Memorandum

TO: Kevin Tilbury, Gresham Smith & Partners

FROM: Jie Bian, Cambridge Systematics

DATE: October 10, 2013, 2013

RE: Imagine Central Arkansas, Task 4. Draft Technical Memorandum for Revenue Forecasts and Alternative Revenue Sources

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Introduction

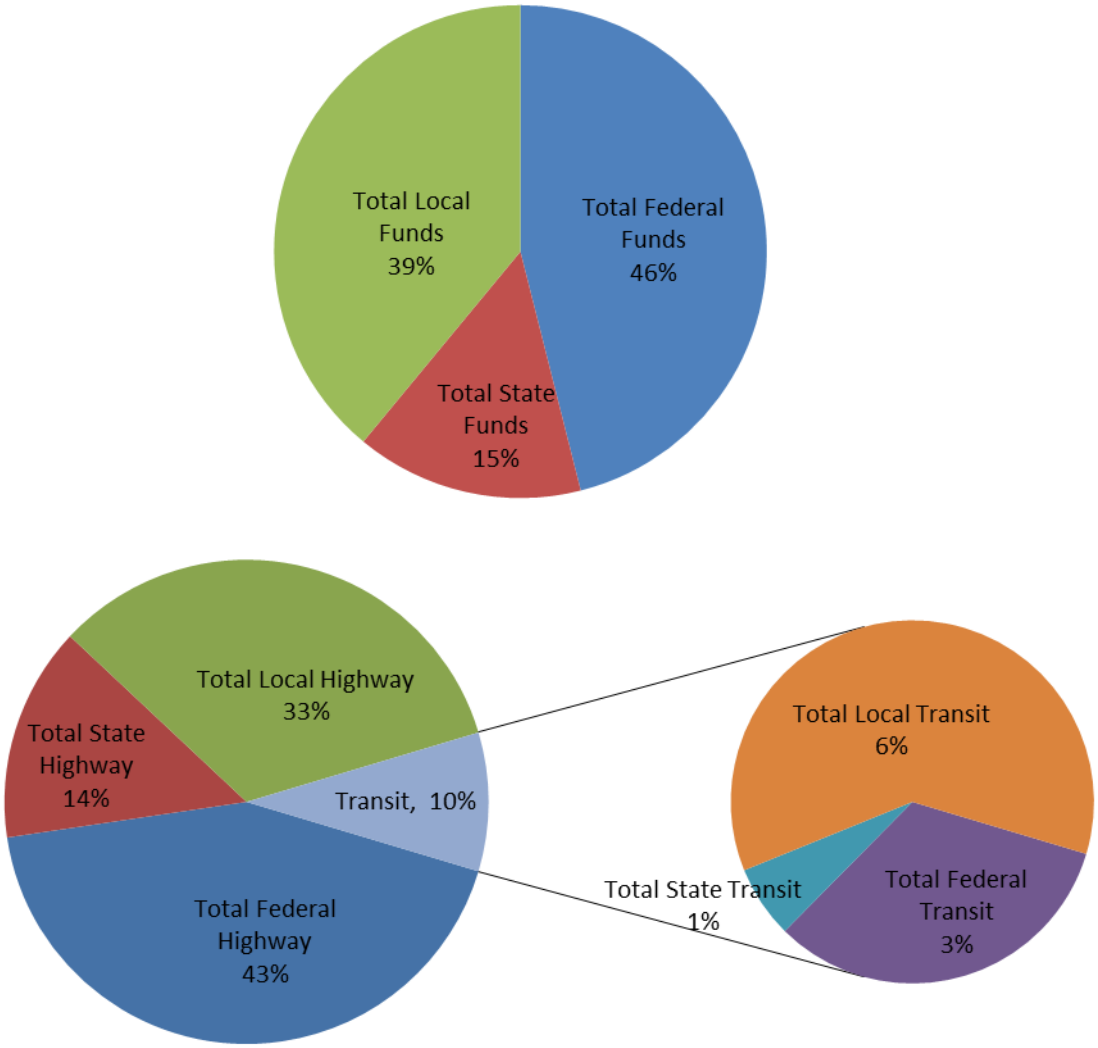
Title 23 United States Code (U.S.C.) Section 134 requires that a Long Range Metropolitan Transportation Plan (LRMTP) shall contain a financial plan that demonstrates how the adopted plan can be implemented, indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan, and recommends any additional financing strategies for needed projects and programs. The purpose of the financial plan is to demonstrate fiscal constraint, which ensures that the LRMTP reflects realistic assumptions about future revenues. This memo documents the methodology used to project future revenues for the Central Arkansas Regional Transportation Study (CARTS) area, and the resulting future revenue estimates.

The three major funding sources for transportation projects are Federal, State, and local funds. A transportation project can be funded through various combinations of the three funding sources. The funding sources that have been utilized in the CARTS area between FY 2006 and FY 2011 are described in the following section.

Summary of Historical Revenues and Funding Sources

Historical financial information relative to the funding of transportation needs within central Arkansas was obtained from Federal, State, and local agencies with the assistance of Metroplan and the Arkansas Highway and Transportation Department (AHTD). Overall, spending levels between FY 2006 and FY 2011 fluctuated significantly due to fluctuations in the number and size of highway projects that progress to construction in a given year. The average transportation funds CARTS received between FY 2006 and FY 2010 were $194.5 million. Based on the average over the five-year period, Federal funds make up 48 percent of total transportation funds in the CARTS area; local funds make up 41 percent; and State funds make up another 13 percent. When examining funding split between highway and transit, around nine percent of the total funds were used on transit. Local funding sources cover over 60 percent of the transit funds. Figure 1 presents the historical transportation spending and funding sources in the CARTS area.

Figure 1 CARTS Area Historical Transportation Spending and Funding Sources



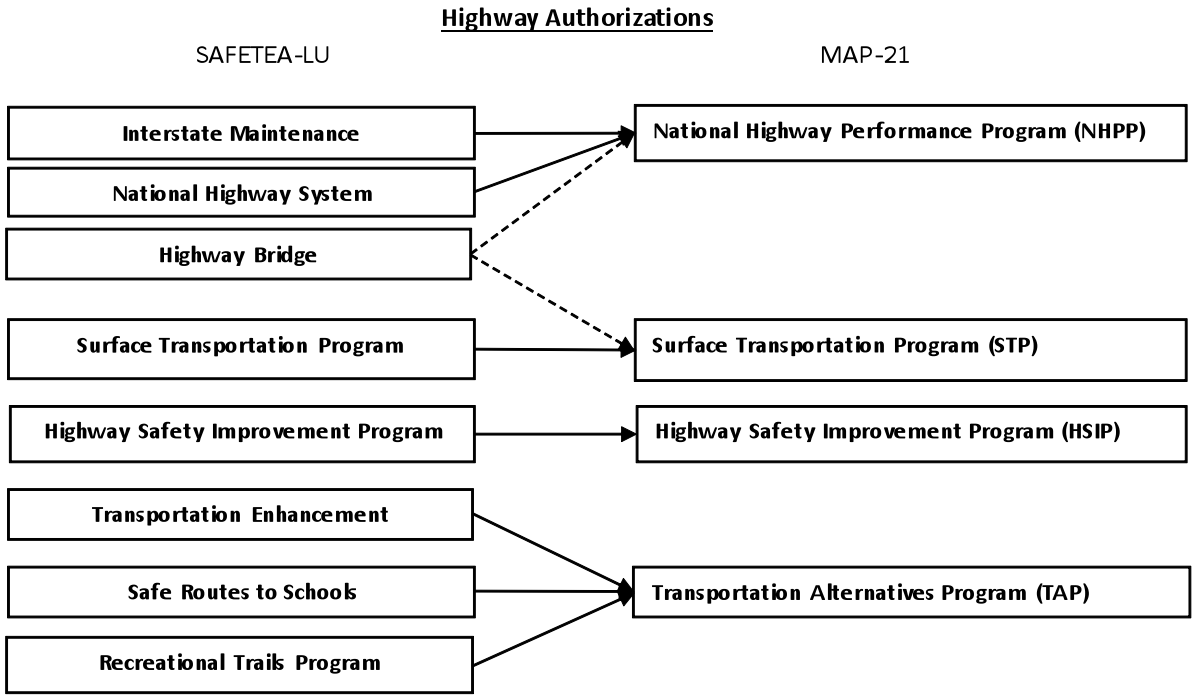
Federal Funding

Prior to FY 2013, Federal transportation funding was provided under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) transportation bill. Table 1 presents the Federal funding programs and average provisions for the CARTS area between FY 2006 and FY 2011 under SAFETEA-LU. According to the historical average, total Federal highway funds have traditionally added up to almost $85 million and transit funds add up to just under $6 million.

Table 1 SAFETEA-LU Funding Program Restructuring Under MAP-21

Federal Highway Funding Programs	Annual Average (FY 2006 - FY 2011) (in $Thousands)	Federal Transit Funding Programs	Annual Average (FY 2006 - FY 2011) (in $Thousands)
NHS	$25,375	FTA 5307	$3,849
IM	$19,753	FTA 5309 (CATA)	$626
STP-State	$17,393	FTA 5309 Discretionary (CATA)	$524
STP-Safety	$4,626	FTA 5309 (Human Service Providers)	$153
STP>200K	$9,639	FTA 5310	$287
STP<200K	$175	FTA 5316	$333
Bridge Program	$1,495	FTA 5317	$201
TE	$211		
SRTS	$388		
Recreational Trails	$152		
Earmarks	$5,714		
TOTAL	$84,792	TOTAL	$5,972

On July 6, 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed in to law. This new transportation bill, effective on October 1st, 2012, replaced SAFETEA-LU. Nationally, MAP-21 authorizes over $105 billion of stable transportation funds over fiscal years (FY) 2013 and 2014 through a reformed and streamlined funding program structure. Activities carried out under previous formula programs, e.g. the National Highway System Program (NHS), the Interstate Maintenance (IM) Program, Transportation Enhancement (TE), and the Highway Bridge Program, are incorporated into new core formula program structure as presented below:



MAP-21's approach to distribution of formula funds is based on the amounts of formula funds each State received under SAFETEA-LU in 2009. Table 2 summarizes the historical Federal funding revenues for the CARTS area between FY 2006 and FY 2011 under the new MAP-21 transportation bill funding program structure:

Table 2 Annual Average Federal Transportation Funding by Category

Federal Highway Funding Programs under SAFETEA-LU	Federal Highway Funding Programs under MAP-21	Federal Transit Funding Programs under SAFETEA-LU	Federal Transit Funding Programs under MAP-21
NHS	NHPP	FTA 5307	FTA 5307
IM	NHPP	FTA 5309 (CATA)	FTA 5337/5339
STP-State	STP	FTA 5309 Discretionary (CATA)	FTA 5337/5339
STP-Safety	STP	FTA 5309 (Human Service Providers)	FTA 5337/5339
STP>200K	STP	FTA 5310	FTA 5310
STP<200K	STP	FTA 5316	FTA 5307
Bridge Program	NHPP/STP	FTA 5317	FTA 5310
TE	TAP		
SRTS	TAP		
Recreational Trails	TAP		
Earmarks	Discontinued		

- **National Highway Performance Program (NHPP):** Under MAP-21, the enhanced National Highway System (NHS) includes the Interstate System, all principal arterials (including some not previously designated as part of the NHS) and border crossings on those routes, highways that provide motor vehicle access between the NHS and major intermodal transportation facilities, and the network of highways important to U.S. strategic defense (STRAHNET) and its connectors to major military installations. The NHPP is authorized at an average of $21.8 billion per year to provide support for the condition and performance of the NHS; to provide support for the construction of new facilities on NHS; and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in s State's asset management plan for the NHS. The Federal share for NHPP is generally 80 percent (90 percent for projects on the Interstate System), and can be up to 100 percent for certain activities. NHPP combined the functions of the former National Highway System (NHS), Interstate Maintenance (IM), Bridge Programs (on-system bridge, no more than 85 percent of total Bridge Program funds) that have been historically utilized in the CARTS area.

