CHAPTER 14

FINANCIAL STRATEGIES, REVENUES, AND COST

U.S. Department of Transportation guidelines require that metropolitan transportation plans (MTP) include a financial plan that demonstrates how the adopted MTP can be implemented. The plan must ensure that the total estimated costs to operate and maintain the region's transportation system will not exceed reasonably expected transportation revenues available from public and private sources. Additionally, the financial plan must:

- ensure the maintenance and preservation of the existing transportation system,
- contain system-level estimates of cost and revenue sources,
- identify and ensure the availability of any new funding sources, and
- reflect year-of-expenditure dollars for funding estimates included in the plan.

This chapter describes the projected revenues for the OCARTS area over the 30-year plan period, 2010–2040, and the estimated costs associated with construction and maintenance of the region's planned street and highway network, bicycle and pedestrian trails, and public transportation system. The financial strategy presented in the following sections demonstrates that Encompass 2040 is an affordable plan which can be implemented using reasonably anticipated revenues. For the purposes of financial capacity analysis, highway and transit funds were accounted for separately despite the fact that current federal law allows a portion of some categories of federal funds to be "flexed" between highway and transit purposes. There are several limitations on the ability to accurately predict future revenues and costs, including the following:

- Projections are for a period of 30 years, during which significant changes to transportation financing and priorities are possible at both the federal and local level.
- Future federal funding involves a great deal of uncertainty due to shifts in transportation budgeting and deficit-reduction policies and because these funds are primarily administered on a statewide basis.
- Cost estimates for projects beyond the first few years of the plan period may involve significant future changes due to the long-range nature of the plan, modifications to project scope, uncertainty about future inflation, and the absence of detailed project design.
- The analysis combines federal, state and local funding and compares the total against the aggregate expenditures identified in the plan. Except for the distinction between highway and transit, this doesn't account for the fact that certain funding sources are available only for specific purposes.

ANTICIPATED REVENUES FOR ENCOMPASS 2040

A 30-year projection of transportation revenue was developed by the MPO and approved by the Intermodal Transportation Policy Committee (as updated) in August 2016. Transportation revenues historically available to, or spent within, the OCARTS area were identified from a variety of federal, state and local sources, and reflect funding for all transportation modes that move both people and goods. The total revenue projection is just over $10.4 billion.

Federal and state funds spent within the OCARTS area during the first five years of the plan period (FFY 2010 – FFY 2014) served as the historical basis to develop an annual average that was projected over the 30-year planning period. Additionally, federal discretionary funds, tied to specific OCARTS projects, were included in the estimated federal revenues, and local revenues were estimated based on a survey of OCARTS area local governments. More detailed information on the MPO's revenue projection for Encompass 2040 is included in a separate report available from ACOG.

The funding categories listed below are part of the Encompass 2040 revenue projection. Federal sources spent between FY 2010 and FY 2014 spanned the two previous Federal Surface Transportation laws—the 2005 Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) and the 2012 Moving Ahead for Progress in the 21st Century Act (MAP 21)—as identified on pages 138 and 139.

FEDERAL REVENUE SOURCES

STREETS AND HIGHWAYS

Federal Highway Administration Formula Programs[1]:

- Bridge Replacement and Rehabilitation (BR), SAFETEA-LU
- Congestion Mitigation/Air Quality (CMAQ), MAP-21
- Highway Safety Improvement Program (HSIP), MAP-21
- Interstate Maintenance (IM), SAFETEA-LU
- National Highway System (NHS), SAFETEA-LU
- Safe Routes to School (SRTS), SAFETEA-LU
- Surface Transportation Program (STP), MAP-21
  (Statewide, Urbanized Area, Enhancement, and Safety)
- Transportation Alternatives Program (TAP), MAP-21

STREETS AND HIGHWAYS

Federal Highway Administration Discretionary Programs:

- American Recovery and Reinvestment Act of 2009 (ARRA)
- Emergency Relief (ER)
- Intelligent Transportation Systems (ITS)
- I-40 Crosstown (OKCY-XTWN)
- Transportation Community Systems Preservation (TCSP)
- Other Discretionary Earmarks

TRANSIT

Federal Transit Administration Formula Programs[2]:

- Sec. 5307: Urbanized Area Funds, MAP-21
  (Oklahoma City UZA and Norman UZA)
- Sec. 5310: Elderly and Persons with Disabilities Program, MAP-21
- Sec. 5311:Non-Urbanized Area Formula Program, MAP-21
- Sec. 5316 – Jobs Access and Reverse Commute (JARC), SAFETEA-LU
- Sec. 5317: New Freedom (NF),SAFETEA-LU
- Congestion Mitigation/Air Quality (CMAQ) ,Transferred from FHWA to FTA, MAP-21

FOOTNOTES:
1: Indicates the more recent federal law in which the federal source was a separate funding program. Under MAP-21, NHPP replaced BR, IM and NHS. TAP replaced SRTS and STP-Enhancement.

2: Indicates the latest federal law in which the federal source was a separate funding program. Under MAP-21, JARC was consolidated into the Sec. 5307 Program and New Freedom into the Section 5310 Program.

