

Quadrennial Review  
2012–2015



**METRO**

**Capital Metropolitan Transportation Authority**

Prepared by

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# Contents

## Section 1—Performance Indicators

<b>1. Executive Summary .....</b>	<b>1</b>
1.1 Change in Operating Model .....	1
1.2 Sources of Data .....	2
1.3 Types of Services and Transit Mode .....	2
<b>2. Performance Indicators .....</b>	<b>6</b>
2.1 Summary of Key Findings .....	6
2.2 Operating Cost per Passenger .....	7
2.3 Operating Cost per Revenue Hour .....	11
2.4 Operating Cost per Revenue Mile .....	16
2.5 Sales and Use Tax Receipts per Passenger .....	16
2.6 Fare Recovery Rate .....	21
2.7 Average Vehicle Occupancy .....	22
2.8 On-Time Performance .....	23
2.9 Accidents per 100,000 Miles of Service .....	25
2.10 Number of Miles Between Mechanical Road Calls .....	27
<b>Appendix: Differences in Quadrennial Review Methodologies .....</b>	<b>34</b>

## Section 2—Statutory Compliance

<b>1. Executive Summary .....</b>	<b>36</b>
1.1 Approach .....	36
1.2 Sources of Information .....	37
1.3 Metrics .....	37
<b>2. Prior Compliance Efforts .....</b>	<b>38</b>
2.1 HB 2702 .....	39
2.2 HB 2702 .....	40
2.3 HB 2702 .....	40
2.4 HB 2702 .....	40
2.5 HB 2325 .....	41
2.6 HB 2325 .....	41
2.7 HB 2702 .....	42
2.8 HB 2702 .....	42
2.9 HB 2702 .....	42
2.10 HB 2702 .....	43

2.11 SB 650..... 43

2.12 SB 650..... 45

**3. Statutory Amendments to the Texas Transportation Code Section 451 ..... 46**

3.1 HB 2396.....47

3.2 HB 2148.....47

3.3 HB 3031.....47

3.4 HB 283..... 48

3.5 HB 3123.....48

3.6 HB 3666 ..... 49

3.7 SB 57 ..... 49

**4. Other Statutes Relevant to Capital Metro ..... 50**

4.1 SB 18 ..... 50

4.2 SB 1303..... 51

**5. Compliance with the Sunset Provisions ..... 51**

5.1 Background ..... 51

5.2 Sunset Recommendations ..... 52

5.3 Audit Findings ..... 53

**6. Findings and Recommendations..... 53**

**7. Improvement Opportunities ..... 54**

**Section 3—Vehicle Transit Operations and Maintenance**

**1. Executive Summary ..... 56**

**2. Organization of the Vehicle Transit Operations and Maintenance Section..... 56**

**3. Acronyms ..... 57**

**4. Background ..... 57**

4.1 System Maintenance Audit Scope ..... 57

4.2 Texas Administrative Code ..... 57

4.3 Sunset Commission Report and Senate Bill 650..... 58

4.3.1 1985 to 2009 ..... 58

4.3.2 Sunset Advisory Commission Recommendations ..... 59

4.3.3 July 2011 to Present..... 60

<b>5. Transit Operations and Maintenance Overview .....</b>	<b>61</b>
5.1 Physical Assets Summary .....	62
5.1.1 Fleet.....	64
5.1.2 Primary Facilities.....	66
5.1.3 Inventory .....	68
5.2 Key Service Providers with Maintenance-Related Tasks .....	68
5.3 Organization Structure .....	69
5.4 Current Maintenance Environment.....	70
5.4.1 Vehicle Maintenance Program Plan.....	71
5.4.2 Maintenance Standards.....	71
5.4.3 Maintenance-Related Quality Assurance Audits .....	72
5.4.4 Preventive Maintenance Inspections (PMIs).....	74
5.4.5 MAP-21/State of Good Repair.....	74
5.4.6 Performance Measurement.....	75
5.4.7 Enterprise Asset Management System .....	76
5.4.8 Capital Metro’s Triennial Review of Maintenance-Related Issues.....	76
<b>6. Audit Findings of Transit Operation and Maintenance .....</b>	<b>77</b>
6.1 Analysis of Service Providers’ Contracts.....	77
6.1.1 McDonald Transit Associates, Inc.....	79
6.1.2 MV Transportation, Inc. ....	81
6.1.3 Ride Right LLC.....	85
6.1.4 Herzog Transit Services, Inc. ....	87
6.1.5 Rosemark .....	89
6.2 Condition Assessment of the Fleet and Facilities .....	89
6.2.1 Fleet.....	90
6.2.1.1 Bus.....	90
6.2.1.2 Rail.....	90
6.2.2 Facilities.....	90
6.3 Review of Monthly Reports Submitted by Service Providers .....	91
6.4 Benchmarking Findings .....	92
<b>7. Improvement Recommendations .....</b>	<b>94</b>

## Section 1

# Performance Indicators

# 1. Executive Summary

The purpose of this section of the report is to examine Capital Metropolitan Transportation Authority's (CMTA) compliance with nine key performance indicators in accordance with Texas Transportation Code Section 451.454 statutory requirements:

- Operating cost per passenger
- Operating cost per revenue hour
- Operating cost per revenue mile
- Sales and use tax receipts per passenger
- Fare recovery rate
- Average vehicle occupancy
- On-time performance
- Number of accidents per 100,000 miles
- Number of miles between mechanical road calls.

Iknow's view is that Cap Metro saw very strong improvement in several key metrics (miles between mechanical road calls and sales and use tax receipts per passenger), but remains challenged by rising operating costs.

Where available, data since 2002 has been presented to provide perspective on how these performance indicators have changed over time. Commentary has been added to note significant events that took place during the review period or to note interesting trends in the data. The last quadrennial performance review was conducted by the Texas A&M Transportation Institute, which covered the period 2008–2011. Each section contains definitions and a calculation methodology and each chart and table contains sources should the reader wish to further investigate.

In reviewing the source data and calculation methodologies used by the previous authors of the quadrennial review, several discrepancies were noted (these are addressed in the Appendix). These differences are not significant to the final performance report or trend analysis. Where the discrepancies did occur, no efforts were made to restate the historical data.

## 1.1 Change in Operating Model

A new labor structure model for transit service that would be directly operated by private contractors began on August 19, 2012. The change was a direct result of a Texas Sunset Commission review in 2010 that outlined recommendations for improvement in four areas: finance, labor, rail, and governance/public engagement. The resulting legislation, SB650, adopted by the 82nd Texas legislature (2011), mandated the labor structure changes, in addition to other improvements. Table 1.1 shows the contracted services of Capital Metro during the review period.

Table 1.1 **Capital Metro Contracted Services**

Service	Company	Years
Motor Bus*	Veolia Transportation	2012–2014
	Capital Area Rural Transportation System	2012–2015
	First Transit	2012–2015
	McDonald Transit Association	2012–2015
Commuter Bus	McDonald Transit Association	2012–2015
	Capital Area Rural Transportation System	2014–2015
Demand Response	LeFleur Transportation of Texas, Inc.	2012–2014
	MV Transportation, Inc.	2012–2015
	Capital Area Rural Transportation System	2014–2015
	Austin Ride Right	2014–2015
Demand Response— Taxi	Greater Austin Transportation Company	2012–2015
Rail	Herzog	2012–2015
Vanpool	VRIDE, Inc.	2014–2015

Source: National Transit Database

\*CMTA entered into a contract with MV Contract Transportation, Inc., to provide bus service in 2015 but the service didn't start until 2016.

## 1.2 Sources of Data

The primary source of data for the Capital Metro quadrennial performance review is the National Transit Database (NTD). The NTD is the nation's source for information and statistics on the transit systems of the United States. Recipients or beneficiaries of grants from the Federal Transit Administration (FTA) are required by statute to submit data to the NTD. Each year, NTD performance data are used to apportion over \$5 billion of FTA funds to transit agencies in urbanized areas. Annual NTD reports are submitted to Congress summarizing transit service and safety data. FTA audits each transit agency's annual NTD data to ensure compliance with statute.

Not all data for the performance indicators are available in the annual NTD reports. Capital Metro provided data for accidents, passenger incidents, and on-time performance. The methodology for how the data was calculated can be found in each of the sections, respectively. The source of the historical data is the previous Quadrennial Performance Reviews. No effort has been made to validate this data. Table 1.2 summarizes the data elements and the sources for the data for calculation of the performance indicators required for this report.

## 1.3 Types of Service and Transit Mode

The Federal Transit Administration classifies data by type of service. There are two types of services: directly operated and purchased transportation. Prior to 2013, Capital Metro utilized both types of services. Beginning in 2013, with the exception of Vanpool transit, all of Capital Metro's service falls in the purchased transportation category. Vanpool service was outsourced in 2014. Table 1.3 provides the definitions of the two modes of transit as defined in the National Transit Database.

Table 1.2 **Sources of Data for Quadrennial Performance Review, 2002–2015**

Source	Data Element	Data Record	Fiscal Years
National Transit Database	Operating Expenses	Form F30, Form F40	2002–2015
	Unlinked Passenger Trips	Form S10	2002–2015
	Vehicle Revenue Hours	Form S10	2002–2015
	Vehicle Revenue Miles	Form S10	2002–2015
	Passenger Miles	Form S10	2002–2015
	Fare Revenues	Form F10	2002–2015
	Sales and Use Tax Receipts	Form F10	2002–2015
	Mechanical System Failures	Form R20	2002–2015
Capital Metro	On-Time Performance	Pointcheck Summary/ Trapeze/OrbCAD	2002–2015
	Accident Rate	Quadrennial Review, Cambridge Systematics	2002–2006
	Accidents and Incidents	Access Database	2007–2014
	Accidents and Incidents	Risk Master Accelerator	2015

Source: Capital Metro

Table 1.3 **Definition of Types of Transit Modes**

Type of Transit Modes	Definition
Directly Operated (DO)	Transportation service provided directly by a transit agency, using their employees to supply the necessary labor to operate the revenue vehicles. This includes instances where an agency’s employees provide purchased transportation services to the agency through a contractual agreement.
Purchased Transportation (PT)	Transportation service provided to a public transit agency or governmental unit from a public or private transportation provider based on a written contract. The provider is obligated in advance to operate public transportation services for a public transit agency or governmental unit for a specific monetary consideration, using its own employees to operate revenue vehicles. Purchased transportation does not include: <ul style="list-style-type: none"> <li>■ Franchising,</li> <li>■ Licensing operations,</li> <li>■ Management services,</li> <li>■ Cooperative agreements, or</li> <li>■ Private conventional bus service.</li> </ul>

Source: National Transit Database Glossary

The Federal Transit Administration also classifies data by type of transit mode as shown in Table 1.4.



Table 1.4 **Definition of Modes of Transit**

<b>Type of Service</b>	<b>Definition</b>
Motor Bus (MB)	<p>A transit mode comprised of rubber-tired passenger vehicles operating on fixed routes and schedules over roadways. Vehicles are powered by:</p> <ul style="list-style-type: none"> <li>■ Diesel</li> <li>■ Gasoline</li> <li>■ Battery</li> <li>■ Alternative fuel engines contained within the vehicle.</li> </ul>
Commuter Bus (CB)	<p>Fixed-route bus systems that are primarily connecting outlying areas with a central city through bus service that operates with at least five miles of continuous closed-door service. This service may operate motorcoaches (aka over-the-road buses), and usually features peak scheduling multiple-trip tickets and limited stops in the central city.</p>
Demand Response (DR)	<p>A transit mode comprised of passenger cars, vans, or small buses operating in response to calls from passengers or their agents to the transit service, who then dispatches a vehicle to pick up the passengers and transport them to their destinations. A demand response (DR) operation is characterized by the following:</p> <ol style="list-style-type: none"> <li>a) The vehicles do not operate over a fixed route or on a fixed schedule except, perhaps, on a temporary basis to satisfy a special need, and</li> <li>b) Typically, the vehicle may be dispatched to pick up several passengers at different pick-up points before taking them to their respective destinations and may even be interrupted en route to these destinations to pick up other passengers.</li> </ol>
Demand Response—Taxi (DT)	<p>A special form of the demand response mode operated through taxicab providers. The mode is always a purchased transportation type of service.</p>
Commuter Rail (CR)	<p>A transit mode that is an electric- or diesel-propelled railway for urban passenger train service consisting of local, short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by or under contract with a transit service for the purpose of transporting passengers within urbanized areas (UZAs), or between urbanized areas and outlying areas.</p>
Hybrid Rail (YR)	<p>Rail System Primarily operating routes on the national system of railroads, but not operating with the characteristics of commuter rail. This service typically operates light rail-type vehicles as diesel multiple-unit trains (DMUs). These trains do not meet Federal Railroad Administration standards, and so must operate with temporal separation from freight rail traffic.</p>

Vanpool (VP)	A transit mode comprised of vans, small buses, and other vehicles operating as a ride-sharing arrangement, providing transportation to a group of individuals traveling directly between their homes and a regular destination within the same geographical area. The vehicles shall have a minimum seating capacity of seven persons, including the driver. For inclusion in the NTD, it is considered mass transit service if it meets the requirements for public mass transportation and is publicly sponsored.
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Source: National Transit Database Glossary

Table 1.5 summarizes the classification for services by type of service as contained in this Quadrennial Review.

Table 1.5 **Classifications for Services**

Type of Service	Mode	Fiscal Years
Directly Operated	Motor Bus	2002–2012
	Demand Response	2002–2012
	Vanpool	2002–2014
Purchased Transportation	Motor Bus	2002–2015
	Commuter Bus	2012–2015
	Demand Response	2002–2015
	Demand Response—Taxi	2010–2015
	Rail—Commuter Rail	2010
	Rail—Hybrid Rail	2011–2015
	Vanpool	2014–2015

Source: Capital Metro

Capital MetroRail was inaugurated in March 2010. The line operates on 32 miles of freight track and serves 9 stations. It connects downtown Austin with Austin’s northern suburbs. The Federal Transit Administration initially classified it as Commuter Rail (CR). In 2011, the FTA re-examined the definitions of transit modes and reclassified MetroRail as Hybrid Rail (YR).

Commuter Bus service has been in operation since before 2002. Prior to 2012 it was included with Motor Bus data. After 2012, the Federal Transit Administration reclassified it as Commuter Bus. Roughly 10 percent of bus routes are Commuter Bus routes, which generally offer peak service from outlying areas.

## 2. Performance Indicators

### 2.1 Summary of Key Findings

- **Annual operating cost per passenger** rose 21.9 percent during the review period (2012–2015), from \$4.60 to \$5.51. This was primarily a function of an 18.7 percent increase in operating costs. A broad expansion of service across all modes of transit (as reflected in an almost 14 percent and 9 percent growth in revenue hours and revenue miles, respectively), as well as an inflation rate of 5.3 percent over the period, accounted for the bulk of the operating cost growth.
- **Operating cost per revenue hour** grew by 4.3 percent during the review period from \$116.16 to \$121.16. Revenue hours grew by almost 14 percent as there was an across-the-board expansion in service and the introduction of a new transit mode (rail) in 2010.
- **Operating cost per revenue mile** increased 9.3 percent during the period. Revenue miles grew by 8.6 percent, spurred by strong growth in rail due to the introduction of Friday night and Saturday afternoon and evening service, as well as the start of MetroRapid Bus service in 2014.
- **Sales and use tax receipts per passenger** rose 30.8 percent. With overall passenger trips down 2.6 percent, the rise was due entirely to favorable demographics and an improving economy, which spurred consumer spending and in turn drove sales and use tax receipts up over 27 percent.
- **The fare recovery rate**, which is defined as annual revenue as a percent of operating cost, rose and fell during the period, but overall increased slightly from 11.7 percent to 11.9 percent. Fare revenues increased 21.5 percent due to fare hikes in January of 2014 and 2015. Operating costs growing at a slightly slower rate (18.7 percent) accounts for the marginal increase in the fare recovery rate.
- **Average vehicle occupancy**, which is defined as passenger miles as a percent of revenue miles, rose 3.3 percent. Revenue miles grew 8.6 percent due to new rail service, while passenger miles increased 12.1 percent. A rise in the average distance ridden per passenger explains why passenger miles grew faster than revenue miles.
- **On-time performance** was very strong during the period. System-wide motorbus performance has remained remarkably stable over the 2012–2015 period. In fact, over the past decade, on-time performance has ranged from 87 to 89 percent. Rail and Demand Response on-time performance have also been extremely robust (mid- to upper-90 percent range).
- **The number of accidents per 100,000 miles** rose dramatically during the period. All four transit modes saw accidents rise by at least 30 percent. Motor bus and demand response saw a significant, double-digit rise in the number of accidents per 100,000 miles while rail accidents remained flat during the period.
- **Miles between mechanical road calls** increased for bus and fell for both Rail and Demand Response. The spike in bus mechanical road calls was due to the introduction of a new system which allowed for better service monitoring. This resulted in identifying many instances where contractors were not categorizing incidents as road calls.

## 2.2 Operating Cost per Passenger

Operating cost per passenger is computed by dividing the authority’s annual operating cost by the passenger trips for the same period. For the purpose of reporting performance indicators, operating cost means the authority’s costs of providing public transit service, including purchased transportation not performed by the authority, but excluding the costs of:

- depreciation, amortization, and capitalized charges;
- charter bus operations; and
- coordination of carpool and vanpool activities.

Passenger trips means the number of all passenger boardings, including transfers, but excluding charter passengers and carpool and vanpool passengers whose trips are only coordinated by the authority. In NTD terms, the equivalent term for passenger trips is “unlinked passenger trips.”

Table 1.6 shows Capital Metro’s operating cost by type of service (directly operated and purchased transportation) and by transit mode (Motor Bus, Demand Response, Demand Response Taxi, Rail, and Vanpool).

Operating cost for all modes of transit (excluding Vanpool) grew by 18.7 percent during the review period, which represented a 5.9 percent CAGR (combined annual growth rate). This annual growth rate was consistent with the long-term annual growth rate observed over the 2002–2015 period. Seventy-two percent of all operating cost was allocated to Bus (motor and commuter), 20 percent to Demand Response and 8 percent to Rail in 2015. These figures have remained relatively stable over the review period. Figure 1.1 shows the annual operating cost by each of the four transit modes for the review period.

To better understand operating cost, it is necessary to break down the costs by function and by expense item. Table 1.7 shows the cost by function and by expense item for all transit modes.

All four functions (Vehicle Operations, Vehicle Maintenance, Nonvehicle Maintenance, and General Administrative) experienced double-digit percent changes during the period, led by nonvehicle maintenance, which grew 47.4 percent, and general administrative, which grew 30.4 percent. Nonvehicle maintenance, which refers to all activities associated with facility maintenance, grew mostly due to rail line upgrade and maintenance. General administrative, defined as all activities associated with general administration of the agency, was impacted by pension contributions and expenses associated with the transition to all-purchased transit.

In looking at the cost by expense line item, operators’ Salaries/Wages dropped to \$0 in 2013 as Capital Metro ceased directly operated service.

Associated with the drop in salaries and wages was a commensurate drop in fringe benefits, which are the payments or accruals to others (insurance companies, governments, etc.) on behalf of an employee and payments and accruals direct to an employee arising from something other than a piece of work.

