$ 591.5	3,709

Calculated by ECONorthwest with data from Oklahoma City Adopted Budget: 2012-13.

3.3 Forecast growth in operating expenses

We forecast the total operating budget for core City services based on the 2050 build-out projection for each scenario. These cost estimates account for both new growth and the existing population and employment base. For each line item (including administrative overhead costs), we identified one or more variables that could be forecast to the year 2050 and applied as a growth rate to the base year annual operating budget amount. For some line items, these variables were fairly straightforward. For example, total population was used to forecast the growth in annual operating expenses for the Civic Center Music Hall (a line of business within the Parks and Recreation Department).

For other line items, these variables were more complex. For example, many line items within the Police Department, like Investigations, were forecast based on the increase in Police Department calls for service. However, to forecast the number of calls for service, we needed to run a regression analysis to determine the relationship between the number of calls for service and a polygrid cell's population, employment, income level, density, and mix of uses. We then used Envision Tomorrow forecasts for each of these variables to forecast the future number of emergency calls for police in 2050.

Overall, our analysis relied on 19 different growth rate variables to forecast the 124 different budget line items. Exhibit 4 identifies each of the variables used in our analysis, describes how they were forecast, and identifies the types of line items that were forecast using each variable.

[1] Note that this budget amount excludes capital expenditures, and other City funds.

Exhibit 4. Overview of growth rate variables

Code	Variable Name	Description	Used For
P	Population	Population. Source: ET	Educational and recreational programs and specific facilities.
PE	Pop & Emp	Population and Employment. Source: ET	Items tied to general growth, like customer service and billing.
SW	Solid Waste	Calculated cost of residential garbage collection, based on existing contract rates for "urban" and "rural" customers. Urban/rural split deterined by polygrid density from ET. Source: ET, ECO	Most solid waste utility costs, other than street sweeping and fleet maintenance.
VMT	Vehicle Miles Traveled	Total daily vehicle miles traveled. Source: ET	Fleet services, traffic and transportation line items, and travel-based services.
WWG	Waste H2O Geneneration	Gallons of waste water generated each year. Source: ET	Waste water utility items other than lift station maintance.
WC	H2O Consumption	Gallons of water consumed each year. Source: ET	Most water utility items.
LM	Lane Miles	Total miles of publicly maintained roads. Source: OKC Planning.	Street sweeping and drainage maintenance.
SM	Street Maintenance - Hybrid	A hybrid variable to estiamte the growth in street maintenance costs, based on the growth rate in total lane miles and the growth rate in VMT per lane mile. Source: ET, OKC Planning, ECO.	Street maintenance.
ISA	Impervious Surface Area	Acres of impervious surface area. Source: ET	Storm water quality.
LIFT	Sewer Lift Stations	The number of sewer lift stations. Source: OKC Utilities.	Lift station maintenance.
FIRE	Fire Station Personnel	Fire Department estimate of the cost for personnel to serve additional fire stations. Source: OKC Planning and Fire.	Fire operational services.
CSPDT	Police - Calls for Service	The annual number of calls for police service. Forecast based on population, employment, mix of uses, density and income. Source: ECO, ET.	Police investigations and other public safety support items.
CSFDT	Fire - Calls for Service	The annual number of calls for fire service. Forecast based on population, employment, mix of uses, density and income. Source: ECO, ET.	Fire investigations and other fire support services.
CSRTPD2	Police - Calls, Respose Time	The total amount of time spent responding to priority 1 calls each year. Based on the calls for service, and response time factors, including connectivity, and density. Source: ECO, ET.	Police patrol.
BUS	Bus Revenue Miles	Total annual revenue miles, based on existing routes with variable assumptions on average headways. Source: OKC Planning, and Public Transportation.	Bus operations and other public transit items.
PipeW	Miles of Water Pipe	Total miles of water pipe. Source: OKC Planning, and Utilities.	Waste water line maintenance.
PipeS	Miles of Sewer Pipe	Total miles of sewer pipe. Source: OKC Planning, and Utilities.	Water line maintenance.
PM	Park Maintenance	Percent growth in parks maintenance costs, including change from historical cost per acre to planned cost per acre, growth in total acres of parks, and growth in VMT applied to portion of park costs related to travel time. Source: ECO, OKC Planning.	Parks grounds management.
Admin	Administrative Costs	Growth in administrative costs are proportional to the growth in all other lines of business for the same department. Source: ECO, OKC Planning.	Administration.

3.4 Estimate capital costs

Even if no growth were to occur in Oklahoma City, there would still be capital costs. Over time, infrastructure and buildings wear down and require upgrades and replacement. Additionally, the existing population and employment base may desire new or better facilities, driving additional demand for capital expenditures. Our analysis does not include these capital costs, but instead focuses on the capital costs of projects needed to serve new development.

Maps and tables summarizing the three growth scenarios were shared with senior staff for each of the core services departments. The consultant team and Planning Department staff discussed these scenarios with each department and requested estimates of infrastructure costs to serve growth in each development scenario.

Each department then provided us with their estimate of specific capital facilities that would be needed to serve growth. In some situations, estimates from each department only included "major" publicly-built facilities, with the understanding that additional "minor" privately-built facilities would also be needed. In these situations, the Oklahoma City Planning Department, using Envision Tomorrow model outputs, estimated the amount of privately-built facilities (for example, neighborhood streets and associated water and sewer pipes). Costs for privately-built infrastructure are presented separately from the costs for publicly-built infrastructure.

As capital costs are typically financed through long-term borrowing, like a general obligation bond, as opposed to being paid up front with cash, we determined the annual debt service payment required for all projects, allowing us to include interest payments with our cost estimates, and allowing us to present our one-time capital costs estimates in a per-year dollar amount that can be combined with the annual operating expenditures to "compare apples to apples".[2]

3.5 Review and revise with City staff

The analysis was an iterative process. Numerous rounds of revisions occurred, including changes to the growth scenarios, changes to the specific methods used to forecast costs, and changes to the underlying assumptions. After each round of revisions, City staff reviewed the results to assess the accuracy of the calculations and the reasonableness of the results. These revisions continued until City staff and the consultant team were comfortable with the methods used to estimate capital and operating costs for each department.

[2] Note that the "per year" cost of capital projects is, therefore, not simply calculated as the total cost of capital projects divided by the total number of years between our baseline budget (FY 2012-13) and our forecast year (2049-50). Consistent with our "overnight" approach to the analysis, we show the "per year" capital costs as the annual debt service payment based on typical current terms for municipal debt, including a 20-year term, and 4.0% interest.

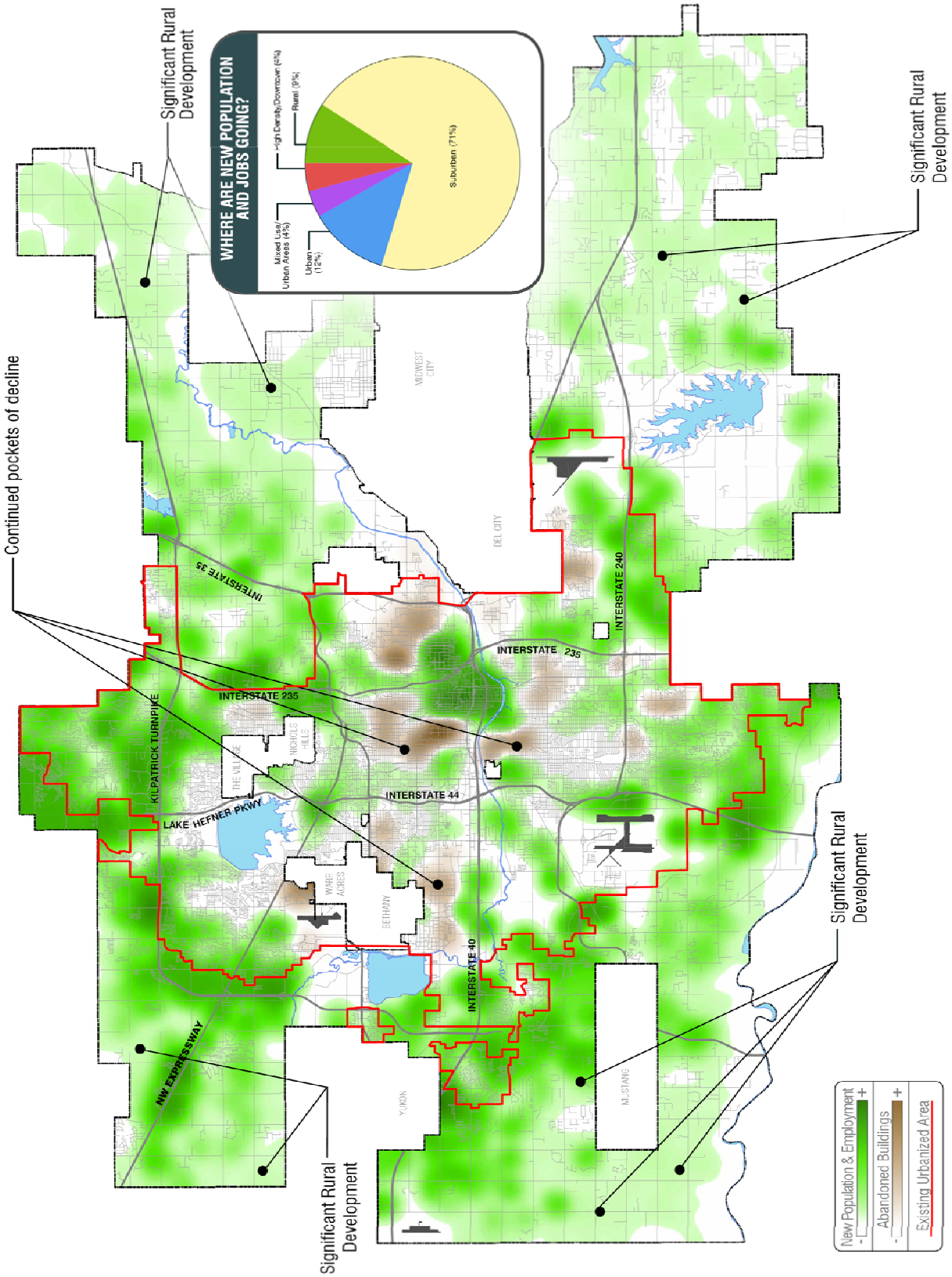
4 Scenarios

The City created three development scenarios that were used in our analysis:

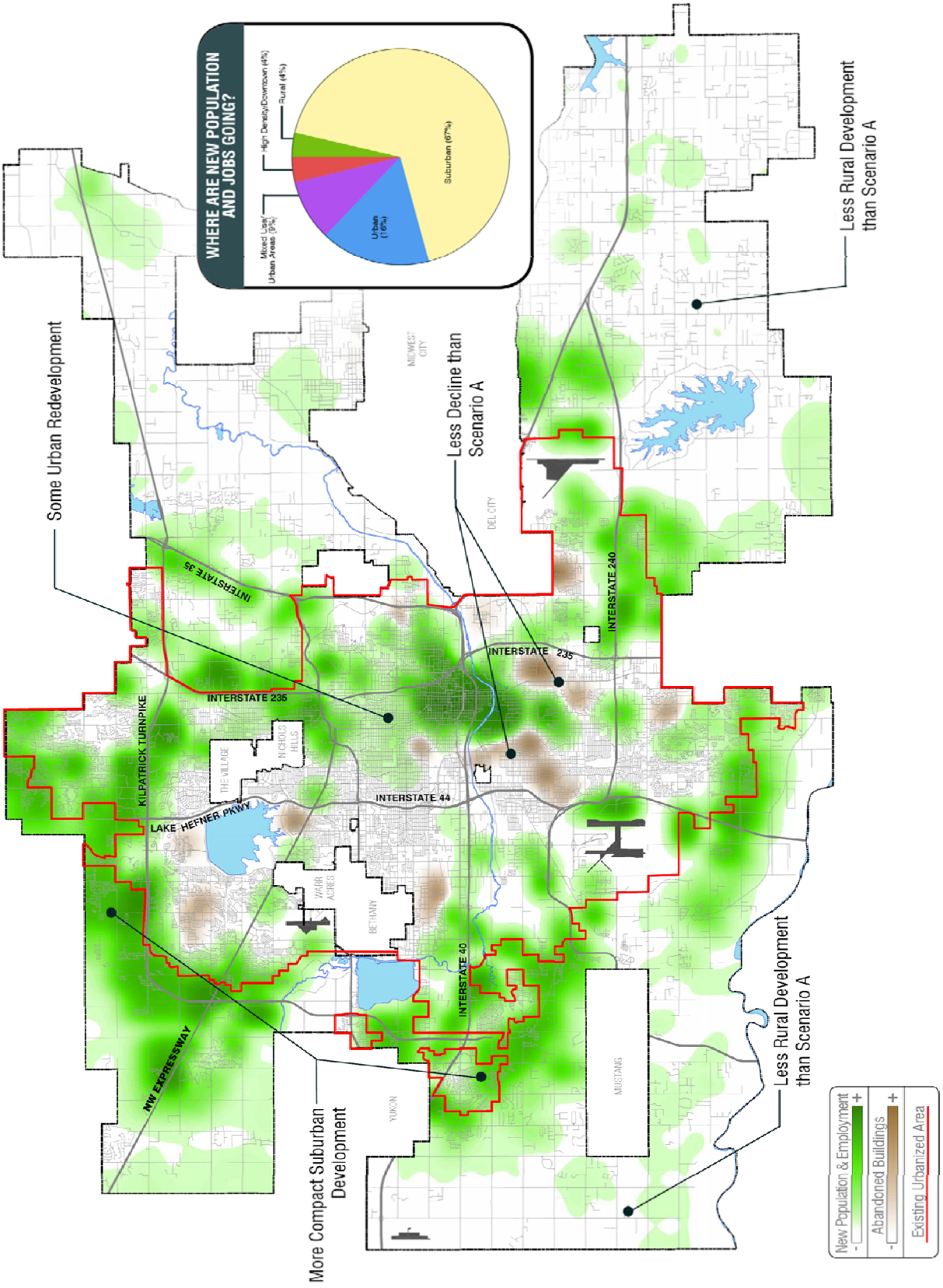
- **Scenario A: Trends**. This scenario models the status quo. It shows a development pattern that resembles historical trends over the past 20 years. This pattern is characterized by substantial low-density development occurring at the edge of the urban area, while the central city continues to see abandonment of existing buildings. This scenario has the least dense development pattern of the three. Throughout this report, we refer to this scenario as SA:T
- **Scenario B: Trends + Market + Efficiency**. This scenario deviates from historical trends and factors in the results from the City's recently completed Housing Market Preference and Demand Study, showing changing market trends that support somewhat higher-density development. Additionally, the location of development was adjusted based on input from City departments, to avoid areas that would be most costly to serve. This scenario falls in between the other two scenarios in terms of density of development. We refer to this scenario as SB:T+M+E.
- **Scenario C: Market + Efficiency + Revitalization**. The third scenario was intended to illustrate the most efficient growth scenario for providing public services. It was based on the extensive body of research into cost-effective development patterns, which supports the central principle that more compact development is more efficient to serve. The scenario is not purely abstract, as it is still controlled to consumer preferences as identified in the Housing Market Study, but it does present a more compact development scenario than scenario B. As with Scenario B, input from City departments was used to avoid developing in areas that would be costly to serve. This scenario also assumes revitalization in the city center, reversing the trend of abandonment. This scenario is the most dense development pattern of the three. We refer to this scenario as SC:M+E+R.

All three scenarios keep the amount and composition of growth constant, with the only differences being land use pattern: location, density, and mix of uses. The following pages show maps of each of the development scenarios. Green areas on the maps show where new development will occur. Blue areas on the maps show where abandonment of existing neighborhoods will occur.