TRANSIT

Federal Transit Administration Discretionary Programs:

- Sec. 5309: Discretionary Capital Program, MAP-21
- American Recovery and Reinvestment Act of 2009 (ARRA)
- Transportation Investment Generating Economic Recovery (TIGER) Grant, Other

STATE REVENUE SOURCES

STREETS AND HIGHWAYS

- State Highway Maintenance Funds
- State Bridge and Road Funds: Asset Preservation
- State Railroad Revolving Fund
- County Road and Bridge Funds
- Industrial Access Program
- Lake Access Program
- State Taxes & Fees Distributed to Counties for Roads
- State Taxes & Fees Distributed to Cities and Towns
- Oklahoma Turnpike Authority (OTA)

TRANSIT

- Public Transit Revolving Fund

LOCAL REVENUE SOURCES

Dedicated to Arterial Street, Bicycle and Pedestrian Improvements:

- General Fund
- General Obligation Bonds
- Earmarked Sales Tax
- Street and Alley Fund
- Contributions by Developers

TRANSIT

- Municipal and County funds: Budgeted for transit
- University funds: Budgeted for transit
- Farebox: Advertising and other revenues
- General Obligation Bonds
- MAPS 3 Sales Tax: Budgeted for Streetcar and Intermodal Hub
- Project 180 Budgeted for Intermodal Hub

Table 14.1 summarizes the total OCARTS area revenue projection. All figures are rounded, and an inflation factor was not applied to the projected revenues.

TABLE 14.1: ESTIMATED TRANSPORTATION REVENUES

A. STREETS & HIGHWAYS - FFY 2010-2040	ESTIMATED 30 YEAR TOTAL
Federal Sources	
Federal-aid Formula Funds - Includes NHPP, HSIP, & STP Funds (UZA, Statewide) - a portion of STP funds will be spent on bicycle & pedestrian improvements	$3,139,606,500
Discretionary Funds - FFY 2010-2014 - Includes ARRA, ER, ITS, I-40 Crosstown earmarks & TCSP	$254,937,500
Future Discretionary Funds - FFY 2015-2017 - Includes remaining I-40 Crosstown earmarks & TCSP	$57,329,300
State Sources	
State Maintenance, Industrial Access and Lake Access Programs - Includes County Road & Bridge Funds and State Road, Bridge & RR Maint. Funds	$1,016,761,000
Oklahoma Turnpike Authority (OTA) - (equals estimated turnpike costs)	$736,526,100
State Taxes & Fees Distributed Directly to Counties for Roads - Includes Gasoline, Diesel & Special Fuel Taxes, Gross Production Taxes, and Motor Vehicle Collections	$887,321,500
State Taxes & Fees Distributed Directly to Cities and Towns - Includes Gasoline Excise Tax, Motor Vehicle Collections	$341,961,400
Local Sources	
Local Funds for Roadway Construction and Maintenance - Includes funding for roadways from: General Fund, Dedicated Sales Taxes, General Obligation Bonds, Street & Alley Fund, and Developer Contributions	$2,435,101,700
Street & Highway Subtotal	**$8,869,545,000**

B. BICYCLE & PEDESTRIAN MODES - FFY 2010-2040	ESTIMATED 30 YEAR TOTAL
Federal Sources	
Federal-aid Formula Funds - Includes TAP (UZA, Statewide)	$68,682,600
Local Sources	
Local Funds for Bicycle & Pedestrian Construction and Maintenance - Includes funding for bicycle & pedestrian improvements from: General Fund, Dedicated Sales Taxes, General Obligation Bonds, and Developer Contributions	$206,538,100
Bicycle & Pedestrian Subtotal	**$275,220,700**

Note: Estimated Revenues are not inflated. Figures are rounded.

TABLE 14.1: ESTIMATED TRANSPORTATION REVENUES *continued*

C. TRANSIT MODE - FFY 2010-2040	ESTIMATED 30 YEAR TOTAL
Federal Sources	
Federal-aid Formula Funds - Includes FTA Sec. 5307, 5310, 5311, JARC, New Freedom, and CMAQ Transfers	$339,441,800
Discretionary Funds - FFY 2010-2014 - Includes FTA Sec. 5309, ARRA, and TIGER	$63,607,800
State Sources	
Transit Revolving Funds for COTPA, CART, Citylink, First Capital Trolley, and Delta Public Transit (partial)	$43,846,800
Local Sources	
Includes municipal, university & private funds for urban and rural operators	$831,652,900
Transit Subtotal	**$1,278,549,300**
TOTAL ESTIMATED REVENUES FOR ENCOMPASS 2040	**$10,423,315,000**

Note: Estimated Revenues are not inflated. Figures are rounded.