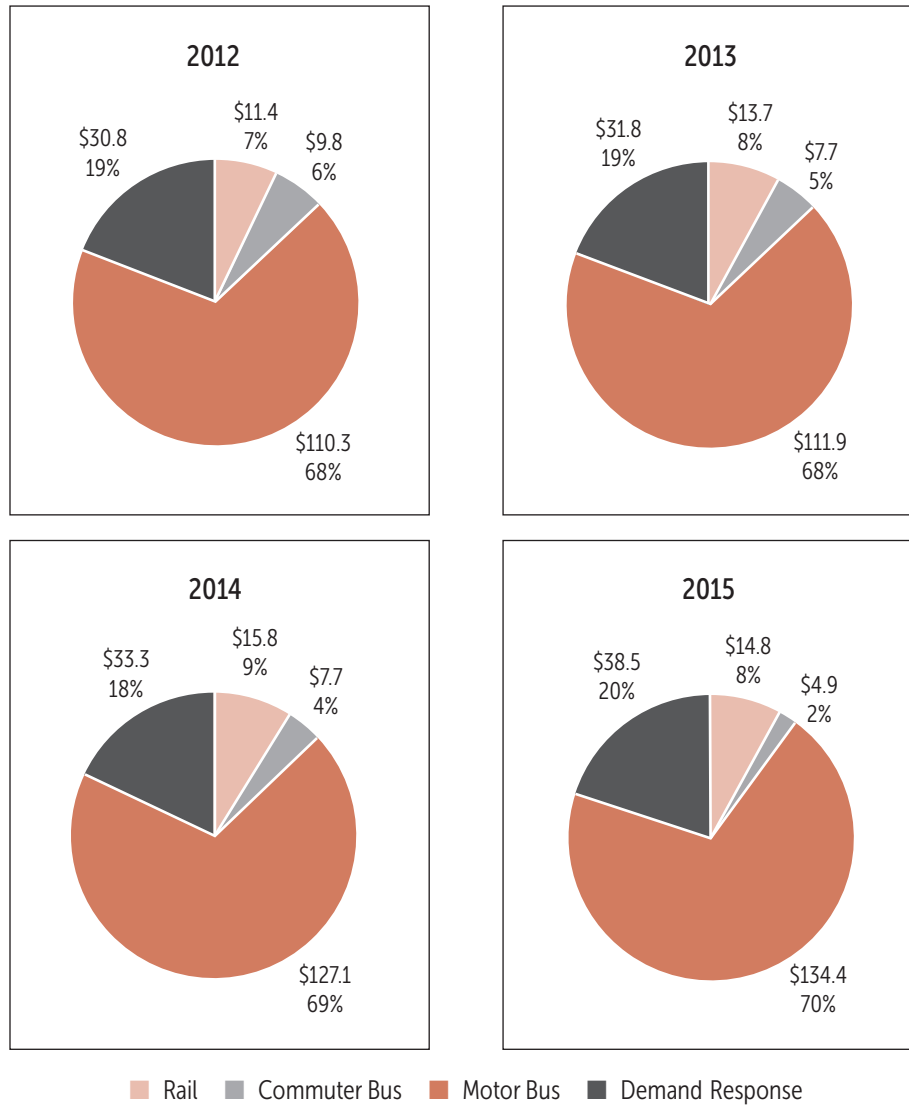
The expense line item “In Report,” which rose by 191.5 percent from 2012 to 2013, refers to contracted services. The rise reflects the change in model as Capital Metro moved from a mix of directly owned and purchased transportation to purchased transportation only.

Table 1.6 **Annual Operating Cost by Type of Service and Transit Mode**  
2002–2015, in millions

Year	Directly Operated		Purchased Transportation					Combined		All Modes Excluding Vanpool	Vanpool
	Motor Bus	Demand Response	Motor Bus	Demand Response	Taxi Demand Response (Taxi DR)	Rail	Commuter Bus	Motor Bus	Demand Response Including Taxi		
2002	\$58.1	\$14.7	\$17.2	\$1.6				\$75.3	\$16.3	\$91.6	\$0.6
2003	\$68.1	\$18.0	\$18.6	\$2.2				\$86.7	\$20.2	\$106.9	\$0.7
2004	\$73.0	\$18.1	\$16.2	\$2.7				\$89.2	\$20.8	\$110.0	\$0.8
2005	\$79.9	\$21.1	\$17.1	\$2.4				\$97.0	\$23.5	\$120.5	\$0.9
2006	\$82.1	\$21.0	\$20.4	\$3.4				\$102.5	\$24.4	\$126.9	\$1.2
2007	\$83.6	\$22.5	\$23.7	\$3.2				\$107.3	\$25.7	\$133.0	\$1.4
2008	\$86.7	\$24.1	\$28.9	\$3.4				\$115.6	\$27.4	\$143.1	\$1.6
2009	\$84.1	\$24.2	\$31.0	\$4.2				\$115.0	\$28.3	\$143.4	\$1.5
2010	\$76.2	\$25.6	\$32.0	\$0.1	\$3.5	\$6.9		\$108.1	\$29.2	\$144.2	\$1.2
2011	\$80.2	\$24.6	\$34.3	\$1.0	\$2.4	\$9.4		\$114.5	\$28.0	\$151.9	\$1.2
2012	\$69.5	\$23.2	\$40.8	\$6.8	\$0.9	\$11.4	\$9.8	\$110.3	\$30.8	\$162.2	\$2.2
2013			\$111.9	\$31.3	\$0.5	\$13.7	\$7.7	\$111.9	\$31.8	\$165.1	\$2.1
2014			\$127.1	\$33.0	\$0.4	\$15.8	\$7.7	\$127.1	\$33.3	\$184.0	\$1.5
2015			\$134.4	\$37.6	\$0.9	\$14.8	\$4.9	\$134.4	\$38.5	\$192.6	\$2.0
CAGR 2002–2015			17.1%	27.4%				4.6%	6.8%	5.9%	9.3%
CAGR 2012–2015			48.8%	76.8%	0.4%	9.2%	-20.4%	6.8%	7.7%	5.9%	-2.9%
Percentage Change 2002–2015			681.2%	2221.1%				78.5%	136.1%	110.3%	216.9%
Percentage Change 2012–2015			229.7%	452.5%	1.2%	30.3%	-49.6%	21.9%	24.9%	18.7%	-8.4%

Source: National Transit Database, Form 30  
CAGR = Combined Annual Growth Rate

Figure 1.1 **Annual Operating Cost by Transit Mode**  
2012–2015



**Table 1.7 Annual Operating Cost by Function and Expense Item**  
 2012–2015, in millions

Cost by Function (All Transit Modes)	2012–2015					% of Total			2012–2015		
	2012	2013	2014	2015	2015	2012	2013	2014	2015	2015	
Vehicle Operations	\$86.7	\$86.9	\$96.3	\$97.0	\$97.0	52.7%	52.0%	51.9%	49.8%	\$10.3	11.9%
Vehicle Maintenance	\$32.2	\$32.8	\$36.0	\$37.0	\$37.0	19.6%	19.6%	19.4%	19.0%	\$4.9	15.2%
Nonvehicle Maintenance	\$6.6	\$11.5	\$10.8	\$9.7	\$9.7	4.0%	6.9%	5.8%	5.0%	\$3.1	47.4%
General/Administrative	\$39.1	\$36.0	\$42.4	\$50.9	\$50.9	23.8%	21.5%	22.9%	26.2%	\$11.9	30.4%
<b>Total</b>	<b>\$164.5</b>	<b>\$167.2</b>	<b>185.5</b>	<b>194.6</b>	<b>194.6</b>						
<b>Cost by Expense Line Item</b>											
Services' Salaries/Wages	23.0	0.0	0.0	0	0	13.9%	0.0%	0.0%	0.0%	\$-23.0	-100.0%
Other Salaries/Wages	25.5	15.6	16.8	18.6	18.6	15.5%	9.3%	9.1%	9.5%	\$-6.9	-27.2%
Fringe Benefits	37.2	7.6	9.6	12.2	12.2	22.6%	4.6%	5.2%	6.2%	\$-25.0	-67.3%
Services	15.6	17.4	21.2	18.2	18.2	9.5%	10.4%	11.4%	9.4%	\$ 2.7	17.0%
Fuel/Lube	15.7	16.0	16.3	14.8	14.8	9.5%	9.6%	8.8%	7.6%	\$-0.9	-5.6%
Tires/Tubes	0.7	0.9	0.0	0.0	0.0	0.4%	0.5%	0.0%	0.0%	\$-0.7	-100.0%
Other Materials/Supplies	6.7	0.0	1.9	1.6	1.6	4.1%	0.0%	1.0%	0.8%	\$-5.1	-76.1%
Utilities	0.1	2.2	2.2	2.6	2.6	0.1%	1.3%	1.2%	1.3%	\$ 2.5	2041.6%
Casualty/Liability Costs	2.7	2.2	1.0	1.3	1.3	1.6%	1.3%	0.5%	0.7%	\$-1.4	-51.9%
Taxes	0.9	1.0	1.0	1.1	1.1	0.6%	0.0%	0.5%	0.6%	\$ 0.1	13.6%
In Report	35.3	102.9	113.5	122.7	122.7	21.5%	61.6%	61.2%	63.1%	\$ 87.4	247.4%
Miscellaneous Expenses	1.3	1.4	2.0	1.6	1.6	0.8%	1.4%	1.1%	0.8%	\$ 0.3	24.4%
<b>Total</b>	<b>164.6</b>	<b>167.2</b>	<b>185.5</b>	<b>194.6</b>	<b>194.6</b>						

Source: National Transit Database

Note: Discrepancy in 2012 totals are due to rounding.

The Consumer Price Index (CPI), which is a measure of the average change in prices over time in a fixed market basket of goods and services, grew annually by 1.3 percent during the period, or 5.3 percent overall.<sup>1</sup>

Finally, it is important to note when looking at the operating cost to understand that the 2012–2015 period saw a tremendous expansion in service offered by Capital Metro. For example, Rail expanded to Friday and Saturday night service in 2012, and Bus introduced MetroRapid service, limited-stop service along popular routes, in 2014.

Table 8 provides Capital Metro’s operating cost per passenger trip by service and by transit mode.

Overall, operating cost per passenger rose by 21.9 percent in the review period. Rail saw a 17.5 percent drop in operating cost over the period. Demand Response saw a very significant growth of 67.0 percent, although this figure is somewhat distorted by the transition of Demand Response to all purchase transportation in 2013. The rise can be also attributed to an increase in service (passenger miles were up 46.5 percent, revenue miles were up 47.6 percent for the review period). An overall drop in ridership also boosted operating cost per passenger.

### 2.3 Operating Cost per Revenue Hour

Operating cost per revenue hour is computed by dividing the authority’s annual operating cost by the total of scheduled hours that authority revenue vehicles are in revenue service for the same period. Revenue service means the time an authority revenue vehicle is in service to carry passengers, other than charter passengers. A revenue vehicle means a vehicle operated by an authority or as a purchased service that is used to carry paying passengers. Revenue hours do not include hours that a vehicle is not available for transporting passengers; for example, the time for travel to/from the operating facility and the start/end of revenue service.

Operating costs were previously reported in Table 1.6. Table 1.9 shows revenue hours by type of service and transit mode.

Overall revenue hours of service grew consistently during the review period, from 1.4 million to 1.6 million, for an average annual growth rate of 4.4 percent, much higher than the overall average annual growth during the 2002–2015 period of 1.6 percent. This was due to expansion of service across all modes as well as the 2010 introduction of a new transit mode (Rail). Demand Response saw tremendous growth during the period (52.2 percent, 21.1 percent adjusted), primarily due to a rise in unlinked passenger trips.

Motor Bus transit accounts for almost 75 percent of total revenue hours. Table 1.10 shows the revenue hours percentage breakdown by transit mode.

Table 1.11 shows Capital Metro’s operating cost per revenue hour by service and transit mode.

<sup>1</sup> Bureau of Labor Statistics, Consumer Price Index, South Region, All Urban Consumers, Cities (population 500,000–1,500,000), 2006–2016.



**Table 1.8 Operating Cost per Passenger by Service and Transit Mode**  
2002–2015, in millions

Year	Directly Operated		Purchased Transportation				Combined		All Modes Excluding Vanpool	Vanpool	
	Motor Bus	Demand Response	Motor Bus	Demand Response	(Taxi DR)**	Rail	Commuter Bus	Motor Bus			Demand Response Including Taxi
2002	\$2.54	\$38.27	\$1.42	*				\$2.16	\$42.18	\$2.59	\$2.48
2003	\$2.81	\$46.41	\$1.50	*				\$2.37	\$51.85	\$2.89	\$2.96
2004	\$3.02	\$44.75	\$1.48	*				\$2.54	\$51.05	\$3.10	\$3.27
2005	\$3.48	\$48.98	\$1.80	*				\$2.99	\$54.41	\$3.66	\$3.02
2006	\$3.17	\$53.07	\$2.38	\$18.17				\$2.97	\$41.85	\$3.62	\$3.49
2007	\$3.56	\$53.27	\$2.48	\$12.65				\$3.25	\$38.10	\$3.94	\$4.32
2008	\$3.51	\$50.55	\$2.48	\$14.18				\$3.18	\$38.41	\$3.86	\$4.50
2009	\$3.27	\$54.27	\$2.43	\$16.13				\$2.99	\$40.28	\$3.66	\$4.64
2010	\$3.36	\$54.33	\$2.63	\$13.21	\$18.53	\$57.05		\$3.11	\$43.85	\$4.05	\$4.70
2011	\$3.82	\$52.87	\$2.75	\$17.92	\$19.20	\$24.86		\$3.42	\$43.29	\$4.40	\$5.43
2012	\$3.66	\$60.51	\$2.80	\$34.83	\$25.65	\$21.54	\$16.28	\$3.29	\$50.40	\$4.60	\$9.86
2013			\$3.28	\$52.86	\$22.64	\$16.43	\$12.04	\$3.28	\$51.86	\$4.56	\$9.72
2014			\$3.98	\$53.71	\$18.13	\$20.71	\$13.52	\$3.98	\$52.60	\$5.42	\$6.38
2015			\$4.17	\$58.15	\$30.26	\$17.76	\$8.40	\$4.17	\$56.96	\$5.61	\$5.90
CAGR 2002–2015			8.6%					5.2%	2.3%	6.1%	6.9%
CAGR 2012–2015			14.1%	18.6%	5.7%	-6.2%	-19.8%	8.2%	4.2%	6.8%	-15.7%
Percentage Change 2002–2015			192.6%					93.3%	35.0%	116.1%	138.1%
Percentage Change 2012–2015			48.5%	67.0%	18.0%	-17.5%	-48.4%	26.7%	13.0%	21.9%	-40.2%

Source: National Transit Database  
 CAGR = Compound Annual Growth Rate  
 \*Purchased Transportation Demand Response (DR) Passenger Trips 2002–2006 may not be accurately reported.  
 \*\*Taxi DR included in Purchased DR 2006–2009

**Table 1.9 Revenue Hours by Service and Transit Mode**  
2002–2015, in millions

Year	Directly Operated		Purchased Transportation				Combined			All Modes Excluding Vanpool	
	Motor Bus	Demand Response	Motor Bus	Demand Response *	(Taxi DR) **	Rail	Commuter Bus	Motor Bus	Demand Response Including Taxi		Vanpool
2002	0.85	0.19	0.26	0.001				1.11	0.19	1.29	0.05
2003	0.87	0.20	0.26	0.001				1.14	0.20	1.34	0.04
2004	0.86	0.21	0.25	0.001				1.11	0.21	1.31	0.04
2005	0.82	0.22	0.24	0.001				1.06	0.22	1.28	0.05
2006	0.78	0.20	0.26	0.000				1.04	0.20	1.24	0.06
2007	0.78	0.21	0.31	0.073				1.09	0.29	1.37	0.05
2008	0.79	0.23	0.32	0.068				1.11	0.30	1.41	0.05
2009	0.76	0.21	0.34	0.081				1.10	0.29	1.40	0.06
2010	0.68	0.23	0.36	0.003	0.050	0.003		1.04	0.28	1.33	0.05
2011	0.69	0.24	0.40	0.031	0.036	0.008		1.09	0.31	1.41	0.04
2012	0.63	0.20	0.40	0.104	0.009	0.010	0.037	1.03	0.32	1.40	0.04
2013			1.04	0.314	0.005	0.012	0.037	1.04	0.32	1.41	0.04
2014			1.07	0.334	0.006	0.012	0.040	1.07	0.34	1.46	0.03
2015			1.16	0.368	0.007	0.012	0.040	1.16	0.38	1.59	0.07
CAGR 2002–2015			12.3%	60.9%				0.4%	5.5%	1.6%	3.2%
CAGR 2012–2015			42.7%	52.2%	-5.4%	5.5%	2.8%	4.0%	5.8%	4.4%	22.3%
Percentage Change 2002–2015			350.8%	48286.2%				50%	101.7%	22.9%	50.3%
Percentage Change 2012–2015			190.3%	252.7%	-15.4%	17.6%	8.6%	12.6%	18.3%	13.8%	82.8%

Source: National Transit Database  
 CAGR = Compound Annual Growth Rate  
 \*Purchased Transportation Demand Response (DR) Passenger Trips 2002–2006 may not be accurately reported.  
 \*\*Taxi DR included in Purchased DR 2006–2009

Table 1.10 **Revenue Hours Percentage Breakdown by Transit Mode**  
2002–2015, %

Year	Directly Operated		Purchased Transportation				Combined		
	Motor Bus	Demand Response	Motor Bus	Demand Response *	(Taxi DR) **	Rail	Commuter Bus	Motor Bus	Demand Response Including Taxi
2002	65.7%	14.3%	19.9%	0.1%				85.6%	14.4%
2003	65.3%	14.9%	19.7%	0.1%				85.0%	15.0%
2004	65.4%	15.8%	18.7%	0.1%				84.1%	15.9%
2005	64.2%	17.3%	18.4%	0.1%				82.6%	17.4%
2006	63.0%	16.1%	20.9%	0.0%				83.9%	16.1%
2007	56.8%	15.5%	22.4%	5.3%				79.2%	20.8%
2008	56.4%	16.2%	22.5%	4.9%				78.9%	21.1%
2009	54.4%	15.3%	24.6%	5.8%				78.9%	21.1%
2010	51.1%	17.4%	27.3%	0.2%	3.8%	0.2%		78.5%	21.3%
2011	49.3%	17.1%	28.3%	2.2%	2.6%	0.5%		77.5%	21.9%
2012	45.3%	14.6%	28.7%	7.5%	0.6%	0.7%	2.6%	73.9%	26.1%
2013			73.9%	22.3%	0.4%	0.8%	2.6%	73.9%	26.1%
2014			73.2%	22.9%	0.4%	0.8%	2.7%	73.2%	26.8%
2015			73.1%	23.1%	0.5%	0.8%	2.5%	73.1%	26.9%

Source: National Transit Database Form S10

\*Purchased Transportation Demand Response (DR) Passenger Trips 2002–2006 may not be accurately reported.