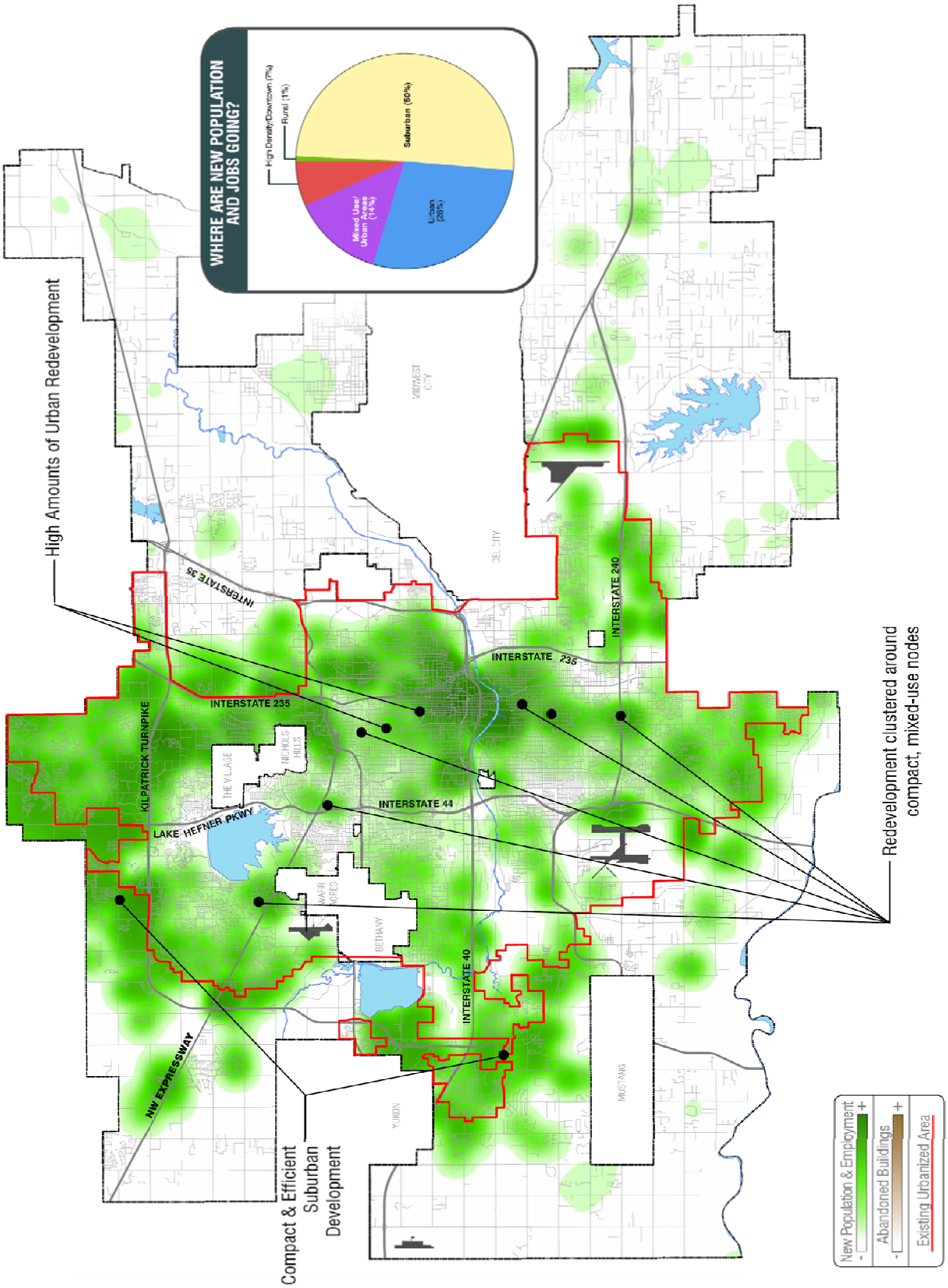
4.1 Scenario A: Trends



4.2 Scenario B: Trends + Market + Efficiency



4.3 Scenario C: Market + Efficiency + Revitalization

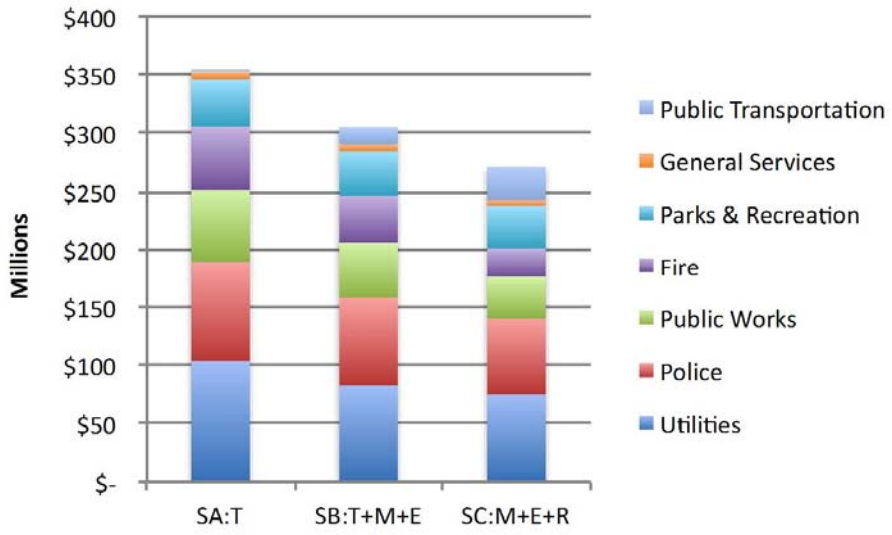


5 Costs of growth

The three development scenarios would have very different costs of growth (i.e., the capital and operating costs to provide services and infrastructure to new development). Overall, Scenario A: Trends would be the most expensive scenario, with an annual cost to the City of $352.9 million per year. Scenario B: Trends + Market + Efficiency would be the second most expensive, at $305.1 million per year. Scenario C: Market + Efficiency + Revitalization would be the least expensive at $271.5 million per year. In other words, the more compact development pattern shown in Scenario C could save the City $81.8 million per year, compared to the low-density development pattern shown in the Trends Scenario.

Exhibit 5 shows the annual capital and operating costs for each department. For most departments Scenario A is the most costly scenario and Scenario C is least costly. Public Transportation is the only department where Scenario A is less costly than Scenario C. This is due to increased transit ridership that is assumed to occur as a result of denser development patterns.

Exhibit 5. Oklahoma City costs of growth, capital and operating, all core City services



Source: ECONorthwest
Note that the numbers in Exhibit 5 only show the seven "core" departments. Operating costs for other City departments amount to $314.8 million in the FY 2012-13 base year.

Exhibit 6 shows the total capital costs for the City to serve new development for each scenario, including the cost of financing (i.e., interest payments). Scenario C would require far less investment in new infrastructure such as fire stations, roads, and pipes, resulting in a total cost of about two-thirds the cost of Scenario A. The combined annual debt service payments for all this new infrastructure would be $70.4 million per year in Scenario A, compared to $46.4 million per year in Scenario C.

Exhibit 6. Oklahoma City total capital costs to serve new development

Department	Capital costs to serve new development		
	Scenario A	Scenario B	Scenario C
Fire Department	$ 138,300,000	$ 98,200,000	$ 53,000,000
General Services	$ -	$ -	$ -
Parks and Recreation	$ 410,600,000	$ 374,200,000	$ 349,800,000
Police Department	$ -	$ -	$ -
Public Transportation	$ -	$ 6,900,000	$ 13,800,000
Public Works	$ 606,200,000	$ 437,400,000	$ 324,900,000
Utilities	$ 253,600,000	$ 216,500,000	$ 187,000,000
Total	$ 1,408,700,000	$ 1,133,200,000	$ 928,500,000
Percent Difference from Scenario A	0%	-20%	-34%

Source: ECONorthwest

Note that Exhibit 6 only shows the City's share of capital costs for new development. Low-density, spread-out development has high costs of growth for the private-sector as well. Scenario A: Trends would require over 4,300 new lane miles, and almost 2,000 miles of water and sewer pipes. While the City would fund a portion of these costs ($1.4 billion shown in Exhibit 6), private developers would cover a larger portion of the costs, totaling $5.4 billion over 40 years. This is $1.3 billion more than the private-sector capital costs forecast for Scenario B and double the $2.6 billion forecast for Scenario C.

Exhibit 7 shows the annual operating costs to serve new development for each of the seven core City departments for each scenario. New development through the year 2050 is forecast to increase the City's annual operating expenses by 48% for Scenario A, compared to 38% in Scenario C. Overall, Scenario A would cost the City $57.6 million more per year for operations than Scenario C.

Exhibit 7. Oklahoma City operations cost of serving new development

Lines of Business	FY 2049-50 (2013$)		
	Scenario A	Scenario B	Scenario C
Fire Department	$ 47,706,796	$ 35,799,142	$ 22,215,511
General Services	$ 6,527,367	$ 5,713,102	$ 4,711,358
Parks and Recreation	$ 19,711,015	$ 19,380,438	$ 19,115,678
Police Department	$ 85,456,969	$ 74,933,487	$ 64,879,511
Public Transportation	$ 543,083	$ 14,584,219	$ 28,626,066
Public Works	$ 31,818,091	$ 25,953,344	$ 19,951,913
Utilities	$ 90,798,302	$ 72,120,805	$ 65,498,368
Total	**$ 282,561,624**	**$ 248,484,537**	**$ 224,998,405**

Source: ECONorthwest

Exhibit 8 combines both annual operating and capital costs for each department, showing the difference for Scenarios B and C from Scenario A. With the exception of Public Transportation, every department would have higher costs in Scenario A than Scenario C. That includes $29.6 million more per year for Fire, $28.7 million more per year for Utilities, $26.2 million more per year for Public Works, and $20.5 million more per year for Police.

Exhibit 8. Oklahoma City annual cost of serving new development (operations and capital costs): difference from Scenario A: Trends

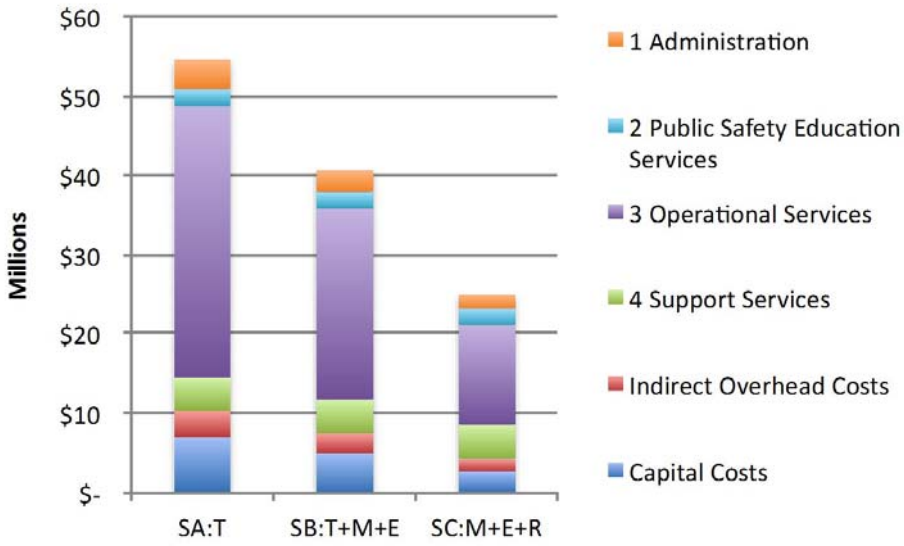
Department	Scenario A Annual Costs of Serving New Development	Difference from Scenario A	
		Scenario B	Scenario C
Fire	$ 54,600,000	$ (14,000,000)	$ (29,600,000)
Utilities	$ 103,600,000	$ (20,700,000)	$ (28,700,000)
Public Works	$ 62,100,000	$ (14,200,000)	$ (26,200,000)
Police	$ 85,400,000	$ (10,500,000)	$ (20,500,000)
Parks & Recreation	$ 40,200,000	$ (2,100,000)	$ (3,600,000)
General Services	$ 6,600,000	$ (900,000)	$ (1,900,000)
Public Transportation	$ 600,000	$ 14,300,000	$ 28,700,000
Total	$ 353,100,000	$ (48,100,000)	$ (81,800,000)

Source: ECONorthwest

5.1 Fire Department

Exhibit 9 shows the annual costs of growth for the Fire Department. The Trends Scenario would be the most costly, at $54.6 million per year, compared to only $25.0 million in the Market + Efficiency + Revitalization Scenario. In fact, the cost of growth in the Trends Scenario is more than double the cost of the growth in the Market + Efficiency + Revitalization Scenario.

Exhibit 9. Oklahoma City Fire Department costs of growth



Source: ECONorthwest

Operating costs

Annual operating costs for the Fire Department were $136.7 million in 2012-13. According to our forecast the costs of growth would increase these costs by $47.7 million in Scenario A, $35.8 million in Scenario B, and $22.2 million in Scenario C. The most costly line of business for the Fire Department is Operational Services, which also has the greatest difference in costs of

growth for the three scenarios. Exhibit 10 shows a breakdown of operating costs by line of business.

Exhibit 10. Oklahoma City Fire Department costs of growth, operating expenses

Lines of Business	FY 2049-50 (2013$) SA. T	SB. T+M+E	SC. M+E+R
1 Administration	$ 3,800,000	$ 2,800,000	$ 1,800,000
2 Public Safety Education Services	$ 2,100,000	$ 2,100,000	$ 2,100,000
3 Operational Services	$ 34,300,000	$ 24,100,000	$ 12,500,000
4 Support Services	$ 4,100,000	$ 4,200,000	$ 4,300,000
Total -- All Lines of Business	$ 44,300,000	$ 33,300,000	$ 20,600,000
Indirect Overhead Costs	$ 3,400,000	$ 2,500,000	$ 1,600,000
Total Annual Operating Costs	**$ 47,700,000**	**$ 35,800,000**	**$ 22,200,000**

Source: ECONorthwest

The primary cause for the difference in operating costs between the three scenarios is the need to develop new fire stations. Senior staff from the Planning Department and Fire Department reviewed maps of projected growth relative to existing fire stations. Based on this review, City staff determined where new fire stations would need to be built to provide adequate fire coverage with equal levels of service in terms of response time across all three scenarios. Other costs were forecast based on growth in call volumes for fire and emergency medical services as estimated by ECONorthwest.

Note that all three scenarios forecast a similar number of total calls citywide, but the location of these calls has a major impact on the ability of the fire department to provide service. When development occurs at the periphery of the City, far from existing fire stations, then the fire department cannot respond to calls in these areas in a timely fashion, requiring the need to build new stations. When development occurs closer in to existing urban areas that are already served by fire stations, then the Fire Department can provide adequate service with their existing stations and personnel.

Ultimately, the Fire Department anticipates that 21 new fire stations would be needed to serve the development forecast in Scenario A, 15 new fire stations for Scenario B, and 8 fire stations for Scenario C. Each new fire station requires a staff of 24 FTE, with personnel costs of $1,560,000 ($65,000 per FTE). These additional personnel costs explain most of the difference in operating costs between the three scenarios.

Capital costs

Capital costs are based on of the number of stations required to serve new development, and the equipment necessary for each of those stations. Exhibit 11 shows the total capital costs for each scenario. Each fire station was estimated to cost $3.5 million, with additional costs of $600,000 per fire engine (one engine for each station), $800,000 per ladder truck, and $85,000 per brush pumper. Urban fire stations would require a ladder truck, rural fire stations would require a brush pumper, and suburban fire stations would require a mixture of both. It is

assumed that all capital costs would be financed. The annual cost of debt service for the Fire Department in Scenario A would be more than double the cost for Scenario C.