ESTIMATED COSTS

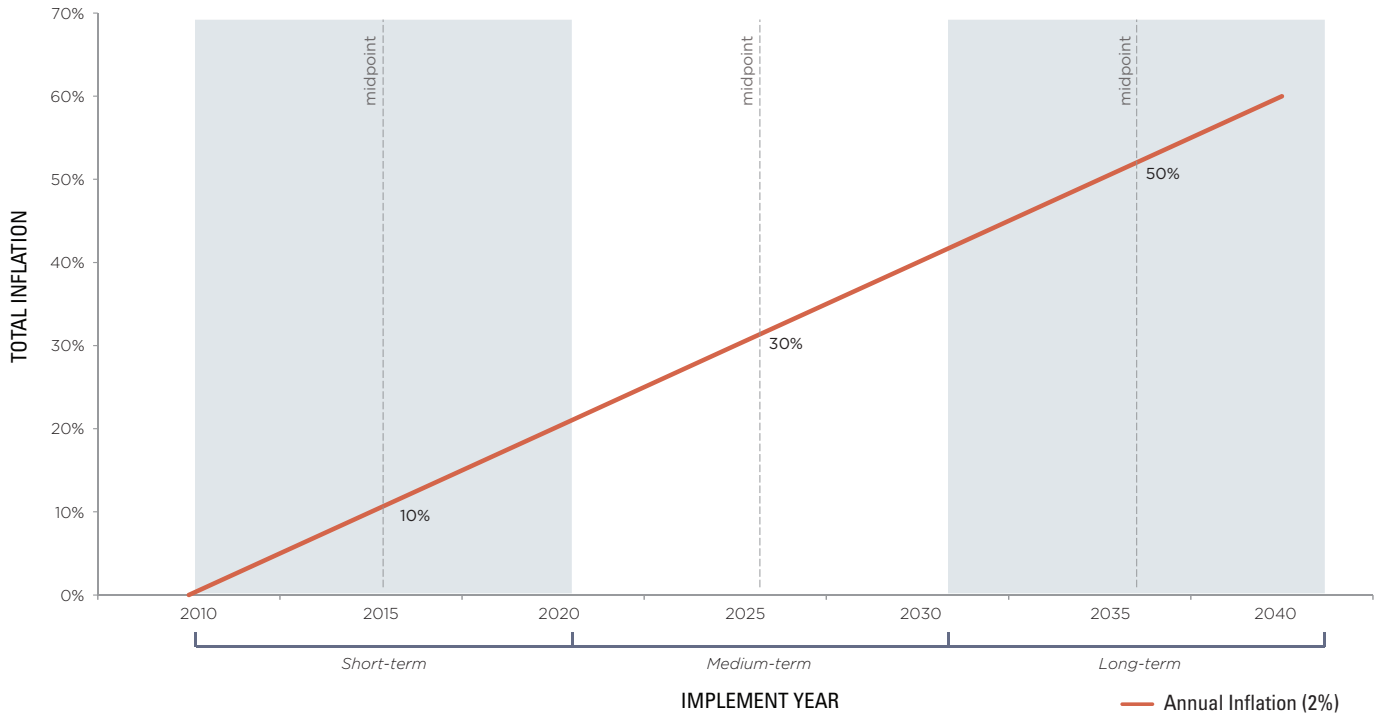
COST INFLATION ASSUMPTIONS

The Safe Accountable Flexible Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU) introduced, and subsequent federal law has continued, the requirement that MPOs consider inflation in the development of transportation plans and programs. Specifically, federal law requires that costs must reflect "year of expenditure" (YOE) dollars. This proved to be challenging since there is no federal guidance or common best practices available to MPOs for estimating future inflation. ACOG staff developed the following methodology to address the YOE inflation requirement.

Project cost estimates were inflated using an estimated growth rate of two percent per year as the basis, which equates to a 60 percent increase over the life of the 30-year plan. The two percent annual increase was based on national economic indicators which showed a gradual downward trend between 2010 and 2015. According to the U.S. Bureau of Labor Statistics and Bureau of Economic Analysis, the Consumer Price Index reflected an average annual growth rate of approximately 1.68 percent over the five-year period (ranging from 3.16 percent between 2010 and 2011 to 0.12 percent between 2014 and 2015). The MPO rounded the 1.68 percent average annual growth rate up to 2.0 percent as its estimated annual rate of growth throughout the plan period.

Since the implementation of projects and maintenance will be spread out over the 30 year plan period, three separate inflation bands were assumed in order to create year-of-expenditure project cost estimates. Base year (2010) costs were inflated by 10 percent for projects expected to be constructed in the short-term (2010-2020), 30 percent for projects expected to be constructed in the medium-term (2021-2030), and 50 percent for long-term projects (2031-2040). The amount of inflation (10, 30, or 50 percent) correlates to the 10-year period in which construction is estimated to occur, as provided by the state or local government project sponsor. The inflation estimates used for the short, medium, and long-term bands reflect the average, or mid-point, of inflation for the respective 10-year period, as shown in Figure 14.1. Maintenance costs were inflated by the same factors correlating to the 10-year period in which the maintenance would occur.

FIGURE 14.1: ENCOMPASS 2040 YEAR-OF-EXPENDITURE (YOE) INFLATION



ALTERNATE NETWORKS AND SCENARIOS

The following alternates were developed and modeled with projected 2040 traffic volumes as part of the Encompass 2040 plan development process:

Alternate 1—Present + Committed Network

The Present + Committed Network included all existing roadways and transit routes with improvements implemented since the 2010 base year, as well as those for which funding was committed through December 2016. This network—sometimes referred to as a "no build" network—would complete all projects underway, with future transportation funding focused on maintenance of the existing system. Alternate 1 was an affordable option, but it would not address growing traffic congestion anticipated through 2040.

Alternate 2—Improved Transportation Network

Alternate 2 included all existing roadways and transit routes, the Present + Committed Network (Alternate 1), as well as future transportation improvements. These improvements included:

- Transportation projects submitted by local governments during the Encompass 2040 call for projects, including sidewalk and biking components,
- Long-range projects on the State Highway System (interstates, U.S. highways and state highways) provided by the Oklahoma Department of Transportation (ODOT),
- New OCARTS area turnpikes to be constructed by the Oklahoma Turnpike Authority as part of Driving Forward OK (SW Kilpatrick Turnpike extension and NE Oklahoma County loop),
- Roadway improvements to close gaps identified by ACOG staff, and
- Phase one improvements at the Santa Fe Station Intermodal Hub scheduled for completion in 2017, and the Oklahoma City downtown modern streetcar scheduled to open in 2018.