\*\*Taxi DR included in Purchased DR 2006–2009

**Table 1.11 Operating Cost per Revenue Hours by Service and Transit Mode 2002–2015**

Year	Directly Operated		Purchased Transportation					Combined		All Modes Excluding Vanpool	
	Motor Bus	Demand Response	Motor Bus	Demand Response	(Taxi DR) **	Rail	Commuter Bus	Motor Bus	Demand Response		Vanpool
2002	\$68.35	\$79.27	\$66.71	*				\$67.97	\$87.66	\$70.80	\$14.24
2003	\$78.01	\$90.33	\$70.85	*				\$76.36	\$101.12	\$80.07	\$16.93
2004	\$84.98	\$87.05	\$65.75	*				\$80.70	\$99.35	\$83.67	\$17.66
2005	\$97.05	\$94.71	\$72.33	*				\$91.53	\$105.20	\$93.91	\$17.41
2006	\$104.80	\$105.05	\$78.79	*				\$98.32	\$122.09	\$102.15	\$18.95
2007	\$107.33	\$105.55	\$76.93	\$43.84				\$98.73	\$89.86	\$96.88	\$26.97
2008	\$109.06	\$105.37	\$91.19	\$49.44				\$103.97	\$92.47	\$101.54	\$29.18
2009	\$110.69	\$113.27	\$90.30	\$51.47				\$104.34	\$96.29	\$102.65	\$23.89
2010	\$112.10	\$111.02	\$87.99	\$24.15	\$70.48	\$2.720		\$103.70	\$103.10	\$108.53	\$25.43
2011	\$115.66	\$101.88	\$86.12	\$32.38	\$66.79	\$1.236		\$104.89	\$90.80	\$107.91	\$29.48
2012	\$109.98	\$113.52	\$101.82	\$65.31	\$97.65	\$1.116	\$264.2	\$106.81	\$97.23	\$116.16	\$59.95
2013			\$107.61	\$99.51	\$87.93	\$1.187	\$210.0	\$107.61	\$99.33	\$117.26	\$56.42
2014			\$119.30	\$98.73	\$63.91	\$1.361	\$195.2	\$119.30	\$98.16	\$126.34	\$51.44
2015			\$115.61	\$102.31	\$116.81	\$1.237	\$122.6	\$115.61	\$102.60	\$121.16	\$30.04
CAGR 2002–2015			4.3%					4.2%	1.2%	4.2%	5.9%
CAGR 2012–2015			4.3%	16.1%	6.2%	3.5%	-22.6%	2.7%	1.8%	1.4%	-20.6%
Percentage Change 2002–2015			73.3%					70.1%	170%	71.1%	110.9%
Percentage Change 2012–2015			13.5%	56.7%	19.6%	10.8%	-53.6%	8.2%	5.5%	4.3%	-49.9%

Source: National Transit Database  
 CAGR = Compound Annual Growth Rate  
 \*Purchased Transportation Demand Response (DR) Passenger Trips 2002–2006 may not be accurately reported.  
 \*\*Taxi DR included in Purchased DR 2006–2009

The Capital Metro operating cost per revenue hours for all transit modes except Vanpool rose 4.3 percent during the review period. This figure resulted from a rise in operating costs by 18.7 percent and a rise in revenue hours of 13.8 percent. Demand Response saw a 56.7 percent increase from 2012–2015. Commuter Bus saw a 53.6 percent drop. Prior to 2015, commuter bus and fixed-route bus costs were combined and allocated based on miles. These calculations were changed to more accurately reflect the cost for each transit mode and not allocated based on miles. This resulted in a lower operating cost for commuter bus and slightly higher cost for motor bus.

## 2.4 Operating Cost per Revenue Mile

Operating cost per revenue mile is computed by dividing the authority's annual operating cost by the number of miles traveled by authority revenue vehicles while in revenue service for the same period. Revenue service means the time an authority revenue vehicle is in service to carry passengers, other than charter passengers. A revenue vehicle means a vehicle operated by an authority or as a purchased service that is used to carry paying passengers. Revenue miles do not include miles for travel to/from the operating facility for the start/end of revenue service or other miles when the vehicle is not in service to carry passengers.

Operating cost data is reported in Table 1.6, and revenue miles are reported in Table 1.12 by service and transit mode.

For all transit modes excluding Vanpool, revenue miles increased 8.6 percent from 2012–2015. Bus, which represents 70 percent of all revenue miles, grew 8.8 percent, due to new and expanded routes. Rail growth was 21.5 percent over this period, with a large spike in 2012 and 2013. In 2012, Capital Metro added Friday evening and Saturday afternoon and evening regularly scheduled service. Demand Response grew at 15.2 percent, aided by a near double-digit rise in passenger miles.

Table 1.13 provides Capital Metro's operating cost per revenue mile by service and transit mode.

Changes in the operating cost per revenue mile for all modes was mixed. Commuter Bus fell, while Rail, Demand Response, and Motor Bus grew during the review period. On average, operating cost per revenue mile for all modes of transit with the exception of vanpool grew 9.3 percent. This reflects a 18.7 percent rise in operating costs and a 8.6 percent rise in revenue miles.

## 2.5 Sales and Use Tax Receipts per Passenger

The sales and use tax receipts per passenger are computed by dividing the annual receipts from authority sales and use taxes by passenger trips for the same period. Passenger trips refers to unlinked passenger trips, which is the number of passengers who board public transportation vehicles.

Figure 1.2 shows the trend in Capital Metro sales and use tax revenues for 2002–2015.

The steady increase in sales receipts during the 2012–2015 period is a function of favorable demographics and an improving economy. Population in the Austin area has grown 14.8 percent from

Table 1.12 **Revenue Miles by Service and Transit Mode**  
2002–2015, in millions

Year	Directly Operated		Purchased Transportation					Combined		All Modes Excluding Vanpool	
	Motor Bus	Demand Response	Motor Bus	Demand Response	(Taxi DR)**	Rail	Commuter Bus	Motor Bus	Demand Response Including Taxi	Vanpool	Vanpool
2002	10.2	2.6	3.6	0.020				13.9	2.6	16.5	1.3
2003	10.5	2.6	3.7	0.018				14.1	2.7	16.8	1.3
2004	10.4	2.9	3.4	0.017				13.8	2.9	16.7	1.2
2005	10.1	3.0	3.5	0.018				13.7	3.0	16.7	1.5
2006	9.7	2.7	3.6	0.000				13.2	2.7	16.0	1.6
2007	9.6	2.9	4.2	1.478				13.8	4.4	18.1	1.5
2008	9.8	3.2	4.4	1.248				14.2	4.4	18.6	1.6
2009	9.2	2.8	4.8	1.562				14.0	4.3	18.3	1.5
2010	8.3	2.9	5.1	0.036	1.135	0.063		13.4	4.1	17.5	1.3
2011	8.6	3.0	5.5	0.365	0.776	0.176		14.1	4.1	18.4	1.2
2012	7.5	3.0	5.4	1.537	0.228	0.237	0.707	12.9	4.1	18.5	1.1
2013			12.8	4.487	0.123	0.279	0.702	12.8	4.7	18.4	1.1
2014			13.0	4.666	0.111	0.280	0.739	13.0	4.6	18.8	0.9
2015			14.0	4.942	0.150	0.288	0.748	14.0	4.8	20.1	2.2
CAGR 2002–2015			10.9%	53.0%				0.1%	4.7%	1.5%	4.2%
CAGR 2012–2015			37.7%	47.6%	-13.2%	6.7%	1.9%	2.8%	4.8%	2.8%	25.5%
Percentage Change 2002–2015			284.6%	24984.8%				1.0%	81.9%	22.1%	70.3%
Percentage Change 2012–2015			161.2%	221.6%	-34.5%	21.5%	5.8%	8.8%	15.2%	8.6%	97.4%

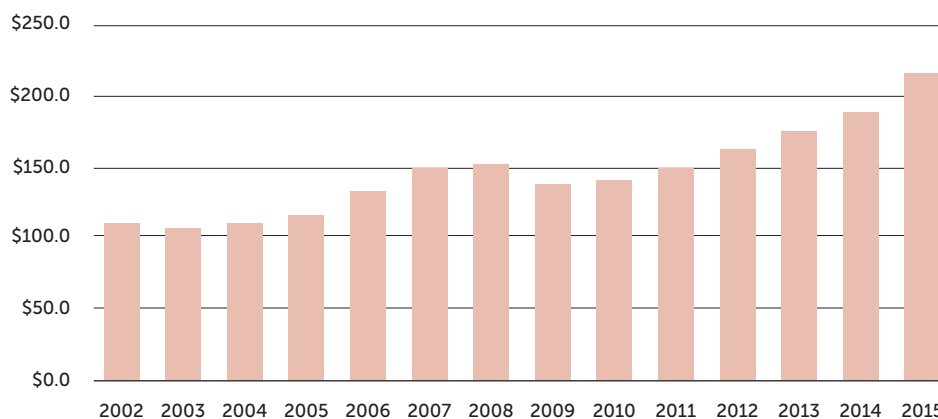
Source: National Transit Database  
 CAGR = Compound Annual Growth Rate  
 \*Purchased Transportation Demand Response (DR) Passenger Trips 2002–2006 may not be accurately reported.  
 \*\*Taxi DR included in Purchased DR 2006–2009

Table 1.13 **Operating Cost per Revenue Mile by Service and Transit Mode**  
2002–2015

Year	Directly Operated		Purchased Transportation					Combined		All Modes Excluding Vanpool	Vanpool
	Motor Bus	Demand Response	Motor Bus	Demand Response	(Taxi DR)	Rail	Commuter Bus	Motor Bus	Demand Response Including Taxi		
2002	\$5.68	\$5.63	\$4.73	*				\$5.43	\$6.21	\$5.56	\$0.49
2003	\$6.51	\$6.80	\$5.06	*				\$6.13	\$7.60	\$6.37	\$0.57
2004	\$7.02	\$6.29	\$4.71	*				\$6.45	\$7.16	\$6.57	\$0.64
2005	\$7.88	\$6.96	\$4.85	*				\$7.10	\$7.72	\$7.21	\$0.59
2006	\$8.49	\$7.66	\$5.73	*				\$7.74	\$8.90	\$7.94	\$0.73
2007	\$8.71	\$7.82	\$5.69	\$2.16				\$7.80	\$5.90	\$7.34	\$0.91
2008	\$8.88	\$7.60	\$6.56	\$2.71				\$8.16	\$6.22	\$7.70	\$0.99
2009	\$9.19	\$8.74	\$6.41	\$2.66				\$8.23	\$6.55	\$7.83	\$1.00
2010	\$9.18	\$8.82	\$6.31	\$1.76	\$3.10	\$108.99		\$8.09	\$7.16	\$8.24	\$0.91
2011	\$9.35	\$8.18	\$6.22	\$2.73	\$3.13	\$53.28		\$8.12	\$6.76	\$8.25	\$1.08
2012	\$9.26	\$7.83	\$7.61	\$4.43	\$3.75	\$47.90	\$13.82	\$8.57	\$7.44	\$8.75	\$1.96
2013			\$8.72	\$6.97	\$3.72	\$49.09	\$11.01	\$8.72	\$6.72	\$8.96	\$1.99
2014			\$9.79	\$7.06	\$3.22	\$56.51	\$10.45	\$9.79	\$7.23	\$9.80	\$1.71
2015			\$9.60	\$7.61	\$5.80	\$51.37	\$6.58	\$9.60	\$8.06	\$9.57	\$0.91
CAGR 2002–2015			5.6%					4.5%	2.0%	4.3%	4.9%
CAGR 2012–2015			8.1%	19.8%	15.6%	2.4%	-21.9%	3.9%	2.7%	3.0%	-22.6%
Percentage Change 2002–2015			103.1%					76.7%	29.8%	72.2%	86.1%
Percentage Change 2012–2015			26.2%	71.8%	54.5%	7.3%	-52.4%	12.0%	8.4%	9.3%	-53.6%

Source: National Transit Database  
 CAGR = Compound Annual Growth Rate  
 \*Purchased Transportation Demand Response (DR) Passenger Trips 2002–2006 may not be accurately reported.  
 \*\*Taxi DR included in Purchased DR 2006–2009

Figure 1.2 **Sales and Use Tax Revenues**  
2002–2015, in millions



Source: National Transit Database

2010–2015, more than triple the U.S. average (4.1 percent).<sup>2</sup> In addition to more potential spenders, consumer spending and consumer confidence has risen during the period. Personal consumption expenditures, which is the primary measure of consumer spending on goods and services in the U.S. economy, rose 9.8 percent during the period.<sup>3</sup>

Table 1.14 shows Capital Metro’s sales and use tax receipts per passenger.

The combination of a decrease in passenger trips during the period (from 35.3 million to 34.4 million) and an 27.3 percent increase in sales and use tax receipts (from \$165.2 million to \$210.4 million) resulted in a 30.8 percent rise in tax receipts per passenger trip for all modes of transit with the exception of Vanpool. Passenger trips fell by 2.6 percent during this period, in contrast with a national increase of unlinked passenger trips, which rose by 2.4 percent for the similar period, according to the American Public Transportation Authority.<sup>4</sup>

Multiple explanations exist for why passenger trips declined during the period. Fare increases that occurred in 2014 could serve as a disincentive, as evidenced by a steep drop in unlinked passenger trips the year the fare increase was introduced. The drop in consumer fuel prices of 43.6 percent

2 U.S. Census Bureau, Population percent change (April 1, 2010–July 1, 2015) as quoted on: <https://www.census.gov/quickfacts/table/PST045215/00>

3 Bureau of Economic Analysis, Table 2.3.1. Percent Change From Preceding Period in Real Personal Consumption Expenditures by Major Type of Product, Updated on August 26, 2016.

4 American Public Transportation Authority, APTA Public Transportation Ridership Report, appearing on <http://www.apta.com/resources/statistics/Pages/ridershipreport.aspx>



Table 1.14 **Sales and Use Tax Receipts per Passenger**  
2002–2015, in \$

Year	Sales and Use Tax Receipts (in millions)	Unlinked Passenger Trips All Modes (in millions)	Tax Receipts per Passenger Trip
2002	\$112.3	35.3	\$3.18
2003	\$106.3	37.0	\$2.87
2004	\$114.5	35.5	\$3.23
2005	\$122.1	32.9	\$3.71
2006	\$135.9	35.0	\$3.88
2007	\$150.3	33.7	\$4.46
2008	\$153.8	37.1	\$4.15
2009	\$139.9	39.1	\$3.58
2010	\$141.9	35.6	\$3.98
2011	\$151.2	34.5	\$4.38
2012	\$165.2	35.3	\$4.68
2013	\$179.0	36.2	\$4.95
2014	\$193.8	33.9	\$5.71
2015	\$210.4	34.4	\$6.12
CAGR 2002–2015	4.9%	–0.2%	5.2%
CAGR 2012–2015	8.4%	–0.9%	9.4%
Percentage Change 2002–2015	87.4%	–2.7%	92.6%
Percentage Change 2012–2015	27.3%	–2.6%	30.8%

Source: National Transit Database  
CAGR = Combined Annual Growth Rate

over the review period could make driving an appealing alternative to public transportation.<sup>5</sup> Finally, increased traffic congestion resulting from rapid population growth, could lead to dissatisfaction with Capital Metro services.

<sup>5</sup> The week of January 2, 2012, the Texas regular conventional retail gasoline price per gallon was \$3.12. The week of December 28, 2015, the price was \$1.76. Source: Energy Information Administration. Data can be found at: [http://www.eia.gov/oil\\_gas/petroleum/data\\_publications/wrgp/mogas\\_history.html](http://www.eia.gov/oil_gas/petroleum/data_publications/wrgp/mogas_history.html)

## 2.6 Fare Recovery Rate

The fare recovery rate is computed by dividing the annual revenue (including fares, tokens, passes, tickets, and route guarantees, provided by passengers and sponsors of passengers) by the operating cost for the same period. Charter revenue, interest income, advertising income, and other operating income are excluded from revenue provided by passengers and sponsors of passengers. Capital Metro’s contract revenues from the UT Shuttle service and other sponsored pass programs are included as fare revenue.

In fall 2013, the Capital Metro Board of Directors approved a two-phase fare restructuring program. In January 2014, Capital Metro launched a new tiered-fare system consisting of three main service categories: Local, Premium, and Commuter. The Local Service, which includes all local bus routes and UT Shuttle, will have a base fare of \$1.00, unchanged from 2010. The Premium Service, which was introduced to coincide with the MetroRapid Service, costs \$1.50 for a single ride and \$3.00 for a day pass. The Regional fare category was replaced by the Commuter Service, which included access to MetroRail, MetroExpress, Local, and Premium Services. A single ticket will be \$2.75 with a 1-day pass costing \$5.50. Finally, Capital Metro is simplifying MetroRail service by eliminating rail zones and charging a single flat fee of \$2.75.

The second phase of the fare restructuring occurred in January of 2015. Capital Metro made changes to all pass prices, including the Local base fare which increased 25 cents to \$1.25 with Local Day Passes costing \$2.50. Premium fares rose by 25 cents to \$1.75 for a Single Ride and \$3.50 for a Day Pass. Commuter fares increased by 75 cents to \$3.50 for a Single Ride, \$7 for a Day Pass, \$27.50 for a 7-Day Pass and \$96.25 for a 31-Day Pass.

Table 1.15 shows Capital Metro’s fare revenue by service and transit mode.

Motor Bus saw fare revenues increase each year during the review period. In fact, since 2002, Motor Bus has experienced revenue increases each year, averaging over 6 percent. This is partially explained by the contract with the University of Texas, which has both fixed and variable pricing, thus providing some protection when ridership drops, as it did during the 2012–2015 period (from 35.3 million to 34.4 million).

Fare revenue for Rail rose and fell during the period as Capital Metro negotiated a two-year deal with the City of Austin in which they paid a fixed amount for weekend rail service (the deal was 2012–2013, which corresponded with the rapid rise in fare revenue).

Table 1.16 gives the average fare recovery rate by service and transit mode. The fare recovery rate is a measure of the percentage of operating expenses offset by fare revenue.

The fare recovery rate rose and fell during the period, but overall increased slightly from 11.7 percent to 11.9 percent.

Table 1.15 **Fare Revenue by Service and Transit Mode**  
2002–2015, in millions

Year	Motor Bus	Demand Response	Directly Operated	Purchased			All Modes Excluding Vanpool	Vanpool
				Motor Bus and DR	Rail	Commuter Bus		
2002	\$8.50	\$0.15	\$3.27	\$5.39			\$8.65	\$0.24
2003	\$9.03	\$0.52	\$3.45	\$6.09			\$9.55	\$0.22
2004	\$9.13	\$0.44	\$3.94	\$5.63			\$9.57	\$0.21
2005	\$9.92	\$0.27	\$4.40	\$5.80			\$10.20	\$0.26
2006	\$10.52	\$0.27	\$4.90	\$5.89			\$10.78	\$0.34
2007	\$11.40	\$0.31	\$5.18	\$6.53			\$11.71	\$0.37
2008	\$12.38	\$0.36	\$5.53	\$7.21			\$12.74	\$0.31
2009	\$13.44	\$0.44	\$6.75	\$7.13			\$13.88	\$0.54
2010	\$13.89	\$0.65	\$7.81	\$6.72	\$0.03		\$14.57	\$0.55
2011	\$15.50	\$0.72	\$8.46	\$7.76	\$0.95		\$17.18	\$0.51
2012	\$15.79	\$0.78	\$7.90	\$8.66	\$2.27	\$0.11	\$18.94	\$0.48
2013	\$16.68	\$0.63		\$17.31	\$3.36	\$0.68	\$21.35	\$0.51
2014	\$18.37	\$0.73		\$19.10	\$3.14	\$0.48	\$22.71	\$0.40
2015	\$19.26	\$0.77		\$20.02	\$2.49	\$0.50	\$23.01	\$0.87
CAGR 2002–2015	6.5%	13.1%		10.6%			7.8%	10.6%
CAGR 2012–2015	6.8%	–0.6%		32.2%	3.2%	64.7%	6.7%	22.1%
Percentage Change 2002–2015	126.6%	395.5%		271.8%			165.9%	268.5%
Percentage Change 2012–2015	22.0%	–1.8%		131.1%	9.8%	346.9%	21.5%	81.9%

Source: National Transit Database

CAGR = Compound Annual Growth Rate

Note: UT Shuttle and Other Transportation Revenue (in lieu of fares) included with Motor Bus/Purchased Fare Revenues

## 2.7 Average Vehicle Occupancy

Average vehicle occupancy is computed by dividing the annual passenger miles by the miles traveled by authority revenue vehicles in revenue service for the same time period. The annual passenger miles are computed by multiplying annual passenger trips by the average distance ridden per passenger during the same time period. The average distance ridden per passenger is determined by sampling the average passenger distance on a random selection of bus trips during the year. The methodology is established by the requirements for reporting passenger miles to the National Transit Database.