Exhibit 11. Oklahoma City Fire Department costs of growth, capital expenses

	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Stations	$ 73,500,000	$ 52,500,000	$ 28,000,000
Engines	$ 12,600,000	$ 9,000,000	$ 4,800,000
Other vehicles	$ 7,900,000	$ 5,200,000	$ 3,200,000
Total cost	$ 94,000,000	$ 66,700,000	$ 36,000,000
with financing	$ 138,300,000	$ 98,200,000	$ 53,000,000
Annual cost of debt service	**$ 6,900,000**	**$ 4,900,000**	**$ 2,700,000**

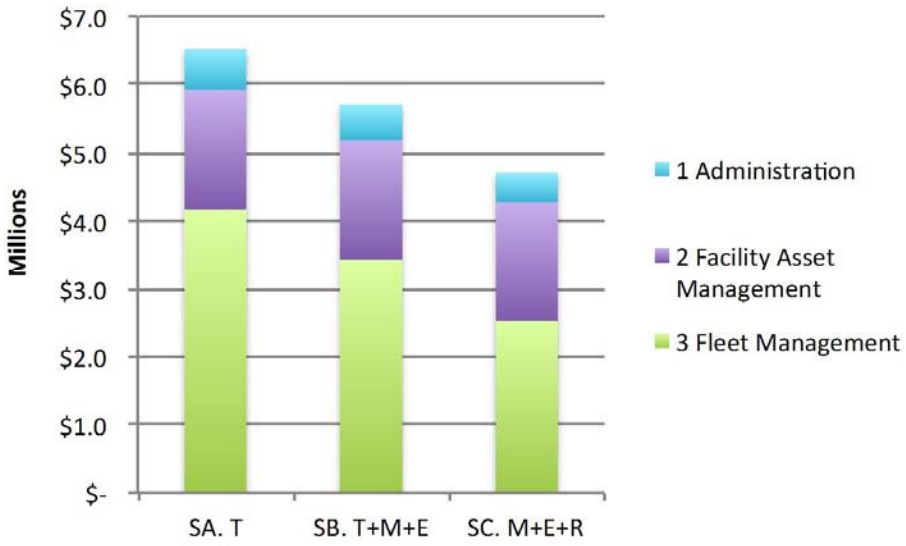
Source: ECONorthwest

5.2 General Services

General Services provides asset management and fleet management services. Our analysis assumed there would be no capital expenditures for General Services, so all of the costs of growth stem from operating expenditures.[3] Exhibit 12 shows the annual cost of growth for General Services for the three scenarios. The Trends Scenario would cost $6.5 million per year, 39% more than the Market + Efficiency + Revitalization Scenario.

[3] Some fleet purchases (like new fire department vehicles, and buses) are reflected in the capital cost estimates for their respective departments. The demand for other fleet vehicles were not forecast as part of this analysis, and therefore the capital costs of these vehicles were not included in the General Services budget.

Exhibit 12. Oklahoma City General Services costs of growth



Source: ECONorthwest

Operating costs

Annual operating costs for General Services were $14.6 million in 2012-13. Exhibit 13 shows the annual operating expenses for General Services to serve new growth in each scenario. The cost for Fleet Management varies significantly across scenarios, as more efficient and compact land use patterns result in fewer miles driven for the City's fleet, reducing maintenance costs. There is very little difference in the cost for Facility Asset Management, as these costs depend on total growth in population and employment, which is held constant across the three scenarios.

Exhibit 13. Oklahoma City General Services costs of growth, operating expenses

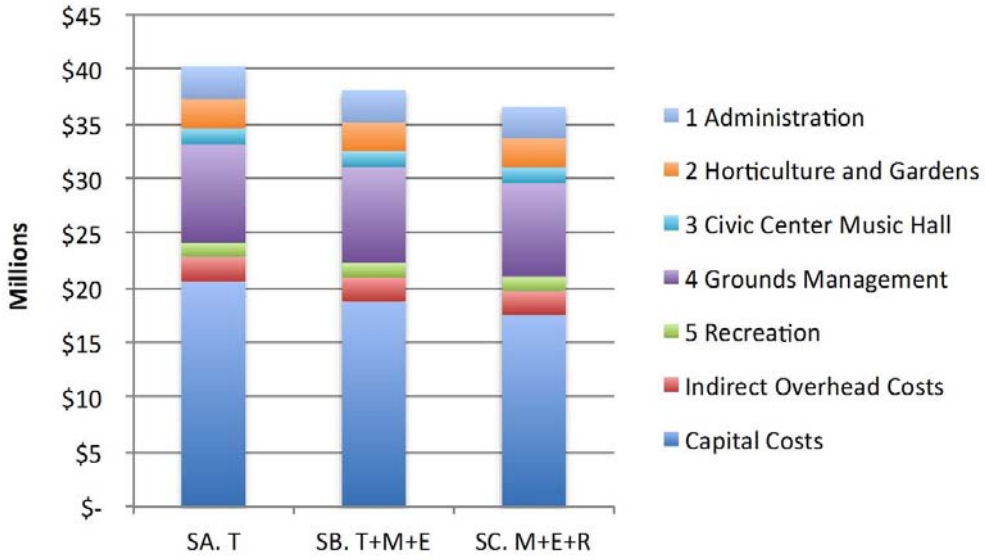
Lines of Business	SA. T	SB. T+M+E	SC. M+E+R
1 Administration	$ 603,617	$ 528,319	$ 435,682
2 Facility Asset Management	$ 1,759,621	$ 1,756,206	$ 1,755,726
3 Fleet Management	$ 4,164,130	$ 3,428,577	$ 2,519,949
Total - All Lines of Business	$ 6,527,367	$ 5,713,102	$ 4,711,358
Indirect Overhead Costs	$ -	$ -	$ -
Total Annual Operating Costs	**$ 6,527,367**	**$ 5,713,102**	**$ 4,711,358**

Source: ECONorthwest

5.3 Parks and Recreation

Exhibit 14 shows the annual costs of growth for the Parks and Recreation Department. The Trends Scenario would be the most costly scenario, although the difference in costs between the three scenarios is relatively small. Annual costs for the Trends Scenario would be only 10% higher than in the Market + Efficiency + Revitalization Scenario. The bulk of the difference in costs can be attributed to capital costs.

Exhibit 14. Oklahoma City Parks and Recreation costs of growth



Source: ECONorthwest

Operating costs

Annual operating costs for the Parks & Recreation Department were $26.6 million in FY 2012-13. Exhibit 15 shows the forecast annual operating expenses to serve new growth in each scenario. The costs for most lines of business are constant across all scenarios, as they are based on general growth in population and employment, which is held constant in all three scenarios. Costs for Grounds Management, however, varies across scenarios, as the Trends Scenario calls for more park acres, and the Market + Efficiency + Revitalization Scenario calls for less. This difference in park acres across the scenarios is driven by the City's level of service standard, which is based on distance to parks, rather than total acres. Additionally, a portion of these costs can be attributed to travel time for Parks staff. In scenarios with less efficient land use patterns, parks would be more dispersed and the drive time to travel from one park to another would increase, having an impact on the costs for Grounds Management. Overall, these differences in operating costs are relatively small. The projected Parks and Recreation operating expenses for new development would range from $19.1 million in Scenario C, to $19.7 million in Scenario A.

Exhibit 15. Oklahoma City Parks & Recreation costs of growth, operating expenses

Lines of Business	FY 2049-50 (2013$) SA. T	SB. T+M+E	SC. M+E+R
1 Administration	$ 3,000,000	$ 3,000,000	$ 2,900,000
2 Horticulture and Gardens	$ 2,700,000	$ 2,700,000	$ 2,700,000
3 Civic Center Music Hall	$ 1,400,000	$ 1,400,000	$ 1,400,000
4 Grounds Management	$ 9,000,000	$ 8,800,000	$ 8,600,000
5 Recreation	$ 1,300,000	$ 1,300,000	$ 1,300,000
Total - All Lines of Business	$ 17,400,000	$ 17,100,000	$ 16,900,000
Indirect Overhead Costs	$ 2,300,000	$ 2,200,000	$ 2,200,000
Total Annual Operating Costs	**$ 19,700,000**	**$ 19,400,000**	**$ 19,100,000**

Source: ECONorthwest

Capital costs

Exhibit 16 shows capital cost estimates for Parks and Recreation to serve new growth. Scenario A would cost $60.8 million more for capital projects than Scenario C, resulting in an annual debt service cost of $17.5 million per year. All scenarios assume ten new regional parks would be needed, at an average size of 120 acres, and a cost of $110,000 per acre.[4] Capital costs for local parks and trails vary across scenarios. Demand for local parks was based on the Parks Department's stated level of service in its recently adopted master plan: all residents in an urban service area have walking access to a park within one mile or less. Thus, more dispersed development patterns require more parks. For trails, we based the cost estimate for the Trends Scenario on the Parks Master Plan estimate of miles of trail needed to serve new development, and scaled this amount down for each of the other scenarios based on how compact the development pattern is.[5] Thus, more compact development patterns require fewer miles of trail. Local parks were assumed to cost $110,000 per acre, the same as regional parks, and trails were assumed to cost $700,000 per mile.[6]

Exhibit 16. Oklahoma City Parks & Recreation costs of growth, capital expenses

	Total Costs 2014-2050 (2013$) SA. T	SB. T+M+E	SC. M+E+R
Local Parks	$ 77,000,000	$ 57,200,000	$ 46,200,000
Regional Parks	$ 132,000,000	$ 132,000,000	$ 132,000,000
Trails	$ 70,000,000	$ 65,100,000	$ 59,500,000
Total cost	$ 279,000,000	$ 254,300,000	$ 237,700,000
with financing	$ 410,600,000	$ 374,200,000	$ 349,800,000
Annual cost of debt service	**$ 20,500,000**	**$ 18,700,000**	**$ 17,500,000**

[4] Oklahoma City Parks Master Plan, August 2013.

[5] For the purposes of this calculation citywide VMT was used as a proxy for how compact the City is.

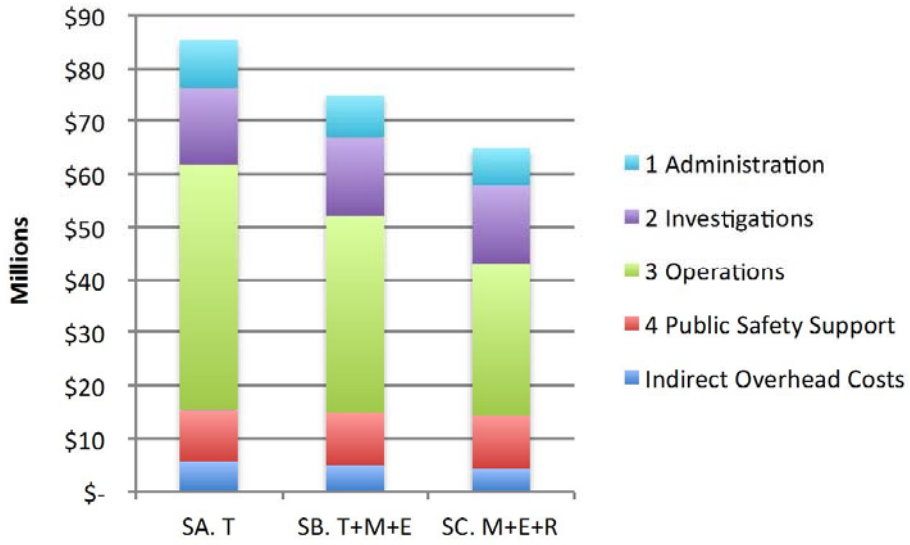
[6] Oklahoma City Parks Master Plan, August 2013.

Source: ECONorthwest

5.4 Police Department

Exhibit 17 shows the total costs of growth for the Police Department. The Trends Scenario would be the most costly at $85.4 million per year. The Trends + Market + Efficiency Scenario would be the next most costly at $74.9 million per year, and the Market + Efficiency + Revitalization Scenario would be the least costly at $64.9 million per year. Scenario A would cost 32% more than Scenario C. No capital costs were identified for the Police Department as necessary to serve new growth, as existing police stations are adequate. Additionally, even if a new station were added, the cost would be the same in each scenario, since police are not dispatched from their stations. Thus, the costs of growth shown in Exhibit 17 are entirely based on annual operating expenses.

Exhibit 17. Oklahoma City Police Department costs of growth



Source: ECONorthwest

Operating costs

Exhibit 18 shows the costs of growth for the Police Department's annual operating expenses.

Exhibit 18. Oklahoma City Police Department costs of growth, operating expenses

Lines of Business	FY 2049-50 (2013$) SA. T	SB. T+M+E	SC. M+E+R
1 Administration	$ 9,100,000	$ 8,000,000	$ 6,900,000
2 Investigations	$ 14,500,000	$ 14,700,000	$ 14,900,000
3 Operations	$ 46,500,000	$ 37,400,000	$ 28,800,000
4 Public Safety Support	$ 9,700,000	$ 9,900,000	$ 10,000,000
Total - All Lines of Business	$ 79,800,000	$ 70,000,000	$ 60,600,000
Indirect Overhead Costs	$ 5,600,000	$ 4,900,000	$ 4,300,000
Total Annual Operating Costs	**$ 85,500,000**	**$ 74,900,000**	**$ 64,900,000**

Source: ECONorthwest

Note that the Investigations and Public Safety Support are two lines of business within the Police Department that have relatively little difference in costs between the three scenarios. For these lines of business, Scenario A is actually slightly less expensive than Scenarios B and C. This is because these cost estimates were based on the total calls for police service citywide. Although each scenario has the same population, employment, and income at the aggregate level, there were subtle differences in the amount of police calls forecast in each scenario, with the more compact scenarios forecast to experience slightly more calls for service.

We used regression analysis to forecast police and fire call volumes for 2050 based on historical data for 2010 call volumes. Regression techniques make it possible to estimate future demand for services while accounting for factors that may influence demand such as the location, average income, land use mix, or population density of the area where the call originated. The inclusion of such measures helps to estimate how future development and demographic shifts may affect the demand for emergency services across the city. The regression analysis yielded the following conclusions:

- Density does not have a statistically significant correlation with calls for police service. Thus, the fact that Scenario C includes more dense development patterns than Scenario A does not cause any difference in the expected calls for police service in these scenarios. This was a particularly interesting result, as one common hypothesis is that higher-density neighborhoods are more prone to criminal activity. Our analysis indicates that higher-density, in and of itself, does not lead to increased criminal activity. However, if higher-density neighborhoods also happen to be lower-income neighborhoods, then the correlation between income and call volumes could explain higher crime rates in those areas.
- Population and employment are the main drivers of call volume. Our analysis holds population and employment constant across the three scenarios, which means that total calls for police service should be expected to be very similar across the three scenarios.

- Personal income is negatively correlated with calls for service. This means that higher incomes correspond with fewer calls for police service. Although our analysis attempts to hold aggregate incomes constant across the three scenarios, the incomes levels of different polygrid cells differ, which can contribute to some slight differences in call volumes across the three scenarios.
- Land use mix is positively correlated with calls for service. This means that areas with a higher mix of uses correspond with more calls for police service. While this correlation has a relatively small impact on overall call volumes, it is the primary reason why Scenario C (with a greater mix of uses) is forecast to have higher call volumes than Scenario A (with a more traditional segregation of different land uses).