More than 200 projects were received, evaluated and scored using the Encompass 2040 Project Selection Criteria. Alternate 2 was deemed affordable using revenues anticipated to be available to the OCARTS area during the 30-year plan period, and became the adopted 2040 network.

Alternate 3—Improved Transportation Network + Regional Transit

The Alternate 3 network included all existing roadways and transit routes, the Present + Committed Network (Alternate 1), future transportation improvements (Alternate 2), as well as

regional commuter rail, bus rapid transit, and feeder bus routes identified by the 2014 Central Oklahoma Commuter Corridors Study and the 2005 Regional Fixed Guideway Study. The Alternate 3 network was considered illustrative, due to the lack of dedicated funding sources to implement new regional high capacity transit improvements.

Scenarios—Historical Trend and Nodal Growth

Each Alternate network was modeled using two potential land use patterns for the region in 2040. Scenario 1 continued the region's historical trend of outward growth with no new zoning initiatives. Scenario 2 focused on growth that would encourage infill, nodal, and downtown development within communities, which would be more supportive of future regional transit. The scenarios were used to demonstrate how potential land use changes could improve the efficiency of the transportation system, but they did not impact the estimated costs of the alternates.

DEVELOPMENT OF TRANSPORTATION COSTS BY MODE

ESTIMATED COSTS FOR ROADWAY CONSTRUCTION, MAINTENANCE AND RIGHT-OF-WAY

Each of the Encompass 2040 plan alternates was assigned an estimated cost by the MPO. Street and highway costs were based mostly on estimated unit costs developed from recent construction information provided by the Oklahoma Department of Transportation (ODOT) and by local entities for non-highway facilities.

Table 14.2 provides the OCARTS area unit costs approved by the Policy Committee in January 2016 and used for estimating the costs of construction, maintenance, and right-of-way acquisition for Encompass 2040. Unit costs for construction include engineering, grading, drainage, surface and base improvements, utility relocation, sodding, signing, and structure costs (such as bridges, interchanges, curbs, and gutters). Unit costs for maintenance on interstates, turnpikes and freeways include resurfacing with concrete, and unit costs for maintenance on arterials and collectors include base repair and resurfacing with a 2-3 inch asphalt overlay.

Costs for roadway segments vary based upon federal functional classification and their urban or rural location. The four functional classifications included in the OCARTS network are interstates/turnpikes/ freeways, principal arterials, minor arterials, and urban collectors. Since the costs of construction and maintenance of interstate, turnpike and freeway facilities are significantly higher than other classifications, separate unit costs were applied to those facilities.

Typically, it is more expensive to build or widen roadways in the urban portion of the region than in rural areas due to increased development, higher right-of-way costs, and greater expenses to relocate utilities and remove encroachments. As a result, unit costs were prepared for both urban and rural facilities. The urban/rural designation was based on the Oklahoma City Urban Area Boundary map approved by the MPO and the Oklahoma Division of the Federal Highway Administration in 2013.

The approved unit costs reflect 2010 base year dollars, which were later inflated, by project, using the cost inflation methodology described previously. Each existing link on the network was assumed to require maintenance over the 30-year plan period a total of three times. Where improvements were planned (new construction, reconstruction or widening), the number of maintenance cycles included was relative to the project's proposed implementation phase. Maintenance costs for segments planned for improvement during the short and medium-term periods were calculated once, subsequent to the improvement, at the highest inflation rate of 50 percent.

Lump sum cost estimates for several major projects were provided by ODOT and the Oklahoma Turnpike Authority (OTA) rather than applying the unit costs provided in Table 14.2. These were developed through recent studies or project scoping and design.

Below is a description of the projects for which separate costs were received, and later added to the network calculations to arrive at total network costs.

The Alternate 1 (Present + Committed) Network includes cost estimates for completion of major interchange improvements at the following locations:

- Turner Turnpike near Peebly Road (eastbound on, westbound off)
- Broadway Extension/Memorial Road
- I-235/I-44 (part)
- I-35/Lindsey Street in Norman
- I-35/Main Street in Norman
- I-35/SH-9 (south half)

The Present + Committed Network also includes costs for completion of final project components of the I-40 Crosstown relocation, as well as construction of the Oklahoma City Boulevard. The boulevard will be an at-grade street within the right-of-way of the former elevated I-40 structure, providing direct access to Bricktown and downtown Oklahoma City.

The Alternate 2 and Alternate 3 Networks include the following additional interchange modifications and turnpike construction projects, as provided by ODOT and OTA:

- I-35/SH-33
- I-35/Waterloo Road
- I-35/I-240 (Crossroads Interchange)
- I-40/Frisco Road
- I-40/I-44/I-240
- I-40/I-35
- I-40/Douglas Boulevard
- I-40/Choctaw Road
- I-44/I-35
- Kilpatrick Turnpike extension from SW 15th Street to Airport Road
- NE Oklahoma County Turnpike Loop from Turner Turnpike (I-44) to I-40

Additional Network costs include system wide operational improvements using transportation system management (TSM), regional travel demand management (RTDM), and intelligent transportation system (ITS) technologies, as well as numerous interstate bridge widening projects identified by ODOT.

GOODS MOVEMENT COSTS

Within the OCARTS area, goods are moved by truck, rail and air as described in the Chapter 10 of this report. All of these modes for transporting goods are reliant upon the street and highway system for a seamless trip from the manufacturer to the customer. Therefore, the costs for improving access to airport terminals, rail yards, warehouses and intermodal facilities are reflected in the street and highway alternates. Costs for upkeep and improvement of freight rail tracks and yards are the responsibility of the owning entity. Long-range planning and costs for improving access and mobility within the "fence line" of area airports are the responsibility of the airport administrators and are reflected in their airport comprehensive plans and budgets, and thus are not included in this Plan.