Table 1.16 **Fare Recovery Rate by Service and Transit Mode**  
2002–2015, %

Year	Motor Bus	Demand Response	Directly Operated	Purchased			All Modes Excluding Vanpool	Vanpool
				Motor Bus and DR	Rail	Commuter Bus		
2002	11.3%	0.9%	4.5%	28.6%			9.4%	36.8%
2003	10.4%	2.6%	4.0%	29.2%			8.9%	30.4%
2004	10.2%	2.1%	4.3%	29.9%			8.7%	27.0%
2005	10.2%	1.2%	4.4%	29.7%			8.5%	30.0%
2006	10.3%	1.1%	4.8%	24.7%			8.5%	29.3%
2007	10.6%	1.2%	4.9%	24.3%			8.8%	26.5%
2008	10.7%	1.3%	5.0%	22.3%			8.9%	20.2%
2009	11.7%	1.6%	6.2%	20.3%			9.7%	36.6%
2010	12.8%	2.2%	7.7%	18.9%	0.5%		10.1%	45.6%
2011	13.5%	2.6%	8.1%	20.6%	10.2%		11.3%	40.9%
2012	14.3%	2.5%	8.5%	17.9%	19.9%	1.2%	11.7%	21.6%
2013	14.9%	2.0%		12.1%	24.5%	8.8%	12.9%	23.9%
2014	14.4%	2.2%		11.9%	19.8%	6.2%	12.3%	26.6%
2015	14.3%	2.0%		11.6%	16.8%	10.2%	11.9%	42.8%

Source: National Transit Database

Note: UT Shuttle and Other Transportation Revenue (in lieu of fares) included with Motor Bus/Purchased Fare Revenues

Table 1.17 shows Capital Metro’s passenger miles by service and transit mode for the period 2002–2015.

Passenger miles for all modes (excluding Vanpool) increased 12.1 percent from 2012–2015. Rail passenger miles grew 58.1 percent due to the addition of weekend and evening service in 2012 and 2013. Motor Bus miles grew, primarily due to the opening of two MetroRapid routes in 2014. The MetroRapid service covers popular routes and offers expanded capacity and service.

Table 1.18 shows Capital Metro’s average vehicle occupancy by service and by transit mode for the period 2002–2015.

Average vehicle occupancy increased by 3.3 percent during the period 2012–2015.

## 2.8 On-Time Performance

According to the instructions for computation of performance indicators in Texas Transportation Code Section 451.455, an authority’s on-time performance is computed by determining an annual percentage of revenue vehicle trips that depart from selected locations at a time not earlier than the published departure time and not later than five minutes after that published time.

Table 1.17 **Passenger Miles by Service and Transit Mode**  
2002–2015, in millions

Year	Directly Operated		Purchased Transportation					All Modes Excluding Vanpool	Vanpool
	Motor Bus	Demand Response	Motor Bus	Demand Response *	(Taxi DR) **	Rail	Commuter Bus		
2002	77.7	3.2	31.6	0.05				112.6	5.5
2003	83.9	3.3	32.5	0.04				119.7	4.8
2004	82.3	3.6	30.7	0.03				116.5	4.8
2005	76.0	3.8	28.1	0.04				107.9	5.5
2006	96.4	3.5	24.3	1.08				125.2	6.3
2007	94.4	3.4	31.2	1.47				130.5	6.1
2008	109.5	3.6	40.8	1.53				155.5	6.2
2009	125.8	3.3	45.3	1.73				176.2	7.3
2010	99.7	3.5	42.0	0.04	1.23	2.15		148.6	6.1
2011	99.7	3.3	34.9	0.40	0.90	6.42		145.6	5.4
2012	84.7	3.0	47.0	1.59	0.26	8.53	9.30	154.3	5.6
2013			133.2	4.77	0.14	13.28	9.73	161.1	5.8
2014			135.3	4.94	0.13	12.01	8.92	161.3	6.3
2015			144.8	5.01	0.18	13.49	9.60	173.1	10.5
CAGR 2002–2015			12.4%	41.6%				3.4%	5.1%
CAGR 2012–2015			45.5%	46.5%	-11.8%	16.5%	1.1%	3.9%	23.1%
Percentage Change 2002–2015			358.8%	9078.6%				53.7%	91.6%
Percentage Change 2012–2015			208.1%	214.5%	-31.5%	58.1%	3.2%	12.1%	86.6%

Source: National Transit Database

CAGR = Compound Annual Growth Rate

\*Purchased Transportation Demand Response (DR) Passenger Trips 2002–2006 may not be accurately reported.

\*\*Taxi DR included in Purchased DR 2006–2009

On-time performance is not reported to the National Transit Database. The source of data for on-time performance is Capital Metro, which conducted field checks at approximately 25 high-volume bus locations once per month between the hours of 6 a.m. and 6 p.m. Monday through Friday. Rail and Demand Response figures were captured electronically using Trapeze and OrbCAD, respectively. Table 1.19 documents on-time performance by transit mode and for the Capital Metro system.

Discussions with Capital Metro staff and Iknow analysis indicate a leading factor affecting demand response and bus on-time performance is congestion. Austin has experienced explosive population growth recently—an increase of 14.8 percent from 2010–2015, according to the U.S. Census Bureau. This has naturally put a strain on the transportation infrastructure. As a result, traffic congestion has increased. Austin is now the fourth most congested city in the United States, according to INRIX, a leading transportation watchdog agency.

Table 1.18 **Average Vehicle Occupancy by Service and Transit Mode**  
2002–2015, in millions

Year	Motor Bus	Demand Response	Purchased Transportation				All Modes Excluding Vanpool	Vanpool
			Directly Operated	Motor Bus and DR	Rail	Commuter Bus		
2002	7.89	1.24	6.31	8.64			6.83	4.17
2003	8.24	1.25	6.66	8.80			7.13	3.79
2004	8.17	1.25	6.46	8.90			6.97	3.88
2005	7.62	1.26	6.06	7.93			6.46	3.71
2006	9.11	1.67	8.05	7.11			7.84	3.95
2007	9.13	1.12	7.84	5.80			7.20	4.00
2008	10.61	1.17	8.75	7.49			8.37	3.91
2009	12.24	1.16	10.84	7.36			9.62	4.97
2010	10.61	1.17	9.21	6.94	33.93		8.49	4.59
2011	9.55	1.11	8.89	5.44	36.46		7.91	4.65
2012	10.23	1.17	8.38	6.85	35.99	13.15	8.33	4.96
2013	10.38	1.04		7.92	47.54	13.87	8.75	5.42
2014	10.43	1.10		7.91	42.92	12.07	8.59	7.26
2015	10.34	1.09		7.85	46.85	12.84	8.60	4.69
CAGR 2002–2015	2.1%	-1.0%		-0.7%			1.8%	0.9%
CAGR 2012–2015	0.4%	-2.3%		4.6%	9.2%	-0.8%	1.1%	-1.9%
Percentage Change 2002–2015	31.1%	-12.6%		-9.1%			25.9%	12.5%
Percentage Change 2012–2015	1.1%	-6.9%		14.6%	30.2%	-2.4%	3.3%	-5.5%

Source: National Transit Database  
CAGR = Compound Annual Growth Rate

System-wide Motor Bus performance has remained remarkably stable over the 2012–2015 period. In fact, over the past decade, on-time performance has ranged from 87 percent to 89 percent. Rail and Demand Response on-time performance have also been extremely robust.

### 2.9 Accidents per 100,000 Miles of Service

As defined by Texas statute, accidents per 100,000 miles is derived by dividing the annual number of accidents by 100,000 and dividing the product by the number of miles for all services, including charter and nonrevenue service, directly operated by the authority for the same period. According to statute, an “accident” includes:

Table 1.19 **On-Time Performance by Transit Mode**  
2002–2015, %

Year	Motor Bus			Demand Response All	Rail	Commuter Bus
	Directly Operated	Purchased	System			
2002			88.9%			
2003			89.0%			
2004			89.1%			
2005			90.0%			
2006			88.5%			
2007			89.8%			
2008	88.1%	88.4%	88.1%	88.7%		
2009	89.6%	89.7%	89.6%	88.8%		
2010	88.0%	88.4%	88.1%	92.9%	97.3%	
2011	88.1%	87.5%	88.0%	95.2%	99.2%	
2012	87.2%	87.0%	87.2%	95.5%	99.1%	87.3%
2013	NA	88.5%	88.5%	94.3%	97.6%	89.0%
2014	NA	88.9%	88.9%	93.7%	96.4%	87.8%
2015	NA	87.1%	87.1%	91.3%	96.9%	90.4%

Source: Capital Metro  
N/A = Not applicable

- a collision that involves an authority’s revenue vehicles, other than a lawfully parked revenue vehicle, and that results in property damage, injury, or death, and
- an incident that results in the injury or death of a person on board or boarding or alighting from an authority’s revenue vehicle.

Table 1.20 shows Capital Metro accidents by transit mode.

While purchased transportation motor bus accidents rose during the period, if the 2012 figure is normalized to include directly operated as well, motor bus accidents rose by 91.2 percent during the period. Demand Response accidents during the period more than doubled, from 48 (both directly operated and demand response) to 97. Discussions with Capital Metro staff and Iknow analysis indicate a mix of reasons for the rise in accidents. Factors include: (1) the rise in population in the area (which results in more cars on the road); (2) a deteriorating transportation infrastructure; (3) increased use of technology (cell phone use while driving); and (4) increased congestion on the roads. Also, Capital Metro shifted to a purchased transportation model that removes the organization from direct control over safety and security issues. Rail accidents remained stable during the period.

Table 1.21 shows Capital Metro accidents per 100,000 miles of service for directly operated service by transit mode, which ceased to exist in 2012.

Table 1.22 shows Capital Metro accidents per 100,000 miles of purchased transportation service by transit mode.

Accidents per 100,000 miles rose 23.0 percent during the period, with Rail dropping by 15.0 percent while Motor Bus increased by 45.2 percent.

## 2.10 Number of Miles Between Mechanical Road Calls

According to the instructions for computation of performance indicators in Texas Transportation Code, the number of miles between mechanical road calls is computed by dividing the annual miles for all service directly operated by an authority, including charter and nonrevenue service, by the number of mechanical road calls for the same period. For this performance indicator, mechanical road calls means an interruption in revenue service that is caused by a revenue vehicle equipment failure that requires assistance from a person other than the vehicle operator before the vehicle can be operated normally.

Table 1.23 shows Capital Metro mechanical road calls by transit mode. The extreme jump in the number of Bus mechanical road calls from 2014 to 2015 was due to the introduction of a new computer-aided dispatch (CAD) system that allowed for improved service monitoring. This resulted in identifying many instances where contractors were not categorizing incidents as road calls.

Table 1.24 shows Capital Metro miles between mechanical road calls by transit mode for directly operated service, which ceased to exist in 2012.

Table 1.25 shows Capital Metro miles between mechanical road calls for purchased transportation service.



Table 1.20 **Accidents by Transit Mode**  
2007–2015

Year	Motor Bus				Directly Operated				Purchased Transportation				
	Vehicle Accidents	Passenger Incidents	Vehicle Accidents	Passenger Incidents	Demand Response	Total	Motor Bus	Rail**	Demand Response	Vehicle Accidents and Derailments	Passenger Incidents	Vehicle Accidents	Passenger Incidents
2007	279	108	45	13	324	121	95	3					
2008	303	106	74	12	377	118	96	13					
2009	246	85	88	3	334	88	129	18					
2010	283	89	86	9	369	98	129	33					
2011	259	59	48	7	307	66	113	33	5	13			
2012	179	64	27	0	206	64	176	18	15	0	21	9	
2013							515	83	19	0	80	8	
2014							509	87	11	1	75	11	
2015							679	72	14	1	97	14	
CAGR 2012–2015							56.8%	58.7%	-2.3%		66.5%	15.9%	
Percentage Change 2012–2015							285.8%	300.0%	-6.7%		361.9%	55.6%	

Source: CapMetro

CAGR = Compound Annual Growth Rate

\*\*2010 Data for Rail not available

A reportable incident (accidents/derailments and incidents) is defined as occurring on transit property or otherwise affecting revenue service that results in one or more of the following conditions: (1) A fatality confirmed within 30 days of the incident; (2) An injury requiring immediate medical attention away from the scene for one or more persons; (3) Property damage equal to or exceeding \$25,000; (4) An evacuation for life safety reasons; or (5) A mainline derailment.

Table 1.21 **Accidents per 100,000 Miles of Directly Operated Service by Transit Mode**  
2007–2012

Year	Directly Operated Motor Bus				Directly Operated Demand Response				Directly Operated Total			
	Vehicle Accidents	Passenger Incidents	Vehicle Miles	Accidents per 100,000 Miles*	Vehicle Accidents	Passenger Incidents	Vehicle Miles	Accidents per 100,000 Miles*	Vehicle Accidents	Passenger Incidents	Vehicle Miles	Accidents per 100,000 Miles*
2007	279	108	11,049,958	3.50	45	13	3,321,920	1.75	324	121	14,371,878	3.10
2008	303	106	11,240,362	3.64	74	12	3,659,886	2.35	377	118	14,900,248	3.32
2009	246	85	10,619,408	3.12	88	3	3,228,739	2.82	334	88	13,848,147	3.05
2010	283	89	9,782,268	3.8	86	9	3,395,410	2.8	369	98	13,177,678	3.54
2011	259	59	9,997,377	3.18	48	7	3,519,396	1.56	307	66	13,516,773	2.76
2012	179	64	8,463,747	2.87	27	0	3,450,310	0.78	206	64	11,914,057	2.27

Source: Capital Metro; National Transit Database  
\*Defined as Demand Taxi and Paratransit. It is not a meaningful metric for Vanpool.

Table 1.22 **Accidents per 100,000 Miles of Purchased Transportation Service by Transit Mode**  
2007–2015

Year	Purchased Transportation Motor Bus*				Rail**			Purchased Transportation Demand Response*				
	Vehicle Accidents	Passenger Incidents	Vehicle Miles	Accidents per 100,000 Miles*	Vehicle Accidents and Derailments	Passenger Incidents	Vehicle Miles	Accidents per 100,000 Miles*	Vehicle Accidents	Passenger Incidents	Vehicle Miles	Accidents per 100,000 Miles
2007	95	3	4,712,971	2.08								
2008	96	13	4,834,998	2.25								
2009	129	18	5,273,645	2.79								
2010	129	33	5,490,544	2.95								
2011	113	33	6,139,957	2.38	5	13	227,559	7.91				
2012	176	18	5,859,140	3.31	15	0	285,322	5.26	21	9	2,022,778	1.48
2013	515	83	14,253,229	4.20	19	0	331,075	5.74	80	8	5,418,833	1.62
2014	509	87	14,439,501	4.13	11	1	330,739	3.63	75	11	5,542,454	1.55
2015	679	72	15,616,894	4.81	14	1	335,520	4.47	97	14	6,082,742	1.82
CAGR 2012–2015	56.8%	58.7%	38.7%	13.2%	-2.3%		5.6%	-5.3%	66.5%	15.9%	44.3%	7.2%
Percentage Change 2012–2015	285.8%	300.0%	166.5%	45.2%	-6.7%		17.6%	-15.0%	361.9%	55.6%	200.7%	23.0%

Source: Capital Metro; National Transit Database  
 CAGR = Compound Annual Growth Rate  
 \*Defined as Demand Taxi and Paratransit. It is not a meaningful metric for Vanpool.  
 \*\*2010 data for Rail not available

Table 1.23 **Mechanical Road Calls by Transit Mode**  
2002–2015

Year	Directly Operated						Purchased Transportation															
	Motor Bus			Demand Response			Total			Bus			Rail			Commuter Bus			Demand Response			
	Major Mechanical Failure	Other Mechanical Failure	Mechanical Failure	Major Mechanical Failure	Other Mechanical Failure	Mechanical Failure	Major Mechanical Failure	Other Mechanical Failure	Mechanical Failure	Major Mechanical Failure	Other Mechanical Failure	Mechanical Failure	Major Mechanical Failure	Other Mechanical Failure	Mechanical Failure	Major Mechanical Failure	Other Mechanical Failure	Mechanical Failure	Major Mechanical Failure	Other Mechanical Failure	Mechanical Failure	
2002	1,377	243	173	13	1,550	256																
2003	2,085	424	135	20	2,220	444																
2004	4,704	305	266	15	4,970	320																
2005	3,210	173	299	14	3,509	187																
2006	2,475	203	277	30	2,752	233																
2007	1,699	110	131	7	1,830	117																
2008	1,884	128	292	5	2,176	133																
2009	1,774	89	277	11	2,051	100																
2010	1,657	115	248	5	1,905	120																
2011	1,936	117	162	8	2,098	125	963	845	6	1	6	128	73	32	11	180						
2012	1,857	102	101	3	1,958	105	1,026	1,096	6	6	6	128	73	32	11	180						
2013							2,156	1,517	7	7	7	73	98	22	186	122						
2014							414	212	4	16	16	98	99	22	173	131						
2015							4,902	418	15	16	16	99	99	22	173	131						
CAGR 2012–2015							68.4%	-27.5%	35.7%	38.7%	-8.2%	108.8%	197.0%									
Percentage Change 2012–2015							377.8%	-61.9%	150.0%	166.7%	-22.7%	633.3%	2520.0%									

Source: Capital Metro; National Transit Database  
 CAGR = Compound Annual Growth Rate  
 \*Defined as Demand Taxi and Paratransit. It is not a meaningful metric for Vanpool.  
 \*\*2010 data for Rail not available

Table 1.24 **Miles between Mechanical Road Calls by Transit Mode for Directly Operated Service**  
2002–2012

Year	Directly Operated Motor Bus				Directly Operated Demand Response				Directly Operated Total			
	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles between Road Calls	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles between Road Calls	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles between Road Calls
2002	1,377	243	11,794,161	7,280	173	13	3,099,068	16,662	1,550	256	14,893,229	8,247
2003	2,085	424	12,098,378	4,822	135	20	3,141,895	20,270	2,220	444	15,240,273	5,721
2004	4,704	305	12,028,613	2,401	266	15	3,423,268	12,182	4,970	320	15,451,881	2,921
2005	3,210	173	11,742,466	3,471	299	14	3,577,704	11,430	3,509	187	15,320,170	4,145
2006	2,475	203	11,144,304	4,161	277	30	3,224,694	10,504	2,752	233	14,368,998	4,814
2007	1,699	110	11,049,958	6,108	131	7	3,321,920	24,072	1,850	117	14,371,878	7,382
2008	1,884	128	11,240,362	5,587	292	5	3,659,886	12,323	2,176	133	14,900,248	6,453
2009	1,774	89	10,619,408	5,700	277	11	3,228,739	11,211	2,051	100	13,848,147	6,438
2010	1,657	115	9,782,268	5,520	248	5	3,395,410	13,421	1,905	120	13,177,678	6,507
2011	1,936	117	9,997,377	4,870	162	8	3,519,396	20,702	2,098	125	13,516,773	6,080
2012	1,857	102	8,463,747	4,320	101	3	3,450,310	33,176	1,958	105	11,914,057	5,775

Source: National Transit Database  
 Major mechanical system failure—A failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip because actual movement is limited or because of safety concerns.  
 Other mechanical system failure— A failure of some other mechanical element of the revenue vehicle that, because of local agency policy, prevents the revenue vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip even though the vehicle is physically able to continue in revenue service..

**Table 1.25 Miles between Mechanical Road Calls by Transit Mode for Purchased Transportation Service 2011–2015**

Year	Purchased Transportation Bus				Rail				Commuter Bus				Demand Response			
	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles between Road Calls	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles between Road Calls	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles between Road Calls	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles between Road Calls
2011	963	845	6,139,957	3,396	6	1	227,559	32,508	128	3	1,099,267	8,391	0	2	422,879	211,440
2012	1,026	1,096	5,859,140	2,761	6	6	285,322	23,777	128	3	1,099,267	8,391	19	5	1,794,376	74,766
2013	2,156	1,517	14,253,229	3,881	7	7	331,075	23,648	73	32	1,087,077	10,353	11	180	5,296,229	27,729
2014	414	212	14,439,501	23,066	4	16	330,739	16,537	98	22	1,118,267	9,319	186	122	5,942,454	17,995
2015	4,902	418	15,616,894	2,936	15	16	335,520	10,823	99	22	1,130,597	9,344	173	131	5,933,117	19,517
CAGR 2012–2015	68.4%	-27.5%	38.7%	2.1%	35.7%	38.7%	5.6%	-23.1%	-8.2%	94.3%	0.9%	3.6%	108.8%	197.0%	49.0%	-36.1%
Percentage Change 2012–2015	377.8%	-61.9%	166.5%	6.3%	150.0%	166.7%	17.6%	-54.5%	-22.7%	633.3%	2.9%	11.4%	810.5%	2520.0%	230.7%	-73.9%

Source: National Transit Database, Form S10 for Vehicle Miles and Form R20 for Mechanical Failures  
 CAGR = Compound Annual Growth Rate  
 Major mechanical system failure—A failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip because actual movement is limited or because of safety concerns.  
 Other mechanical system failure—A failure of some other mechanical element of the revenue vehicle that, because of local agency policy, prevents the revenue vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip even though the vehicle is physically able to continue in revenue service.