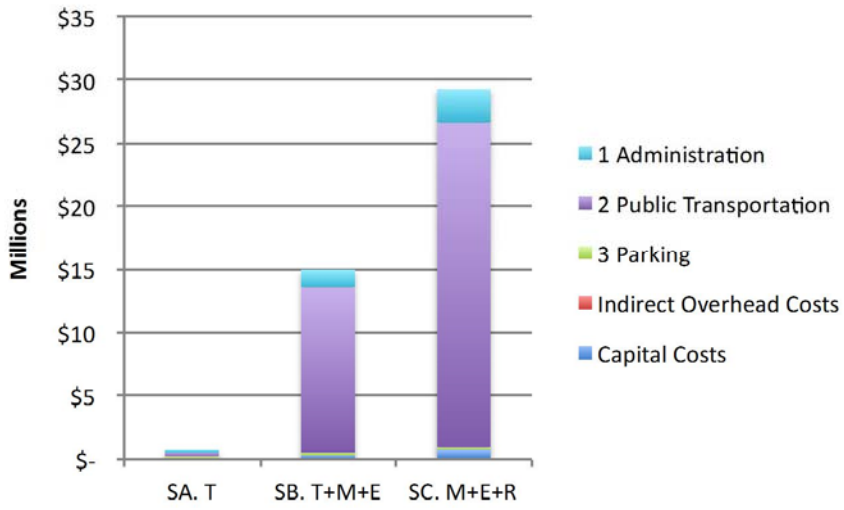
Operations is by far the most costly line of business within the Police Department. Our analysis forecasts significant differences in costs for Operations across the three scenarios. The cost for Operations depends on both the number of calls for service and how spread out these calls are. Obviously more calls for service will translate into the demand for more police officers to respond to these calls. At the same time, having calls that are more spread out, means that each call is harder to get to in a timely fashion, which also increases the demand for service. Even though Scenario A is forecast to have the fewest calls for service, this difference is relatively small, compared to how dispersed these calls are, and how long it would take the Police Department to respond to each call.[7] This results in the annual operating costs for Operations being significantly higher in Scenario A, compared to Scenarios B and C.

5.5 Public Transportation

Exhibit 19 shows the annual costs of growth for the Public Transportation and Parking Department. The costs of growth in Scenario A are almost non-existent, as the assumption was made that the existing system (including improvements to headways made this year) would be unchanged for Scenario A. (The reasons for this assumption are described in the Operating Costs section below). The annual costs of growth are estimated to be $600,000 in Scenario A, $14.9 million in Scenario B, and $29.3 million in Scenario C. While there are capital costs for new buses, the vast majority of the difference in costs between the scenarios is driven by operating costs for Public Transportation, and the associated Administration costs.

[7] For the purposes of this calculation citywide VMT was used as a proxy for how compact the City is.

Exhibit 19. Oklahoma City Public Transportation and Parking costs of growth



Source: ECONorthwest

Operating costs

Operating costs for the Parking line of business are expected to be the same in each scenario, with the cost of growth tied to the increase in population and employment. Public Transportation, and associated Administration costs vary dramatically across scenarios. These cost estimates are based on the assumption that the City would maintain the same bus service area for each scenario, as a way of holding level of service constant across the three scenarios. Even though this assumption was made, the ET transportation model still predicted substantially higher transit ridership in Scenarios B and C than in Scenario A. Therefore, although the bus service area would be the same for all three scenarios, it was assumed that the frequency of bus service would need to increase in Scenarios B and C, to reflect additional demand for bus service in the urban core. Increasing the frequency of bus service results in an increase in the total amount of "revenue miles" for bus service. Our analysis assumes the average headway (i.e., time between buses) is 30 minutes in Scenario A, 15 minutes in Scenario B, and 10 minutes in Scenario C. This results in the total cost of the Public Transportation line of service essentially doubling from Scenario A to B, and essentially tripling from Scenario A to C. The differences appear even larger in Exhibit 20, as the table shows only the cost of growth, as opposed to the total budget amount. In other words, the base year, 2012-13 budget for the Public Transportation line of business was $13.4 million. This cost, to serve the existing population, is not shown in Exhibit 20.

Exhibit 20. Oklahoma City Public Transportation costs of growth, operating expenses

Lines of Business	FY 2049-50 (2013$) SA. T	SB. T+M+E	SC. M+E+R
1 Administration	$ 100,000	$ 1,400,000	$ 2,700,000
2 Public Transportation	$ 300,000	$ 13,000,000	$ 25,700,000
3 Parking	$ 200,000	$ 200,000	$ 200,000
Total - All Lines of Business	$ 500,000	$ 14,600,000	$ 28,600,000
Indirect Overhead Costs	$ -	$ -	$ -
Total Annual Operating Costs	**$ 500,000**	**$ 14,600,000**	**$ 28,600,000**

Source: ECONorthwest

Capital costs

Capital costs for the Public Transportation and Parking Department are limited to the number of buses needed to accommodate the decreased headways in Scenarios B and C. The City currently operates 55 buses and 24 paratransit vans.[8] The number of buses would need to double for Scenario B, and triple for Scenario C. Staff from the Public Transportation and Parking Department estimated these costs would be $400,000 for each new bus, and $65,000 for each new paratransit bus. However, the majority of the capital costs for new buses are typically covered by the federal government, with the City only paying 20% of the total cost. Therefore the figures shown in Exhibit 21 reflect just the City's portion of the costs. The full capital costs, including both the City and Federal shares would be $0 in Scenario A, $23.4 million in Scenario B, and $46.8 million in Scenario C, with annual debt service costs equivalent to $0, $1.7 million, and $3.4 million respectively.

Exhibit 21. Oklahoma City Public Transportation costs of growth, capital expenses

	Total Costs 2014-2050 (2013$) SA. T	SB. T+M+E	SC. M+E+R
Buses	$ -	$ 4,700,000	$ 9,400,000
Total	$ -	$ 4,700,000	$ 9,400,000
with financing	$ -	$ 6,900,000	$ 13,800,000
Annual cost of debt service	**$ -**	**$ 300,000**	**$ 700,000**

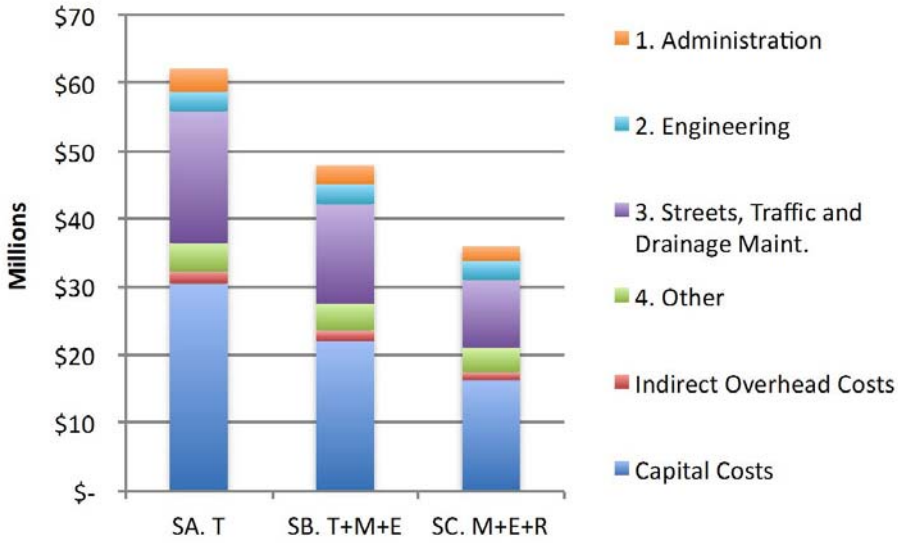
Source: ECONorthwest

[8] Source: Email communication from Jason Ferbrache, Parks Director, April 3, 2014.

5.6 Public Works

The Public Works Department includes a variety of services, with Streets, Traffic and Drainage Maintenance as the largest lines of business. Exhibit 22 shows the annual costs of growth for Public Works. The costs of Scenario A are 73% higher than the costs in Scenario C. The total annual costs of growth are $62.1 million in Scenario A, $47.9 million in Scenario B, and $35.9 million in Scenario C. Roughly half of these costs are for capital projects, and the other half for operations.[9]

Exhibit 22. Oklahoma City Public Works costs of growth



Source: ECONorthwest

Operating costs

Several lines of business in Public Works are the same for all scenarios: Engineering, Field Services, and the Oklahoma River Corridor. These services are tied to general growth in population and employment. Other lines of business have significant differences, generally based on the density of new development. The more spread out development is, the more streets will need to built to serve that development. That means more pavement will need to be maintained, and more miles will be driven, further increasing the demand for street maintenance.

Overall, we find that Scenario A will require 4,327 new lane miles to built, compared to 3,068 lane miles in Scenario B, and 1,906 lane miles in Scenario C.[10] Total Vehicle Miles Traveled (VMT) are forecast to be 31.4 million in Scenario A, 29.3 million in Scenario B, and 26.7 million

[9] Note that the "other" category includes the Traffic Management, Storm Water Quality, Oklahoma River Corridor, and Field Services lines of business.

[10] Source: Envision Tomorrow version 3.2.2., scenarios dated October 23, 2013.

in Scenario C.[11] The combination of increased lane miles and increased VMT makes Scenario A the mostly costly scenario, and Scenario C the least costly scenario. Annual operating costs of growth are shown in Exhibit 23.

Exhibit 23. Oklahoma City Public Works costs of growth, operating expenses

	FY 2049-50 (2013$)		
Lines of Business	SA. T	SB. T+M+E	SC. M+E+R
1 Administration	$ 3,400,000	$ 2,800,000	$ 2,100,000
2 Engineering	$ 3,000,000	$ 3,000,000	$ 3,000,000
3 Field Services	$ 1,800,000	$ 1,800,000	$ 1,800,000
4 Oklahoma River Corridor	$ 600,000	$ 600,000	$ 600,000
5 Storm Water Quality	$ 1,300,000	$ 1,100,000	$ 900,000
6 Streets, Traffic and Drainage Maint.	$ 19,300,000	$ 14,700,000	$ 9,900,000
7 Traffic Management	$ 600,000	$ 500,000	$ 300,000
Total All Lines of Business	$ 30,000,000	$ 24,500,000	$ 18,800,000
Indirect Overhead Costs	$ 1,800,000	$ 1,500,000	$ 1,100,000
Total Annual Operating Costs	**$ 31,800,000**	**$ 26,000,000**	**$ 20,000,000**

Source: ECONorthwest

Capital costs

Exhibit 24 shows the City's capital costs for Public Works for each scenario. Scenario A is expected to cost nearly double Scenario C. City Planning Staff forecast the lane miles of publicly-built streets that would be required in each scenario[12]. The analysis identified the need for 412 lane miles in Scenario A, 297 lane miles in Scenario B, and 221 lane miles in Scenario C. At an estimated cost of $1,000,000 per lane mile, we arrive at the cost estimates shown in Exhibit 24.[13]

[11] Source: Envision Tomorrow City Travel Model.

[12] Estimation of new publicly (City) built lane miles, as a subset of all new lanes miles, was based on these assumptions: 1) All arterial widening would constitute the city share of new road construction. 2) For ease of estimating and fairness between scenarios it was assumed that all "currently or newly urbanized" arterials of two lanes would be widened by two lanes, but larger arterials would not be widened. This assumption would not be appropriate to apply to at a small scale, but it was expected to balance out well across the whole city and between scenarios. 3) Current development and projected new development that would require full utility service were used to define "currently or newly urbanized" areas.

[13] Source: Email communication with Leigh Demers, GIS Analyst, Oklahoma City Public Works Department, August 21, 2013.

Exhibit 24. Oklahoma City Public Works costs of growth, capital expenses

	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Streets	$ 411,900,000	$ 297,200,000	$ 220,800,000
Total	$ 411,900,000	$ 297,200,000	$ 220,800,000
with financing	$ 606,200,000	$ 437,400,000	$ 324,900,000
Annual cost of debt service	**$ 30,300,000**	**$ 21,900,000**	**$ 16,200,000**

Source: ECONorthwest

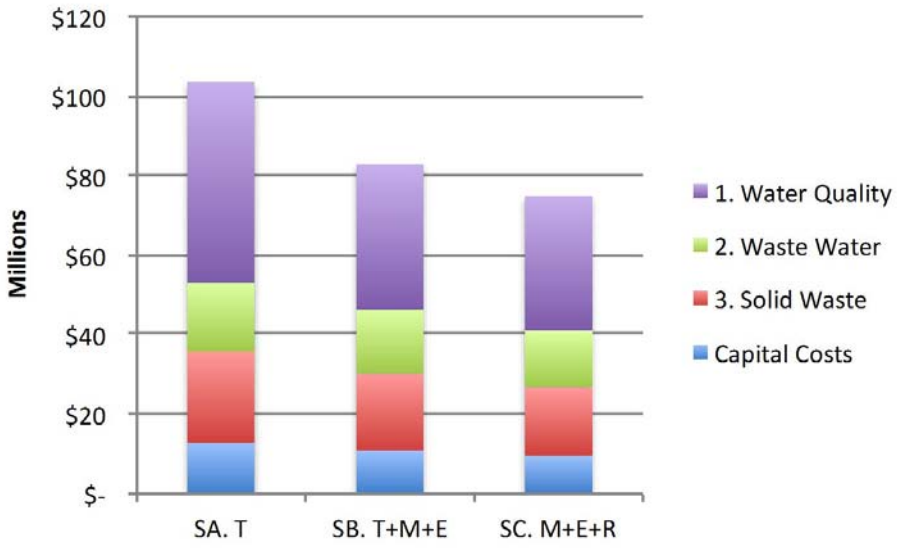
The costs shown in Exhibit 24, however, are only a fraction of the full costs for new roads. The majority of roads needed to serve new development are paid for directly by private developers. These small neighborhood streets account for roughly 90% of the total lane miles needed in each scenario. Although the focus of this report is the City's costs of growth, these private costs are so large that they warrant inclusion in this report. These streets are estimated to be less costly per lane mile ($650,000) than larger, publicly-built streets.[14] Each scenario, however, would require hundreds of miles of privately-built roads. The total private cost for new streets to serve development is estimated to be $2.96 billion in Scenario A, $2.10 billion in Scenario B, and $1.32 billion in Scenario C. Those costs would be even higher, if developers financed these costs, incurring interest charges. All told, the expected difference between Scenarios A and C for the private costs of streets is $1.64 billion, highlighting the financial impacts that land use patterns can have on the private-sector, in addition to the public-sector.

[14] Source: Email communication with Leigh Demers, GIS Analyst, Oklahoma City Public Works Department, August 21, 2013.

5.7 Utilities

The last department in our analysis of core City services is Utilities, which includes Water, Waste Water, and Solid Waste. Exhibit 25 shows the annual costs of growth for Utilities. These costs are estimated to be $103.6 million in Scenario A, $82.9 million in Scenario B, and $74.9 million in Scenario C. It should be noted that operating and capital costs for Scenario A would be higher, but for the fact that roughly six percent fewer people use the City water and sewer systems in Scenario A than in Scenarios B or C. These six percent of Scenario A residents would instead live in rural areas and use wells and septic systems. The result is a transfer of costs from the public to the private sector.

Exhibit 25. Oklahoma City Utilities costs of growth



Source: ECONorthwest

Operating costs

Exhibit 26 shows the costs of growth for Utilities for operating expenses. All lines of business within Utilities are most costly in Scenario A, and least costly in Scenario C. The difference in operating costs is most substantial for Water Quality, which is 50% higher in Scenario A than Scenario C. This difference is driven largely by the amount of water consumption. More compact, higher-density development results in less water consumption, in large part due to a smaller amount of landscaped area that requires watering.

Operating costs for Waste Water and Solid Waste also differ across scenarios, but to a lesser extent, as much of the difference in water consumption between the three scenarios is due to outdoor use (i.e., watering lawns), which does not drain into the sanitary sewer system. The difference in cost for Waste Water is driven by maintenance costs for pipes and lift stations, as well as the amount of waste water generated. More compact development patterns translate into fewer miles of pipe and fewer lift stations needed to serve the development, reducing waste water maintenance and operating costs.