- **Surface Transportation Program (STP)**: MAP-21 continues the STP, providing an annual average of $10 billion in flexible funding that may be used by States and localities for projects to preserve or improve conditions and performance on any Federal-aid highway, bridge projects on any public road, facilities for nonmotorized transportation, transit capital projects and public bus terminals and facilities.

  Explicit eligibilities are added for electric vehicle charging infrastructure added to previously funded or included in new fringe and corridor parking facilities, and projects and strategies that support congestion pricing, including electronic toll collection and travel demand management strategies and programs. The Federal share for STP is generally 80 percent (90 percent for projects on the Interstate System), and can be up to 100 percent for certain activities. STP combined the functions of the former STP and Bridge Programs (off-system bridge, no less than 15 percent of total Bridge Program funds have been historically utilized in the CARTS area.

- **Highway Safety Improvement Program (HSIP)**: Safety throughout all transportation programs remains DOT's number one priority. MAP-21 continues the successful HSIP, with average annual funding of $2.4 billion, including $220 million per year for the Rail-Highway Crossings program. The purpose of HSIP is to achieve a significant reduction in fatalities and serious injuries on all public roads, including non-state-owned public roads and roads on tribal roads. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. The funding level for HSIP under MAP-21 has significantly increased from the past. The Federal share of HSIP is generally 90 percent, and can be up to 100 percent for certain activities.

- **Transportation Alternatives Program (TAP)**: MAP-21 establishes a new program to provide for a variety of alternative transportation projects that were previously eligible activities under separately funded programs. The TAP replaces the funding from pre-MAP-21 programs including Transportation Enhancements, Recreational Trails, Safe

Routes to School, and several other discretionary programs, wrapping them into a single funding source. This program is funded at a level equal to two percent of the total of all MAP-21 authorized Federal-aid highway and highway research funds, with the amount for each State set aside from the State's formula apportionments. Unless a State opts out, it must use a specified portion of its TA funds for recreational trails projects. Arkansas has not opted out to use TA funds for recreational trails projects. Eligible activities under TAP include:

- Transportation alternatives (new definition incorporates many transportation enhancement (TE) activities and several new activities)
- Recreational trails program (program remains unchanged)
- Safe routes to schools program
- Planning, designing, or constructing boulevards or other roadways largely within the right-of way of former Interstate routes or other divided highways.

50 percent of TAP funds are distributed to areas based on population (suballocated), similar to the STP, with the remaining 50 percent available for use in any area of the State. The Federal share for TAP is generally 80 percent (90 percent for projects on the Interstate System).

- **Urbanized Area Formula Program (5307)**: The Urbanized Area Formula Grants is the largest of FTA's grant programs. This program provides grants to urbanized areas to support public transportation. Funding is distributed by formula based on the level of transit service provision, population, and other factors. Total funding is $4.9 billion in FY 2013 and $5 billion in FY 2014 (includes the Growing States and High Density States formula). The program remains largely unchanged with a few exceptions:
  - Job Access and Reverse Commute Program activities (Section 5316) under SAFETEA-LU now eligible under Urbanized Area Formula Program;
  - Expanded eligibility for operating expenses for systems with 100 or fewer buses;
  - New discretionary Passenger Ferry Grants; and
  - New takedown for safety oversight
- **State of Good Repair Program(SGR) (5337)**: MAP-21 establishes a new grant program to maintain public transportation systems in a state of good repair. This program replaced the Fixed Guideway Modernization Program (Section 5309). Funding is limited to fixed guideway systems (including rail, bus rapid transit, and passenger ferries) and high intensity bus (high intensity bus refers to buses operating in high occupancy vehicle (HOV) lanes). Projects are limited to replacement and rehabilitation, or capital projects required to maintain public transportation systems in a state of good repair. Projects must be included in a transit asset management plan to receive funding. The new formula comprises: (1) the former fixed guideway modernization formula; (2) a

new service-based formula; and (3) a new formula for buses on HOV lanes. Authorized funding for this program is $2.1 billion in FY 2013 and $2.2 billion in FY 2014.

- **Bus and Bus Facilities Program (5339)**: A new formula grant program is established under Section 5339, replacing the previous discretionary Bus and Bus Facilities program (Section 5309). This capital program provides funding to replace, rehabilitate, and purchase buses and related equipment, and to construct bus-related facilities. Authorized funding is $422 million in FY 2013 and $428 million in FY 2014. Each year, $65.5 million will be allocated with each State receiving $1.25 million and each territory (including DC and Puerto Rico) receiving $500,000. The remaining funding will be distributed by formula based on population, vehicle revenue miles and passenger miles. The Federal share for this program is 80 percent.

- **Enhanced Mobility of Seniors and Individuals with Disabilities (5310)**: This program provides formula funding to increase the mobility of seniors and persons with disabilities. Funds are apportioned based on each State's share of the targeted populations and are now apportioned to both States (for all areas under 200,000) and large urbanized areas (over 200,000). This Program carries forward the functions of former Transportation for Elderly or Persons with Disability Program (Section 5310). The former New Freedom program (5317) is also folded into this program.

  At least 55 percent of program funds must be spent on the types of capital projects eligible under the former section 5310 -- public transportation projects planned, designed, and carried out to meet the special needs of seniors and individuals with disabilities when public transportation is insufficient, inappropriate, or unavailable. The remaining 45 percent may be used for: public transportation projects that exceed the requirements of the ADA; public transportation projects that improve access to fixed-route service and decrease reliance by individuals with disabilities on complementary paratransit; or, alternatives to public transportation that assist seniors and individuals with disabilities. Using these funds for operating expenses requires a 50 percent local match while using these funds for capital expenses (including acquisition of public transportation services) requires a 20 percent local match.

All former earmarks and the American Recovery and Reinvestment Act of 2009 are discontinued under the Map-21 bill.

State Funding

In addition to the Federal revenues distributed to the CARTS area, Arkansas also has State revenue sources, e.g., fuel taxes, motor vehicle registration, rental car taxes, etc., that fund transportation projects in the CARTS area. These revenue sources are used to support transportation funding programs identified below. In addition, it should be noted that State funds are also used to cover the required match for Federal funds. Table 3 presents the State funding programs and average funds distributed to the CARTS area between FY 2006 and FY 2011.

- **State Highway Funds:** State highway funds include State match for Federal funds, State-funded overlay program, and a very few fully State-funded projects.

- **AHTD Road Maintenance:** Average State spending on routine maintenance is determined by lane-miles on State Highways, plus $5.8 million per Highway District for overlays and sealing distributed by averaging the area's percent of District VMT and lane-miles[1].

- **Public Transit Trust Funds (PTTF)**: Act 949 of 2001 established the Arkansas Public Transit Fund, to be funded from a five percent tax on car rental rates, which generates approximately $3.5 million yearly for transit activities. The funds generated by the tax on rental cars are used to match Federal funds for the purchase of public transportation vehicles, public transit equipment or facilities, and for the operation of the U.S. DOT FTA assistance programs.

Table 3 Annual Average State Transportation Funding by Category

State Highway Funding Programs	Annual Average (FY 2006 - FY 2011) (in $Thousands)	State Transit Funding Programs	Annual Average (FY 2006 - FY 2011) (in $Thousands)
State Highway Funds	$19,087	PTTF (Public Transit)	$1,107
AHTD Road Maintenance	$9,185	PTTF (Human Service)	$69
TOTAL	$28,272	TOTAL	$1,176

Local Funding

Local funding is a critical funding source for both highway and transit needs. In the State of Arkansas, most of the non-Federal transportation revenues are allocated using a 70/15/15 Highway Revenue Distribution Formula, with 70 percent of revenues gone to AHTD, 15 percent to the cities, and 15 percent to the counties. Local jurisdictions also use other revenues sources to fund transportation needs, including property taxes, sales taxes, city taxes, interest income, farebox revenue, general fund, etc. These local funding sources are described below. Table 4 presents the State funding programs and average funds distributed to the CARTS area between FY 2006 and FY 2011.

- **State Motor Fuel Tax Turnback:** State of Arkansas levies 21.5 cents per gallon of gasoline and 22.5 cents per gallon on diesel statewide. There is no legislation that allows local motor fuel taxes to be collected for transportation. The state collected transportation revenues are allocated based on a 70/15/15 formula, as mentioned above.

- **Local Taxes:** local taxes include property taxes, sales taxes and city taxes. The counties within Arkansas may levy up to three mills property tax for road and bridge funds. Cities and Counties in Arkansas can also implement local sales taxes by popular vote. A statewide half-cent sales tax to support a list of transportation projects was passed in 2012. This will be discussed in more detail in revenue projections.

[1] AHTD Road Maintenance funding distribution methodology was provided by AHTD.

- **Other sources:** this includes revenue from the general fund, interest income, and miscellaneous income.
- **General fund:** the general fund, as opposed to other specific funds, may be used to support a variety of transportation needs, including transit, at the discretion of the local governing body and within given confines of the adopted budget.
- **Farebox Revenue:** revenues from Central Arkansas Transit Authority (CATA) operations, primarily the farebox revenue, are used to support CATA operations.

Table 4 Annual Average Local Funding by Category

Local Highway Funding Programs	Annual Average (FY 2006 - FY 2011)	Local Transit Funding Programs	Annual Average (FY 2006 - FY 2011)
State Motor Fuel Tax Turnback	$28,915,169	Local Contributions (General Fund)	$9,107,063
Local Taxes	$30,650,395	Farebox Revenues	$1,968,432
Other Sources	$6,227,813		
TOTAL	$65,793,378	TOTAL	$11,075,495

Revenue Forecast Methodology

FY 2014 was determined as the base year for the revenue forecasts. Federal, State, and local FY 2014 revenues were estimated for both highways and transit funding programs. Once the base year revenues are estimated, growth rates were then determined to project revenues into FY 2040 for different funding programs.