## Appendix: Differences in Quadrennial Review Methodologies

1. In 2006 and 2007, Cambridge Systematics, Inc. (hereafter referred to as “Cambridge”), did not include Demand Response service by Taxi.
  - This impacted passengers, revenue hours, revenue miles, and passenger miles.
  - Taxis are included in DR for years 2006–2009 in the 2008–2011 Quadrennial Review.
  - NTD added Demand Response Taxis as a mode in 2010 and 2011.
2. In three years 2004–2006, Cambridge reported Fare Revenues greater than reported in NTD.
  - This impacts fare revenues, average fare, and fare recovery for Motor Bus, Purchased.
  - The greater amounts by year are:
    - \$0.3 million      Motor Bus Purchased 2004
    - \$0.4 million      Motor Bus Purchased 2005
    - \$0.3 million      Motor Bus Purchased 2006
  - The 2008–2011 Quadrennial Review reports Fare Revenues consistent with NTD 2002–2011.
3. In 2007, Cambridge did not report Other Transportation Revenue, although these data were included in previous years.
  - This impacts fare revenues, average fare, and fare recovery for Motor Bus, Purchased.
    - (\$0.40) million      Motor Bus Purchased 2007
  - The 2008–2011 Quadrennial Review includes Other Transportation Revenue consistent with NTD.
4. Cambridge appears to have reported only Motor Bus (Fixed-Route), Directly Operated On-Time Performance (2002–2007).
  - This impacts On-Time Performance trend.
  - The 2008–2011 Quadrennial Review reports On-Time data for Motor Bus and Demand Response and Rail in 2010 and 2011.
5. Cambridge reported only Vehicle Accidents and not Passenger Incidents 2002–2007.
  - This impacts Accidents per 100,000 miles.
  - The 2008–2011 Quadrennial Review reports Accident and Incident data for 2007–2011 per Texas Transportation Code Section 451.455(i).
6. Cambridge used data for mechanical failures as reported by Capital Metro.
  - This impacts Miles between Road Calls.
  - The 2008–2011 Quadrennial Review reports Mechanical System Failures as reported in NTD 2002–2011.

Section 2  
Statutory Compliance



# 1. Executive Summary

The purpose of this section of the report is to examine Capital Metropolitan Transportation Authority's (CMTA) compliance with applicable state law.

Iknow's findings are that Capital Metro is in compliance with all applicable Texas state laws and that the Capital Metro Board and staff work diligently to comply with all Texas statutes that govern the Authority's policies, practices, and procedures. The 2016 Quadrennial Performance Review did not find any failure to comply with existing and new provisions of Texas Transportation Code 451 and other relevant State of Texas legislation as of December 2015.

## 1.1 Approach

Iknow started by making the following two assumptions that narrowed our scope to the review of legislative amendments that were enrolled by the 83rd (2013) and 84th (2015) Texas Legislature sessions:

1. Previous Quadrennial Performance Reviews assessed Capital Metro's compliance with new legislation from previous Texas Legislature sessions and that all issues raised in those reviews had been thoroughly addressed
2. Capital Metro did not regress in its policies or practices that would negatively impact the Authority's ability to satisfy all relevant enacted legislation.

Additionally, we added the 82nd (2011) Texas Legislature Session to our review, even though the 82nd Legislature Session was covered in the previous Quadrennial Review. We felt that the significant impact of Senate Bill 650 (Sunset Advisory Commission recommendations) on Capital Metro's operations required us to include this session in our audit.

We then examined the findings and recommendations of the previous 2008 Quadrennial Review and evaluated the Authority's responses. We note that the previous Quadrennial Performance Review, covering the FY 2008–2011 period, only analyzed the statutory amendments to the Texas Transportation Code Section 451 and not other relevant Texas Government Code.

We took two approaches to identifying bills enrolled in the 83rd (2013) and 84th (2015) Texas Legislature Sessions that were relevant to Capital Metro. First, we reviewed all amendments made to the Texas Transportation Code, Section 451. This was done by reviewing each bill on Texas Legislature Online. Second, we researched amendments in all other code areas in the three Texas Legislature sessions by identifying topics that have direct relevance to Capital Metro. Figure 2.1 lists the key words and phrases that were searched.

Figure 2.1 **Key Search Terms**

■ Alcoholic beverages	■ Drug testing	■ Public records
■ Board matters	■ HIPPA compliance	■ Records management
■ Board terms	■ Marijuana	■ System security
■ Commute rail	■ Minimum wage	■ Train maintenance
■ Competitive bidding	■ Occupational safety	■ Transportation safety
■ Conflict of interest	■ Open meeting	

After the list of relevant House and Senate enrolled bills was created, we conducted interviews with Capital Metro’s staff and reviewed relevant data and documents to determine the Authority’s compliance with each of the identified statutes.

Because of the significant financial and operational changes required by the Sunset Advisory Commission in February 2011, Iknow prepared a specific section for this statutory compliance audit that directly addresses Capital Metro’s progress in implementing the Sunset recommendations.

### 1.2 Sources of Information

In order to examine Capital Metro’s compliance with the relevant statutes, Iknow collected and reviewed several sources of information, including:

- Texas Legislature Online, at <http://www.capitol.state.tx.us/>,
- Publicly available information on the Authority’s website, at <http://www.capmetro.org/>,
- Internal policy manuals and memoranda provided by Capital Metro staff,
- Interviews with Capital Metro’s personnel, and
- Observed policies and practices in use, where relevant.

### 1.3 Metrics

The metrics used to evaluate whether the Authority is meeting the Texas statutes are:

- **Compliant.** An area is considered “compliant” if during the review no findings were noted with the Authority’s implementation of statute.
- **Deficient.** An area is considered “deficient” if any of the requirements of a statute were not met.
- **Not Applicable.** An area is deemed “not applicable” if during the review the Authority does not conduct activities relevant to the statute.

## 2. Prior Compliance Efforts

The Capital Metro Board and staff work diligently to comply with all provisions of the statutes governing the Authority’s policies and procedures. The 2012 Quadrennial Performance Review did not find any failure to comply with current provisions of Texas Transportation Code 451 and requirements as of December 2012. Texas A&M Transportation Institute, which conducted the previous Quadrennial Performance Review, identified 12 amendments to the Texas Transportation Code Section 451 that were relevant to Capital Metro. These amendments are discussed below as well as Capital Metro’s continued compliance efforts.

Table 2.1 **Enrolled Amendments to the Texas Transportation Code Section 451**  
82nd, 83rd, and 84th Texas Legislature Sessions

Ref. No.	Texas Legislature Session	Bill No.	Texas Transportation Code Chapter / Article / Section	Bill Caption
1	82 R - 2011	HB 2702, Section 136	451.061	Relating to the application of statutes that classify political subdivisions according to population.
2	82 R - 2011	HB 2702, Section 138	451.0612(a)	Relating to the application of statutes that classify political subdivisions according to population.
3	82 R - 2011	HB 2702, Sections 144	451.071(a)	Relating to the application of statutes that classify political subdivisions according to population.
4	82 R - 2011	HB 2702 Section 148	451.0612(b)(c)(d)(e)	Relating to the application of statutes that classify political subdivisions according to population.
5	82 R - 2011	HB 2325, Section 1	451.110(c)	Relating to the competitive bidding and notice requirements for contracts of certain mass transportation authorities.
6	82 R - 2011	HB 2325, Sections 2 and 3	451.111(a)	Relating to the competitive bidding and notice requirements for contracts of certain mass transportation authorities.
7	82 R - 2011	HB 2702, Section 159	451.458	Relating to the application of statutes that classify political subdivisions according to population.
8	82 R - 2011	HB 2702, Section 160	451.459(a)	Relating to the application of statutes that classify political subdivisions according to population.
9	82 R - 2011	HB 2702, Section 161	451.460(a)	Relating to the application of statutes that classify political subdivisions according to population.

Table 2.1 **Enrolled Amendments to the Texas Transportation Code Section 451** continued  
82nd, 83rd, and 84th Texas Legislature Sessions

Ref. No.	Texas Legislature Session	Bill No.	Texas Transportation Code Chapter / Article / Section	Bill Caption
10	82 R - 2011	HB 2702, Sections 162–163	451.501, 451.502, 451.5021	Relating to the application of statutes that classify political subdivisions according to population.
11	82 R - 2011	SB 650, Sections 132–139	451.135–451.139	Relating to the management of certain metropolitan rapid transit authorities.
12	82 R - 2011	SB 650, Sections 2 and 3	451.461 and 451.6101	Relating to the application of statutes that classify political subdivisions according to population.

## 2.1 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
1	82 R - 2011	HB 2702, Section 136	451.061	9/1/2011

<b>Bill Caption</b>	Relating to the application of statutes that classify political subdivisions according to population.
<b>Description</b>	The bill amends existing rules and procedures for the establishment of or a change to fares, tolls, charges, and rents by Capital Metro.
<b>Audit Findings</b>	<p><b>Compliant.</b> In fall 2013, the Capital Metro Board of Directors approved a two-phase fare restructuring program. In January 2014, Capital Metro launched a new tiered-fare system consisting of three main service categories: Local, Premium, and Commuter. The Local Service, which includes all local bus routes and UT Shuttle, will have a base fare of \$1.00, unchanged from 2010. The Premium Service, which was introduced to coincide with the MetroRapid Service, costs \$1.50 for a single ride and \$3.00 for a day pass. The Regional fare category was replaced by the Commuter Service, which included access to MetroRail, MetroExpress, Local, and Premium Services. A single ticket will be \$2.75 and a 1-day pass will cost \$5.50. Finally, Capital Metro is simplifying MetroRail service by eliminating rail zones and charging a single flat fee of \$2.75.</p> <p>The second phase of the fare restructuring occurred in January 2015. Capital Metro made changes to all pass prices, including the Local base, which changed by 25 cents to \$1.25 with Local Day Passes costing \$2.50. Premium fares rose by 25 cents to \$1.75 for a Single Ride and \$3.50 for a Day Pass. Commuter fares increased by 75 cents to \$3.50 for a Single Ride, \$7 for a Day Pass, \$27.50 for a 7-Day Pass and \$96.25 for a 31-Day Pass.</p> <p>Capital Metro’s fare increases in 2014 and 2015 were reviewed by Capital Metropolitan Planning Organization (CAMPO) and were enacted in compliance with this amendment.</p>

## 2.2 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
2	82 R - 2011	HB 2702, Section 138	451.0612(a)	9/1/2011

<b>Bill Caption</b>	Relating to the application of statutes that classify political subdivisions according to population.
<b>Description</b>	The bill amends existing rules and procedures and grants Capital Metro authority to employ persons to serve as fare enforcement officers to enforce the payment of fares for use of the public transportation system.
<b>Audit Findings</b>	<b>Compliant.</b> Capital Metro currently employs three fare inspectors who are empowered to enforce payment of fares. Failure to do so can result in a Class C Misdemeanor if payment is not made within 30 days. Capital Metro Fare Inspectors did not issue any citations during the 2012–2015 period. They worked closely with Austin Police Department (APD) officers and when a potential infraction was observed, referred the matter to the APD officers for adjudication.

## 2.3 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
3	82 R - 2011	HB 2702, Section 144	451.071(a)	9/1/2011

<b>Bill Caption</b>	Relating to the application of statutes that classify political subdivisions according to population.
<b>Description</b>	The bill amends existing rules and procedures and permits Capital Metro to hold a referendum on whether Capital Metro may operate a fixed-rail transit system.
<b>Audit Findings</b>	<b>Compliant.</b> Capital Metro currently has not called a referendum to expand the rail system. Per Texas Transportation Code 451, Capital Metro is required to hold a referendum to build or operate a rail line.

## 2.4 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
4	82 R - 2011	HB 2702, Section 148	451.0612(b)(c)(d)(e)	9/1/2011

<b>Bill Caption</b>	Relating to the application of statutes that classify political subdivisions according to population.
<b>Description</b>	The bill amends existing rules and procedures regarding the ability of Capital Metro to establish a security force, employ security personnel, and commission security personnel as peace officers.

<b>Audit Findings</b>	<b>Not Applicable.</b> Capital Metro does not commission peace officers. Capital Metro does employ off-duty police officers under an agreement with the city of Austin. Austin Police Department (APD) officers on assignment for Capital Metro must abide by all APD rules pertaining to off-duty officers. As of December 2015, Capital Metro employed approximately 130 off-duty Austin Police Department officers.
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## 2.5 HB 2325

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
5	82 R - 2011	HB 2325, Section 1	451.110(c)	9/1/2011

<b>Bill Caption</b>	Relating to the competitive bidding and notice requirements for contracts of certain mass transportation authorities.
<b>Description</b>	The bill amends existing rules and procedures regarding competitive bidding, namely that the Capital Metro Board may contract for the construction of an improvement or the purchase of any property through a noncompetitive bidding process if the contract is less than \$50,000.
<b>Audit Findings</b>	<b>Compliant.</b> On August 27, 2012, the Capital Metro Board approved an update to the procurement Department Acquisition Policy to increase the small purchase threshold to \$50,000. This threshold remains in place as of December 31, 2015.

## 2.6 HB 2325

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
6	82 R - 2011	HB 2325, Sections 2 and 3	451.111(a)	9/1/2011

<b>Bill Caption</b>	Relating to the competitive bidding and notice requirements for contracts of certain mass transportation authorities.
<b>Description</b>	The bill amends existing rules and procedures regarding competitive bidding, namely that the Capital Metro Board may authorize the negotiation of a contract without competitive sealed bids or proposals if the value is not more than \$50,000 as long as the announcement for the contract is posted in a prominent place in the principal office of the authority for at least two weeks before the date the contract is awarded.
<b>Audit Findings</b>	<b>Compliant.</b> On August 27, 2012, the Capital Metro Board approved an update to the procurement Department Acquisition Policy to increase the small-purchase threshold to \$50,000. This threshold remains in place as of December 31, 2015. CapMetro posts all noncompetitive bids on a bulletin board in the public entryway of the main building (2910 East 5th Street) as well as on the internet at: <a href="http://www.demandstar.com">www.demandstar.com</a> .

## 2.7 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
7	82 R - 2011	HB 2702, Section 159	451.458	9/1/2011
<b>Bill Caption</b>		Relating to the application of statutes that classify political subdivisions according to population.		
<b>Description</b>		The bill amends existing rules and procedures regarding the Capital Metro Board appointing a qualified individual to perform internal auditing services for a term of five years.		
<b>Audit Findings</b>		<b>Compliant.</b> The Capital Metro Board appointed a qualified individual to perform internal auditing services. The Board appointed an individual on October 28, 2009 for a five-year term. The individual was re-appointed in 2014. There are no statutory restrictions on reappointment.		

## 2.8 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
8	82 R - 2011	HB 2702, Section 160	451.459(a)	9/1/2011
<b>Bill Caption</b>		Relating to the application of statutes that classify political subdivisions according to population.		
<b>Description</b>		The bill amends existing rules regarding what entities are subject to review under Chapter 325, Government Code (Texas Sunset Act). It creates an additional review to be conducted as if the authority were scheduled to be abolished on September 1, 2017. It furthermore defines that the reviews conducted examine as an assessment of the governance, management, and operating structure of the authority’s compliance with the duties and requirements placed on it by the legislature.		
<b>Audit Findings</b>		<b>Compliant.</b> The Sunset Review was completed in September 2010. R 84 HB 3123 repeals Section 451.459 of the Transportation code, which required that another review be conducted as if the authority were scheduled to be abolished September 1, 2017.		

## 2.9 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
9	82 R - 2011	HB 2702, Section 161	451.460(a)	9/1/2011
<b>Bill Caption</b>		Relating to the application of statutes that classify political subdivisions according to population.		
<b>Description</b>		The bill amends existing rules and procedures regarding Capital Metro and the requirement to provide an annual report to each governing body of a municipality or county in the authority regarding the status of any financial obligation of the authority to the municipality or the county.		

<b>Audit Findings</b>	<b>Compliant.</b> The Capital Metro Board annually provides a report to each governing body of a municipality or county in the authority regarding the status of any financial obligation of the authority to the municipality or county. The financial report summarizes the status of any financial obligation as of the end of the previous fiscal year.
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## 2.10 HB 2702

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
10	82 R - 2011	HB 2702, Sections 162–163	451.501, 451.502, 451.5021	9/1/2011

<b>Bill Caption</b>	Relating to the application of statutes that classify political subdivisions according to population.
<b>Description</b>	The bill amends existing rules and procedures regarding Board composition and appointment terms and conditions.
<b>Audit Findings</b>	<b>Compliant.</b> Appointments to the Capital Metro Board comply with the requirements outlined in Section 451.5021. Information about each Board member is listed on the Capital Metro website: <a href="http://capmetro.org/board/">http://capmetro.org/board/</a> .

## 2.11 SB 650

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
11	82 R - 2011	SB 650, Sections 132–139	451.132–451.139	9/1/2011

<b>Bill Caption</b>	Relating to the management of certain metropolitan rapid transit authorities.
<b>Description</b>	The bill amends existing rules and procedures regarding: (1) adoption of a five-year capital improvement plan, (2) limits on capital expenditures, (3) the need for an operating reserve account, (4) the adoption of a strategic and a rail safety plan, (5) competitive bid requirements for transit services, (6) public involvement in board matters, and (7) requirements as to when bonds may be issued.
<b>Audit Findings</b>	<p><b>Compliant.</b></p> <p>(1) Every September, the Capital Metro Board of Directors adopts operating and capital budgets for the next fiscal year. The budget incorporates planned capital spending for the next year of the Capital Improvement Plan (CIP). The CIP is an appendix to the adopted annual budget and includes estimated costs for the next four years. The CIP also reflects the funding source for each capital project. Public review and comment is included in the budget development process prior to board adoption. The Capital Metro Board adopted the Capital Planning Policy in January 2011. The policy incorporates the detailed planning process and is consistent with organizational and regional long-range goals. [451.132]</p> <p>(2) The Capital Metro Board of Directors’ operating budget includes line-item account details for each department, and the capital budget includes project descriptions,</p>



spending categories, funding sources, expected benefits, estimated operating cost impacts and the corresponding strategic objectives for each of the capital projects.

The statute requires quarterly status reports on actual operations and capital expenditures. Capital Metro staff currently reports operating expense variances to the Board on a monthly basis. Capital Metro staff uses a matrix to monitor projects identified in the Capital Improvement Plan (CIP). Elements of the matrix include project budget, project manager, major milestones and timelines. Beginning in January 2011, Capital Metro staff reports quarterly to the Board regarding capital project status and progress.

Capital Metro maintains, updates, and posts accounting records for each authority account on the agency's website. See <http://www.capmetro.org/transparency/>. [451.133]

- (3) The Capital Metro Board approved a reserve policy on September 24, 2010. The policy defines several types of reserves: an operating reserve of at least two months of operating expenses (a cash flow reserve), a capital reserve, a self-insurance reserve and a budget stabilization reserve. Procedures are being developed on funding and maintaining the various reserves. The FY 2015 Operating Reserve Account balance was \$32.9 million. [451.134]
- (4) In October 2011, the Capital Metro Board adopted a strategic plan that includes a new vision, mission, and four key goals to guide the agency through FY2012 and beyond. The goals and objectives are tied directly to Capital Metro's operating and capital budgets.