For Solid Waste, the difference stems from greater efficiencies of garbage collection in more compact neighborhoods. When homes are few and far between, in rural areas, garbage trucks need to travel more miles to collect the same amount of garbage. This is reflected in the City's contract with waste management companies. The City's cost of service is $9.02 per urban household and $17.38 for every rural household.[15]

Exhibit 26. Oklahoma City Utilities costs of growth, operating expenses

	FY 2049-50 (2013$)		
Lines of Business	SA. T	SB. T+M+E	SC. M+E+R
1. Water Quality OCWUT	$ 50,800,000	$ 36,800,000	$ 34,000,000
2. Waste Water OCWUT	$ 17,200,000	$ 16,000,000	$ 14,300,000
3. Solid Waste OCEAT	$ 22,900,000	$ 19,300,000	$ 17,200,000
Total - All Lines of Business	$ 90,800,000	$ 72,100,000	$ 65,500,000
Indirect Overhead Costs	$ -	$ -	$ -
Total Annual Operating Costs	**$ 90,800,000**	**$ 72,100,000**	**$ 65,500,000**

Source: ECONorthwest

Capital costs

The City's Utilities staff provided estimates of the specific capital projects that would be required to serve new development shown in each of the three scenarios. These estimates included water mains, sewer mains, booster stations, and lift stations. The public share of these costs is shown in Exhibit 27. The public costs for water infrastructure are expected to be relatively similar in all three scenarios; however, the public costs for sewer infrastructure are substantially higher in Scenario A, than in Scenarios B and C.

Exhibit 27. Oklahoma City Utilities costs of growth, capital expenses

	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Water	$ 59,600,000	$ 58,900,000	$ 56,700,000
Sewer	$ 112,700,000	$ 88,200,000	$ 70,400,000
Solid Waste	$ -	$ -	$ -
Total costs	$ 172,300,000	$ 147,100,000	$ 127,100,000
with financing	$ 253,600,000	$ 216,500,000	$ 187,000,000
Annual cost of debt service	**$ 12,700,000**	**$ 10,800,000**	**$ 9,400,000**

Source: ECONorthwest

Note that the costs shown in Exhibit 27 are only the City's share of the infrastructure costs. Like streets in the Public Works Department, a large portion of the costs for Water and Sewer

[15] Source: Utilities Department "Fees Paid by Oklahoma City to Waste Management of Oklahoma for Urban vs. Rural Collection, Direct Costs Only" spreadsheet for 2014.

infrastructure are funded directly by private developers. These developers are generally responsible for all water pipes 12" in diameter or less, and all sewer pipes 8" or less. For pipes with larger diameters, the costs are typically split proportionately, with the public sector paying for the portion of the pipe that exceeds the 8" or 12" developer responsibility.

The privately-funded portion of Utilities infrastructure would amount to $1.1 billion in Scenario A, $920.2 million in Scenario B, and $628.6 million in Scenario C. That results in a difference of $474.6 million between the Trends Scenario and the more compact Market + Efficiency + Revitalization Scenario. Although the focus of this report is on the public costs of growth for the City, the analysis on Utilities infrastructure highlights the financial impacts that development patterns could have on the private-sector as well.

6 Revenue considerations

The emphasis of this study is on the costs of growth, which were detailed in the previous section. Nonetheless, it is natural to wonder what impacts development patterns may have on the City's revenues. Since sales tax is the City's primary revenue source, it is naturally the focus of attention. For the City to experience a change in sales tax revenue, residents of Oklahoma City or visitors to the City would need to change their spending patterns. Both of these impacts are possible, though hard to quantify. Although we did not conduct a quantitative analysis of these revenue impacts, we have identified several ways that revenues might be impacted by different development patterns. We describe these potential impacts here.

Spending patterns refers to both the amount of money spent, and what that money is spent on. The potential impact of each scenario affect local spending patterns is limited, as each scenario in our analysis assumes the same amount and composition of growth. In other words, under each scenario Oklahoma City would be home to the same residents, working the same jobs, earning the same incomes. With citywide income held constant, it stands to reason that local expenditures (in the aggregate) would also be held constant. However, some small changes to local spending patterns may occur.

One potential way land use patterns could affect City revenues is if local residents change what they spend their money on. Take transportation for example. In a more compact development pattern, individuals are more likely to be able to travel by bus, bike, or foot. When alternative transportation options are available, and neighborhoods offer plenty of choices to work, shop, and play; some individuals may choose to drive less, reducing gasoline and maintenance costs. They may even choose to reduce the number of cars owned by their household.

This reduction in costs (gas, maintenance, parking charges, car payments, insurance, etc.) could translate into less government revenue from gas taxes, parking fees, traffic fines, automobile-related sales taxes, etc. But it also means that an individual would have additional funds to spend on other things. This could translate into more tax revenue from other sources. If the money is spent on other goods and services, then this could increase local sales tax revenue.

There is no guarantee, however, that a reduction in spending on transportation would lead to a direct increase in retail spending. For example, the money could be spent on housing, particularly if this individual needs to afford more expensive land in a desirable, amenity-rich neighborhood conducive to a car-free lifestyle. In this case, property tax revenues would benefit, instead of sales tax revenue. Similarly, the money could be spent on travel, in which case the spending would occur outside of the City, resulting in no increase to local tax revenues.

Another possible revenue impact comes from visitors to Oklahoma City. Certain development patterns may make neighborhoods more or less attractive to visitors. For example, the downtown core in the Trends Scenario is forecast to experience continued decline and abandonment. These vacant buildings are a magnet for crime, and the low population density makes it difficult to support shops and restaurants downtown. In the Market + Efficiency +

Revitalization Scenario, on the other hand, the downtown and surrounding area experience a rebirth. Instead of urban decay, downtown is envisioned as the center of dense, mixed-use development. This higher density and mix of uses is conducive to new shops and restaurants downtown. It is not hard to imagine that downtown Oklahoma City in the Market + Efficiency + Revitalization Scenario is a more attractive place to visit than the downtown of the Trends Scenario. If this is true, then Oklahoma City could find itself attracting more out-of-town guests who spend money at restaurants, shops, and hotels, pumping money into the economy and increasing the City's sales tax revenue.

A higher density, mixed-use environment could also help reduce "leakage" from local residents. Leakage occurs when residents of an area go outside of that area to make purchases. By providing a more attractive retail environment in Oklahoma City, some residents may choose to do more of their shopping in town, rather than elsewhere in the region, which would also increase local sales tax revenue. Another aspect of more compact development patterns that could potential help reduce leakage is the fact that more residents would live closer to the center of the City and further from the edge. Since households make a substantial portion of their purchases close to their homes, having these households located further from the edge of the City makes it more likely that residents would spend more in Oklahoma City, and less in neighboring communities.

While it is easy to see what changes in spending might happen, it is hard to estimate exactly what would happen, and how these changes in spending patterns would ripple through the economy, impacting the City's tax revenues. Additional economic analysis would be needed to help the City better understand these potential revenue impacts. All things considered, we estimate the potential revenue impacts would be of a much smaller order of magnitude than the cost impacts, due to the fact that we hold population, employment, and income constant in all three scenarios.

7 Implications

Continuation of recent development patterns would be costly for the City.

Development patterns have the ability to significantly impact City costs. The three scenarios we evaluated present a range of development choices: from a low-density pattern characterized by large areas of homogenous uses in Scenario A: Trends, to the medium-density pattern with integrated land uses found in Scenario C: Market + Efficiency + Revitalization. Almost across the board, we found the costs of the City's core services to be more expensive in the lower-density, less integrated scenario.

The results are significant. Given the anticipated amount of growth by the year 2050, Scenario A would cost the City $81.8 million more per year than Scenario C. With the exception of Public Transportation, every department in the City's core services would have higher costs in Scenario A than Scenario C. That includes $29.6 million more per year for Fire, $28.7 million more per year for Utilities, $26.2 million more per year for Public Works, and $20.5 million more per year for Police.

Low density, less integrated development is also costly for private developers.

The City is not the only entity that will bear the costs of inefficient land use patterns. Private developers have a huge financial stake in how the City grows. Although the City maintains almost all the streets, sewer pipes, and water mains in the City, private developers actually pay to build many of these facilities themselves. Ultimately these impacts are passed on to homebuyers, as developers increase housing prices to compensate for the higher development costs.

A consequence of a sprawling, low-density, inefficient development pattern is the need to build more infrastructure. We found that Scenario A: Trends would require over 4,300 new lane miles, and almost 2,000 miles of water and sewer pipes. While the City would fund a portion of these costs, private developers would have to cover a large portion of the costs, totaling $3.6 billion. The costs of infrastructure for private developers in Scenario A would be $1.9 billion more than in Scenario C: Market + Efficiency + Revitalization.

The City should engage private property owners and developers to discuss and understand these impacts, and make policy choices that help the public- and private-sectors save money, through more efficient use of infrastructure.

Assumptions don't always match reality.

A core principle of this analysis was to hold constant the amount and composition of growth across all three scenarios. This was important to isolate the fiscal impacts of development patterns, but it may not be realistic. Certain development patterns may be more attractive to different people. What if the development pattern in Scenario C: Market + Efficiency + Revitalization primarily attracts, highly-educated, young professionals to Oklahoma City? Or what if the development pattern in Scenario A: Trends tends to attracts baby boomers and

retirees? In these cases, the amount and composition of growth would be changing along with the development patterns.

Changes to the amount and composition of growth are likely to have far stronger fiscal impacts for the City. Older residents are likely to generate more calls for emergency medical service than younger residents. More educated residents are likely to generate fewer calls for police than less educated residents. Higher-income residents are likely to generate more sales tax revenue than lower-income residents. And more residents are naturally going to require more infrastructure than fewer residents.

Oklahoma City is part of an international market, competing with other places around the globe to attract and retain residents and businesses. Depending on the type of city that Oklahoma City becomes, it may attract different people to live, work, and shop. The City should consider who will be attracted to different development patterns, and what implications that will have for the City's costs and revenues.

Another key principle in this analysis was to hold the level of service constant across all scenarios in order to isolate fiscal impact of development patterns. However this too may be out of sync with reality. Different development patterns may come with tradeoffs. Residents of low-density, rural neighborhoods may be willing to accept gravel roads with no sidewalks, which would reduce the City's costs of service. Residents of high-density, urban neighborhoods may require expanded transit service or other urban amenities, increasing the costs of growth. If certain development patterns necessitate a change in the level of service, then it could have significant impacts on the costs of growth. For example, it may be that if the city implemented a development pattern similar to Scenario C, citizens would choose to allocate the $82 million in annual savings to urban amenities such as parks, plazas, rail transit, etc. Thus, City expenditures would be at the same level as Scenario A, but they would be spent on different things. In the end it comes down to a choice of what kind of city residents want to live in.

Change is needed to avert high costs of growth.

The most costly scenario in our analysis was Scenario A: Trends, which was based on a continuation of Oklahoma City's historical development patterns. With relatively affordable land, and few topographic constraints, Oklahoma City has historically seen development spread out in a casual, spontaneous manner. These past development patterns did not arise out of a desire to use land efficiently, or to provide City services to these growing areas in a cost effective manner.

But this pattern of development has put a burden on the City budget, and if these trends continue, the costs of growth will continue to rise. Thousands of miles of new roads and pipes will need to be built in the coming years, if development patterns don't change, costing the City hundreds of millions of dollars. And as the City expands further and further into rural areas, it becomes harder for the City to provide basic services like police and fire, requiring the City to hire more police officers and build more fire stations to provide adequate response times.

To avert these high costs of growth, a change is needed. The City needs to be thoughtful and strategic about where development happens, recognizing some areas are more affordable to serve than others and some building types lend themselves to more efficient services and use of land. This does not mean that everyone in Oklahoma City needs to move into shoebox-sized apartments in tall towers downtown. These changes can be much more subtle.

Even the densest scenario included in our analysis, isn't all that dense. In Scenario C: Market + Efficiency + Revitalization, we still assumed that 67% of housing units in Oklahoma City would be single-family homes (compared to 68% today), and that the average utility-served residential density would increase from 5.5 units per acre currently to 6.2 units per acre in 2050.[16] This density is about the same density as the Mesta Park neighborhood today, and is not a dramatic departure from recent trends in Oklahoma City. In fact, the City's recent Housing Market Preference and Demand Study found that residents of Oklahoma City desired more compact housing types.

Plan**okc** is an opportunity for residents of Oklahoma City to make a choice about what type of City they want to live in, and what type of City they want to leave for their children. This choice will be influenced by many factors: length of the daily commute, impact on the environment, availability of amenities, and access to places to live, work, and shop among others. But one factor that should be included in the decision is the fiscal impact to the City. What is the cost of growth? This report provides some answers to this question. It is up to the residents of the city to decide how important these fiscal impacts are, as they plan for the future of their city.

[16] Current and future units per acre calculations are constructed from current parcel data and Envision Tomorrow model outputs. All units within current or expected areas of water and sewer service were included in the calculation and normalized by only the area of parcels or projected development with residential units within those same utility-served areas. This method intentionally excludes non-residential land uses and those very low density residences that are more rural in nature and make up an outlier in the general description of residential density.

Appendices

- Appendix A. Detailed Tables
- Appendix B. Regression Results

Appendix A: Detailed Tables

Code	Variable	Growth (FY 2012-13 to FY 2049-50) Trends	Market	Efficiency
P	Population	148.90%	148.78%	148.88%
PE	Pop & Emp	144.80%	144.71%	144.69%
SW	Solid Waste	162.02%	152.48%	147.37%
VHT	Vehicle Hours Travelled	137.40%	134.58%	131.75%
VMT	Vehicle Miles Traveled	144.64%	136.51%	126.46%
WWG	Waste H2O Genereration	139.13%	138.39%	138.57%
WC	H2O Consumption	196.23%	166.46%	162.79%
LM	Lane Miles	150.89%	136.25%	122.63%
X	VMT / Lane Mile	100.39%	104.16%	106.22%
SM	Street Maintenance - Hybrid	151.19%	139.09%	126.44%
ISA	Impervious Surface Area	135.54%	126.73%	121.15%
LIFT	Sewer Lift Stations	110.47%	104.65%	102.33%
FIRE	Fire + new personnel costs	132.21%	123.00%	112.27%
CSPDT	Calls for Service PD Total	140.46%	141.10%	141.63%
CSFDT	Calls for Service FD Total	142.28%	143.30%	143.76%
CSRTPD2	Calls/Response PD 2	146.92%	138.38%	130.23%
PA	Park Acres	108.18%	107.41%	106.98%
VHTPA	VHT / Park Acre	143.11%	134.59%	123.44%
BR2	Bus Ridership 2	148.29%	334.00%	494.98%
BUS	Bus Revenue Miles	100.00%	200.00%	300.00%
PipeW	Miles of Water Pipe	136.63%	132.20%	121.43%
PipeS	Miles of Sewer Pipe	125.51%	128.16%	117.06%
N/A	N/A	0.00%	0.00%	0.00%

		2010 Total	2050 Net Change	2050 Total	2010 - 2050 Growth Rate	2010 - 2050 Total % Change
SA	**Trends**					
	Population	579,981	311,971	891,952	1.08%	53.79%
	Employment	403,990	172,219	576,209	0.89%	42.63%
	Pop & Emp	983,971	484,190	1,468,161	1.01%	49.21%
SB	**Trends + Market + Efficiency**					
	Population	579,981	311,190	891,171	1.08%	53.66%
	Employment	403,990	172,080	576,178	0.89%	42.62%
	Pop & Emp	983,971	483,270	1,467,241	1.00%	49.11%
SC	**Market + Efficiency + Revitalization**					
	Population	579,981	311,820	891,801	1.08%	53.76%
	Employment	403,990	171,175	575,165	0.89%	42.37%
	Pop & Emp	983,971	482,995	1,466,966	1.00%	49.09%