Base Year Revenue Estimate

Federal Highway Funding Programs

FHWA base year (FY 2014) revenue estimates for the CARTS area were provided by AHTD with the following assumptions:

- All amounts provided are for Federal funds only. Matching funds are assumed to be provided by the State on most State Highways
- Unless otherwise noted, estimates are based on MAP-21 FY 2013 apportionments and assumes 94.6 percent obligation limitation
- Revenue estimates for subcategories under NHPP are determined based on FY 2012 breakdown of funding categories:
    - National Highway System (NHS) funds are distributed by a combination of:

  - The area's proportion of statewide lane miles on NHS
  - The area's proportion of statewide VMT on highways of the NHS
- Bridge Program funds are distributed by the area's proportion of the statewide highway lane miles of functionally obsolete (FO) and structurally deficient (SD) bridges on the NHS but off the Interstate system.
- The Interstate Maintenance (IM) Programs funds are distributed by the area's proportion of statewide Interstate lane miles on the National Highway System. Prior to 2023, a portion of these funds are dedicated to bond payments for the Interstate Rehabilitation Program (IRP)

- Revenue estimates for STP are provided based on FY 2012 breakdown of funding categories:
  - State STP funds are distributed by a combination of:
    - The area's proportion of the statewide Federal-Aid, non-NHS highway lane miles
    - The area's proportion of statewide Federal-Aid, non-NHS highway VMT
  - State Bridge Program funds under STP are distributed by the area's proportion of statewide non-Interstate, non-NHS FO/SD bridge lane miles
  - City Bridge Program funds are determined by the area's proportion of statewide city owned, non FO/SD bridges functionally classified as minor collector or local
  - City Intersection Improvement/Signals Program funds are determined by the area's proportion of the statewide population of urban areas between 5,000 and 200,000

- Revenue estimates for HSIP are determined by a combination of:
  - The area's proportion of statewide Federal-Aid lane miles
  - The area's proportion of statewide Federal-Aid highway VMT

- TAP – Areas<200K Program funds are determined by the proportion of the CARTS area's population outside urbanized areas with over 200,000 population to the statewide population outside urbanized areas with over 200,000 population

Federal Transit Funding Programs

FTA base year (FY 2014) funds allocated to the CARTS area were estimated using the amount of funds authorized to the Little Rock urbanized area and Conway urbanized area by FTA in FY 2013.

Based on the above assumptions, the estimated base year Federal transportation funds allocated to the CARTS area are presented in Table 5.

Table 5 Base Year (FY 2014) Federal Transportation Revenue Estimates by Category

Federal Highway Funding Programs (MAP-21)	Base Year Revenue Estimate	Federal Transit Funding Programs (MAP-21)	Base Year Revenue Estimate
NHPP	$47,859,000	**FTA 5307**	$4,556,251
IM	$34,566,667	**FTA 5307 (Conway)**	$867,116
STP-State	$12,058,000	**FTA 5310**	$358,695
STP-City	$617,000	**FTA 5337**	$232,541
STP-Urbanized	$9,659,000	**FTA 5339**	$466,493
HISP	$6,091,000		
TAP	$1,462,000		
TOTAL	$77,746,000	**TOTAL**	6,481,096

State Funding Programs

Base year State highway and transit funds allocated to the CARTS area were estimated to be the same as their historical average, except for State Maintenance. The base year revenue estimate for State Maintenance was provided by AHTD. Two new funding programs were also added as future funding sources for the CARTS area, they are Interstate Rehabilitation Program (IRP) and Connecting Arkansas Program (1/2 cent Sales Tax). The estimated base year revenues for these two programs were provided by AHTD based on average funds programmed for projects in the CARTS area.

In November 2011, the State of Arkansas voted for the 2011 Interstate Rehabilitation Program, which authorizes the Highway Commission to issue up to $575 million in GARVEE bonds to help finance improvements and repairs to existing Interstates. Bonds are being retired using the FHWA Interstate Maintenance (IM) funds (NHPP under MAP-21) and the required State match. The State match is being provided by the four cent per gallon diesel tax that was passed by the Arkansas General Assembly in 1999. Several projects in the CARTS area are included in the IRP. The IRP funds to be used on these projects are provided in Table 6. Please note that IRP funds are made up of both Federal (NHPP) and State funding. In this study, "IRP" is listed under the State funding category to present the IRP funds programed to finance projects identified in the CARTS area over nine years.

Table 6 IRP Funds Planned for the CARTS Area[2]

Schedule	IRP Funds Programed for Project in the CARTS area
FY 2014 FY 2016	$103,700,000
3-year Average (used as base year estimate)	$34,566,667
FY 2017 – FY 2022	$110,700,000
6-year Average	$18,450,000

In November 2012, a temporary half-cent sales tax was approved by the voters in the State of Arkansas to support the Connecting Arkansas Program (CAP). The tax increase will expire in 10 years. Revenues from the half-cent sales tax will finance a $1.3 billion bond issue, which will be combined with existing revenue to pay for $1.8 billion in improvements and construction of four-lane highways that will connect all areas of the State. Several projects in the CARTS area are included in CAP. The CAP funds planned for these projects are provided in Table 6. "CAP (1/2 cent Sales Tax)" is added to the State funding program list to present the CAP funds to be allocated to CARTS area over 10 years.

Table 7 CAP Funds Planned for the CARTS Area[3]

Projects	CAP Funds Programed for Project in the CARTS area
Route 630: BAPTIST HOSPITAL - FAIR PARK BLVD(S)	$50,000,000
Route 67: JACKSONVILLE – CABOT	$120,000,000
Route 40: FAULKNER CO. LINE – EAST	$20,000,000
Route 30: SOUTH TERMINAL - NORTH TERMINAL	$300,000,000
Route 30: HWY. 70 - SEVIER ST.	$75,000,000
Route 70: Garland/Saline – Hot Springs – I-30	$14,800,000
10-year TOTAL	$583,800,000
10-year Average (used as base year estimate)	$58,380,000

Based on the above assumptions, the estimated base year State transportation revenues allocated to the CARTS area are presented in Table 8.

[2] Source: AHTD
[3] Source: AHTD

Table 8 Base Year (FY 2014) State Transportation Revenue Estimates by Category

State Highway Funding Programs	Base Year Revenue Estimate	State Transit Funding Programs	Base Year Revenue Estimate
State Highway Funds	$19,086,500	PTTF (Public Transit)	$1,107,000
State Maintenance	$16,886,000	PTTF (Human Service)	$69,186
IRP	$34,566,667		
CAP (1/2 Sales Tax)	$58,380,000		
TOTAL	$128,919,167	TOTAL	$1,176,186

Local Funding Programs

Similar to State funding programs, base year local highway and transit funds for the CARTS area were estimated to be the same as their historical average. As a result of additional half-cent sales tax raised to fund the CAP at the State level, a new revenue source "1/2 cent Sales Tax Turnback" is added to the local funding source list to reflect revenues local agencies will receive as the sales tax turnback from the state using the 70/15/15 formula, with 70 percent kept at the State, 15 percent goes to the Counties, and 15 percent goes to the cities. The estimated amount of sales tax distributed to the local jurisdictions in the CARTS area were provided by AHTD[4].

Based on the above assumptions, the estimated base year local transportation revenues in the CARTS area are presented in Table 9.

Table 9 Base Year (FY 2014) Local Transportation Revenue Estimates by Category

Local Highway Funding Programs	Base Year Revenue Estimate	Local Transit Funding Programs	Base Year Revenue Estimate
1/2 Sales Tax Turnback	$13,258,441	Local Contributions (General Fund)	$9,107,063
State Motor Fuel Tax Turnback	$28,915,169	Farebox Revenues	$1,968,432
Local Taxes	$30,650,395		
Other Sources	$6,227,813		
TOTAL	$79,051,819	TOTAL	$11,075,495

[4] http://arkansashighways.com/2012_hcstax/CC_turnback.pdf

Revenue Forecast Assumptions

Scenarios

Three different scenarios were evaluated in this study to better cover future possibilities.

1. Without CAFE Standards (Scenario 1): Revenue projections were not adjusted for fuel efficiency change due to CAFE standards. VMT growth was only applied at the State and local level. For Federal line-items, no funds will be transferred from General Fund (GF) and Leaking Underground Storage Tank (LUST) Trust Fund to Highway Trust Fund (HTF) starting from FY 2017. The annual general funds transferred to highway trust funds were estimated to be 18 percent of the base year (FY 2014) revenues.

2. With CAFE Standards (Scenario 2): Federal and State revenues from motor fuel taxes are decreased in proportion to fuel efficiency improvements and increased in proportion to forecast VMT increases for the CARTS region. This assumes that distributions of federal and State fuel tax revenue change proportionally to VMT in the CARTS region. The analysis considers both light and heavy-duty vehicle efficiency improvements and revenues. Market adoption of electric vehicles was assumed at a moderate rate. For Federal line-items, no funds will be transferred from GF and LUST Trust Fund to HTF starting from FY 2015. The annual general funds transferred to highway trust funds were estimated to be 18 percent of the base year (FY 2014) revenues. **Revenue forecasts under this scenario will be used for further financial analysis in the LRMTP**.

3. High Electric Vehicle (Scenario 3): This scenario considers a higher market penetration rate for electric vehicles and/or other alternative fuel vehicles not subject to motor fuel taxes. The same line-items that were adjusted for fuel efficiency in Scenario 1 are further adjusted here. The EV/AFV market shares are estimated from a polynomial growth function based on penetration rates of five percent in 2023, 10 percent in 2030, 25 percent in 2040, and 50 percent in 2050. The same assumptions are applied for heavy trucks (e.g., electric urban delivery vehicles, LNG for long-haul) as for cars and light trucks (passenger vehicles). For Federal line-items, no funds will be transferred from GF and LUST Trust Fund to HTF starting from FY 2015. The annual general funds transferred to highway trust funds were estimated to be 18 percent of the base year (FY 2014) revenues.

Growth Rates

The growth rate assumptions are:

1. All growth rates discussed here are adjusted by inflation.

2. For fuel tax based revenues, different assumptions were made for different scenarios:

    a. For without CAFE Standards Scenario (Scenario 1), 1.1 percent annual growth (regional population growth rate) is assumed between FY 2014 and FY 2016. Currently, an average of 18 percent of Federal Highway Trust Fund revenues are transfers from the general fund to support a Trust Fund deficit. Therefore,

beyond FY 2016, it is assumed that the Federal sources decrease by 18 percent (i.e., the transfer does not continue); regional VMT annual growth rate (0.94 percent[5]) is applied to State and local fuel tax based revenues beyond FY 2016.

b. For with CAFE Standards Scenario (Scenario 2), growth rates are determined by VMT growth rate and future fuel efficiency improvement trend driven by the Corporate Average Fuel Economy (CAFE) standards. Fuel efficiency adjustments were applied to the following line items in the revenue projections that are funded from Federal motor fuel taxes (via the Federal Highway Trust Fund) and from state motor fuel taxes:

   - All Federal funding sources
   - State Highway Funds and State Maintenance; and
   - Local Highway – State Motor Fuel Tax Turnback.