The four key principles reflected in the Strategic Plan are:

1. Provide a Great Customer Experience
2. Improve our Business Practices
3. Demonstrate the Value of Public Transportation in an Active Community
4. Be a Regional Leader

The most recent strategic plan (2014–2019) can be found at: <http://www.capmetro.org/future-plans.aspx> [451.135]

A Safety System Program Plan (SSPP) has been completed by Capital Metro and reviewed and accepted by the Federal Railroad Administration, the federal agency responsible for rail oversight. The SSPP identifies goals and objectives to ensure safe, reliable, convenient and efficient operations. This SSPP also describes the requirements, processes and controls required to transport people safely on the system.

Since May 2010, staff has reported on the safety of the system to the Capital Metro Board on a monthly basis. The reports are also shared with the Texas Department of Transportation. [451.136]

- (5) Capital Metro issued a Request for Proposals in 2011 to competitively procure all transit services not directly provided by Capital Metro employees by September 2012. Effective August 19, 2012, all transit service is operated by contractors. For a complete list of service providers, please see Table 1 in the Performance Indicators section. This procurement process complied with all aspects of Section 451.137. Subsequent procurement activities through December 31, 2015 have also complied with Section 451.137. [451.137]

	<p>(6) In 2010, the Capital Metro Board adopted a Community Involvement Policy that outlines how Capital Metro will work to ensure that its decision-making processes are open and accessible to all interested parties. The policy establishes how Capital Metro will develop and implement a comprehensive community involvement strategy for receiving input from the community <a href="http://www.capmetro.org/getinvolved/">http://www.capmetro.org/getinvolved/</a></p> <p>Capital Metro staff is reaching out to a greater number of stakeholders through social media and technology. For example, during the review period, Capital Metro developed outreach and community involvement plans for all action items going to the Board (e.g., budget, fare changes, service changes), which includes use of televised town halls, webinars, blogs and social media outlets such as Facebook and Twitter. [451.138]</p> <p>(7) Cap Metro has not issued bonds for self-insurance or retirement of pension fund reserves as of December 2015. [451.139]</p>
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## 2.12 SB 650

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
12	82 R - 2011	SB 650, Section 2 and 3	451.461 and 451.6101	9/1/2011

<b>Bill Caption</b>	Relating to the application of statutes that classify political subdivisions according to population.
<b>Description</b>	The bill amends existing rules and procedures regarding providing transportation services to persons with disabilities in a withdrawn unit of election.
<b>Audit Findings</b>	<p><b>Compliant.</b> MetroAccess is a demand-response, shared-ride service for people whose disabilities prevent them from riding regular bus and rail service. MetroAccess service complies with the Americans with Disabilities Act of 1990 (ADA). The term “paratransit” in this section refers to transit that is parallel in service to fixed-route bus service. The paratransit Rider’s Guide is available online. <a href="http://www.capmetro.org/metroaccess.aspx?id=58">http://www.capmetro.org/metroaccess.aspx?id=58</a></p> <p>Capital Metro implemented an alternative program for continuation of services to persons with disabilities as provided in Section 451.6101. As of December 31, 2015, there was one individual who applied and was eligible to receive transportation services pursuant to the requirements of the alternative program.</p>

### 3. Statutory Amendments to the Texas Transportation Code Section 451

Seven amendments to the Texas Transportation Code Section 451 were enrolled during the last three Texas Legislature Sessions. The amendments are listed and described in Table 2.2.

**Table 2.2 Enrolled Amendments to the Texas Transportation Code Section 451**  
82nd, 83rd, and 84th Texas Legislature Sessions

Ref. No.	Texas Legislature Session	Bill No.	Texas Transportation Code Chapter / Article / Section	Bill Caption
13	82 R - 2011	HB 2396, Section 1	451.702	Relating to the pledge of advanced transportation district sales and use taxes to certain bonds.
14	83 R - 2013	HB 2148, Section 3	Section 162.312	Relating to the motor fuel tax on compressed natural gas and liquefied natural gas; receiving a refund; providing penalties; imposing a tax.
15	83 R - 2013	HB 3031, Sections 1 and 2	451.0612 and 451.0612(a)	Allows Capital Metro to employ persons to serve as fare enforcement officers to enforce the payment of fares for use of the public transportation system.
16	84 R - 2015	HB 283 Section 1	551.128	Relating to the requirement that certain governmental bodies make audio and video recordings of open meetings available on the Internet.
17	84 R - 2015	HB 3123, Article 4	Section 4.03	Relating to governmental entities subject to the Sunset Review process.
18	84 R - 2015	HB 3666, Sections 1 and 2	451.601 and 451.618	Relating to the withdrawal of the territory of certain emergency services districts from the territory of a metropolitan rapid transit authority.
19	84 R - 2015	SB 57, Section 6	451.061	Relating to information collected by a regional tollway authority, regional mobility authority, regional transportation authority, metropolitan rapid transit authority, or coordinated county transportation authority.

### 3.1 HB 2396

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
13	82 R - 2011	HB 2396, Section 1	451.702	9/1/2011
<b>Bill Caption</b>		Relating to the pledge of advanced transportation district sales and use taxes to certain bonds.		
<b>Description</b>		The bill amends the transportation code to allow the Capital Metro Board to order an election to create an advanced transportation district within its boundaries and impose a sales and use tax for advanced transportation and mobility enhancement. The proceeds may be pledged to one or more sales and use tax revenue bonds providing a public hearing and announcement occur.		
<b>Audit Findings</b>		<b>Not Applicable.</b> Capital Metro did not order an election to create an advanced transportation district during the review period nor to impose a sales and use tax for advanced transportation and mobility enhancement.		

### 3.2 HB 2148

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
14	82 R - 2013	HB 2148, Section 3	Section 162.312	9/1/2013
<b>Bill Caption</b>		Relating to the motor fuel tax on compressed natural gas and liquefied natural gas; receiving a refund; providing penalties; and imposing a tax.		
<b>Description</b>		Bill grandfathers the existing motor fuels tax annual decal collection system for Chapter 451 and 452 transit authorities utilizing CNG (compressed natural gas) and LNG (liquefied natural gas).		
<b>Audit Findings</b>		<b>Compliant.</b> As of 2013, Capital Metro does not operate buses that use CNG or LNG.		

### 3.3 HB 3031

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
15	83 R - 2013	HB 3031, Sections 1 and 2	451.0612 and 451.0612(a)	9/1/2013
<b>Bill Caption</b>		Relating to fare enforcement officers for metropolitan rapid transit authorities.		
<b>Description</b>		Allows Capital Metro to employ persons to serve as fare enforcement officers to enforce the payment of fares for use of the public transportation system.		
<b>Audit Findings</b>		<b>Compliant.</b> Substantively the same as HB 2702 (2011), except this bill allows all rapid transit authorities to employ fare enforcement officers, regardless of when the authority was created or the size of the principal municipality's population.		

### 3.4 HB 283

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
16	84 R - 2015	HB 283, Section 1	Section 551.128	1/1/2016
<b>Bill Caption</b>		Relating to the requirement that certain governmental bodies make audio and video recordings of open meetings available on the Internet.		
<b>Description</b>		Bill requires a transit authority or department subject to Chapter 451, 452, 453, or 460 of the Transportation Code, certain school district boards, an elected governing body of a home-rule municipality that has a population of 50,000 or more, or a county commissioner’s court for a county that has a population of 125,000 or more, to make a video and audio recording of each regularly scheduled open meeting. An archived copy of the video and audio recording of each meeting must be made available on the Internet. The governmental body is not required to establish a separate website and can post the video on an existing website, including a publicly accessible video-sharing or social networking site. If the governmental body maintains a website, the video should be on that website. The archived video recording must be available online no later than seven days after the date the recording was made and should be maintained for no less than two years. A government body is exempt if there is no recording from the result of a catastrophe or technical breakdown. A governmental body may broadcast a regularly scheduled open meeting of the body on television.		
<b>Audit Findings</b>		<b>Compliant.</b> Live video feeds of Board meetings are available through a link on the Board Meetings page of the Capital Metro website ( <a href="http://www.capmetro.org/boardmeetings/">http://www.capmetro.org/boardmeetings/</a> ). Video files of past Board meetings are available on the Capital Metro website, in the Board Archive tab on the Board meetings page ( <a href="http://www.capmetro.org/board.aspx?id=142">http://www.capmetro.org/board.aspx?id=142</a> ).		

### 3.5 HB 3123

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
17	84 R - 2015	HB 3123, Article 4	Section 4.03	6/18/2015
<b>Bill Caption</b>		Relating to government entities subject to the Sunset Review process.		
<b>Description</b>		The bill repeals Section 451.459 of the Transportation code, which required that another review be conducted as if the authority were scheduled to be abolished September 1, 2017.		
<b>Audit Findings</b>		<b>Not Applicable.</b> No action required by Capital Metro.		

### 3.6 HB 3666

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
18	84 R - 2015	HB 3666, Sections 1 and 2	451.601 and 451.618	9/1/2015

<b>Bill Caption</b>	Relating to the withdrawal of the territory of certain emergency services districts from the territory of a metropolitan rapid transit authority.
<b>Description</b>	Bill allows for the withdrawal of an emergency services district from the Capital Metro authority by vote of the majority of registered voters of the district. Furthermore, the new law outlines actions the governing body must take if an election is requested.
<b>Audit Findings</b>	<b>Not Applicable.</b> No emergency services districts have withdrawn during the review period (2012–2015).

### 3.7 SB 57

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
19	84 R - 2015	SB 57, Section 6	451.061	9/1/2015

<b>Bill Caption</b>	Relating to information collected by a regional tollway authority, regional mobility authority, regional transportation authority, metropolitan rapid transit authority, or coordinated county transportation authority.
<b>Description</b>	Bill provides that certain personal account information collected by a regional tollway authority, regional mobility authority, regional transportation authority, metropolitan rapid transit authority, or coordinated county transportation authority is not subject to disclosure under the State’s Public Information Act (Chapter 552). Personal information includes a person’s name, address, e-mail address, phone number, account number, password, payment transaction activity, toll or charge record, credit, debit, or other payment card number and other personal financial information. This change will not prohibit law enforcement or judicial requests for information.
<b>Audit Findings</b>	<b>Compliant.</b> The Legal Department solely controls the release of information under Chapter 552, so the release of personal account information is always approved by Chief Legal Counsel or someone duly appointed by her.

## 4. Other Statutes Relevant to Capital Metro

Two other amendments to Texas statutes, adopted during the last three Texas Legislature Sessions, were deemed relevant to Capital Metro. The amendments are listed and described in Table 2.3.

Table 2.3 **Other Enrolled Amendments to the Texas Legislative Code**  
82nd, 83rd, and 84th Texas Legislature Sessions

Ref. No.	Texas Legislature Session	Bill No.	Texas Government Code Chapter / Article / Section	Bill Caption
20	82 R - 2011	SB 18, Subchapter B, Subchapter C	Section 2206.053, 2206.101, 22.0111, 21.0113, 21.102	Relating to the use of eminent domain authority.
21	82 R - 2011	SB 1303, Article 24	Chapter 191, Section 191.001–003, Chapter 192 Section 192.001-003	Relating to nonsubstantive additions to and corrections in enacted codes, to the nonsubstantive codification or disposition of various laws omitted from enacted codes, and to conforming codifications enacted by the 81st Legislature to other Acts of that legislature.

### 4.1 SB 18

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
20	82 R - 2011	SB 18, Subchapter B, Subchapter C	Section 2206.053, 2206.101, 22.0111, 21.023, 21.102	9/1/2012
<b>Bill Caption</b>		Relating to the use of eminent domain authority.		
<b>Description</b>		Bill modifies processes and requirements governing eminent domain, including evidence to be considered by special commissioners in making decisions on damages awards, the rights of property owners to repurchase taken property, the requirement of a bona fide offer to purchase property, and landowners' right to access information from an entity taking their property. Additionally, the bill adds a statutory prohibition against a government or private entity taking land that was not for a public use. The bill requires governmental entities to pay relocation expenses for displaced property owners and provide a relocation advisory service.		
<b>Audit Findings</b>		<b>Compliant.</b> No eminent domain proceedings took place during the review period (2012–2015).		

## 4.2 SB 1303

Ref. No.	Texas Legislative Session	Bill No.	Article / Section	Effective Date
21	82 R - 2011	SB 1303, Article 24	Chapter 191, Section 191.001–003  Chapter 192, Section 192.001–003	9/1/2012
<b>Bill Caption</b>		Relating to nonsubstantive additions to and corrections in enacted codes, to the nonsubstantive codification or disposition of various laws omitted from enacted codes, and to conforming codifications enacted by the 81st Legislature to other Acts of that legislature.		
<b>Description</b>		The bill addresses structures and materials near railroads and railways and engineer and train operator permits.		
<b>Audit Findings</b>		<b>Compliant.</b> Capital Metro contracts with service providers all include language to ensure compliance with federal and state legislation.		

## 5. Compliance with the Sunset Provisions

### 5.1 Background

Due to a variety of financial and operational business problems, Senator Kirk Watson introduced SB 1263, 81st Legislative Session (2009), that placed Capital Metro under review by the Texas Sunset Advisory Commission. The legislation required Sunset to assess Capital Metro’s governance, management, operations, and compliance with legislative requirements.

In September 2009, Capital Metro prepared and submitted a Self-Evaluation Report to the Sunset Advisory Commission. The Commission collected additional information, conducted public meetings, and published its decisions in July 2010. The Texas Legislature passed SB 650, 82nd Legislative Session (2011), which made changes in the law to ensure that Capital Metro implemented the recommendations.

Note that unlike state agencies, Capital Metro is not subject to abolishment under the Sunset Act because Capital Metro receives no state appropriations.



## 5.2 Sunset Recommendations

In 2011, the Texas Legislature adopted the majority of the Sunset Commission's recommendations, removing only a few provisions that had already been implemented by Capital Metro. The Legislature also added a new provision to address how to maintain services for certain people with disabilities in areas that withdrew from Capital Metro's service area. The bill's five major provisions are summarized on the following pages.

### 1. **Require the Board to revamp Capital Metro's reserves and budgeting practices to ensure its finances are responsibly managed.**

Senate Bill 650 requires the Board to maintain a reserve equal to at least two months of actual operating expenses, or about \$27.5 million. The Legislature modified this provision to allow the Board five years to establish the reserve amount, but requiring Capital Metro to report to the Legislature in three years on its progress in meeting the reserve. The bill allows the Board to spend from reserves only to address unanticipated circumstances, and requires the Board to adjust reserve amounts at least once a year. The Legislature expanded on this provision by requiring the Board to post on its website the balances, deposits, expenditures, and interest income for all its financial accounts, as well as for its reserve account.

The bill requires Capital Metro to develop a new strategic plan that establishes its mission and goals, and sets policy and service priorities to drive budget development and allocation of resources. The bill also requires Capital Metro to develop a system for tracking the progress of its capital projects, and prohibits Capital Metro from spending more on these projects than provided for in the budget.

Senate Bill 650 requires the Board to develop a five-year capital improvement plan, with public comment, that links to Capital Metro's strategic goals. The capital plan must address various elements including project prioritization and proposed financing. The Legislature added that the capital plan must include policies on cost-benefit analysis of projects and participation of Historically Underutilized Businesses.

### 2. **Require Capital Metro to competitively bid all transit services not directly provided by its own employees.**

Senate Bill 650 requires Capital Metro to use a competitive bidding process to contract out for any transit services not provided directly by Capital Metro employees, including bus and paratransit services, no later than September 1, 2012. This provision will effectively dissolve Capital Metro's relationship with StarTran, its in-house noncompetitively bid service provider. This change should significantly reduce costs to Capital Metro, as StarTran's costs far exceed similar services provided by peer transit systems and those already competitively bid by Capital Metro. Any contracts for transit services must include performance and cost control measures, incentives for performance, penalties for noncompliance, and contract end dates. The Legislature also added a provision authorizing Capital Metro to issue bonds to help spread out the costs of pension liabilities resulting from implementing this requirement.

### 3. Enhance the ongoing safety of Capital Metro’s commuter rail system.

The bill requires Capital Metro to adopt a comprehensive rail safety plan that covers all rail activities, including commuter and freight. The safety plan must emphasize the safety of Capital Metro’s railroad bridges, and include specifics such as hazard analyses, risk assessments, and safety audits. The Legislature modified this provision by requiring Capital Metro to provide the Texas Department of Transportation any rail safety-related reports that Capital Metro also provides to federal transportation agencies.

### 4. Require Capital Metro to develop a policy to engage stakeholders more effectively and to help rebuild the public’s trust.

Senate Bill 650 requires Capital Metro to develop a public involvement policy that ensures full opportunity for the public to help shape decisions on Capital Metro’s plans and transportation projects. The policy must provide for public comment on issues in advance of Board decisions, an approach for obtaining input throughout the year, and information on how the public can be involved. The bill requires that Capital Metro post the public involvement policy on its website.

### 5. Require Capital Metro to provide services to certain persons with disabilities living in communities that withdrew from its service area.

The bill requires Capital Metro to provide limited transportation services to persons with disabilities who were disabled and lived in outlying communities at the time these communities withdrew from Capital Metro’s service area. These communities will pay the costs associated with providing the transportation services. This bill provision expires on January 1, 2020.

## 5.3 Audit Findings

Iknow’s review found that Capital Metro has fully implemented the Sunset Advisory Commission’s recommendations. Capital Metro is compliant with SB 650, Sections 1, 2, and 3, 82nd Texas Legislature Session. Additionally, HB 3123, Section 4.03, was passed by the 84th Texas Legislature Session (2015) that eliminated the requirement that Capital Metro undergo a second Sunset Review in 2017.

## 6. Findings and Recommendations

Iknow’s statutory compliance review assesses compliance with 21 legislative requirements. Compliance findings documented in this report indicate that Capital Metro remains in full compliance with all of the requirements that were applicable to the Authority during the FY 2012–FY 2015 audit period. The State Auditor’s Office issued a report on November 5, 2015, which found that Capital Metro had fully implemented all statutory recommendations from the Sunset Review.

## 7. Improvement Opportunities

The following recommendation is offered to Capital Metro for consideration to further enhance its compliance with state statutes:

**Iknow Recommendation #1: Conduct a detailed cost study to determine the financial impact of implementing Sunset Provision #2.**

In their final report, the Sunset Advisory Commission stated “Requiring Capital Metro to competitively contract out transit services would result in a net estimated savings of \$11.8 million initially and up to \$22.2 million once some initial costs have been covered, as summarized in the chart below. The chart does not show a savings in 2012 because Capital Metro will need time to transition to contracting for services. While Capital Metro may take action sooner, this estimate conservatively provides a year to implement these changes. In addition, the exact amount of these savings would depend on contract negotiations. The next three years show the costs to Capital Metro for paying out StarTran pension liabilities and vacation or sick leave for StarTran employees, before realizing greater savings in 2016. These estimates may vary depending on how the Board approaches the contract, particularly if the Board opts to maintain some level of current salaries and benefits during the transition.”

Fiscal Year	Savings to Capital Metro	Costs to Capital Metro	Net Savings to Capital Metro
2012	\$0	\$0	\$0
2013	\$22,200,000	\$10,400,000	\$11,800,000
2014	\$22,200,000	\$6,000,000	\$16,200,000
2015	\$22,200,000	\$6,000,000	\$16,200,000
2016	\$22,200,000	\$0	\$22,200,000

Since 2012, Capital Metro has outsourced all of its transit services to independent contractors, as described in the Performance Indicators section. However, as presented in the Performance Indicators section, Capital Metro’s annual operating costs for all modes of transit excluding Vanpool grew by 18.7 percent over the audit review period (2012–2015), which represents a 5.9 percent combined annual growth rate (CAGR). A detailed cost study will identify the most important cost drivers behind the cost growth and provide a response to the Sunset Advisory Commission about why the cost savings forecasted in the table never materialized.