		2010 Total	2050 Net Change	2050 Total	2010 - 2050 Growth Rate	2010 - 2050 Total % Change
SA	**Trends**					
	Waste H2O Geneneration	18,599,878,250	7,981,160,760	26,581,039,010	0.90%	42.91%
	H2O Consumption	27,605,584,500	29,608,718,390	57,214,302,890	1.84%	107.26%
	Lane Miles	7,725	4,327	12,052	1.12%	56.01%
	VMT / Lane Mile	2,597	11	2,608	0.01%	0.42%
	Impervious Surface Area	60,644	23,604	84,248	0.83%	38.92%
	Park Acres	22,590	1,900	24,490	0.21%	8.41%
	VMT / Park Acre	888.24	395.25	1,283.49	0.97%	44.50%
SB	**Trends + Market + Efficiency**					
	Waste H2O Geneneration	18,599,878,250	7,827,231,666	26,427,109,916	0.88%	42.08%
	H2O Consumption	27,605,584,500	20,283,981,790	47,889,566,290	1.39%	73.48%
	Lane Miles	7,725	3,068	10,793	0.84%	39.72%
	VMT / Lane Mile	2,597	117	2,714	0.11%	4.51%
	Impervious Surface Area	60,644	17,701	78,345	0.64%	29.19%
	Park Acres	22,590	1,720	24,310	0.19%	7.61%
	VMT / Park Acre	888.24	316.91	1,205.15	0.81%	35.68%
SC	**Market + Efficiency + Revitalization**					
	Waste H2O Geneneration	18,599,878,250	7,865,093,231	26,464,971,481	0.89%	42.29%
	H2O Consumption	27,605,584,500	19,143,800,974	46,749,385,474	1.33%	69.35%
	Lane Miles	7,725	1,906	9,631	0.55%	24.67%
	VMT / Lane Mile	2,597	175	2,772	0.16%	6.74%
	Impervious Surface Area	60,644	13,978	74,622	0.52%	23.05%
	Park Acres	22,590	1,620	24,210	0.18%	7.17%
	VMT / Park Acre	888.24	214.47	1,102.71	0.57%	24.15%

		2005/2013 Total	2050 Net Change	2050 Total	2005 - 2050 Growth Rate	2005 - 2050 Total % Change
SA	**Trends**					
	VMT	20,065,125	11,367,340	31,432,465	1.00%	56.65%
	Total Daily Trips - Bus	14,820	7,157	21,977	1.07%	48.29%
	Revenue Miles	2,500,000	-	2,500,000	0.00%	0.00%
SB	**Trends + Market + Efficiency**					
	VMT	20,065,125	9,231,896	29,297,021	0.84%	46.01%
	Total Daily Trips - Bus	14,820	34,679	49,499	3.31%	234.00%
	Revenue Miles	2,500,000		5,000,000	1.89%	100.00%
SC	**Market + Efficiency + Revitalization**					
	VMT	20,065,125	6,631,236	26,696,361	0.64%	33.05%
	Total Daily Trips - Bus	14,820	58,536	73,356	4.42%	394.98%
	Revenue Miles	2,500,000		7,500,000	3.01%	200.00%

		2005 Total	2050 Net Change	2050 Total	2005 - 2050 Growth Rate	2005 - 2050 Total % Change
SA	**Trends**					
	Vehicle Hours Travelled	613,817	142,568	903,325	0.86%	47.17%
SB	**Trends + Market + Efficiency**					
	Vehicle Hours Travelled	613,817	120,079	880,836	0.81%	43.50%
SC	**Market + Efficiency + Revitalization**					
	Vehicle Hours Travelled	613,817	97,592	858,349	0.75%	39.84%

		2010	2050		2010 - 2050	
		Total	Net Change	Total	Growth Rate	Total % Change
SA	**Trends**					
	Calls for Service					
	PD Total	**520,850**	**231,144**	**751,994**	**0.92%**	**44.38%**
	PD Priority	22,822	10,128	32,949	0.92%	44.37%
	FD Total	**82,738**	**38,393**	**121,131**	**0.96%**	**46.40%**
	FD Priority	67,492	31,318	98,811	0.96%	46.40%
	Response Times (Hours)					
	PD Total	**55,297**	**24,540**	**79,837**	**0.92%**	**44.38%**
	PD Priority	2,423	1,075	3,498	0.92%	44.37%
	FD Total	**5,599**	**2,598**	**8,197**	**0.96%**	**46.40%**
	FD Priority	4,567	2,119	6,686	0.96%	46.40%
	Average Response Time (Min)					
	PD Total	6.37	-	6.37	**0.00%**	**0.00%**
	FD Total	4.06	-	4.06	**0.00%**	**0.00%**
SB	**Trends + Market + Efficiency**					
	Calls for Service					
	Calls for Service PD Total	**520,850**	**234,903**	**755,753**	**0.93%**	**45.10%**
	Calls for Service PD Priority	22,822	10,293	33,114	0.93%	45.10%
	Calls for Service FD Total	**82,738**	**39,335**	**122,073**	**0.98%**	**47.54%**
	Calls for Service FD Priority	67,492	32,087	99,579	0.98%	47.54%
	Response Times (Hours)					
	PD Total	**55,297**	**24,473**	**79,770**	**0.92%**	**44.26%**
	PD Priority	2,423	1,072	3,495	0.92%	44.25%
	FD Total	**5,599**	**2,581**	**8,180**	**0.95%**	**46.10%**
	FD Priority	4,567	2,106	6,673	0.95%	46.10%
	Average Response Times (Min)					
	PD Total	6.37	(0.04)	6.33	-0.01%	-0.58%
	FD Total	4.06	(0.04)	4.02	**-0.02%**	**-0.97%**
SC	**Market + Efficiency + Revitalization**					
	Calls for Service					
	PD Total	**520,850**	**237,919**	**758,769**	**0.95%**	**45.68%**
	PD Priority	22,822	10,425	33,246	0.94%	45.68%
	FD Total	**82,738**	**39,761**	**122,499**	**0.99%**	**48.06%**
	FD Priority	67,492	32,434	99,927	0.99%	48.06%
	Response Times (Hours)					
	PD Total	**55,297**	**24,324**	**79,621**	**0.92%**	**43.99%**
	PD Priority	2,423	1,066	3,489	0.92%	43.98%
	FD Total	**5,599**	**2,475**	**8,074**	**0.92%**	**44.21%**
	FD Priority	4,567	2,019	6,586	0.92%	44.21%
	Average Response Times (min)					
	PD Total	6.37	(0.07)	6.30	**-0.03%**	**-1.16%**
	FD Total	4.06	(0.11)	3.95	**-0.07%**	**-2.60%**

		2010	2050		2010 - 2050	
		Total	Net Change	Total	Growth Rate	Total % Change
SA	**Trends**					
	PD Priority Calls For Service	22,822	10,128	32,949	0.92%	44.37%
	VMT	20,065,125	11,367,340	31,432,465	1.13%	56.65%
	VMT per pop & emp	20.39	1.02	21.41	0.12%	4.99%
	Response Time Measure	1.00	0.52	1.52	1.05%	51.58%
SB	**Trends + Market + Efficiency**					
	PD Priority Calls For Service	22,822	10,293	33,114	0.93%	45.10%
	VMT	20,065,125	9,231,896	29,297,021	0.95%	46.01%
	VMT per pop & emp	20.39	(0.42)	19.97	-0.05%	-2.08%
	Response Time Measure	1.00	0.42	1.42	0.88%	42.08%
SC	**Market + Efficiency + Revitalization**					
	PD Priority Calls For Service	22,822	10,425	33,246	0.94%	45.68%
	VMT	20,065,125	6,631,236	26,696,361	0.72%	33.05%
	VMT per pop & emp	20.39	(2.19)	18.20	-0.28%	-10.76%
	Response Time Measure	1.00	0.30	1.30	0.66%	30.00%

		2013	2050		2013 - 2050	
		Total	Net Change	Total	Growth Rate	Total % Change
SA	**Trends**					
	Sewer Lift Stations	86	9	95	0.27%	10.47%
SB	**Trends + Market + Efficiency**					
	Sewer Lift Stations	86	4	90	0.12%	4.65%
SC	**Market + Efficiency + Revitalization**					
	Sewer Lift Stations	86	2	88	0.06%	2.33%

		2013	2050		2013 - 2050	
		Total	Net Change	Total	Growth Rate	Total % Change
SA	**Trends**					
	Fire Station Operations	101,721,657	32,760,000	134,481,657	0.76%	32.21%
SB	**Trends + Market + Efficiency**					
	Fire Station Operations	101,721,657	23,400,000	125,121,657	0.56%	23.00%
SC	**Market + Efficiency + Revitalization**					
	Fire Station Operations	101,721,657	12,480,000	114,201,657	0.31%	12.27%

		2010	2050		2010 - 2050	
		Total	Net Change	Total	Growth Rate	Total % Change
SA	**Trends**					
	Small Water Pipes (Miles)	2,521	839	3,360	0.72%	33.28%
	Total Water Pipes (Miles)	2,898	1,163	4,061	0.85%	40.13%
	Small Sewer Pipes (Miles)	2,067	688	2,755	0.72%	33.29%
	Total Sewer Pipes (Miles)	2,877	801	3,678	0.62%	27.84%
SB	**Trends + Market + Efficiency**					
	Small Water Pipes (Miles)	2,521	766	3,287	0.67%	30.39%
	Total Water Pipes (Miles)	2,898	1,021	3,919	0.76%	35.23%
	Small Sewer Pipes (Miles)	2,067	628	2,695	0.67%	30.38%
	Total Sewer Pipes (Miles)	2,877	885	3,762	0.67%	30.76%
SC	**Market + Efficiency + Revitalization**					
	Small Water Pipes (Miles)	2,521	611	3,132	0.54%	24.24%
	Total Water Pipes (Miles)	2,898	677	3,575	0.53%	23.36%
	Small Sewer Pipes (Miles)	2,066.90	501	2,567.90	0.54%	24.24%
	Total Sewer Pipes (Miles)	2,877.00	534	3,411.00	0.43%	18.56%

	Solid Waste	2010	2050		2010 - 2050	
		Total	Net Change	Total	Growth Rate	Total % Change
SA	**Trends**					
	Urban Households	184,830	70,436	255,266	0.81%	38.11%
	Rural Households	43,428	58,886	102,314	2.17%	135.59%
	Urban Cost of Service	1,667,167	635,332	2,302,499	0.81%	38.11%
	Rural Cost of Service	754,779	1,023,438	1,778,217	2.17%	135.59%
	Total Projected Cost of Service	2,421,946	1,658,770	4,080,716	1.31%	68.49%
SB	**Trends + Market + Efficiency**					
	Urban Households	184,830	102,776	287,606	1.11%	55.61%
	Rural Households	43,428	27,187.00	70,615	1.22%	62.60%
	Urban Cost of Service	1,667,167	927,039	2,594,206	1.11%	55.61%
	Rural Cost of Service	754,779	472,510	1,227,289	1.22%	62.60%
	Total Projected Cost of Service	2,421,946	1,399,549	3,821,495	1.15%	57.79%
SC	**Market + Efficiency + Revitalization**					
	Urban Households	184,830	119,613	304,443	1.26%	64.72%
	Rural Households	43,428	10,489	53,917	0.54%	24.15%
	Urban Cost of Service	1,667,167	1,078,909	2,746,076	1.26%	64.72%
	Rural Cost of Service	754,779	182,298	937,077	0.54%	24.15%
	Total Projected Cost of Service	2,421,946	1,261,207	3,683,153	1.05%	52.07%

FIRE DEPARTMENT	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Stations	$ 73,500,000	$ 52,500,000	$ 28,000,000
Engines	$ 12,600,000	$ 9,000,000	$ 4,800,000
Other vehicles	$ 7,900,000	$ 5,200,000	$ 3,200,000
Total cost	$ 94,000,000	$ 66,700,000	$ 36,000,000
with financing	$ 138,300,000	$ 98,200,000	$ 53,000,000
Annual cost of debt service	**$ 6,900,000**	**$ 4,900,000**	**$ 2,700,000**

PARKS AND RECREATION	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Local Parks	$ 77,000,000	$ 57,200,000	$ 46,200,000
Regional Parks	$ 132,000,000	$ 132,000,000	$ 132,000,000
Trails	$ 70,000,000	$ 65,100,000	$ 59,500,000
Total cost	$ 279,000,000	$ 254,300,000	$ 237,700,000
with financing	$ 410,600,000	$ 374,200,000	$ 349,800,000
Annual cost of debt service	**$ 20,500,000**	**$ 18,700,000**	**$ 17,500,000**

PUBLIC TRANSPORTATION - LOCAL PUBLIC SHARE	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Buses	$ -	$ 4,700,000	$ 9,400,000
Total	$ -	$ 4,700,000	$ 9,400,000
with financing	$ -	$ 6,900,000	$ 13,800,000
Annual cost of debt service	**$ -**	**$ 300,000**	**$ 700,000**

PUBLIC WORKS - LOCAL PUBLIC SHARE	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Streets	$ 411,900,000	$ 297,200,000	$ 220,800,000
Total	$ 411,900,000	$ 297,200,000	$ 220,800,000
with financing	$ 606,200,000	$ 437,400,000	$ 324,900,000
Annual cost of debt service	**$ 30,300,000**	**$ 21,900,000**	**$ 16,200,000**

UTILITIES - LOCAL PUBLIC SHARE	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Water	$ 59,600,000	$ 58,900,000	$ 56,700,000
Sewer	$ 112,700,000	$ 88,200,000	$ 70,400,000
Solid Waste	$ -	$ -	$ -
Total costs	$ 172,300,000	$ 147,100,000	$ 127,100,000
with financing	$ 253,600,000	$ 216,500,000	$ 187,000,000
Annual cost of debt service	**$ 12,700,000**	**$ 10,800,000**	**$ 9,400,000**

ALL DEPARTMENTS - CAPITAL COSTS - LOCAL PUBLIC SHARE	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Fire Department	$ 94,000,000	$ 66,700,000	$ 36,000,000
General Services	$ -	$ -	$ -
Parks and Recreation	$ 279,000,000	$ 254,300,000	$ 237,700,000
Police Department	$ -	$ -	$ -
Public Transportation	$ -	$ 4,700,000	$ 9,400,000
Public Works	$ 411,900,000	$ 297,200,000	$ 220,800,000
Utilities	$ 172,300,000	$ 147,100,000	$ 127,100,000
Total	$ 957,200,000	$ 770,000,000	$ 631,000,000
with financing	$ 1,408,600,000	$ 1,133,200,000	$ 928,600,000
Annual cost of debt service	**$ 70,400,000**	**$ 56,700,000**	**$ 46,400,000**

PUBLIC TRANSPORTATION - TOTAL (INC. FED FUNDS)			
	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Buses	$ -	$ 23,600,000	$ 47,100,000
Total	$ -	$ 23,600,000	$ 47,100,000
with financing	$ -	$ 34,700,000	$ 69,300,000
	$ -	**$ 1,700,000**	**$ 3,500,000**

PUBLIC WORKS - TOTAL (PUBLIC AND PRIVATE)			
	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Streets	$ 2,956,700,000	$ 2,098,200,000	$ 1,315,900,000
Total	$ 2,956,700,000	$ 2,098,200,000	$ 1,315,900,000
with financing	$ 4,351,200,000	$ 3,087,800,000	$ 1,936,500,000

UTILITIES - TOTAL (PUBLIC AND PRIVATE)			
	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Water	$ 875,500,000	$ 777,100,000	$ 538,500,000
Sewer	$ 400,000,000	$ 290,200,000	$ 217,200,000
Solid Waste	$ -	$ -	$ -
Total	$ 1,275,500,000	$ 1,067,300,000	$ 755,700,000
with financing	$ 1,877,100,000	$ 1,570,700,000	$ 1,112,100,000