   Beginning in 2015, it is assumed that the Federal sources decrease by 18 percent (i.e., the transfer does not continue). Other than this adjustment and the adjustment for fuel efficiency, it is assumed that both Federal and state sources continue to be directed to the CARTS region in proportion to 2014 levels, i.e., there are no changes in the formulas for Federal and state allocation. It is further assumed that revenues directed to the CARTS region increase in proportion to VMT increases in the CARTS region.

   Federal revenues in 2015 and later are therefore projected, based on 2014 revenues, using a fuel efficiency adjustment factor (FEFact) and VMT adjustment factor (VMTFact) as follows:

$$Revenue_{YearX} = Revenue_{2014} * 0.82 * FEFact_{YearX} * VMTFact_{YearX}$$

   State revenues, which are not subject to the 18 percent adjustment, are projected as follows:

$$Revenue_{YearX} = Revenue_{2014} * FEFact_{YearX} * VMTFact_{YearX}$$

   For years 2015 and later, a year-specific fuel efficiency adjustment factor (FEFact) is computed based on national projections from the U.S. Energy Information Administration (EIA) Annual Energy Outlook (AEO) 2013 Reference Case. The AEO projections incorporate the most recent Federal light- and heavy-duty fuel efficiency standards (light duty standards through model year 2025 and heavy-duty standards through model year 2018). The FEAF reflects combined efficiency across the entire on-road vehicle fleet, including both light and heavy-duty vehicles.

   The FEFact was calculated by first multiplying total on-road vehicle energy use (in British Thermal Units, or BTU) by the fuel tax rate ($ per gallon, converted to

[5] Source: Metroplan

$ per BTU)[6] to obtain a total revenue estimate. This was divided by total on-road VMT (from AEO projections) to obtain an index of fuel tax revenue per VMT. The ratio of this revenue ($/VMT) in each year to $/VMT in 2014 was then computed and used as the FEAF. The ratio declines from 0.99 in 2015 to 0.68 in 2040. **Note that this approach assumes that alternative fuels (natural gas, propane, and ethanol) are taxed at the same rate per BTU as gasoline and diesel in the future**.[7]

The VMT adjustment factor is based on Metroplan's forecast of 30 percent total regional VMT growth. A constant annual growth rate of 0.94 percent is assumed. VMTFact is calculated as the ratio of forecast year VMT to 2014 VMT.

c. For High Electric Vehicle Scenario (Scenario 3), the same assumptions and methodology as Scenario 2 are applied in the analysis. Compared with Scenario 2, a more aggressive electric vehicle market penetration rate is assumed for this scenario - assuming 25% market penetration (by 2040) of EVs and other alternative fuel vehicles (e.g., LNG trucks) not subject to motor fuel tax.

3. Future revenues for IRP and CAP (1/2 cent Sales Tax) were estimated by AHTD:

   a. IRP projects are financed through GARVEE bonds, which will retire in FY 2022.

   b. CAP projects will be paid off using the ½-cent sales tax collections at the State level. The ½-cent sales tax will discontinue as soon as the CAP projects are paid off. The estimated pay off year is FY 2023.

4. Between FY 2014 and 2016, 1.1 percent growth rate is applied to all the State and local funding programs, except for State Motor Fuel Tax Turnback, and State PTTF program; for years beyond FY 2016, population growth rates (1.3 percent to 0.89 percent annually) are applied to the State PTTF and all local funding sources except for State Gas Turnback, ½ cent Sales Tax Turnback, and Farebox; two percent growth rate is applied to Farebox revenues[8].

Table 10 summarizes the growth rates applied to each funding source.

[6] The tax rate for gasoline (about $3.24 per million BTU) was used. The diesel tax rate is slightly higher ($3.40 per million BTU).

[7] If they are not, the revenue decline will be somewhat greater. The AEO Reference Case projects that the amount of on-road energy from alternative fuel sources will increase from 0.6 percent in 2015 to 6.3 percent in 2040.

[8] Source: Metroplan/CATA

Table 10 Growth Rates Used in Revenue Forecasts

Funding Programs	Growth Rates Assumptions
Federal Highway Funding Programs	
NHPP STP-State STP-City STP-Urbanized HSIP TAP	VMT growth and fuel efficiency improvements
Federal Transit Funding Programs	
FTA 5307 - Urbanized Areas Formula Grants FTA 5307 (operating Max) FTA 5310 - Enhanced Mobility of Seniors and Individuals with Disabilities FTA 5337 - State of Good Repair-High Intensity Fixed Guideway FTA 5339 - Bus and Bus facilities	VMT growth and fuel efficiency improvements
State Highway Funds	
State Highway Funds State Maintenance	VMT growth and fuel efficiency improvements
IRP CAP (1/2 Sales Tax)	Actual funds programmed –estimated by AHTD
State Transit Funds	
PTTF (Public Transit) PTTF (Human Service)	Population growth rates between 0.89% and 1.3%
Local Highway Funds	
1/2 Sales Tax Turnback	Population growth rates between 0.89% and 1.3%
State Motor Fuel Tax Turnback	VMT growth and fuel efficiency improvements
Taxes Other Sources	Population growth rates between 0.89% and 1.3%
Local Transit Funds	
Local Contributions (General Fund)	Population growth rates between 0.89% and 1.3%
Farebox Revenues	2%

Revenue Forecast Results

Based on the above revenue forecast methodology, and the basic assumptions made for base year revenues and growth rates, transportation revenues available to the CARTS area are projected by funding category and presented in

Table 11**Error! Reference source not found.**, Table 12, and Table 13. Based on the projection,

Funding Programs	TIP Period FY2014-FY2016	FY2017-FY2020	FY2021-FY2030	FY2031-FY2040	Scenario 1 Total
Federal Funding Programs					
NHPP	$145,162,138	$147,166,020	$509,435,049	$544,815,049	$1,346,578,256
STP-State	$36,573,373	$40,425,131	$101,062,827	$101,062,827	$279,124,158
STP-City	$1,871,436	$2,068,528	$5,171,319	$5,171,319	$14,282,601
STP-Urbanized	$29,296,916	$32,382,347	$80,955,867	$80,955,867	$223,590,997
HSIP	$18,474,740	$20,420,424	$51,051,060	$51,051,060	$140,997,284
TAP	$4,434,423	$4,901,438	$12,253,595	$12,253,595	$33,843,052
Total Federal Highway	$235,813,025	$247,363,887	$759,929,718	$795,309,718	$2,038,416,348
FTA 5307 - Urbanized Areas Formula Grants	$13,819,661	$15,275,091	$42,006,499	$38,187,727	$109,288,977
FTA 5307 - Urbanized Areas Formula Grants (Conway)	$2,630,068	$2,907,056	$7,994,403	$7,267,639	$20,799,166
FTA 5310 - Enhanced Mobility of Seniors and Individuals with Disabilities	$1,087,965	$1,202,545	$3,307,000	$3,006,363	$8,603,874
FTA 5337 - State of Good Repair-High Intensity Fixed Guideway	$705,325	$779,607	$2,143,919	$1,949,017	$5,577,868
FTA 5339 - Bus and Bus facilities	$1,414,930	$1,563,944	$4,300,847	$3,909,861	$11,189,582
Total Federal Transit	$19,657,948	$21,728,243	$54,320,607	$54,320,607	$150,027,406
Total Federal Funds	**$255,470,974**	**$269,092,130**	**$814,250,325**	**$849,630,325**	**$2,188,443,755**
State Funding Programs					
State Highway Funds	$57,891,664	$79,885,988	$213,297,993	$234,217,733	$585,293,377
State Maintenance	$51,217,281	$70,675,859	$188,706,673	$207,214,557	$517,814,370
IRP[a]	$103,700,000	$73,800,000	$36,900,000	$-	$214,400,000
CAP (1/2 Sales Tax)[b]	$175,140,000	$233,520,000	$175,140,000	$-	$583,800,000
Total State Highway	$387,948,945	$457,881,847	$614,044,665	$441,432,289	$1,901,307,747
PTTF (Public Transit)	$3,357,665	$4,674,992	$12,697,657	$14,016,253	$34,746,567
PTTF (Human Service)	$209,851	$292,182	$793,590	$876,001	$2,171,624
Total State Transit	$3,567,515	$4,967,174	$13,491,248	$14,892,254	$36,918,191
Total State Funds	**$391,516,461**	**$462,849,021**	**$627,535,913**	**$456,324,544**	**$1,938,225,938**
Local Funding Programs					
1/2-cent Sales Tax Turnback[C]	$39,775,323	$53,033,764	$39,775,323	$-	$132,584,410
State Motor Fuel Tax Turnback	$87,703,207	$121,023,596	$323,136,644	$354,829,087	$886,692,533
Taxes	$92,966,357	$129,440,240	$351,570,203	$388,079,221	$962,056,022
Other Sources	$18,889,711	$26,300,791	$71,435,084	$78,853,303	$195,478,889
Total Local Highway	$239,334,598	$329,798,391	$785,917,254	$821,761,611	$2,176,811,854
Local Contributions (General Fund)	$27,622,825	$38,460,204	$104,461,037	$115,308,856	$285,852,921
Farebox Revenues	$5,970,491	$8,458,425	$24,323,527	$29,650,244	$68,402,687
Total Local Transit	$33,593,316	$46,918,629	$128,784,564	$144,959,099	$354,255,608
Total Local Funds	**$272,927,914**	**$376,717,019**	**$914,701,817**	**$966,720,711**	**$2,531,067,462**
TOTAL ALL FUNDS - Scenario 1	**$919,915,348**	**$1,108,658,171**	**$2,356,488,056**	**$2,272,675,580**	**$6,657,737,155**

total future revenues between FY 2014 and FY 2040 for both highway and transit are estimated to be almost $6.7 billion under scenario 1 (without CAFE standards), $6 billion under scenario 2 (with CAFE standards), and $5.8 billion for scenario 3 (high EV scenario). The difference of $681 million between scenario 1 and 2 reflects the reduced revenues between FY 2014 and FY 2040 due to VMT change and fuel efficiency improvement. Under scenario 2, estimated annual revenue drops from approximately $304 million in 2014 to $194 million in 2040, a deficit of about $110 million. Revenue from state sources experiences the greatest reduction, from $130 million annually in 2015 to $33 million in 2040, a difference of $97 million. This is due to the expiration of the half-cent sales tax and the fact that a significant portion of state revenues are derived from fuel taxes. Local and federal sources remain relatively constant, with growth in population and vehicle miles travelled (VMT) helping to offset impacts of CAFE standards. Total highway funds from Federal, State, and local revenue sources add up to $6.1 billion under

scenario 1, $5.5 billion under scenario 2, and $5.2 billion under scenario 3; while total transit funds add up to $0.54 billion under scenario 1, $0.52 billion under scenario 2, and 0.51 billion under scenario 3. Figure 2 presents the three scenarios in one chart. Please note that all the estimates are provided in Year of Expenditure dollars ($YOE). **As mentioned previously, further financial analysis in the LRMTP will be based on revenue forecasts under scenario 2**.