## Section 3

# Vehicle Transit Operations and Maintenance

## 1. Executive Summary

The purpose of this section of the report is to examine Capital Metropolitan Transportation Authority's (CMTA) vehicle transit operation and maintenance functions.

Iknow's overall assessment of these functions is good. CMTA is in the middle of transition. At the beginning of the Quadrennial Performance Review period, Capital Metro was ordered by State statute to outsource all of its transit service operations to external service providers. This is a complex task and trying to achieve acceptable and stable levels of maintenance performance with a portfolio of new vendors in just a few years is quite challenging.

As part of this transition to contracted service providers, Capital Metro had to establish new internal roles, hire staff, and design and implement the new processes, policies, and procedures to effectively monitor the performance of its services vendors.

Making matters even more challenging, more than a third of Capital Metro's revenue vehicle fleet is greater than ten years old. An older fleet has a lower Miles Between Road Calls (MBRC) metric and requires more maintenance.

We applaud the progress Capital Metro has made in moving to a new operating model. Several recommendations are provided to strengthen the Agency's contracting process and ongoing contract oversight activities.

## 2. Organization of the Vehicle Transit Operations and Maintenance Section

The vehicle transit operations and maintenance portion of the Quadrennial Performance Review is organized into three main parts.

1. **Transit Operations and Maintenance Overview.** In this section, we summarize Capital Metro's fleet and facility assets, list the CMTA's key service providers, describe the CMTA's maintenance oversight function, and highlight the main elements of the current maintenance environment.
2. **Audit Findings.** In this section, we present our audit findings of the vehicle transit operations and maintenance functions. The findings follow our four lines of analysis—a review of the contracts between Capital Metro and six of its major service providers; a condition assessment of the fleet and facilities; a review of the monthly reports submitted by the service providers; and external benchmarking.
3. **Improvement Recommendations.** In this section, we present several improvement recommendations. Management responses to Iknow's recommendations are also presented.

### 3. Acronyms

The following acronyms are used in this section.

Acronym	Meaning
CMTA	Capital Metropolitan Transportation Authority (also “Capital Metro” or “Authority”)
CMMS	computerized maintenance management system
LRV	commuter rail vehicle
MAP-21	Moving Ahead for Progress in the 21st Century Act
MMIS	maintenance management information system
NRV	nonrevenue vehicle
OEM	original equipment manufacturer
PMI	preventive maintenance inspection
SGR	state of good repair
TAMP	transit asset management plan
WSA	ways, structures, and amenities

### 4. Background

#### 4.1 System Maintenance Audit Scope

The Texas Transportation Code, Title 6 (Roadways), Subtitle K (Mass Transportation), Chapter 451 (Metropolitan Rapid Transit Authorities), Subchapter A (General Provisions), Section 451.454 (Performance Audits: Certain Authorities), states that the board of an authority in which the principal municipality has a population of more than 1.9 million or less than 850,000 shall contract at least once every four years for a performance audit of the authority with the purpose of providing:

1. evaluative information necessary for the performance of oversight functions by state and local officers, and
2. information to the authority to assist in making changes for the improvement of the efficiency and effectiveness of authority operations.

Capital Metro selected “transit operations” and “transit authority system maintenance” as the specific functions to be examined as part of the Quadrennial Performance Review, 2012–2015.

#### 4.2 Texas Administrative Code

IknoW included the Texas Administrative Code, Title 43 (Transportation), Part 1 (Texas Department of Transportation), Chapter 31 (Public Transportation), Subchapter E (Property Management Standards), Rule §31.53 (Maintenance Requirements) maintenance guidelines as part of its review.

It is understood that Capital Metro does not receive state appropriations and acknowledges that this rule was adopted by the Texas Legislature to protect the public investment in real property and equipment purchased with state or federal public transportation funds. Specifically, it grants the Department of Transportation (TxDOT) authority to ensure that sub recipients maintain all property and equipment in good condition. Part (b) states that for real property and facilities, “sub recipients shall perform necessary maintenance and grounds keeping to preserve the value of the original investment and its physical appearance and integrity.” Part (c) states that “sub recipients shall maintain equipment to ensure that the equipment remains in good condition.”

Sub recipients shall have a maintenance program that includes:

1. A written maintenance plan;
2. Preventive maintenance inspections and scheduled services, which shall include at a minimum the manufacturers’ recommended servicing schedules;
3. Provisions for accessibility;
4. Management of maintenance resources;
5. Warranty compliance and recovery; and
6. Standards for maintenance subcontractors.

### **4.3 Sunset Commission Report and Senate Bill 650**

The net effect of the Sunset Commission Report and Senate Bill 650 has been to shift all maintenance operations previously performed by Capital Metro to numerous external, independent contractors. Background on the Sunset Commission Report is provided in the following pages.

#### **4.3.1 1985 to 2009**

When Capital Metro was first created in 1985, it took over transit services from the City of Austin’s contractor, Austin Transit Corporation. Under federal requirements, the Authority had to continue to recognize the labor protections of the employees of this company or risk losing federal funding. These protections, at the time, included the right to collectively bargain and the right to strike. However, under state law, Capital Metro, as a public entity, could not enter into a collective bargaining agreement with a union. State law also prohibits public employees from striking.

Initially, Capital Metro resolved this conflict between federal and state requirements by hiring a management company to conduct labor negotiations. Due to concerns that this arrangement did not adequately separate Capital Metro and its unionized employees, Capital Metro decided to organize a private nonprofit corporation, known as StarTran, to negotiate with the union and operate most of its services. This structure was intended to provide more separation of Capital Metro from union activities without having to contract out services to a private for-profit provider. In addition, workers maintained their right to collectively bargain and strike.

In 2009, StarTran provided two-thirds of Capital Metro’s bus services and all of its paratransit services. Capital Metro paid StarTran \$80 million to operate 226 buses on 85 regular routes and to drive

118 vehicles providing paratransit services. As of September 30, 2009, StarTran had 926 employees, including 620 drivers, 120 mechanics, 150 administrative staff, and 36 maintenance staff. For the other third of its bus services, Capital Metro contracted with two private for-profit providers, First Transit with a \$9.6 million contract and Veolia with a \$10.5 million contract.

As part of Capital Metro's agreement with StarTran, StarTran was responsible for hiring, firing, and managing its employees, and negotiating with the two unions that represented StarTran workers. The primary union, the Amalgamated Transit Union Local 1091, represented 500 of 800 union-eligible workers; a smaller union represented 13 employees.

#### 4.3.2 Sunset Advisory Commission Recommendations

Senate Bill 1263, passed by the Texas Legislature in 2009, required the Sunset Advisory Commission to "evaluate the governance, management, and operations of Capital Metro to determine what improvements are needed . . . to operate efficiently and effectively."

The Sunset Advisory Commission's review of Capital Metro included an assessment of StarTran. The Commission's findings were:

- **Capital Metro's costs to provide services through StarTran are growing rapidly, and are significantly higher than Capital Metro's competitively contracted services.** Over the last six years, StarTran's annual expenditures grew by about \$17 million, or 27 percent. This increase occurred despite the level of service remaining relatively constant. During this same period, the number of employees declined by 6 percent—from a high of 987 in fiscal year 2006 to a low of 926 in fiscal year 2009. However, high fixed costs and increased overtime wages contributed to driving up overall costs even as the number of employees decreased.
  - *Comparison to contracted providers.* StarTran's fixed route bus services cost more than similar services provided by Capital Metro's two contracted service providers. According to Capital Metro, based on a cost-per-mile comparison, StarTran's fixed-route costs in fiscal year 2009 were 23 percent higher than First Transit's and 32 percent higher than Veolia's costs.
  - *Peer comparison.* A 2008 peer review found that services provided by StarTran cost 32 percent more per mile than services operated by Capital Metro's contract providers. These higher costs for StarTran contribute significantly to Capital Metro's overall higher costs when compared to peer transit systems. For example, for 2007, the peer review found that Capital Metro's fixed-route costs per mile are 37 percent higher than those of a select group of peer cities.
  - *Paratransit cost comparison.* Capital Metro's cost of paratransit services was high, resulting in the Authority spending about \$28.9 million, or more than 17 percent of its operating budget to serve about 7,000 clients. Capital Metro spends on average about \$41 per passenger trip, or about 35 percent more than the average of peer transit authorities. Sunset staff also found that contracted paratransit providers can deliver services at lower costs than in-house employees. For example, both Fort Worth's and San Antonio's transit authorities use in-house employees and contracted providers for paratransit services. Fort Worth's and San Antonio's contracted providers' cost-per-passenger for paratransit services is 33 percent less, on average, than that of in-house employees.



- *Comparisons of labor costs and benefits.* In a comparison of labor contracts, Sunset staff found that StarTran’s hourly labor rates were higher than First Transit and Veolia. StarTran’s highest labor rate for an operator was 23 percent higher than First Transit’s and 27 percent higher than Veolia’s rates. Top pay for StarTran’s mechanics was 13 percent higher than First Transit’s.
  - *Performance comparison.* Sunset staff questioned whether StarTran’s higher costs led to higher performance; in fact, key performance measurements tracked through monthly reports indicate that StarTran’s performance was not significantly different than that of Capital Metro’s contract providers.
- **The unclear organizational relationship between Capital Metro and StarTran results in confusion and no clear control by Capital Metro over these services.** StarTran comprised the most significant portion of staff providing Capital Metro’s services. The Authority provided the majority of administrative support for StarTran, including finance, accounting, payroll, auditing, and human resource services. In fact, StarTran’s 926 employees existed separately from Capital Metro staff, with several layers of management but no clear link to Capital Metro’s Board. As a nonprofit corporation with its own Board, StarTran appeared as a separate organization, but, in fact, no true line existed between the two organizations, contributing to unclear and confusing relationships between the two entities.

In July 2010, the Sunset Advisory Commission adopted the staff report concerning Capital Metro and the Texas Legislature passed Senate Bill 650 in 2011 that required Capital Metro to address key components of its finances and operation, as detailed in the Sunset Report. Senate Bill 650 required Capital Metro to use a competitive bidding process to contract out for any transit services not provided directly by Capital Metro employees, including bus and paratransit services, no later than September 1, 2012. This provision effectively dissolved Capital Metro’s relationship with StarTran, its in-house noncompetitively bid service provider. “This change should significantly reduce costs to Capital Metro, as StarTran’s costs far exceed similar services provided by peer transit systems and those already competitively bid by Capital Metro. Any contracts for transit services must include performance and cost control measures, incentives for performance, penalties for noncompliance, and contract end dates.” The Legislature also added a provision authorizing Capital Metro to issue bonds to help spread out the costs of pension liabilities resulting from implementing this requirement.

This law required that Capital Metro adopt one of two proposed labor structures: a public option where all transit services operated by StarTran would be provided by direct employees of Capital Metro; and a private option where all services not directly operated by Capital Metro employees would be provided by private contractors after a competitive procurement process. In May 2011, ATU Local 1091 notified Capital Metro that its membership was unwilling to become direct public employees of the Authority. On June 27, 2011, the Capital Metro Board of Directors voted to direct staff to contract out all services provided by StarTran in order to comply with the new law.

#### **4.3.3 July 2011 to Present**

In July 2011, Capital Metro issued an Expression of Interest (EOI) document to gain the transit industry’s input regarding fulfillment of its duties under Senate Bill 650. The EOI responses were used by Capital Metro to gather information regarding possible business approaches to meeting the requirements of Senate Bill 650.

On September 1, 2011, Capital Metro issued a Request for Proposal (RFP) No. 122551 to solicit proposals from qualified, independent contractors to provide fixed-route transportation services. On September 15, 2011, Capital Metro issued a Request for Proposal (RFP) No. 122639 to solicit proposals from qualified, independent contractors to provide paratransit services. On April 23, 2012, the Capital Metro Board of Directors awarded the fixed route transportation services contract to McDonald Transit Associates, Inc., and the paratransit services contract to MV Transportation, Inc.

Regarding labor and employment provisions, McDonald was required to hire StarTran’s existing workforce. Specifically, McDonald “shall offer employment to all bargaining unit employees who are represented by Amalgamated Transit Union Local 1091 (ATU Local 1091) and employed by StarTran, Inc. (the prior employer and operator of certain of Capital Metro’s fixed route and paratransit services) on August 18, 2012.” Such employees shall be employed in positions with McDonald that are comparable to those which they held as StarTran employees.

Capital Metro also required McDonald and MV to recognize ATU Local 1091 as the authorized representative of the employees who previously worked for StarTran.

Since 2012, Capital Metro has entered into other contracts that have outsourced its transit and maintenance services. No Capital Metro staff is involved in any direct maintenance activities.

## 5. Transit Operations and Maintenance Overview

Capital Metropolitan Transportation Authority (hereinafter, “Capital Metro,” “CMTA,” or “the Authority”) is a public agency responsible for providing mass transit service within the City of Austin and the surrounding communities of Leander, Lago Vista, Jonestown, Manor, San Leanna, and Point Venture, as well as the unincorporated area of Travis County within Precinct 2 and the Anderson Mill area of Williamson County.

CMTA’s route network and services provide an average of 108,000 rides each weekday across approximately 534 square miles and includes over one million residents. CMTA operates four transit modes: buses, trains, paratransit, and vanpool vehicles.

This section provides an overview of CMTA’s transit operations and maintenance functions. Its purpose is to satisfy Section 451.454 of the State of Texas Transportation Code, which states that one purpose of the audit is to provide “evaluative information necessary for the performance of oversight functions by state and local officers.”

In this section, we:

- Provide a summary of Capital Metro’s physical assets;
- List the key service providers that have responsibility for managing Capital Metro’s physical assets;
- Describe Capital Metro’s internal organization structure that is responsible for managing the service providers; and
- Describe Capital Metro’s internal maintenance environment.

## 5.1 Physical Assets Summary

Table 3.1 provides important metrics about CMTA’s fleet and facility assets.

Table 3.1 **CMTA Physical Asset Snapshot**

Operating Budget, FY2016	\$246.3 million
Capital Budget, FY2016	\$110.9 million
System wide Ridership (all modes), FY 2015	Capital Metro provided an average of 108,000 rides each weekday onboard its buses, trains, paratransit, and vanpool vehicles, which totaled over 34 million rider boardings in 2015.
Major Facilities	5
Maintenance Department Headcount	0 (excludes contractor oversight roles and other maintenance support functions)
<b>Fleet</b>	
Total Number of Revenue Vehicles	578
Total Number of Nonrevenue Vehicles (NRV)	86
<b>1. Bus</b>	
Number of Passenger Trips, FY2015 (includes special events and charters)	28.37 million rides
Number of Revenue Miles, FY2015	14.75 million miles
Number of Routes	79 bus routes, consisting of: <ul style="list-style-type: none"> <li>■ 50 MetroBus routes,</li> <li>■ 2 MetroRapid routes,</li> <li>■ 8 ExpressBus routes, and</li> <li>■ 19 UT shuttle routes.</li> </ul>
Number of Bus Stops	<ul style="list-style-type: none"> <li>■ MetroBus and MetroExpress: 2,700 bus stops</li> <li>■ MetroRapid: 43 stations along the Route 801 North Lamar/South Congress corridor, 46 stations along the Route 803 from The Domain to Westgate</li> </ul>
Fleet Size and Composition	395 total vehicles, consisting of: <ul style="list-style-type: none"> <li>■ 355 MetroBus and MetroExpress vehicles</li> <li>■ 40 MetroRapid vehicles</li> </ul>
Maintenance Providers (during the Quadrennial Performance Review period)	<ul style="list-style-type: none"> <li>■ Capital Area Rural Transportation System (CARTS)</li> <li>■ First Transit, Inc.</li> <li>■ McDonald Transit Associates, Inc.</li> <li>■ MV Contract Transportation, Inc.</li> <li>■ Veolia Transportation</li> </ul>

Maintenance Facilities (currently owned by CMTA)	<p>Capital Metro Headquarters 2910 East Fifth Street, Austin, Texas 78702 140,000 square feet</p> <p>North Operations Facility 9315 McNeil Road, Austin, Texas 78758 137,377 square feet</p>
<b>2. Commuter Rail (Train)</b>	
Number of Passengers, FY2015	814,292
Number of Routes	One MetroRail route that provides passenger rail service between the City of Leander and downtown Austin
Number of Revenue Car Miles, FY2015	287,997
Length of Commuter Rail System	32-mile line
Number of Commuter Rail Stations	9
Total Commuter Rail Fleet	6
Fleet Size and Composition	Six (6) Gelenk Treib Wagen (GTW) DMU 2/6 (DMU) diesel-electric, self-propelled vehicles, manufactured by Stadler Bussnang AG. The DMU seats 108 passengers and can accommodate 96 standees.
Maintenance Providers (during the Quadrennial Audit review period)	<ul style="list-style-type: none"> <li>■ Herzog Transit Services, Inc.</li> </ul>
Maintenance Facilities (owned by CMTA)	<p>North Operations Facility 9315 McNeil Road, Austin, Texas 78758 137,377 square feet</p>
<b>3. Paratransit</b>	
Number of Passenger Trips, FY2015	698,896
Maintenance Providers (during the Quadrennial Audit review period; excludes Demand taxi)	<ul style="list-style-type: none"> <li>■ Austin Ride Right</li> <li>■ Capital Area Rural Transportation System (CARTS)</li> <li>■ LeFleur Transportation</li> <li>■ MV Transportation, Inc.</li> </ul>
Fleet Size and Composition	<p>116 vehicles, consisting of:</p> <ul style="list-style-type: none"> <li>■ 19 Chevy Cut Away Van 2011 Champion (diesel)</li> <li>■ 25 Chevy Cut Away Van 2013 Champion (diesel)</li> <li>■ 25 Ford Sedans 2014 (gasoline)</li> <li>■ 47 Chevy Cut Away Van 2014 Champion (diesel)</li> </ul>
Maintenance Facilities (owned by CMTA)	<p>MetroAccess Services Facility [South Base] 509 Thompson Lane, Austin, Texas 78742 19,738 square feet</p> <p>One additional maintenance facility is leased and operated by a service provider (1834 Ferguson Lane, Austin, TX 78754 [North Base]).</p>
<b>4. Vanpool</b>	
Number of Passenger Trips, FY2015	259,000 trips
Number of Revenue Miles, FY2015	2,241,335

Fleet Composition	Over 200 vans
Maintenance Provider	VRIDE, Inc.
<b>Other</b>	
<b>Freight Rail</b>	
Name	Capital Metro Railroad (CMTY)
Number of Passengers, FY2015	0
Number of Revenue Car Miles, FY2015	The current freight operation has an annual capacity of 70,000 cars.
Track Length	162 miles of main track between Giddings and Llano
Fleet Composition	0
Maintenance Provider	Watco Companies, LLC

Source: Capital Metro (various documents).

### 5.1.1 Fleet

Summaries of the four transit modes are provided below.

- 1. Bus.** CMTA operates local and express bus routes through the MetroBus, MetroRapid, ExpressBus, and University of Texas Student Shuttle programs.

  - **MetroBus** fixed-route service is the principal service of Capital Metro’s transit system. Capital Metro operates 50 MetroBus routes, including local and cross-town routes. CMTA operates approximately 12.4 million total bus miles over its fixed-route system. The fleet of buses provided riders with an average of 70,235 weekday boardings in FY 2015. Capital Metro’s 355 buses operate seven days per week, providing service to over one million residents of the service area.
  - **MetroRapid** is a premium fixed-route bus service. In January 2014, the first service began operation along North Lamar/South Congress (Route 801). The second service, Burnet/ South Lamar (Route 803), began in August 2014. MetroRapid brings together a set of unique features to result in faster, more convenient service for the community. Some of the features include frequent service, limited stops, boarding from all doors, unique and upgraded stops with real-time arrival information, passenger wi-fi, and vehicles equipped with signal-priority technology. The fleet of 40 buses carried over 2.7 million riders in its second year of operation. The average weekday boardings were 8,976 in FY 2015.
  - **ExpressBus** service is limited-stop service to and from The University of Texas, Capitol complex, downtown, and Park & Rides. There are eight routes that serve north and northwest Austin as well as the cities of Leander, Manor, and Elgin. The average weekday boardings were 2,205 in FY 2015. (Note: The service to Elgin is provided by Capital Area Rural Transportation System.)
  - **University of Texas Student Shuttle** service is provided for The University of Texas (UT). There are 19 routes that provide connections between housing and the downtown campus. Routes move students between the greater UT campus area and areas with high-density student populations. Each year, Capital Metro operates approximately 1.4 million total bus

miles over the UT shuttle system, providing riders with more than 18,000 one-way trips each weekday during a regular semester. The average weekday boardings were 18,265 in FY 2015.