ALL DEPARTMENTS - CAPITAL COSTS - (PUBLIC AND PRIVATE)			
	Total Costs 2014-2050 (2013$)		
	SA. T	SB. T+M+E	SC. M+E+R
Fire Department	$ 94,000,000	$ 66,700,000	$ 36,000,000
General Services	$ -	$ -	$ -
Parks and Recreation	$ 279,000,000	$ 254,300,000	$ 237,700,000
Police Department	$ -	$ -	$ -
Public Transportation	$ -	$ 23,600,000	$ 47,100,000
Public Works	$ 2,956,700,000	$ 2,098,200,000	$ 1,315,900,000
Utilities	$ 1,275,500,000	$ 1,067,300,000	$ 755,700,000
Total	$ 4,605,200,000	$ 3,510,100,000	$ 2,392,400,000
with financing	$ 6,777,200,000	$ 5,165,600,000	$ 3,520,700,000
Annual cost of debt service	**$ 338,900,000**	**$ 258,300,000**	**$ 176,000,000**

FIRE DEPARTMENT					
			FY 2049-50 (2013$)		
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T	SB. T+M+E	SC. M+E+R
1 Administration					
Business Services	20.9	$ 8,214,337	$ 11,081,857	$ 10,366,122	$ 9,549,648
Executive Leadership	16.0	$ 2,565,216	$ 3,460,700	$ 3,237,187	$ 2,982,214
Line of Business Total	**36.9**	**$ 10,779,553**	**$ 14,542,557**	**$ 13,603,309**	**$ 12,531,862**
2 Public Safety Education Services					
Fire Investigations	13.5	$ 1,897,186	$ 2,699,255	$ 2,718,666	$ 2,727,441
Fire Prevention Inspection & Code Compliance	14.6	$ 1,705,402	$ 2,469,357	$ 2,467,925	$ 2,467,497
Public Safety Education Services	9.0	$ 1,118,066	$ 1,664,852	$ 1,663,503	$ 1,664,591
Line of Business Total	**37.1**	**$ 4,720,654**	**$ 6,833,463**	**$ 6,850,095**	**$ 6,859,529**
3 Operational Services					
Emergency Medical Services	591.0	$ 68,602,504	$ 90,696,305	$ 84,383,790	$ 77,019,190
Fire Suppression Operations	94.7	$ 11,501,026	$ 16,770,823	$ 14,831,203	$ 12,912,061
Operations Training	186.9	$ 21,618,127	$ 28,580,360	$ 26,591,150	$ 24,270,406
Line of Business Total	**872.6**	**$ 101,721,657**	**$ 136,047,487**	**$ 125,806,144**	**$ 114,201,657**
4 Support Services					
Fire Dispatch	19.5	$ 2,210,138	$ 3,144,513	$ 3,167,126	$ 3,177,349
Fire Maintenance Services	14.0	$ 7,548,404	$ 10,739,626	$ 10,816,858	$ 10,851,770
Line of Business Total	**33.5**	**$ 9,758,542**	**$ 13,884,139**	**$ 13,983,985**	**$ 14,029,119**
Total -- All Lines of Business	**943.1**	**$ 126,980,406**	**$ 171,307,646**	**$ 160,243,532**	**$ 147,622,167**
Indirect Overhead Costs		**$ 9,681,120**	**$ 13,060,676**	**$ 12,217,136**	**$ 11,254,870**
Total Annual Operating Costs		**$ 136,661,526**	**$ 184,368,322**	**$ 172,460,668**	**$ 158,877,037**

GENERAL SERVICES					
			FY 2049-50 (2013$)		
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T	SB. T+M+E	SC. M+E+R
1 Administration					
Business Services	3.6	$ 1,179,452	$ 1,708,007	$ 1,642,072	$ 1,560,955
Executive Leadership	1.3	$ 167,499	$ 242,561	$ 233,198	$ 221,678
Line of Business Total	**4.9**	**$ 1,346,951**	**$ 1,950,568**	**$ 1,875,270**	**$ 1,782,633**
2 Facility Asset Management					
Aquatic Facility Safety and Maintanance	5.0	$ 405,301	$ 603,512	$ 603,023	$ 603,417
Building Maintenance and Repair	21.5	$ 2,255,807	$ 3,266,322	$ 3,264,428	$ 3,263,863
Facility Energy Management	0.7	$ 585,646	$ 847,993	$ 847,501	$ 847,354
Facility Enhancement	8.0	$ 644,136	$ 932,684	$ 932,143	$ 931,982
Line of Business Total	**35.2**	**$ 3,890,890**	**$ 5,650,511**	**$ 5,647,096**	**$ 5,646,616**
3 Fleet Management					
Fleet Services Support	2.5	$ 282,789	$ 409,468	$ 409,230	$ 409,159
Fleet Refueling	5.0	$ 5,332,184	$ 7,712,342	$ 7,278,859	$ 6,743,247
Vehicle and Equipment Maintenance	27.4	$ 3,712,773	$ 5,370,065	$ 5,068,233	$ 4,695,289
Line of Business Total	**34.9**	**$ 9,327,746**	**$ 13,491,876**	**$ 12,756,323**	**$ 11,847,695**
Total - All Lines of Business	**75.0**	**$ 14,565,587**	**$ 21,092,954**	**$ 20,278,689**	**$ 19,276,945**
Indirect Overhead Costs		**$ -**	**$ -**	**$ -**	**$ -**
Total Annual Operating Costs		**$ 14,565,587**	**$ 21,092,954**	**$ 20,278,689**	**$ 19,276,945**

PARKS AND RECREATION								
			FY 2049-50 (2013$)					
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T		SB. T+M+E		SC. M+E+R	
1 Administration								
Business Services	10.1	$ 2,844,235	$ 4,951,954		$ 4,916,605		$ 4,888,294	
Executive Leadership	9.6	$ 1,220,814	$ 2,125,498		$ 2,110,325		$ 2,098,173	
Line of Business Total	**19.7**	**$ 4,065,049**	**$ 7,077,452**		**$ 7,026,930**		**$ 6,986,467**	
2 Horticulture and Gardens								
Botanical Education	-	$ -	$ -		$ -		$ -	
Botanical Operations Support	8.8	$ 606,270	$ 902,764		$ 902,033		$ 902,623	
Buildings & Infrastructure Support	4.8	$ 950,355	$ 1,415,122		$ 1,413,976		$ 1,414,901	
Events & Programming Suppoort	1.8	$ 1,118,611	$ 1,665,663		$ 1,664,314		$ 1,665,402	
Retail Operations	-	$ -	$ -		$ -		$ -	
Will Rogers Gardens	3.9	$ 399,394	$ 594,716		$ 594,234		$ 594,623	
Martin Nature Park	1.0	$ 127,772	$ 190,258		$ 190,104		$ 190,229	
Canal/Field Horticulture	16.6	$ 2,276,118	$ 3,389,245		$ 3,386,499		$ 3,388,714	
Line of Business Total	**37.0**	**$ 5,478,520**	**$ 8,157,769**		**$ 8,151,161**		**$ 8,156,491**	
3 Civic Center Music Hall								
Box Office	2.8	$ 301,940	$ 449,603		$ 449,238		$ 449,532	
Private Event & Business Services	0.7	$ 172,011	$ 256,132		$ 255,925		$ 256,092	
Performance Support	18.3	$ 2,421,054	$ 3,605,061		$ 3,602,141		$ 3,604,496	
Line of Business Total	**21.8**	**$ 2,895,005**	**$ 4,310,796**		**$ 4,307,304**		**$ 4,310,121**	
4 Grounds Management								
Equipment Repair	6.9	$ 660,254	$ 1,670,684		$ 1,632,730		$ 1,592,264	
Hazard Abatement	2.3	$ 190,966	$ 796,106		$ 764,412		$ 727,424	
Forestry Services*	8.6	$ 755,494	$ 1,848,176		$ 1,808,952		$ 1,767,780	
Parks and Grounds Maintenance	75.9	$ 6,785,630	$ 13,086,099		$ 12,966,443		$ 12,880,579	
Line of Business Total	**93.6**	**$ 8,392,344**	**$ 17,401,065**		**$ 17,172,537**		**$ 16,968,047**	
5 Recreation								
Aquatics	2.2	$ 898,635	$ 1,338,109		$ 1,337,025		$ 1,337,899	
Athletics	3.4	$ 744,469	$ 1,108,549		$ 1,107,651		$ 1,108,375	
Fisheries Management	1.1	$ 154,758	$ 230,442		$ 230,255		$ 230,406	
General Recreation	11.3	$ 263,860	$ 392,900		$ 392,581		$ 392,838	
Nature	-	$ -	$ -		$ -		$ -	
Seniors	2.5	$ 278,202	$ 414,256		$ 413,920		$ 414,191	
Special Events	3.5	$ 356,163	$ 530,343		$ 529,914		$ 530,260	
Line of Business Total	**24.0**	**$ 2,696,087**	**$ 4,014,598**		**$ 4,011,346**		**$ 4,013,969**	
Total - All Lines of Business	**196.0**	**$ 23,527,005**	**$ 40,961,679**		**$ 40,669,279**		**$ 40,435,095**	
Indirect Overhead Costs		**$ 3,071,780**	**$ 5,348,121**		**$ 5,309,944**		**$ 5,279,368**	
Total Annual Operating Costs		**$ 26,598,785**	**$ 46,309,800**		**$ 45,979,223**		**$ 45,714,463**	

POLICE DEPARTMENT					
			FY 2049-50 (2013$)		
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T	SB. T+M+E	SC. M+E+R
1 Administration					
Business Services	23.4	$ 11,015,641	$ 16,120,102	$ 15,491,520	$ 14,890,983
Emergency Management	3.4	$ 370,477	$ 542,150	$ 521,009	$ 500,812
Executive Leadership	19.9	$ 5,104,191	$ 7,469,387	$ 7,178,128	$ 6,899,864
Human Resources	14.0	$ 1,287,639	$ 1,884,309	$ 1,810,833	$ 1,740,635
Professional Standards	9.9	$ 1,077,683	$ 1,577,063	$ 1,515,568	$ 1,456,816
Public Information	8.2	$ 841,291	$ 1,231,131	$ 1,183,125	$ 1,137,260
Line of Business Total	**78.7**	**$ 19,696,922**	**$ 28,824,142**	**$ 27,700,183**	**$ 26,626,370**
2 Investigations					
Investigations	144.5	$ 16,513,848	$ 23,194,625	$ 23,301,853	$ 23,387,857
Investigations Support	67.6	$ 7,176,249	$ 10,079,444	$ 10,126,041	$ 10,163,415
Special Investigations	71.5	$ 12,066,691	$ 16,948,344	$ 17,026,695	$ 17,089,538
Line of Business Total	**283.5**	**$ 35,756,788**	**$ 50,222,413**	**$ 50,454,589**	**$ 50,640,810**
3 Operations					
Crime Prevention and Awareness	10.2	$ 1,197,507	$ 1,733,944	$ 1,732,939	$ 1,732,639
Patrol	621.9	$ 74,270,848	$ 112,259,683	$ 104,150,360	$ 96,722,567
Specialized Operations	-	$ -	$ -	$ -	$ -
Traffic Safety	107.0	$ 11,997,413	$ 17,352,769	$ 16,377,432	$ 15,172,304
Weed & Seed	-	$ -	$ -	$ -	$ -
Youth Services	35.9	$ 5,395,474	$ 8,034,109	$ 8,027,602	$ 8,032,851
Line of Business Total	**775.0**	**$ 92,861,242**	**$ 139,380,506**	**$ 130,288,334**	**$ 121,660,361**
4 Public Safety Support					
911 Communications	83.5	$ 11,771,203	$ 16,533,315	$ 16,609,747	$ 16,671,051
Court Liaison	-	$ -	$ -	$ -	$ -
Incarceration Alternatives	-	$ -	$ -	$ -	$ -
Inmate Processing / Alternative	14.5	$ 4,028,678	$ 5,658,504	$ 5,684,663	$ 5,705,644
Permit Services	6.2	$ 603,127	$ 873,305	$ 872,798	$ 872,647
Records Management	78.0	$ 5,822,198	$ 8,177,604	$ 8,215,408	$ 8,245,730
Training	11.9	$ 1,771,478	$ 2,488,140	$ 2,499,643	$ 2,508,869
Line of Business Total	**193.9**	**$ 23,996,684**	**$ 33,730,867**	**$ 33,882,259**	**$ 34,003,942**
Total - All Lines of Business	**1,331.0**	**$ 172,311,636**	**$ 252,157,928**	**$ 242,325,365**	**$ 232,931,483**
Indirect Overhead Costs		**$ 12,108,076**	**$ 17,718,753**	**$ 17,027,834**	**$ 16,367,740**
Total Annual Operating Costs		**$ 184,419,712**	**$ 269,876,681**	**$ 259,353,199**	**$ 249,299,223**

PUBLIC TRANSPORTATION			FY 2049-50 (2013$)		
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T	SB. T+M+E	SC. M+E+R
1 Administration					
Business Services	5.2	$ 449,626	$ 465,633	$ 879,496	$ 1,293,379
Executive Leadership	3.1	$ 454,791	$ 470,982	$ 889,599	$ 1,308,236
Public Information & Customer Relations	8.0	$ 546,088	$ 565,530	$ 1,068,181	$ 1,570,858
Safety and Risk Management	-	$ 421	$ 436	$ 824	$ 1,211
Line of Business Total	**16.3**	**$ 1,450,926**	**$ 1,502,581**	**$ 2,838,100**	**$ 4,173,684**
2 Public Transportation					
Bus Operations	0.2	$ 12,376,214	$ 12,376,214	$ 24,752,428	$ 37,128,642
Customer Service	-	$ -	$ -	$ -	$ -
Facility Management	1.0	$ 77,673	$ 77,673	$ 155,346	$ 233,019
Fleet Management	0.7	$ 77,154	$ 77,154	$ 154,308	$ 231,462
Oklahoma River Cruises	1.0	$ 670,000	$ 970,134	$ 969,572	$ 969,404
Route and Schedule Development	2.0	$ 175,497	$ 175,497	$ 350,994	$ 526,491
Specialized Transportation	1.1	$ 67,967	$ 98,414	$ 98,357	$ 98,340
Bus Rapid Transit	-	$ -			
Line of Business Total	**5.9**	**$ 13,444,505**	**$ 13,775,086**	**$ 26,481,004**	**$ 39,187,357**
3 Parking					
Municipal Off-Street Parking	1.0	$ 96,181	$ 139,266	$ 139,186	$ 139,162
On Street Parking Meter	2.8	$ 262,883	$ 380,644	$ 380,424	$ 380,358
Line of Business Total	**3.8**	**$ 359,064**	**$ 519,911**	**$ 519,609**	**$ 519,519**
Total - All Lines of Business	**26.0**	**$ 15,254,495**	**$ 15,797,578**	**$ 29,838,714**	**$ 43,880,561**
Indirect Overhead Costs		**$ -**	**$ -**	**$ -**	**$ -**
Total Annual Operating Costs		**$ 15,254,495**	**$ 15,797,578**	**$ 29,838,714**	**$ 43,880,561**