ESTIMATED COSTS FOR BICYCLE AND PEDESTRIAN IMPROVEMENTS

Federal law encourages metropolitan areas to develop regional trails networks. Similar to street and highway planning, these networks require coordinated planning among multiple jurisdictions and should be linked to one another, as well as to transit stops, schools, parks, retail, and medical centers in order to provide transportation options for the community.

Several OCARTS communities have adopted trails master plans to develop biking and walking facilities within their individual jurisdictions. In 2014, ACOG completed the OCARTS Regional Bicycle Master Plan in cooperation with its planning partners and local government members. The Plan identifies priority corridors for future regional bicycle connections among communities to supplement existing and planned local bike facilities. The regional corridors are intended to get bicyclists around the region safely and quickly; however, the total system may take decades to complete.

Encompass 2040 does not include a regional sidewalk plan. However, all OCARTS communities are encouraged to provide accessible sidewalks that connect residential, commercial and public areas, especially near transit stops. Often, communities require sidewalk construction by private developers at the time construction permits are sought. Chapter 7 of this report provides more information about the region's bicycle and pedestrian plans and priorities.

Many of the projects submitted during the Encompass 2040 Call for Projects contained bicycle and pedestrian components. Similar to the unit costs developed for arterials and collectors, the bicycle/pedestrian unit costs were developed by local government members and were based on recent construction costs. Table 14.3 provides the Encompass 2040 unit costs used to estimate the costs of local bicycle and pedestrian facilities.

The unit costs below were converted from current (2015) costs to 2010 base year dollars, and subsequently inflated to YOE dollars based upon project implementation phasing. Cost estimates for additional planned bicycle and pedestrian improvements were estimated from locally adopted trails master plans. In total, the cost for OCARTS area bicycle and pedestrian improvements through 2040 was estimated at $272.5 million.

TABLE 14.2: PROJECT UNIT COSTS (PER LANE-MILE) IN 2010 DOLLARS

PROJECT CONSTRUCTION TYPE	INTERSTATES, TURNPIKES, FREEWAYS	PRINCIPAL & MINOR ARTERIALS, COLLECTORS
URBAN AREA		
1. NEW CONSTRUCTION		
Construction on New Alignment	$ 13,781,500	$ 918,800
2. WIDENING		
Reconstruction - Widening with Access Roads	$ 1,344,400	N/A
Reconstruction - Widening without Access Roads	$ 983,100	$ 1,102,500
Reconstruction - Widening, Divided Parkway	N/A	$ 1,148,500
3. MAINTENANCE		
Mill and Overlay with necessary Base Repair	$ 174,600	$ 137,800
4. OTHERS		
Bridges (if constructed separately) - per square foot	$ 150	$ 150
Right-of Way - per acre	**$ 324,200**	**$ 202,100**
RURAL AREA		
1. NEW CONSTRUCTION		
Construction on New Alignment	$ 5,053,200	$ 803,900
2. WIDENING		
Reconstruction - Widening without Access Roads	$ 983,100	$ 551,300
3. MAINTENANCE		
Mill and Overlay with necessary Base Repair	$ 174,600	$ 128,600
4. OTHERS		
Bridges (if constructed separately) - per square foot	$ 150	$ 150
Right-of Way - per acre	**$ 55,000**	**$ 60,600**

Unit costs for Interstates, Turnpikes & Freeways were based on ODOT awards and provided by the Pre-Construction Program Manager, ODOT Chief Engineer Office, June 2015 and updated Jan. 2016. | Unit costs for Arterials and Collectors reflect discussion at a meeting held at ACOG on July 30, 2015, attended by representatives of Edmond, Midwest City, Norman, Oklahoma City, Oklahoma County and ACOG (with subsequent follow-up). | 2015 costs were converted to 2010 dollars using the Bureau of Labor Statistics CPI Inflation Calculator. Final unit costs are rounded and were approved by the ITPC January 28, 2016.

TABLE 14.3: ESTIMATED UNIT COSTS FOR SIDEWALKS AND BICYCLE FACILITIES

FACILITY TYPE	2010 BASE YEAR COST	UNIT
Sidewalks, Concrete (4-5 ft. wide)	$60	Linear Ft.
Multi-Purpose Trail, Asphalt (10 ft. wide)	$130	Linear Ft.
Bike Lanes (both sides of street)	$800,000	Mile
Bike Routes	$5,500	Mile

Figures are for construction and do not include maintenance. | Bike lanes include widening or reconstruction of the roadway to accommodate sufficient width for bicycles and pavement markings, usually on both sides of the street. | Bike routes include signage and pavement markings on existing roadway widths.

ESTIMATED COSTS FOR URBAN AND RURAL PUBLIC TRANSPORTATION

Most of the estimated costs for public transportation capital and operations were based on historical federal, state, and local funding spent within the OCARTS area between FFY 2010 and FY 2014. Information was gathered from the Federal Transit Administration's National Transit Database (NTD) reports, as well as from local transit operators/administrators—the Central Oklahoma Transportation and Parking Authority (COTPA), Cleveland Area Rapid Transit (CART), Edmond Citylink, and the Transit Programs Division[3] of the Oklahoma Department of Transportation. This information was used to develop an annual estimate that was projected over the 30-year plan period. The 30-year estimated transit costs are presented in Table 14.4.