Table 11 Scenario 1 Future Transportation Revenue Forecasts by Funding Category ($YOE)

Funding Programs	TIP Period FY2014-FY2016	FY2017-FY2020	FY2021-FY2030	FY2031-FY2040	Scenario 1 Total
Federal Funding Programs					
NHPP	$145,162,138	$147,166,020	$509,435,049	$544,815,049	$1,346,578,256
STP-State	$36,573,373	$40,425,131	$101,062,827	$101,062,827	$279,124,158
STP-City	$1,871,436	$2,068,528	$5,171,319	$5,171,319	$14,282,601
STP-Urbanized	$29,296,916	$32,382,347	$80,955,867	$80,955,867	$223,590,997
HSIP	$18,474,740	$20,420,424	$51,051,060	$51,051,060	$140,997,284
TAP	$4,434,423	$4,901,438	$12,253,595	$12,253,595	$33,843,052
Total Federal Highway	$235,813,025	$247,363,887	$759,929,718	$795,309,718	$2,038,416,348
FTA 5307 - Urbanized Areas Formula Grants	$13,819,661	$15,275,091	$42,006,499	$38,187,727	$109,288,977
FTA 5307 - Urbanized Areas Formula Grants (Conway)	$2,630,068	$2,907,056	$7,994,403	$7,267,639	$20,799,166
FTA 5310 - Enhanced Mobility of Seniors and Individuals with Disabilities	$1,087,965	$1,202,545	$3,307,000	$3,006,363	$8,603,874
FTA 5337 - State of Good Repair-High Intensity Fixed Guideway	$705,325	$779,607	$2,143,919	$1,949,017	$5,577,868
FTA 5339 - Bus and Bus facilities	$1,414,930	$1,563,944	$4,300,847	$3,909,861	$11,189,582
Total Federal Transit	$19,657,948	$21,728,243	$54,320,607	$54,320,607	$150,027,406
Total Federal Funds	**$255,470,974**	**$269,092,130**	**$814,250,325**	**$849,630,325**	**$2,188,443,755**
State Funding Programs					
State Highway Funds	$57,891,664	$79,885,988	$213,297,993	$234,217,733	$585,293,377
State Maintenance	$51,217,281	$70,675,859	$188,706,673	$207,214,557	$517,814,370
IRP[a]	$103,700,000	$73,800,000	$36,900,000	$-	$214,400,000
CAP (1/2 Sales Tax)[b]	$175,140,000	$233,520,000	$175,140,000	$-	$583,800,000
Total State Highway	$387,948,945	$457,881,847	$614,044,665	$441,432,289	$1,901,307,747
PTTF (Public Transit)	$3,357,665	$4,674,992	$12,697,657	$14,016,253	$34,746,567
PTTF (Human Service)	$209,851	$292,182	$793,590	$876,001	$2,171,624
Total State Transit	$3,567,515	$4,967,174	$13,491,248	$14,892,254	$36,918,191
Total State Funds	**$391,516,461**	**$462,849,021**	**$627,535,913**	**$456,324,544**	**$1,938,225,938**
Local Funding Programs					
1/2-cent Sales Tax Turnback[C]	$39,775,323	$53,033,764	$39,775,323	$-	$132,584,410
State Motor Fuel Tax Turnback	$87,703,207	$121,023,596	$323,136,644	$354,829,087	$886,692,533
Taxes	$92,966,357	$129,440,240	$351,570,203	$388,079,221	$962,056,022
Other Sources	$18,889,711	$26,300,791	$71,435,084	$78,853,303	$195,478,889
Total Local Highway	$239,334,598	$329,798,391	$785,917,254	$821,761,611	$2,176,811,854
Local Contributions (General Fund)	$27,622,825	$38,460,204	$104,461,037	$115,308,856	$285,852,921
Farebox Revenues	$5,970,491	$8,458,425	$24,323,527	$29,650,244	$68,402,687
Total Local Transit	$33,593,316	$46,918,629	$128,784,564	$144,959,099	$354,255,608
Total Local Funds	**$272,927,914**	**$376,717,019**	**$914,701,817**	**$966,720,711**	**$2,531,067,462**
TOTAL ALL FUNDS - Scenario 1	**$919,915,348**	**$1,108,658,171**	**$2,356,488,056**	**$2,272,675,580**	**$6,657,737,155**

Notes:

(a) Estimated annual amount based on the IRP project costs AHDT provided for the CARTS area

(b) Estimated annual amount based on the CAP project costs AHTD provided for the CARTS area

(c) Source: http://arkansashighways.com/2012_hcstax/CC_turnback.pdf.

Table 12 Scenario 2 Future Transportation Revenue Forecasts by Funding Category ($YOE)*

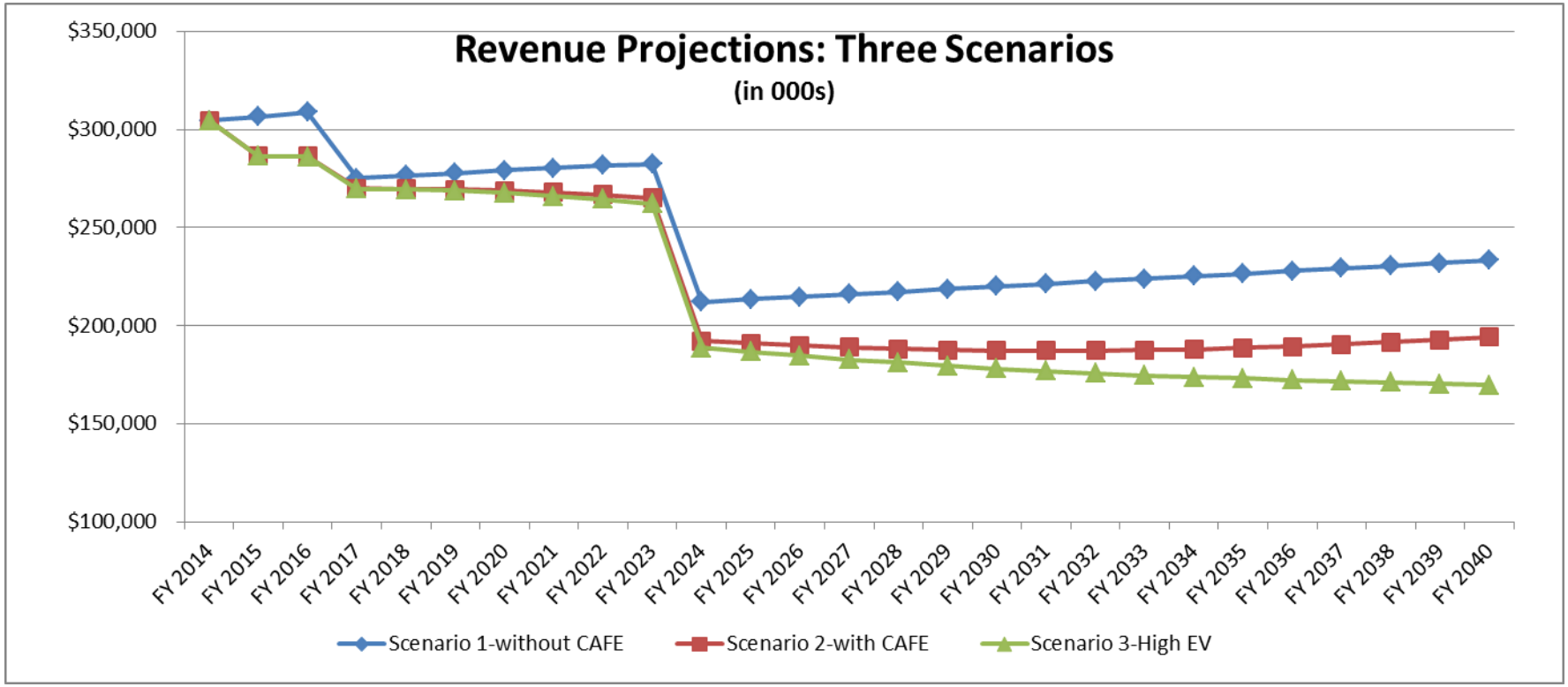
Funding Programs	TIP Period FY2014-FY2016	FY2017-FY2020	FY2021-FY2030	FY2031-FY2040	Scenario 2 Total
Federal Funding Programs					
NHPP	$119,671,238	$139,514,505	$450,954,886	$459,657,193	$1,169,797,822
STP-State	$31,776,440	$38,680,834	$89,463,242	$84,555,774	$244,476,290
STP-City	$1,625,980	$1,979,273	$4,577,776	$4,326,664	$12,509,692
STP-Urbanized	$25,454,357	$30,985,087	$71,664,078	$67,732,976	$195,836,497
HSIP	$16,051,608	$19,539,307	$45,191,624	$42,712,657	$123,495,197
TAP	$3,852,808	$4,689,947	$10,847,177	$10,252,160	$29,642,091
Total Federal Highway	$198,432,430	$235,388,952	$672,698,783	$669,237,424	$1,775,757,589
FTA 5307 - Urbanized Areas Formula Grants	$12,007,085	$14,615,988	$33,804,693	$31,950,351	$92,378,117
FTA 5307 - Urbanized Areas Formula Grants (Conway)	$2,285,110	$2,781,620	$6,433,489	$6,080,583	$17,580,801
FTA 5310 - Enhanced Mobility of Seniors and Individuals with Disabilities	$945,269	$1,150,657	$2,661,305	$2,515,320	$7,272,551
FTA 5337 - State of Good Repair-High Intensity Fixed Guideway	$612,815	$745,968	$1,725,317	$1,630,675	$4,714,775
FTA 5339 - Bus and Bus facilities	$1,229,349	$1,496,462	$3,461,103	$3,271,245	$9,458,159
Total Federal Transit	$17,079,628	$20,790,695	$48,085,906	$45,448,175	$131,404,404
Total Federal Funds	**$215,512,058**	**$256,179,647**	**$720,784,690**	**$714,685,598**	**$1,907,161,993**
State Funding Programs					
State Highway Funds	$57,150,087	$74,667,738	$172,695,809	$163,222,654	$467,736,287
State Maintenance	$50,561,201	$66,059,226	$152,785,551	$144,404,565	$413,810,544
IRP[a]	$103,700,000	$73,800,000	$36,900,000	$-	$214,400,000
CAP (1/2 Sales Tax)[b]	$175,140,000	$233,520,000	$175,140,000	$-	$583,800,000
Total State Highway	$386,551,288	$448,046,964	$537,521,360	$307,627,219	$1,679,746,831
PTTF (Public Transit)	$3,357,665	$4,674,992	$12,697,657	$14,016,253	$34,746,567
PTTF (Human Service)	$209,851	$292,182	$793,590	$876,001	$2,171,624
Total State Transit	$3,567,515	$4,967,174	$13,491,248	$14,892,254	$36,918,191
Total State Funds	**$390,118,804**	**$453,014,138**	**$551,012,607**	**$322,519,473**	**$1,716,665,022**
Local Funding Programs					
1/2-cent Sales Tax Turnback[C]	$39,775,323	$53,033,764	$39,775,323	$-	$132,584,410
State Motor Fuel Tax Turnback	$86,579,752	$113,118,187	$261,626,203	$247,274,809	$708,598,951
Taxes	$92,966,357	$129,440,240	$351,570,203	$388,079,221	$962,056,022
Other Sources	$18,889,711	$26,300,791	$71,435,084	$78,853,303	$195,478,889
Total Local Highway	$238,211,143	$321,892,982	$724,406,813	$714,207,334	$1,998,718,271
Local Contributions (General Fund)	$27,622,825	$38,460,204	$104,461,037	$115,308,856	$285,852,921
Farebox Revenues	$5,970,491	$8,458,425	$24,323,527	$29,650,244	$68,402,687
Total Local Transit	$33,593,316	$46,918,629	$128,784,564	$144,959,099	$354,255,608
Total Local Funds	**$271,804,459**	**$368,811,610**	**$853,191,377**	**$859,166,433**	**$2,352,973,879**
TOTAL ALL FUNDS - Scenario 1	**$877,435,321**	**$1,078,005,395**	**$2,124,988,674**	**$1,896,371,504**	**$5,976,800,894**

* Please note that revenue forecasts under this scenario will be used for further financial analysis in the LRMTP.