PUBLIC WORKS					
			FY 2049-50 (2013$)		
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T	SB. T+M+E	SC. M+E+R
1 Administration					
Business Services	18.0	$ 6,723,406	$ 9,979,092	$ 9,379,000	$ 8,764,923
Executive Leadership	1.2	$ 262,550	$ 389,685	$ 366,251	$ 342,272
Line of Business Total	**19.2**	**$ 6,985,956**	**$ 10,368,777**	**$ 9,745,251**	**$ 9,107,195**
2 Engineering					
Engineering Project Management	22.7	$ 2,388,581	$ 3,458,573	$ 3,456,569	$ 3,455,969
Engineering Support	10.7	$ 993,738	$ 1,438,894	$ 1,438,060	$ 1,437,811
Technical Review and Regulation	22.4	$ 3,399,533	$ 4,922,393	$ 4,919,540	$ 4,918,687
Line of Business Total	**55.8**	**$ 6,781,852**	**$ 9,819,861**	**$ 9,814,168**	**$ 9,812,467**
3 Field Services					
Construction Inspection and Construction Quality	45.9	$ 3,696,585	$ 5,352,513	$ 5,349,410	$ 5,348,483
Survey	4.1	$ 314,438	$ 455,294	$ 455,030	$ 454,951
Line of Business Total	**50.0**	**$ 4,011,023**	**$ 5,807,807**	**$ 5,804,440**	**$ 5,803,434**
4 Oklahoma River Corridor					
River Corridor	5.0	$ 1,398,410	$ 2,024,844	$ 2,023,670	$ 2,023,319
Line of Business Total	**5.0**	**$ 1,398,410**	**$ 2,024,844**	**$ 2,023,670**	**$ 2,023,319**
5 Storm Water Quality					
Environmental Water Quality	5.3	$ 759,307	$ 1,029,156	$ 962,275	$ 919,900
Household Hazardous Waste Collection	7.1	$ 1,035,214	$ 1,541,481	$ 1,540,233	$ 1,541,240
Storm Water Permitting and Public Outreach	14.7	$ 1,338,430	$ 1,814,093	$ 1,696,201	$ 1,621,507
Line of Business Total	**27.0**	**$ 3,132,951**	**$ 4,384,730**	**$ 4,198,709**	**$ 4,082,647**
6 Streets, Traffic and Drainage Maint.					
Drainage	62.5	$ 6,255,279	$ 9,438,876	$ 8,523,090	$ 7,670,729
Graffiti Removal	2.3	$ 263,652	$ 381,758	$ 381,537	$ 381,471
Streets	111.5	$ 10,614,026	$ 16,047,358	$ 14,762,912	$ 13,420,422
Traffic Operations	46.8	$ 4,104,056	$ 5,936,008	$ 5,602,366	$ 5,190,118
Annual Resurfacing (Street and Alley Fund)		$ 5,247,171	$ 7,933,204	$ 7,298,222	$ 6,634,546
GO Bond Resurfacing		$ 11,856,884	$ 17,926,437	$ 16,491,587	$ 14,991,897
Line of Business Total	**223.0**	**$ 38,341,068**	**$ 57,663,640**	**$ 53,059,714**	**$ 48,289,182**
7 Traffic Management					
Traffic and Transportation	5.0	$ 517,118	$ 747,947	$ 705,908	$ 653,964
Traffic Data Collection	2.2	$ 176,655	$ 255,510	$ 241,148	$ 223,403
Traffic Engineering	5.9	$ 604,309	$ 874,058	$ 824,930	$ 764,228
Line of Business Total	**13.0**	**$ 1,298,082**	**$ 1,877,515**	**$ 1,771,986**	**$ 1,641,595**
Total All Lines of Business	**393.0**	**$ 61,949,342**	**$ 91,947,174**	**$ 86,417,939**	**$ 80,759,840**
Indirect Overhead Costs		**$ 3,759,066**	**$ 5,579,325**	**$ 5,243,813**	**$ 4,900,481**
Total Annual Operating Costs		**$ 65,708,408**	**$ 97,526,499**	**$ 91,661,752**	**$ 85,660,321**

UTILITIES					
			FY 2049-50 (2013$)		
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T	SB. T+M+E	SC. M+E+R
1 Administration					
Business Services	35.4	$ 19,553,569	$ 31,892,475	$ 29,236,278	$ 28,222,353
Executive Leadership	3.6	$ 370,834	$ 604,842	$ 554,467	$ 535,238
Line of Business Total	**39.0**	**$ 19,924,403**	**$ 32,497,317**	**$ 29,790,745**	**$ 28,757,591**
2 Customer Service					
Customer Service/Billing	67.2	$ 5,831,490	$ 8,443,773	$ 8,438,878	$ 8,437,416
Field Support	38.9	$ 2,790,141	$ 4,040,017	$ 4,037,675	$ 4,036,975
Meter Maintenance	61.9	$ 3,957,210	$ 5,723,613	$ 5,401,909	$ 5,004,412
Line of Business Total	**168.0**	**$ 12,578,841**	**$ 18,207,403**	**$ 17,878,463**	**$ 17,478,803**
3 Engineering					
Design	15.2	$ 1,504,602	$ 1,980,499	$ 1,966,801	$ 1,804,281
Infrastructure Records	5.3	$ 404,016	$ 585,000	$ 584,661	$ 584,559
Private Development	4.4	$ 467,014	$ 676,218	$ 675,826	$ 675,709
Line of Business Total	**25.0**	**$ 2,375,632**	**$ 3,241,717**	**$ 3,227,288**	**$ 3,064,549**
4 Line Maintenance					
Line Maint. Fleet Operations	22.0	$ 3,145,399	$ 4,549,429	$ 4,293,722	$ 3,977,770
Wastewater Line Maint.	121.0	$ 8,144,421	$ 10,221,901	$ 10,437,662	$ 9,533,589
Water Line Maint.	99.0	$ 1,787,882	$ 2,442,774	$ 2,363,660	$ 2,171,092
Line of Business Total	**242.0**	**$ 13,077,702**	**$ 17,214,105**	**$ 17,095,044**	**$ 15,682,451**
5 Solid Waste					
Bulk Waste Collection	32.0	$ 1,939,057	$ 3,141,735	$ 2,956,680	$ 2,857,536
Environmental Clean-Up	9.0	$ 573,061	$ 829,770	$ 829,289	$ 829,146
Solid Waste Collection	44.0	$ 4,225,473	$ 6,846,275	$ 6,443,013	$ 6,226,966
Solid Waste Operational Support	26.0	$ 2,751,933	$ 4,458,789	$ 4,196,155	$ 4,055,450
Line of Business Total	**111.0**	**$ 9,489,524**	**$ 15,276,569**	**$ 14,425,137**	**$ 13,969,097**
6 Wastewater Quality					
Industrial Pre-treatment	7.0	$ 767,505	$ 1,067,858	$ 1,062,136	$ 1,063,544
Lift Stations	14.5	$ 1,387,946	$ 1,533,196	$ 1,452,502	$ 1,420,224
Wastewater Treatment	4.0	$ 470,172	$ 654,168	$ 650,663	$ 651,525
Line of Business Total	**25.5**	**$ 2,625,623**	**$ 3,255,221**	**$ 3,165,301**	**$ 3,135,293**
7 Water Quality					
Laboratory and System Quality	15.5	$ 1,219,932	$ 2,393,896	$ 2,030,656	$ 1,985,894
Raw Water Supply	6.0	$ 6,763,543	$ 13,272,228	$ 11,258,354	$ 11,010,189
Water Treatment	64.0	$ 13,336,054	$ 26,169,591	$ 22,198,724	$ 21,709,403
Water Trust Property Maint	49.0	$ 3,693,466	$ 7,247,758	$ 6,148,013	$ 6,012,494
Line of Business Total	**134.5**	**$ 25,012,995**	**$ 49,083,473**	**$ 41,635,747**	**$ 40,717,981**
Total - All Lines of Business	**745.0**	**$ 85,084,720**	**$ 138,775,807**	**$ 127,217,724**	**$ 122,805,765**

UTILITIES - Continued.					
			FY 2049-50 (2013$)		
Lines of Business	Positions (FTE)	FY 2012-13 Budget	SA. T	SB. T+M+E	SC. M+E+R
1. Water Quality OCWUT					
OCWUT Utility Operations		$ 12,168,000	$ 23,877,496	$ 20,254,422	$ 19,807,959
Water Utility (City Utilities Dept Operations)		$ 52,800,000	$ 92,726,515	$ 82,380,255	$ 80,059,988
McGee Creek		$ 700,000	$ 700,000	$ 700,000	$ 700,000
Non-Rate Payer Activities		$ 875,000	$ 1,302,915	$ 1,301,860	$ 1,302,711
Line of Business Total	**-**	**$ 66,543,000**	**$ 117,304,011**	**$ 103,334,677**	**$ 100,567,947**
2. Waste Water OCWUT					
OCWUT Utility Operations		$ 4,557,000	$ 6,340,321	$ 6,306,351	$ 6,314,708
Wastewater Utility (City Utilities Dept Ops)		$ 25,300,000	$ 35,329,569	$ 34,336,731	$ 32,544,273
Contracted Services (Veolia)		$ 13,668,000	$ 19,016,789	$ 18,914,901	$ 18,939,966
Line of Business Total	**-**	**$ 43,525,000**	**$ 60,686,679**	**$ 59,557,983**	**$ 57,798,947**
3. Solid Waste OCEAT					
City Utility Operations Transfer (Solid Waste)		$ 10,756,000	$ 17,106,215	$ 16,148,700	$ 15,639,453
OCEAT Expenses		$ 3,320,000	$ 5,379,193	$ 5,062,345	$ 4,892,595
OCEAT Contracts					
Street Sweeping		$ 700,000	$ 1,056,262	$ 953,781	$ 858,397
Recycling		$ 3,250,000	$ 5,265,776	$ 4,955,609	$ 4,789,438
Collection Services		$ 10,200,000	$ 16,526,436	$ 15,552,988	$ 15,031,466
Bulky Collection		$ 2,500,000	$ 4,050,597	$ 3,812,007	$ 3,684,183
Landfill		$ 5,000,000	$ 8,101,194	$ 7,624,014	$ 7,368,366
Fleet Maintenance		$ 2,500,000	$ 3,615,940	$ 3,412,701	$ 3,161,578
CNG Facility Operations		$ -	$ -	$ -	$ -
Line of Business Total	**-**	**$ 38,226,000**	**$ 61,101,612**	**$ 57,522,145**	**$ 55,425,474**
Total - All Lines of Business	**-**	**$ 148,294,000**	**$ 239,092,302**	**$ 220,414,805**	**$ 213,792,368**
Indirect Overhead Costs		**$ -**	**$ -**	**$ -**	**$ -**
Total Annual Operating Costs		**$ 148,294,000**	**$ 239,092,302**	**$ 220,414,805**	**$ 213,792,368**

SUMMARY - ALL DEPARTMENTS - OPERATING EXPENSES

Lines of Business	Positions (FTE)	FY 2012-13 Budget	FY 2049-50 (2013$) SA. T	SB. T+M+E	SC. M+E+R
Fire Department	943.1	$ 136,661,526	$ 184,368,322	$ 172,460,668	$ 158,877,037
General Services	75.0	$ 14,565,587	$ 21,092,954	$ 20,278,689	$ 19,276,945
Parks and Recreation	196.0	$ 26,598,785	$ 46,309,800	$ 45,979,223	$ 45,714,463
Police Department	1,331.0	$ 184,419,712	$ 269,876,681	$ 259,353,199	$ 249,299,223
Public Transportation	26.0	$ 15,254,495	$ 15,797,578	$ 29,838,714	$ 43,880,561
Public Works	393.0	$ 65,708,408	$ 97,526,499	$ 91,661,752	$ 85,660,321
Utilities	745.0	$ 148,294,000	$ 239,092,302	$ 220,414,805	$ 213,792,368
Total - All Departments	**3,709.1**	**$ 591,502,513**	**$ 874,064,137**	**$ 839,987,050**	**$ 816,500,918**
			48%	42%	38%

SUMMARY - ALL DEPARTMENTS - OPERATING EXPENSES - PERCENT DIFFERENCE FROM SA. TRENDS

Lines of Business	Positions (FTE)	FY 2012-13 Budget	FY 2049-50 (2013$) SA. T	SB. T+M+E	SC. M+E+R
Fire Department			0.00%	-6.46%	-13.83%
General Services			0.00%	-3.86%	-8.61%
Parks and Recreation			0.00%	-0.71%	-1.29%
Police Department			0.00%	-3.90%	-7.62%
Public Transportation			0.00%	88.88%	177.77%
Public Works			0.00%	-6.01%	-12.17%
Utilities			0.00%	-7.81%	-10.58%
Total - All Departments	**-**	**$ -**	**0.00%**	**-3.90%**	**-6.59%**

SUMMARY - ALL DEPARTMENTS - OPERATING EXPENSES - DIFFERENCE FROM SA. TRENDS

Lines of Business	Positions (FTE)	FY 2012-13 Budget	FY 2049-50 (2013$) SA. T	SB. T+M+E	SC. M+E+R
Fire Department			$ -	$ (11,907,654)	$ (25,491,285)
General Services			$ -	$ (814,265)	$ (1,816,010)
Parks and Recreation			$ -	$ (330,578)	$ (595,337)
Police Department			$ -	$ (10,523,483)	$ (20,577,458)
Public Transportation			$ -	$ 14,041,136	$ 28,082,983
Public Works			$ -	$ (5,864,747)	$ (11,866,178)
Utilities			$ -	$ (18,677,497)	$ (25,299,933)
Total - All Departments	**-**	**$ -**	**$ -**	**$ (34,077,088)**	**$ (57,563,219)**

Appendix B: Regression Results

Regression results: Police call volume

```
. regress PD_calls ln_EXHHIncWeightFNL EXDensityWeightFNL EXUseMixWeightFNL pop emp

      Source |       SS       df       MS              Number of obs =    3248
-------------+------------------------------           F(  5,  3242) =  914.81
       Model |   245701233     5  49140246.6           Prob > F      =  0.0000
    Residual |   174148850  3242  53716.4869           R-squared     =  0.5852
-------------+------------------------------           Adj R-squared =  0.5846
       Total |   419850083  3247  129303.999           Root MSE      =  231.77

------------------------------------------------------------------------------
           PD_calls |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
ln_EXHHIncWeightFNL |  -162.2535   11.20037   -14.49   0.000     -184.214    -140.293
 EXDensityWeightFNL |  -.2629192    .797356    -0.33   0.742    -1.826292    1.300453
  EXUseMixWeightFNL |  -52.20168    17.2275    -3.03   0.002    -85.97957    -18.4238
                pop |   .6199616   .0115207    53.81   0.000      .597373    .6425501
                emp |   .2480519    .012082    20.53   0.000     .2243627    .2717411
              _cons |   1801.918   124.8834    14.43   0.000      1557.06    2046.777
------------------------------------------------------------------------------
```

Regression results: Fire call volume

```
. regress FD_calls ln_EXHHIncWeightFNL EXDensityWeightFNL EXUseMixWeightFNL pop emp

      Source |       SS       df       MS              Number of obs =    3248
-------------+------------------------------           F(  5,  3242) =  681.55
       Model |  6261033.48     5  1252206.7           Prob > F      =  0.0000
    Residual |  5956460.14  3242  1837.2795           R-squared     =  0.5125
-------------+------------------------------           Adj R-squared =  0.5117
       Total |  12217493.6  3247  3762.70207           Root MSE      =  42.863

------------------------------------------------------------------------------
           FD_calls |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
ln_EXHHIncWeightFNL |  -21.62726   2.071411   -10.44   0.000    -25.68867   -17.56586
 EXDensityWeightFNL |   .0833916    .147464     0.57   0.572    -.2057405    .3725237
  EXUseMixWeightFNL |  -5.835976   3.186075    -1.83   0.067     -12.0829    .4109489
                pop |   .1018685   .0021306    47.81   0.000      .097691    .1060461
                emp |   .0359283   .0022345    16.08   0.000     .0315472    .0403094
              _cons |   239.4923    23.0961    10.37   0.000     194.2079    284.7768
------------------------------------------------------------------------------
```