FOOTNOTE: 3 The ODOT Transit Programs Division administers the FTA Sec. 5311 Rural Public Transit Program, which provides transit service within portions of the OCARTS area via First Capital Trolley in Guthrie and Delta Public Transit in the southern part of the region.

Federal transit funding sources available to the region for preparation of Encompass 2040 included:

- Sec. 5307 Urbanized Area Formula Program
- Sec. 5309 Discretionary Capital Program
- Sec. 5311 Rural Area Formula Program
- Sec. 5310 Elderly and Persons with Disabilities Program
- Job Access and Reverse Commute (JARC) Program (unspent balance prior to MAP-21)
- New Freedom Program (unspent balance prior to MAP-21)

JARC and New Freedom were discontinued as separate FTA funding programs under MAP-21. JARC was combined into the Sec. 5307 Program, and New Freedom was incorporated into the Sec. 5310 Program.

Additional non-recurring federal sources included funding provided to COTPA and CART under the 2009 American Recovery and Reinvestment Act (ARRA) and TIGER grant funds awarded to the City of Oklahoma City for improvement of the Santa Fe Station Intermodal Hub.

An additional federal source is the Congestion Mitigation/ Air Quality (CMAQ) Program. CMAQ funds are provided by the Federal Highway Administration (FHWA) and are considered flexible because federal law allows them to be used for transit improvements as well. Each year, a portion of Oklahoma's CMAQ funds are provided to ACOG and transferred to FTA for use by COTPA.

At the state level, the Oklahoma Legislature annually appropriates funding to the Public Transit Revolving Fund to assist with the provision of urban and rural transit services throughout the state. The level of funding received by CART, First Capital Trolley, and Delta Public Transit is based on their previous year's revenue miles. COTPA's share is limited to roughly 20 percent of the statewide total, even though its revenue miles would justify a greater portion.

Locally, fares are collected from patrons who ride the bus, except for Citylink service which is provided free of charge. These farebox revenues generate approximately 12 percent of the cost of providing the region's transit services. The Cities of Oklahoma City, Norman, and Edmond also budget a portion of their General Fund revenues annually to provide their respective transit services. Other cities and universities that receive transit service from COTPA, CART, or Citylink also provide some local funds. Several non-profit organizations contract with COTPA and participate in funding special programs that serve elderly and persons with disabilities..

TABLE 14.4: ESTIMATED COSTS OF ENCOMPASS 2040 TRANSIT NETWORK

TRANSIT OPERATOR	FEDERAL FORMULA	FEDERAL DISCRETIONARY	FEDERAL OTHER	STATE	LOCAL	ESTIMATED 30 YEAR TOTAL
COTPA	238,036,254	57,526,176	11,639,762	30,525,780	717,519,348	1,055,247,320
CART	42,173,904	6,081,573	975,580	2,937,222	54,366,150	106,534,429
Citylink	2,070,750	0	567,004	2,490,900	37,940,230	43,068,429
First Capital Trolley	18,192,792	0	0	6,175,344	15,902,616	40,270,752
Delta Public Transit	1,137,888	0	0	217,494	876,156	2,231,538
Sec. 5310	24,647,843	0	0	0	0	24,647,843
Other	0	0	0	1,500,000	5,048,353	6,548,353
Total	**326,259,431**	**63,607,749**	**13,182,346**	**43,846,740**	**831,652,853**	**1,278,549,119**

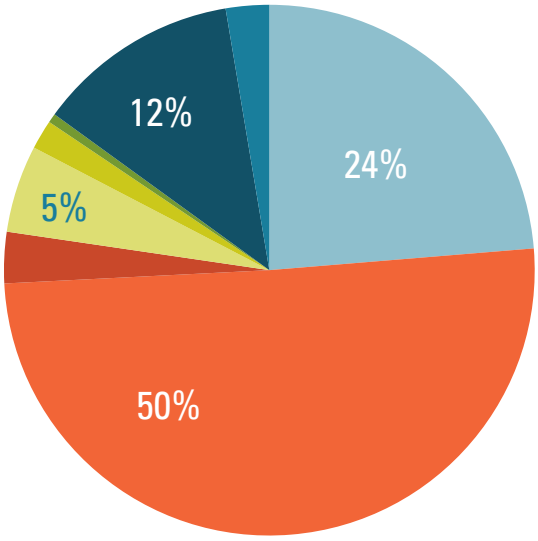
Federal formula funds include Sec. 5307 Urban, Sec. 5311 Rural, and Sec. 5310 Elderly & Disabled program funds. | Federal discretionary funds include Sec. 5309, TIGER grant funds, and remaining balances of American Recovery and Reinvestment Act (ARRA) funds and earmarks. | Federal other funds include CMAQ, STBG-UZA (for Hub), and remaining balances of Job Access Reverse Commute (JARC) and New Freedom funds. | Delta Public Transit funds are 25% of total; approximately 25% of service area is located within the OCARTS area.