Table 13 Scenario 3 Future Transportation Revenue Forecasts by Funding Category ($YOE)

Funding Programs	TIP Period FY2014-FY2016	FY2017-FY2020	FY2021-FY2030	FY2031-FY2040	Scenario 3 Total
Federal Funding Programs					
NHPP	$119,526,404	$138,743,481	$432,687,668	$399,044,212	$1,090,001,765
STP-State	$31,749,797	$38,539,001	$86,102,915	$73,405,774	$229,797,487
STP-City	$1,624,616	$1,972,016	$4,405,830	$3,756,126	$11,758,588
STP-Urbanized	$25,433,015	$30,871,472	$68,972,305	$58,801,325	$184,078,116
HSIP	$16,038,150	$19,467,661	$43,494,182	$37,080,326	$116,080,319
TAP	$3,849,577	$4,672,750	$10,439,746	$8,900,252	$27,862,326
Total Federal Highway	$198,221,560	$234,266,380	$646,102,647	$580,988,015	$1,659,578,601
FTA 5307 - Urbanized Areas Formula Grants	$11,997,018	$14,562,395	$32,534,955	$27,737,198	$86,831,567
FTA 5307 - Urbanized Areas Formula Grants (Conway)	$2,283,194	$2,771,420	$6,191,841	$5,278,763	$16,525,218
FTA 5307 (operating Max)	$8,462,982	$10,272,661	$22,950,933	$19,566,480	$61,253,056
FTA 5310 - Enhanced Mobility of Seniors and Individuals with Disabilities	$944,476	$1,146,438	$2,561,344	$2,183,636	$6,835,894
FTA 5337 - State of Good Repair-High Intensity Fixed Guideway	$612,301	$743,233	$1,660,512	$1,415,645	$4,431,692
FTA 5339 - Bus and Bus facilities	$1,228,318	$1,490,975	$3,331,100	$2,839,881	$8,890,274
Total Federal Transit	$17,065,308	$20,714,460	$46,279,752	$39,455,123	$123,514,644
Total Federal Funds	$215,286,868	$254,980,841	$692,382,399	$620,443,138	$1,783,093,245
State Funding Programs					
State Highway Funds	$57,098,657	$74,393,950	$166,209,184	$141,699,197	$439,400,988
State Maintenance	$50,515,701	$65,817,003	$147,046,775	$125,362,567	$388,742,047
IRP[a]	$103,700,000	$73,800,000	$36,900,000	$-	$214,400,000
CAP (1/2 Sales Tax)[b]	$175,140,000	$233,520,000	$175,140,000	$-	$583,800,000
Total State Highway	$386,454,358	$447,530,953	$525,295,959	$267,061,764	$1,626,343,035
PTTF (Public Transit)	$3,357,665	$4,674,992	$12,697,657	$14,016,253	$34,746,567
PTTF (Human Service)	$209,851	$292,182	$793,590	$876,001	$2,171,624
Total State Transit	$3,567,515	$4,967,174	$13,491,248	$14,892,254	$36,918,191
Total State Funds	**$390,021,873**	**$452,498,127**	**$538,787,207**	**$281,954,019**	**$1,663,261,226**
Local Funding Programs					
1/2-cent Sales Tax Turnback[C]	$39,775,323	$53,033,764	$39,775,323	$-	$132,584,410
State Motor Fuel Tax Turnback	$86,501,838	$112,703,410	$251,799,265	$214,667,763	$665,672,276
Taxes	$92,966,357	$129,440,240	$351,570,203	$388,079,221	$962,056,022
Other Sources	$18,889,711	$26,300,791	$71,435,084	$78,853,303	$195,478,889
Total Local Highway	$238,133,229	$321,478,205	$714,579,875	$681,600,287	$1,955,791,597
Local Contributions (General Fund)	$27,622,825	$38,460,204	$104,461,037	$115,308,856	$285,852,921
Farebox Revenues	$5,970,491	$8,458,425	$24,323,527	$29,650,244	$68,402,687
Total Local Transit	$33,593,316	$46,918,629	$128,784,564	$144,959,099	$354,255,608
Total Local Funds	**$271,726,545**	**$368,396,834**	**$843,364,439**	**$826,559,387**	**$2,310,047,205**
TOTAL ALL FUNDS - Scenario 1	**$877,035,286**	**$1,075,875,801**	**$2,074,534,045**	**$1,728,956,543**	**$5,756,401,675**

Figure 2 Revenue Projections for the Three Scenarios



Revenue Forecasts for Alternative Revenue Sources

To mitigate the loss of revenue from existing sources, meet growing transportation demand and accommodate resources necessary to achieve the regional Vision, a number of new potential revenue sources are being considered, as shown in Table 14.

Transportation funding sources and mechanisms are different at different levels of government. In this study, potential funding sources that will most likely require Federal efforts to initiate are not evaluated quantitatively due to the great uncertainty involved. Examples of these funding sources are VMT taxes and carbon taxes. At the State and local levels, among the many alternative funding sources and mechanisms that can potentially be used, the likelihood of one funding source being used to invest in transportation needs is largely determined by State and local preference. Through discussion with Metroplan and AHTD, the potential funding sources listed in Table 14 are identified and recommended for quantitative analyses. These funding sources, overall, fall into the conventional funding category. In fact, revenues from sales taxes, fuel taxes, and property taxes are already used in CARTS area for transportation investment. In addition to these listed funding sources, VMT taxes and carbon taxes, and a few other funding sources such as tax incremental financing, impact fees, and development exactions, will also be discussed.

The recommended revenue sources are very similar to the revenue sources recommended in a study conducted for the State of Arkansas between 2009 and 2010 by the Blue Ribbon Committee of Highway Financing. This study is focused on the potential revenues available to the CARTS area, while the Blue Ribbon Committee study was focused on potential revenues for AHTD.

Table 14 Potential Funding Sources for CARTS area

Potential Funding Sources
Sales taxes
Half-cent sales tax levied at the municipal level
Half-cent sales tax levied at the County level
Renewal of the current half-cent sales tax (local turnback)
Half-cent sales tax levied at the County level (starting from FY 2024)
Transfer of sales tax on auto-related goods (local share)
Fuel taxes
New fuel taxes – gasoline and diesel, per cent
New excise tax on wholesale fuel price, per cent
Fuel tax index
State fuel tax index to fuel efficiency
State fuel tax index to construction costs
State fuel tax index to fuel efficiency and construction costs
General tolls, per facility
Property taxes, per mill
$100/yr fee on electric vehicles (local turnback)

Alternative Revenue Forecast Methodology

Similar to revenue forecasts methodologies described earlier, there are three main steps for alternative revenue forecasts:

1. Determine base year revenues;
2. Determine key assumptions; and
3. Determine growth rates.

Following are the description of each alternative revenue source, its base year revenue estimate, key assumptions, and growth rate.

1. Sales taxes: Sales tax, also known as a gross receipts tax, is collected by the retailer from customers. The base State sales tax rate is six percent. On top of the six percent, another half percent is currently levied State-wide to pay back the bonds issued to finance the CAP projects. This half cent sales tax will expire in 2023. Counties and Cities can also

levy local sales tax with different tax rates. Given its large tax base, sales tax is considered a significant funding source. Although sales tax revenues fluctuate with economic activity, it is responsive to inflation. Sales tax is a commonly tapped source of revenue in Arkansas because only a simple majority is required to pass any increase[9]. Four different types of sales taxes are being considered in this study. The key assumptions and results are documented in Table 15.

a. A half-cent sales tax levied at the municipal level: it is assumed that all the municipalities within the CARTS area will levy an additional half-cent sales tax to be dedicated on transportation investment. Since this sales tax is a local tax, it is not subject to the 70/15/15 mandated formula, which distributes 30 precent of the total collections to the Counties (15 percent) and Cities (15 percent). The local municipalities will be able to keep all the revenue raised.

b. A half-cent sales tax levied at the County level: it is assumed that all the Counties within the CARTS area will levy an additional half-cent sales tax to be dedicated on transportation investment. Since this sales tax is a local tax, it is not subject to the 70/15/15 mandated formula. All the collections will be transferrable to the Regional Mobility Authority (RMA) and used on regionally significant transportation projects.

c. Indefinite renewal of the current half-cent sales tax, which is set to expire in 2023: it is assumed that the existing half-cent sales tax that is levied at the state level and expected to expire in 2023, will be renewed in 2023 and the years beyond. This sales tax is a State-wide tax, thus is subject to the 70/15/15 formula. The CARTS area will directly receive its local share.

d. A half-cent sales tax levied county-wide starting from FY 2024: it is assumed that all the Counties within the CARTS area will levy an additional half-cent sales tax to be dedicated on transportation investment starting from FY 2024. This sales tax is a local tax, it is not subject to the 70/15/15 mandated formula. All the collections will be transferrable to the RMA and used on regional significant transportation projects.

e. Transfer of local sales tax on auto-related goods (local share): it is assumed that all the local (Counties and Cities within CARTS area) sales tax collected on auto-related goods, which includes used cars, new cars, and service&parts, be dedicated to transportation improvements. Since the transferred sales tax is local, it is not subject to the 70/15/15 mandated formula. Based on national census data[10], the total auto-related sales are about 16 percent of the total retail sales. This could be a significant funding source for transportation investment.

[9] Report of the New Revenue Subcommittee: Overview and Recommendations, Mckenzie, J., *et al*, January 2010.