TABLE 14.5: ESTIMATED COSTS OF ENCOMPASS 2040

FUNCTIONAL CLASSIFICATION	LINEAR MILES	LANE MILES	ESTIMATED COST [A] CONSTRUCTION	MAINTENANCE	RIGHT-OF-WAY	MAJOR INTERCHANGES [b]	OTHER IMPROV [c]	BRIDGES [d]	TOTALS
Turnpikes [e]	85	364	$549,506,944	$171,905,922		$15,113,169			$736,526,035
Interstates & Freeways	235	1,206	$965,667,189	$691,594,077	$62,050,000	$534,825,202	$30,000,000	$184,760,000	$2,468,896,468
Principal Arterials	332	1,348	$184,768,721	$647,040,000	$7,333,780		$7,600,000		$846,742,501
Minor Arterials	1,672	4,362	$522,584,443	$2,090,803,030	$143,036,190		$15,000,000		$2,771,423,663
Collectors	1,479	3,368	$225,558,618	$1,616,640,000	$109,908,222		$5,000,000		$1,957,106,840
Street & Highway Total	3,803	10,648	$2,448,085,915	$5,217,983,029	$322,328,192	$549,938,371	$57,600,000	$184,760,000	$8,780,695,507
								Transit - Current Service + Streetcar [f]	$1,278,549,300
								Bicycle and Pedestrian [g]	$272,513,112
								Total Costs	**$10,331,757,919**

a) Individual project costs were inflated by 10 percent for short-term projects (2010-2020), 30 percent for medium-term projects (2021-2030), and 50 percent for long-term projects (2031-2040) | b) Additional major interchanges include I-35/SH-33, I-35/Waterloo Rd., I-35/I-240, I-40/Frisco Rd., I-40/I-44/I-240, I-40/I-35, I-40/Douglas, I-40/Choctaw Rd., I-44/I-35 | d) Includes interstate bridge widening projects identified by the Oklahoma Department of Transportation (ODOT) | e) Construction costs include Kilpatrick Turnpike extension from SW 15th to Airport Rd., NE OK County Loop from Turner TP to I-40, and H.E. Bailey TP upgrade | f) Transit Costs include current services levels, plus capital and operating for the downtown OKC streetcar and Santa Fe Intermodal Hub | g) Costs include bicycle & pedestrian components submitted with Alternate 2 roadway projects plus an estimated $145 million to implement regional trails plans.

FIGURE 14.2: ENCOMPASS 2040 COSTS BY CATEGORY



Construction	2,448,085,915	23.69%
Maintenance	5,217,983,029	50.5%
ROW	322,328,192	3.12%
Interchanges	549,938,371	5.32%
Bridges	184,760,000	1.79%
Other	57,600,000	0.56%
Transit	1,278,549,300	12.37%
Bike/Ped	272,513,112	2.64%
TOTAL	**10,331,757,919**	**100%**

In December 2009, Oklahoma City voters approved a temporary sales tax increase known as Metropolitan Area Projects 3 (MAPS 3). MAPS 3 included funding for construction of a downtown circulator, subsequently determined through an Alternatives Analysis to be a modern streetcar. Capital costs for the streetcar are anticipated to be $131 million, with annual operating costs estimated at $3.65 million/year once operation begins in 2018. These estimated costs are included under "COTPA Local" in Table 14.4.

During the development of Encompass 2040, the MPO modeled an illustrative transportation network (Alternate 3) inclusive of regional transit—commuter rail, bus rapid transit, and enhanced bus—as recommended by the 2005 Regional Fixed Guideway Study and the 2014 Central Oklahoma Commuter Corridors Study. In addition to the downtown Oklahoma City modern streetcar and Santa Fe Station improvements currently underway, the desired OCARTS regional transit system would include approximately:

- 44 miles of commuter rail transit (CR)
- 40 miles of bus rapid transit (BRT)
- Future extensions of the downtown streetcar system, and
- Enhanced bus service connecting to future rail and BRT stations.

Federal law requires that metropolitan transportation plans be financially realistic. Therefore, the region cannot include transit improvements/services in its long-range plan beyond its anticipated revenues. This results in the level of public transportation within the OCARTS area remaining relatively constant even though the demand for more service is growing. Additional revenues, dedicated to transit, from federal, state, and/or local sources would have to become available in order to include the more extensive regional public transportation system described above in the affordable plan.

In total, approximately $1.28 billion in public transportation costs were assumed over the 30-year plan period, which is generally equivalent to the Encompass 2040 projected revenues for public transportation.

TOTAL COSTS FOR ENCOMPASS 2040

Table 14.5 summarizes the estimated total cost of Encompass 2040 (Alternate 2) by mode. Street and highway costs are provided by type of improvement and functional classification.

Figure 14.2 illustrates the estimated Encompass 2040 costs by type of improvement. All categories except for Transit and Bicycle/Pedestrian, below, are components of the Street and Highway network costs.

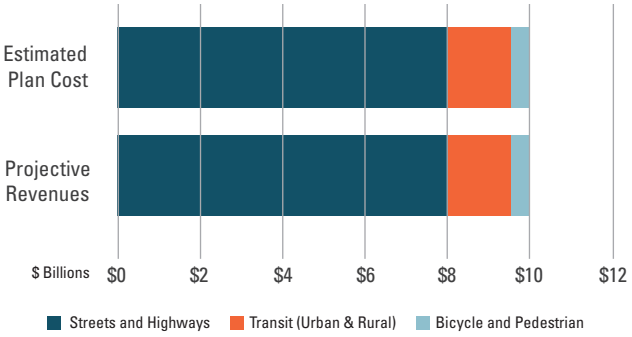
ADOPTION OF THE FINANCIALLY CONSTRAINED PLAN

The Encompass 2040 OCARTS Metropolitan Transportation Plan was adopted by the Intermodal Transportation Policy Committee in October 2016.

The following information demonstrates that the MTP is financially feasible and that the estimated costs to implement the Plan's recommendations will not exceed the estimated revenues reasonably available to the OCARTS area during the 30-year plan period. Table 14.6 provides the estimated distribution of revenues and costs by mode for Encompass 2040.