[10] US Census: http://www.census.gov/retail/

Table 15 Key Assumptions and Results for Sales Tax

Assumptions	Sales Tax - Municipal Level	Sales Tax – County Level	Indefinite Renewal 1/2 – cent Sales Tax	Sales Tax – County-wide (starting from FY 2024)	Transfer of sales tax on auto-related goods
Is there a State share	No	No	Yes	No	No
Does amount shown include State share?	No	No	No	No	No
Tax rate increase assumed in calculation	½ -cent	½ -cent	½ -cent	½-cent	Local sales tax rates vary from County to County, City to City
Growth Rate	Population growth rate	Population growth rate	Assume the same annual amount as current annual programmed funds	Population growth rate	Population growth rate
Estimated revenue generation for FY 2014	$51,401,937 (Cities Total)	$55,987,402	$13,258,441 (local turnback)	$63,522,842 in FY 2024	$41,786,717 (total sales tax collected on auto-related goods within CARTS area)
Estimated revenue generation for FY 2040	$68,100,748	$74,175,881	$13,258,441	$74,175,881	$55,361,857
Cumulative revenues between FY 2014 and FY 2040	$1,622,155,294	$1,766,864,547	$225,393,497	$1,172,589,502	$1,318,715,748
Data Source	1. Local Tax Distribution Report 2012 2. Local Sales Tax Rate Changed in 2013 3. Local Sales Tax Rates released on July 2013 4. Cambridge Systematics Analysis	1. Local Tax Distribution Report 2012 2. Local Sales Tax Rate Changed in 2013 3. Local Sales Tax Rates released on July 2013 4. Cambridge Systematics Analysis	AHTD estimated local turnback for CARTS area for the existing ½-cent sales tax	1. Local Tax Distribution Report 2012 2. Local Sales Tax Rate Changed in 2013 3. Local Sales Tax Rates released on July 2013 4. Cambridge Systematics Analysis	1. Local Tax Distribution Report 2012 2. Local Sales Tax Rate Changed in 2013 3. Local Sales Tax Rates released on July 2013 4. National Automobile Dealers Association, 2012 data 5. Cambridge Systematics Analysis

2. Fuel taxes: The gasoline and diesel taxes are the traditional way of funding transportation projects. However, fuel tax is levied in cents per gallon and only relates to the amount of fuel consumption. With Federal CAFE standards, expected fuel price increases, future inflation, VMT growth, fuel consumption is anticipated to decline. The State of Arkansas currently levies gasoline tax of 21.5 cents per gallon and diesel tax of 22.5 cents per gallon. These have been the rates since 2001. Raising fuel tax in the future could bring a significant amount of transportation funds to the State and the CARTS region. Since fuel tax is a State-wide tax, the collections are subject to the 70/15/15 Highway Revenue Distribution Formula. Two types of fuel tax are considered in this study. The key assumptions and results are documented in Table 16.

    a. A new tax on gasoline and diesel fuel: Estimates of gasoline and diesel motor fuel sales within the four-county region are based on a Metroplan analysis for the year 2010. Metroplan estimated a 1 cent per gallon motor fuel tax to generate $4.62 million, with the gasoline responsible for 71 percent ($3.30 million) and diesel for 29 percent ($1.32 million). The same values are assumed for 2014. Future year revenues are reduced in proportion to fuel efficiency improvements, and increased in proportion to VMT.

       The proportion of gasoline vs. diesel fuel sales is assumed to remain at the current ratio. This assumption could affect the estimates of gasoline vs. diesel taxes individually, but would have little effect on the combined revenue estimate from both taxes.

    b. A wholesale fuel excise tax: This option assumes that an additional 1-cent tax on gasoline and diesel motor fuel at the state level is distributed to the CARTS region in the same proportion as current state motor fuel taxes. The current state tax/fee rates are 21.8 cents per gallon for gasoline and 22.8 cents per gallon for diesel. An additional cent therefore represents an increase of 4.53 percent over current levels (weighted 71 percent to gasoline and 29 percent to diesel). This percentage increase was applied to future estimates of all revenue line-items funded by state fuel taxes.

   Estimates of fuel tax-based sources pivot off of the revenue estimates for the state fuel tax sources (state highway funds, state maintenance, and state motor fuel tax turnback), after they are adjusted for changes in vehicle-miles of travel (VMT) and fuel efficiency. Regional VMT is forecast to grow 30 percent between 2014 and 2040 (based on Metroplan forecasts). A constant annual growth rate is assumed.

   Fuel efficiency projections through 2040 are based on the U.S. Energy Information Administration (EIA) Annual Energy Outlook 2013 Reference Case, which incorporates the most recent Federal light- and heavy-duty fuel efficiency standards. Combined efficiency across the entire on-road vehicle fleet is projected to increase by 32 percent between 2014 and 2040.

Table 16 Key Assumptions and Results for Fuel Tax

Assumptions	A new tax on gasoline and diesel fuel	A wholesale fuel excise tax
Does amount shown include State share?	Yes	Yes
Tax rate increase assumed in calculation	1-cent per gallon	1-cent per gallon
Growth Rate	Determined by the following factors 1. Fuel efficiency improvements due to CAFE standards 2. Assumptions of moderate market adoption rate of electric vehicles 3. VMT Growth	Determined by the following factors 1. Fuel efficiency improvements due to CAFE standards 2. Assumptions of moderate market adoption rate of electric vehicles 3. VMT Growth
Estimated revenue generation for FY 2014	$4,618,709	$2,939,159
Estimated revenue generation for FY 2040	$4,003,323	$2,547,552
Cumulative revenues between FY 2014 and FY 2040	$113,186,704	$72,027,424
Data Source	1. U.S. Energy Information Administration, Annual Energy Outlook 2013 2. Metroplan's compiled data on regional and State population 3. Cambridge Systematics Analysis	1. U.S. Energy Information Administration, Annual Energy Outlook 2013 2. New Baseline Revenue Projections 3. Cambridge Systematics Analysis

3. Fuel tax index: The index is intended to mitigate the flat nature of fuel taxes, which can lead to decline over time. Three specific indices are considered (each implemented at the state level). The key assumptions and results are documented in Table 17.

    a. Index to fuel efficiency (this would offset loss in revenue from CAFE standards): A constant fuel tax rate per VMT was assumed for the state fuel tax sources. Overall revenue in each year was therefore inflated from 2014 levels in the proportion of future year to 2014 VMT. This represents an increase in the tax rate per gallon of 47 percent by 2040 (new tax rate is about 32 cents).

    b. Index to construction costs (this offset decrease in purchasing power from real increases in construction cost): The forecast price of diesel fuel was obtained from the AEO 2013 Reference Case to represent a construction cost index. The

price in 2040 is projected to be 134 percent higher (in 2011 dollars) than in 2014, so the fuel tax increases by the same percentage (total about 51 cents in 2040).

c. Index to fuel efficiency and construction cost (combined): In this case the fuel efficiency and construction cost indices are combined. The net effect is a 244 percent increase in the state fuel tax by 2040 (total about 76 cents).

Table 17 Key Assumptions and Results for Fuel Tax Index

Assumptions	Index to fuel efficiency	Index to construction costs	Index to fuel efficiency and construction cost
Does amount shown include State share?	Yes	Yes	Yes
Growth Rate	Determined by the following factors 1. Fuel efficiency improvements due to CAFE standards 2. Assumptions of moderate market adoption rate of electric vehicles 3. VMT Growth	Determined by the following factors 1. Fuel efficiency improvements due to CAFE standards 2. Assumptions of moderate market adoption rate of electric vehicles 3. VMT Growth 4. Diesel fuel #2 price growth	Determined by the following factors 1. Fuel efficiency improvements due to CAFE standards 2. Assumptions of moderate market adoption rate of electric vehicles 3. VMT Growth 4. Diesel fuel #2 price growth
Estimated revenue generation for FY 2015	$657,980	$1,467,844	$2,140,720
Estimated revenue generation for FY 2040	$26,490,423	$75,412,644	$137,422,900
Cumulative revenues between FY 2014 and FY 2040	$393,357,371	$876,786,142	$1,587,458,993
Data Source	1. U.S. Energy Information Administration, Annual Energy Outlook 2013 2. U.S. Energy Information Administration, Annual Energy Outlook 2013 forecasts of diesel fuel price 3. Cambridge Systematics Analysis	1. U.S. Energy Information Administration, Annual Energy Outlook 2013 2. U.S. Energy Information Administration, Annual Energy Outlook 2013 forecasts of diesel fuel price 3. Cambridge Systematics Analysis	1. U.S. Energy Information Administration, Annual Energy Outlook 2013 2. U.S. Energy Information Administration, Annual Energy Outlook 2013 forecasts of diesel fuel price 3. Cambridge Systematics Analysis

4. General tolls: Tolling is an important transportation funding strategy in many state. Under Arkansas law, AHTD is authorized to act as a toll authority, as are Regional Mobility Authorities. Although Arkansas does not have any toll roads currently, there are two on-going toll studies within the CARTS area which will yield estimates on toll revenues. The two toll studies are North Belt Freeway Toll Feasibility Study and Capacity Improvement on I-40 between Little Rock and Memphis. It is likely that toll rate for I-40 would be around 50 cents for the section in the CARTS area - a much higher rate than estimated toll rate for North Belt Freeway. The revenue estimates in this study are based on a single tolled facility with 60,000 AADT. The key assumptions and results are documented in Table 18. Please note that toll revenue estimates in this study will be updated with results from the previously mentioned two on-going studies.

Table 18 Key Assumptions and Results for General Tolls

Assumptions	General Tolls
Does amount shown include State share?	No
Toll rate	$0.50 /vehicle
Growth Rate	VMT growth rate
Estimated revenue generation for FY 2014	$11,862,500
Estimated revenue generation for FY 2040	$15,124,839
Cumulative revenues between FY 2014 and FY 2040	$362,615,986
Data Source	Cambridge Systematics Analysis

5. Property tax: It is assumed that Counties are not subject to the 3 mills limit on dedicated property tax for road and bridge funds. The estimated revenues are based on a 1 mill property tax levied in each of the four CARTS counties. The key assumptions and results are documented in Table 19.

Table 19 Key Assumptions and Results for Property Tax

Assumptions	Property Tax
Does amount shown include State share?	No
Tax rate increase assumed in calculation	$1 mill
Growth Rate	Population growth rate
Estimated revenue generation for FY 2014	$11,558,018 (Four Counties total)
Estimated revenue generation for FY 2040	$21,080,133
Cumulative revenues between FY 2014 and FY 2040	$428,034,469
Data Source	1. Arkansas Property Tax: Revenue, Assessment & Rates, University of Arkansas System 2. Cambridge Systematics Analysis

6. A $100 annual fee on electric vehicles: It is assumed that a $100 per year fee will be required for electric vehicles State-wide. Collections are subject to the 70/15/15 formula. Because of the insignificant market share of electric vehicles, this revenue source will not bring a significant amount of revenue. The key assumptions and results are documented in Table 20.

Table 20 Key Assumptions and Results for Electric Vehicle Fee

Assumptions	Electric Vehicle Fee
Does amount shown include State share?	No
Registration fee	$100/year
Growth Rate	AEO's projections on market share of electric vehicle
Estimated revenue generation for FY 2014	$854 (Four Counties total)
Estimated revenue generation for FY 2040	$32,943
Cumulative revenues between FY 2014 and FY 2040	$252,947
Data Source	1. Electric Vehicle Market Share, U.S. Energy Information Administration (EIA), Annual Energy Outlook 2013 2. Total Highway Revenues Distribution, 49th Biennial Report, AHTD 3. Number of Electric Vehicles Registrations in Arkansas, EIA 2011 data

Results of Revenue Forecasts for Alternative Revenue Sources

The results of the revenue projections are summarized in Table 21 and Figure 3. Key findings include:

- A half-cent sales tax has the greatest revenue potential, generating between $1.6 billion and $1.8 billion total ($68 to $74 million annually) by 2040.

- A transfer of sales tax on auto-related goods also has strong revenue potential, generating up to $1.3 billion total ($55 million annually) by 2040. It should be noted that this isn't a "new" tax, but rather a transfer of highway-user related revenues from General Fund to support transportation needs.

- An index on state fuel taxes could generate an additional $390 million (fuel efficiency) to $880 million (construction cost), or up to $1.6 billion if implemented in aggregate. Most of this revenue would be collected in the latter years of the 2040 horizon, due to the sharp growth curve.

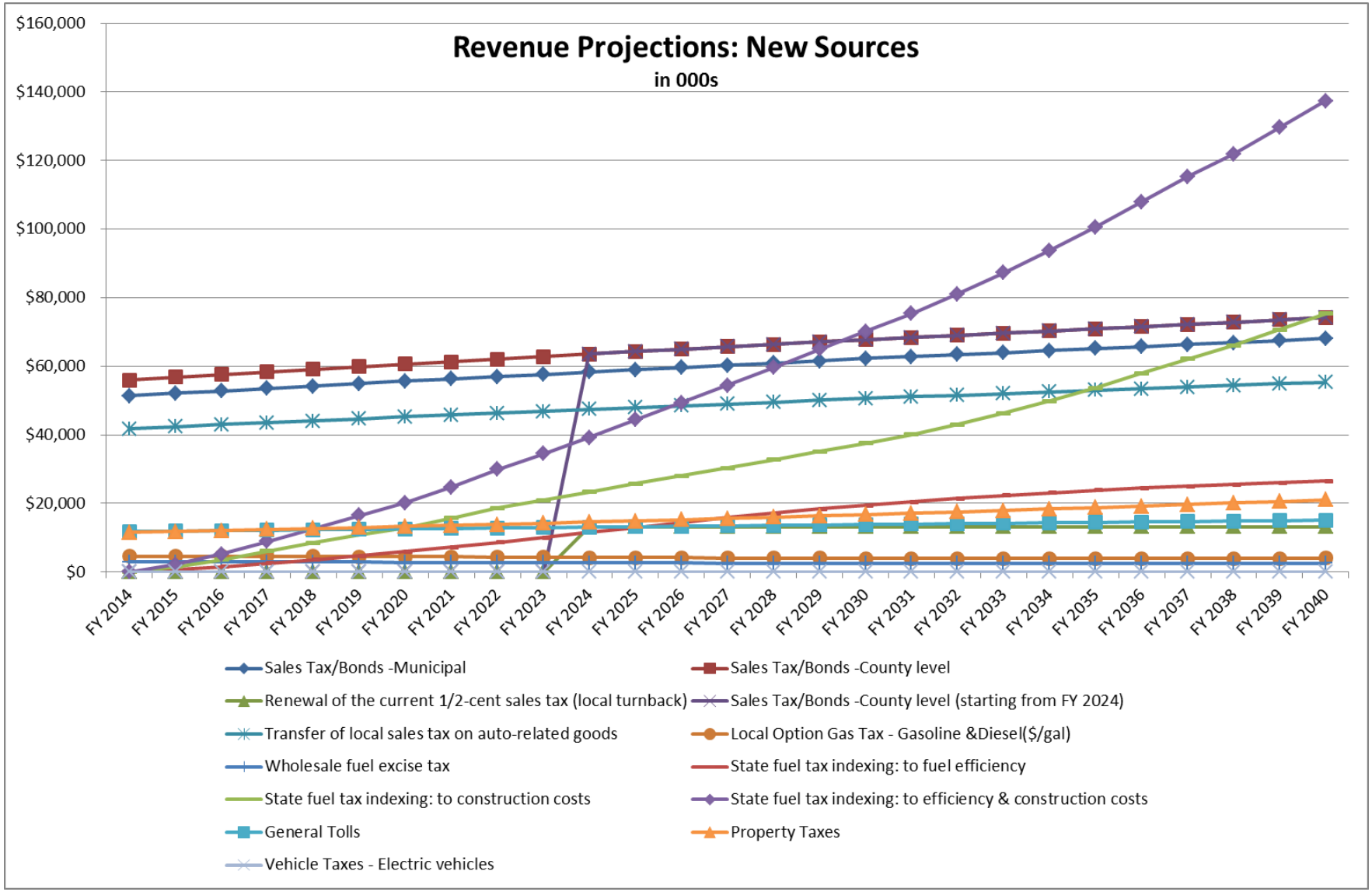
- A single mill of property tax could generate a substantial amount of revenue: approximately $430 million total ($21 million annually) by 2040.

- A single cent of additional fuel tax generates a small amount of revenue: $72 million (wholesale fuel excise tax) to $113 million (local option gas tax) total by 2040. This tax would likely need to be levied in multiple-cent increments to have a significant impact on the region's revenue.

Table 21 Revenue Forecasts for Alternative Revenue Sources ($YOE)

Alternative Funding Sources	TIP Period FY2014-FY2016	FY2017-FY2020	FY2021-FY2030	FY2031-FY2040	Scenario Total	% Increase Comparing to Scenario 2 Total Funds
Sales Taxes:						
Half-cent sales tax levied at the municipal level	$156,397,274	$218,306,669	$592,938,641	$654,512,709	**$1,622,155,294**	**27.0%**
Half-cent sales tax levied at the County level	$170,349,164	$237,781,374	$645,833,520	$712,900,489	**$1,766,864,547**	**29.4%**
Renewal of the current half-cent sales tax	$-	$-	$92,809,087	$132,584,410	**$225,393,497**	**3.8%**
Half-cent sales tax levied at the County level (starting from FY 2024)	$-	$-	$459,689,013	$712,900,489	**$1,172,589,502**	**19.5%**
Transfer of sales tax on auto-related goods	$127,141,679	$177,470,335	$482,023,840	$532,079,894	**$1,318,715,748**	**22.0%**
Fuel Taxes:						
Fuel Tax - Gasoline&Diesel ($/gal)	$13,829,652	$18,068,718	$41,790,363	$39,497,971	**$113,186,704**	**1.9%**
Wholesale fuel excise tax	$8,800,629	$11,498,199	$26,593,691	$25,134,905	**$72,027,424**	**1.2%**
State fuel tax indexing:						
To fuel efficiency	$2,205,234	$16,867,154	$135,643,063	$238,641,921	**$393,357,371**	**6.5%**
To construction costs	$5,077,648	$38,421,303	$268,083,526	$565,203,666	**$876,786,142**	**14.6%**
To efficiency & construction costs	$7,384,285	$58,061,292	$471,535,755	$1,050,477,660	**$1,587,458,993**	**26.4%**
General Tolls, per facility	$35,922,650	$49,490,523	$132,130,332	$145,072,480	**$362,615,986**	**6.0%**
Property Taxes, per mill	$35,485,776	$51,286,859	$150,960,839	$190,300,995	**$428,034,469**	**7.1%**
$100/year fee on electric vehicles	$2,681	$4,152	$39,815	$206,327	**$252,974**	**0.0%**

Figure 3 Revenue Forecasts for Alternative Revenue Sources



Other Alternative Revenue Sources

As part of this study, a few alternative revenue sources are also discussed in this memo, including the following:

Tax increment financing: Tax increment financing (TIF) captures the increase in property value as a result of redevelopment attracted by infrastructure improvements. TIF is a common tool used by local governments to revitalize urban environments. An amendment to the Arkansas Constitution enables local governments to issue bonds or notes to finance improvements in a redevelopment district. The bonds will be paid back from the increased tax revenue generated as a result of the improvements. A redevelopment district must be in an area that is considered blighted, deteriorated or underdeveloped.[11]

Impact fees: Impact fees are a one-time charge to developers on new development. Revenues are used to pay for infrastructure improvements – such as schools, sewers, and roads– to support growth generated by development. Impact fees have been widely used in California and Florida. The revenue potential of impact fees is low, and since the fees are entirely dependent on new development, they are highly speculative, and not easily bondable.

Development Exactions. In addition to impact fees, development exactions can take the form of land donations or in-kind donations, such as construction of public infrastructure, parks, or the provision of public services. Development exactions are negotiated and agreed upon as part of the permitting process of development.

Carbon Taxes on Motor Fuels: A carbon tax is a tax on the carbon content of fuels — effectively a tax on the carbon dioxide emissions from burning fossil fuels. Thus, carbon tax is shorthand for carbon dioxide tax or CO2 tax. By increasing fossil fuel prices generally, it encourages more efficient use of energy and reduced vehicle travel. Within the transportation sector, carbon taxes will function like conventional gasoline taxes except to the extent that they encourage switching to lower carbon fuels. The Congressional Budget Office (CBO) estimated that a national carbon tax of $70 per ton would raise net revenues of $72.5 billion annually[12]. According to the evaluation conducted by the Blue Ribbon Committee of Highway Financing, if the State of Arkansas was to levy one cent per pound of carbon content, the State could potentially collect $404 million annually. The difficulties in implementing this tax exist in determining a method of administration for alternative fuels, and resolving potential impacts of a carbon tax on emerging Arkansas biofuels enterprises[13].

Vehicle Miles Traveled (VMT) Fees: VMT fees are distance-based fees levied on a vehicle user for use of a roadway system. As opposed to tolls, which are facility specific and not necessarily levied strictly on a per-mile basis, these fees are based on the distance driven on a defined network of roadways. To date, this method of revenue generation has been implemented only for trucks (e.g. in Germany and, on a limited basis, Illinois) and only exists as a proposal for all

[11] http://www.arkansasedc.com/global-business/financing#5

[12] US Congress. Congressional Budget Office. *Reducing the Deficit: Spending and Revenue Options.* Report to Senate and House Committees on the Budget, February 1992.

[13] Report of the New Revenue Subcommittee: Overview and Recommendations, Mckenzie, J., *et al*, January 2010.

vehicles (to replace or supplement the motor fuel tax, for example). It has been tested on a pilot basis in Oregon and 12 cities in the U.S. as part of a study conducted by the University of Iowa. Based on the evaluation conducted by the Blue Ribbon Committee of Highway Financing, there are several serious questions and uncertainties about the VTM fee administration, including lack of national standards for VMT tax collection; the unknown cost to develop, deploy and administer a new tax system; on-board technology to support VMT monitoring in older vehicles; and ways to accounts for pass-through vehicles from outside of Arkansas to outside of Arkansas. These questions and uncertainties still exist today. Despite the fact that VMT fees are preferred transportation funding source for the future, it is unlikely that Arkansas will take the lead in implementing VMT fees before adoption of national standards and establishment of administration method.