The revenues projected for implementation of Encompass 2040 total approximately $10.4 billion, approximately $91.5 million greater than the estimated MTP costs. System preservation, maintenance and operation, and planned infrastructure improvements were all considered in the development of Encompass 2040.

FIGURE 14.3: ENCOMPASS 2040 COSTS & REVENUES



This MTP funding breakdown by mode, reflected in Figure 14.3 and Table 14.6, was developed for planning purposes only and is consistent with historical trends and federal program guidelines.

The plan's intent is to ensure that all modes are considered in the Plan's financial capacity analysis, and reflects the fact that revenues for roadway and transit purposes are generally provided separately at the federal level through programs administered by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

More detailed information concerning the sources and methodologies used to develop the estimated costs and revenues described in this chapter is available in the following ACOG 2017 report: Task 2.01(4)-Encompass 2040 Financial Element.

BENEFIT-COST ANALYSIS OF THE ENCOMPASS 2040 ALTERNATE NETWORKS

The MPO conducted a benefit-cost analysis of the Encompass 2040 transportation alternate networks. This analysis compared the benefits and costs associated with each alternate network to determine if the suggested improvements were representative of sound investment decisions.

As a reminder, the 2040 transportation alternates included the following:

- Alternate 1 – Present + Committed Network (No Build & Maintenance): Included all roadways and transit routes implemented through the 2010 base year, as well as improvements for which funding was committed through December 2016. (Financially Feasible)
- Alternate 2 – Improved Transportation Network (Submitted 2040 Projects): Included the Present + Committed Network and future transportation improvements submitted by local governments and ODOT during the Encompass 2040 Call for Projects, two new OCARTS area turnpikes, the downtown Oklahoma City modern streetcar, and gap projects identified by ACOG staff. (Financially Feasible – Adopted 2040 network)
- Alternate 3 – Improved Transportation Network + Regional Transit: Included the Present + Committed Network (Alternate 1), future transportation improvements (Alternate 2), and regional commuter rail, bus rapid transit, and supportive bus routes, as identified by the Commuter Corridors Study and 2005 Regional Fixed Guideway Study. (Illustrative)

In addition, the alternates were modeled using two potential land use patterns for the region:

- Scenario 1 (Historical Trend): Continues similar development patterns of the past with no new zoning initiatives

TABLE 14.6: ANTICIPATED REVENUES AND COSTS FOR ENCOMPASS 2040

MODE	ESTIMATED PERCENT REVENUE	PROJECTED REVENUES	ESTIMATED PLAN COSTS	DIFFERENCE
Streets and Highways	85.1%	$8,869,545,000	$8,780,695,507	$88,849,493
Transit (Urban & Rural)	12.3%	$1,278,549,300	$1,278,549,300	$0
Bicycle and Pedestrian	2.6%	$275,220,700	$272,513,112	$2,707,588
Total	**100.0%**	**$10,423,315,000**	**$10,331,757,919**	**$91,557,081**

- **Scenario 2** (Nodal Growth): Encourages infill, nodal and downtown development in each community to support future regional transit

The benefit-cost (B/C) ratio is a standard measure of cost-effectiveness recommended by the Federal Highway Administration (FHWA). FHWA's suggested method focuses on the value of travel time and operating cost savings experienced by users of the system against the capital and maintenance costs involved in the construction and upkeep of the transportation network.

The benefit-cost ratio is calculated using the following formula:

$$\textbf{Benefit/Cost Ratio} = \frac{(RU_b - RU_p) - (D_p - D_b)}{(I_p - I_b)}$$

Where:

RU_b: The annual road user cost (annual vehicle operating costs plus annual travel time costs) for the base alternate

RU_p: The annual road user cost (annual vehicle operating costs plus annual travel time costs) for the alternate to be compared to the base alternate

D_b: The annual street maintenance cost for the base alternate

D_p: The annual street maintenance cost for the alternate to be compared to the base alternate

I_b: The annualized capital cost for the base alternate

I_p: The annualized capital cost for the alternate to be compared to the base alternate

TABLE 14.7: BENEFIT/COST RATIO COMPARISON OF ALTERNATES

ALTERNATES BEING COMPARED	B/C RATIO SCENARIO 1	B/C RATIO SCENARIO 2
Alternate 2 Compared to Alternate 1	5.30	5.57
Alternate 3 Compared to Alternate 1	5.11	5.21

The following assumptions were made:

- Road user per mile cost was based on AAA estimates - $0.56 per mile in 2010 ($0.85 in 2040)
- Travel time cost was based on FHWA guidance on travel time valuation - $21.00 in 2010 ($31.50 in 2040)
- Six percent (6%) travel time savings, as a result of operational improvements (e.g. intersection upgrades, Intelligent Transportation Systems deployment, signalization, signal coordination, etc.) throughout the network.

The B/C ratio analysis compared Alternates 2 and 3 to Alternate 1 to determine whether the benefit derived per dollar invested was less than, or greater than, the benefit derived from the no build alternate. If the value of the B/C ratio is 1.0 or greater, then the new alternate is considered a better investment than the no build alternate (Alternate 1). Therefore, if the B/C ratio is greater than 1.0 – based on value of travel time and operating cost savings to persons using the transportation network – the alternate network can reasonably be considered cost-effective. In addition, the higher the ratio, the more cost effective the alternate is deemed.

According to the B/C ratio analysis shown in the Table 14.7, Alternate 2 offers a significant benefit over Alternate 1 and a slightly better benefit/cost ratio than Alternate 3.