Bus services were provided by five contractors over the four-year Quadrennial Performance Review period: Capital Area Rural Transportation System (CARTS), First Transit, McDonald Transit Associates, MV Contract Transportation, and Veolia Transportation. These service providers are also responsible for performing maintenance on the vehicles.

2. **Commuter Rail.** In the spring of 2010, Capital Metro began operating the **MetroRail** commuter rail service, a 32-mile line of existing freight tracks between Leander and Downtown Austin. The MetroRail's Red Line provides convenient service for suburban and central Austin residents. Service is provided six days per week with increased service levels for special events. The average weekday boardings were 2,774 in FY 2015.

Herzog Transportation Services, Inc., is the contractor responsible for operating the commuter rail service and performing maintenance.

3. **Paratransit.** The **MetroAccess** ADA Paratransit Program is for persons who have a disability or medical condition that limits or prevents them from independently using accessible bus service some or all of the time as defined in the Americans with Disabilities Act (ADA) of 1990. Persons certified by Capital Metro under this program may ride MetroAccess within  $\frac{3}{4}$  miles of Capital Metro's noncommuter fixed-route bus service on the same days and during the same hours as the fixed-route service in their area. The average weekday boardings were 2,213 in FY 2015.

MV Transportation, Inc., and Austin Ride Right, LLC are the contractors currently responsible for providing paratransit services and performing maintenance.

4. **Vanpool.** The **RideShare** program provides eligible groups of 5 to 12 people with a month-to-month lease agreement of a passenger van that includes insurance, maintenance, 24-hour roadside assistance, administrative support, and fuel-purchasing program. The cost of a Capital Metro RideShare vanpool varies and is based on van selection, commute distance, and number of riders sharing the monthly fare, plus fuel and tolls. The average weekday boardings were 943 in FY 2015.

VRIDE is the contractor responsible for providing vanpool services.

Table 3.2 provides a snapshot of Capital Metro's current vehicle fleet. The fleet consists of 578 total revenue vehicles, excluding the vans for Rideshare. The vehicles are sourced by nine manufacturers. The fleet composition contains at least 17 different models. The largest single model type is the Gillig bus, Model G22D102N4, with 112 vehicles, which represents almost 20 percent of the total vehicle fleet. This model's average age is 15.3 years old.

More than 50 percent of the fleet is under five-years old; one-third of the fleet is greater than 10 years old.

Capital Metro has 86 nonrevenue vehicles. The NRV fleet consists of a mix of Ford F450s, E150s, Explorers, Crown Victorias, and other assorted Ford trucks and cars, thirteen Toyota Priuses, and several other vehicle types.

Table 3.2 **Average Age and Composition of Capital Metro’s Revenue Vehicles (September 2016)**

Manufacturer	Model	No. of Vehicles	% of Total Fleet	Average Age (years)	Location	Contractor
Champion	C4500	47	8.13%	1.00	509 Thompson Lane	Ride Right
Champion	DEFENDER	3	0.52%	1.00	2910 East 5th Street	McDonald
Champion	G33503	34	5.88%	6.29	509 Thompson Lane	Ride Right
Gillig	G22D102N4	112	19.38%	15.31	2910 East 5th Street; North Ops	McDonald; MV
Gillig	G27D102N4	47	8.13%	0.02	North Ops	MV
Gillig	n/a	46	7.96%	0.00	2910 East 5th Street; North Ops	McDonald; MV
MCI	D4500-14328C	6	1.04%	0.00	2910 East 5th Street	McDonald
Mobility Ventures	MV1	35	6.06%	2.00	509 Thompson Lane	Ride Right
Motor Coach Ind.	D4500	10	1.73%	11.80	2910 East 5th Street	McDonald
New Flyer	D35LF	37	6.40%	14.62	2910 East 5th Street; North Ops	McDonald; MV
New Flyer	D35LFR	69	11.94%	4.54	2910 East 5th Street	McDonald
New Flyer	D40LFR	53	9.17%	7.38	2910 East 5th Street	McDonald
New Flyer	DE40LF	2	0.35%	13.00	2910 East 5th Street	McDonald
New Flyer	DE40LFR	1	0.17%	9.00	2910 East 5th Street	McDonald
NOVA Bus Corp.	LFS40	18	3.11%	2.00	North Ops	MV
NOVA Bus Corp.	LFS60	22	3.81%	3.00	North Ops	MV
Optima	LFB-34	30	5.19%	12.00	North Ops	MV
Stadler	GTW 2/6	6	1.04%	9.00	North Ops	Herzog
<b>TOTAL</b>		<b>578</b>	<b>100.00%</b>			

Source: Capital Metro Fleet List, October 3, 2016; Iknow analysis.

### 5.1.2 Primary Facilities

Capital Metro owns four facilities and leases a facility at 209 West Ninth Street for the Transit Store and various MetroAccess operations. The facility name, address, function, size, and year of acquisition/ completion of each primary facility are:

#### Capital Metro Headquarters

2910 East Fifth Street  
Austin, Texas 78702

Administration: 29,000 square feet, 1986

Maintenance: 140,000 square feet, 1986

**Capital Metro Administrative Annex/Child Care Facility**

624 Pleasant Valley  
 Austin, Texas 78702  
 25,500 square feet, 2006

**MetroAccess Services Facility**

509 Thompson Lane  
 Austin, Texas 78742  
 19,738 square feet, 2000

**North Operations Facility**

9315 McNeil Road  
 Austin, Texas 78758  
 137,377 square feet, 2008

**Transit Store, MetroAccess Eligibility, MetroAccess Call Center, MetroAccess Administration (leased)**

209 West Ninth Street  
 Austin, TX 78701  
 18,000 square feet, 2013

Capital Metro owns or leases thirteen Park & Ride facilities:

**Austin**

- Great Hills
- Howard Station Park & Ride
- Lakeline Station Park & Ride
- North Lamar Transit Center
- Oak Hill Park & Ride
- Pavilion
- Tech Ridge
- Triangle
- South Congress Transit Center

**Jonestown**

- Jonestown Park & Ride

**Lago Vista**

- Lago Vista Park & Ride

**Leander**

- Leander Station Park & Ride

**Manor**

- Manor Park & Ride

**Elgin**

- Elgin Park & Ride [owned by the Capital Area Rural Transportation System (CARTS)]

Capital Metro owns nine rail stations:

- Leander Station
- Lakeline Station
- Highland Station
- MLK, Jr. Station



- Howard Station
- Kramer Station
- Crestview Station
- Plaza Saltillo Station
- Downtown Station

### 5.1.3 Inventory

Parts and supplies inventory is the responsibility of the contracted service providers.

## 5.2 Key Service Providers with Maintenance-Related Tasks

As described in Section 4.3, the net effect of the Sunset Commission Report and Senate Bill 650 has been to shift all transit operations and maintenance previously performed by Capital Metro in 2012 to numerous external, independent contractors. Today, Capital Metro staff is not involved in any direct maintenance activities and only partially involved in transit service activities (e.g., paratransit control center).

During the Quadrennial Review Audit period of 2012–2015, Capital Metro used multiple contractors for supplying transit services (see Table 3.3). The contractors in the table are grouped by transit mode. All had maintenance as part of their scope of services.

Table 3.3 **Key Capital Metro Transit Service Contractors with Maintenance Responsibilities**

Service Mode	Company	Years of Operation During the Quadrennial Audit Period
Bus	Capital Area Rural Transportation System (CARTS)	2012–2015
	First Transit, Inc.	2012–2015
	McDonald Transit Associates, Inc.	2012–2015
	MV Contract Transportation, Inc.	2015
	Veolia Transportation	2012–2014
Commuter Bus	Capital Area Rural Transportation System (CARTS)	2014–2015
	McDonald Transit Associates, Inc.	2012–2015
Paratransit	Austin Ride Right	2014–2015
	Capital Area Rural Transportation System (CARTS)	2014–2015
	LeFleur Transportation	2012–2014
	MV Transportation, Inc.	2012–2015
Paratransit (Demand taxi)	Greater Austin Transportation Company	2012–2015
Rail	Herzog Transit Services, Inc.	2012–2015
Vanpool	VRIDE, Inc.	2014–2015

Source: National Transit Database; Iknow analysis.

Additional contractors were used for facility-related maintenance.

All Capital Metro contractors had a responsibility to preserve and maintain the fleet, equipment, and facilities, and were required to meet defined levels of service. Contractual language and oversight by

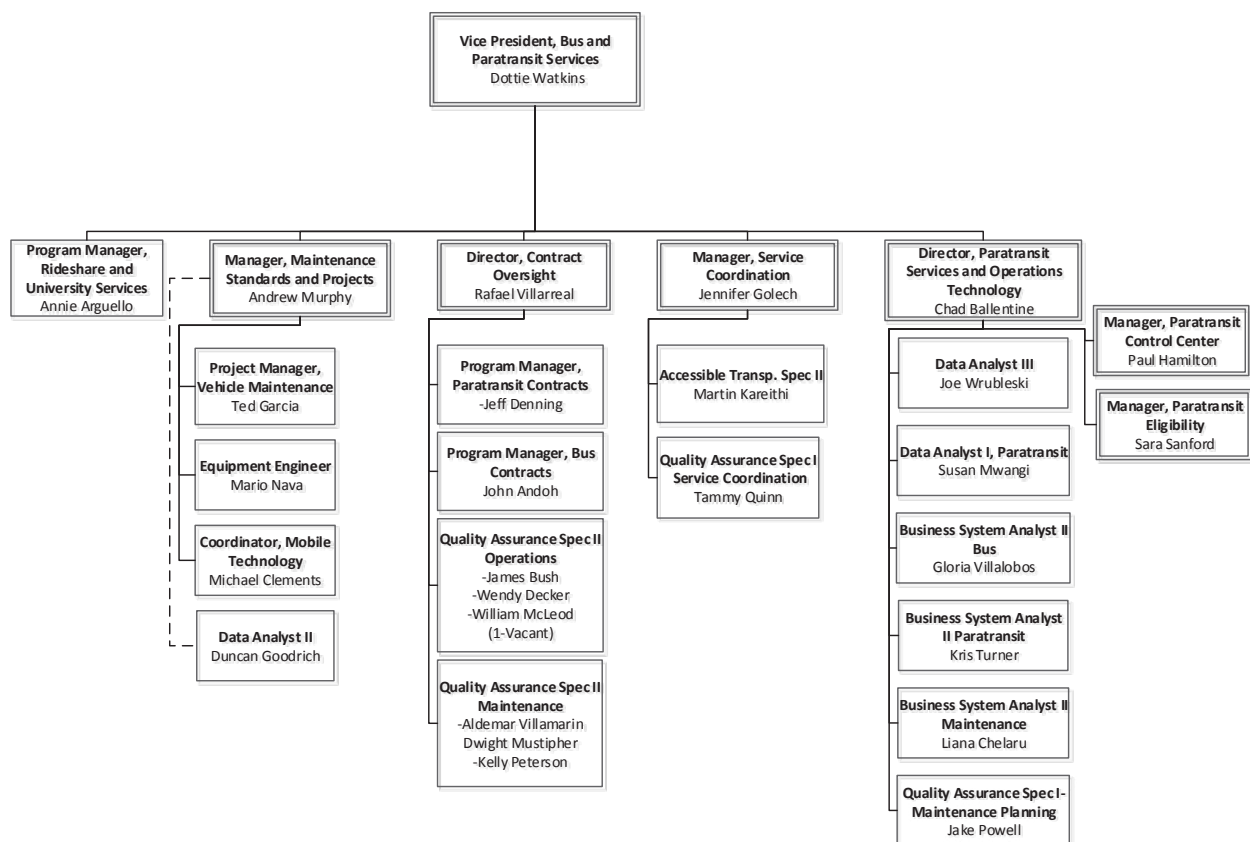
Capital Metro were the two primary tools used by CMTA to ensure that the contractors achieved the agreed-upon service levels and stayed within the contract budget.

### 5.3 Organization Structure

Capital Metro’s role in transit operations and maintenance consists primarily of strategy, route and schedule creation, maintenance standards creation, contract development, and ongoing oversight roles that are scattered throughout the organization. For example, for maintenance, some of the important departments and functions include:

- **Bus and Paratransit Department.** The Bus and Paratransit Department has two teams with vehicle maintenance responsibility (see Exhibit 3.1). The Contract Oversight team includes three CMTA staff dedicated to vehicle maintenance quality assurance. The Maintenance Standards and Projects team focuses on managing projects related to vehicle purchases, configuration changes, and establishing the maintenance standards. This team also supports the Contract Oversight team in a consultative role.

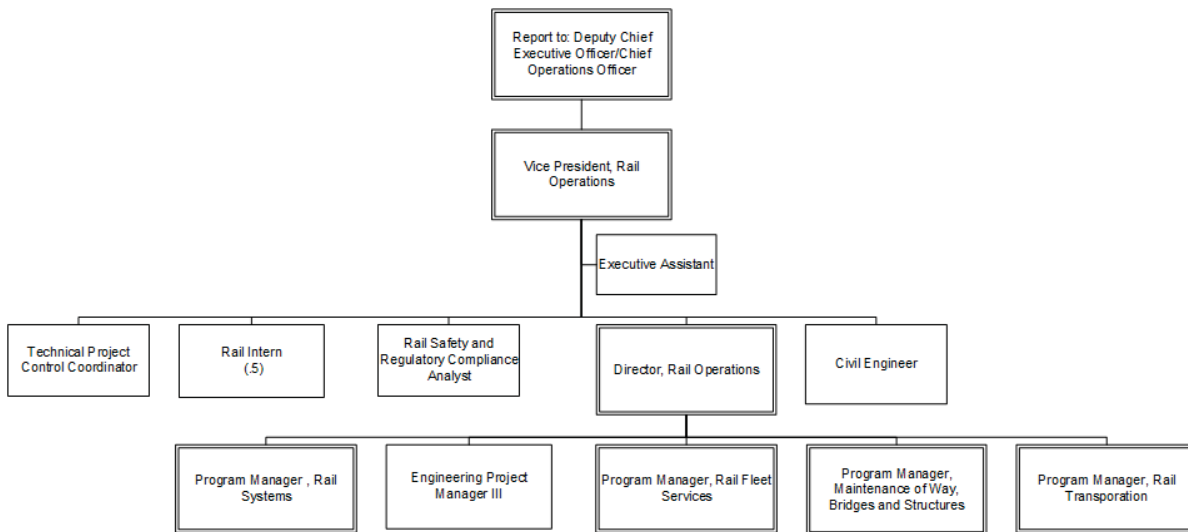
Exhibit 3.1 **Bus and Paratransit Services Organization Chart—November 2016**



Source: Capital Metro PBS Department.

- **Rail.** The Director of Rail Operations is responsible for the daily operation and maintenance of the entire CMTA railroad, covering commuter (MetroRail), freight, and excursion (Austin Steam Train) transit. He reports to the Vice President of Rail Operations. The Director is supported by a Program Manager–Rail Transportation, who serves as the Contracting Officer’s Technical Representative for the Herzog and Watco contracts.

Exhibit 3.2 **Rail Operations Organization Chart—November 2016**



- **Property and Asset Management.** The Vice President of Property and Asset Management is responsible for the maintenance of all nonrevenue assets, excluding vehicles.
- **Procurement.** The Purchasing Department develops Request for Proposals (RFPs), evaluates proposals received from potential service providers, and negotiates with service providers on contract terms and conditions. Performance goals and standards are provided by the operations departments.
- **Legal.** Provides support for contract review and negotiations.
- **Information Technology.** IT hosts and supports Spear, Capital Metro’s maintenance management information system. IT handles Spear’s access credentials, security, system maintenance, updates and patches, and other system-related tasks.

### 5.4 Current Maintenance Environment

This section provides an overview of several important elements of Capital Metro’s maintenance environment. Specifically, the following eight topics are discussed:

1. Vehicle Maintenance Program Plan
2. Maintenance Standards

3. Maintenance-Related Quality Assurance Audits
4. Preventive Maintenance Inspections (PMIs)
5. MAP-21/State of Good Repair
6. Performance Measurement
7. Enterprise Asset Management System
8. Capital Metro’s Triennial Review of Maintenance-Related Issues

Iknow conducted in-person interviews with Capital Metro operations, audit, legal, IT, and other executive and administrative staff. Iknow also conducted a variety of in-person interviews with senior maintenance personnel across almost all major contractors. The objectives of these interviews were to confirm our analysis of the information we received from our data requests and to discuss our improvement recommendations.

#### **5.4.1 Vehicle Maintenance Program Plan**

Iknow reviewed Capital Metro’s Bus and Paratransit Services (BPS) Vehicle Maintenance (VM) Program Plan, dated May 2015. The primary objective of the BPS VM Program Plan is to “ensure that safe, reliable, and clean transit vehicles are available for service.” This objective is achieved through:

- Establishing and communicating the standards for vehicle maintenance that will maintain the integrity and value of the fleet,
- Ensuring compliance to the standards and each contract through focused quality assurance audits, and
- Partnering with our contracted service providers to continuously improve the VM Program.

The VM Program Plan covers:

- Program Objective
- Team Structure and Focus Areas
- Standards and Project Management
- Quality Assurance and Contractor Oversight
- Performance Measurements
- Continuous Improvement.

The VM Program Plan is written and owned by the BPS Maintenance Projects and Standards team (see Exhibit 1).

#### **5.4.2 Maintenance Standards**

The basis of the Capital Metro vehicle maintenance standard is the preventive maintenance program. This program includes detailed work procedures for specific time-based and mileage-based preventive maintenance inspections (PMIs) and routine/repetitive maintenance tasks for each vehicle series.

For example, PMI checklists and preventative maintenance (PM) repetitives checklists for each bus series are kept updated and saved on CMTA’s internal servers. Updated checklists are communicated to the contractors by email. The tasks in the PM repetitives checklists are concurrently loaded into Spear, Capital Metro’s enterprise asset and maintenance management system. Spear is described in Section 5.4.7.

The mileage-based and time-based PM requirements are the Maintenance Patterns with Template Work Order established in Spear. Spear automatically generates work orders from these maintenance patterns.

The Manager, Vehicle Maintenance Projects and Standards, is responsible for establishing the maintenance standards. The maintenance standards are updated as the fleet matures and new approaches to vehicle reliability are adopted. Updates are identified by:

- Monitoring component failures for trends, which suggest that a change to the standard would improve vehicle reliability;
- Adopting reasonable contractor requests for updates to accepted repair procedures or aspects of vehicle configuration;
- Periodic review of various aspects of the standard with contractor maintenance teams to identify areas which warrant clarification or update; and
- Periodic reviews by a third party.

### 5.4.3 Maintenance-Related Quality Assurance Audits

The BPS Contract Oversight team has three people focused on the oversight of service providers’ vehicle maintenance programs. This team conducts audits, analyzes performance data, and reports on the contract compliance of the vehicle maintenance programs for each of Capital Metro’s service providers. This team is not adequately staffed to audit every aspect of every vehicle. The team’s working assumption is that if an audit of any aspect of the maintenance program is found to be following a repeatable process that achieves the desired results, then that process is likely to be working across the entire fleet.

The QA Team generally splits their time between conducting quality assurance audits and assisting contractors. The purpose of quality assurance audits is to determine whether the fleet is in an acceptable condition and the contractor is in compliance with their contract. The QA Team regularly conducts the routine maintenance audits listed in Table 3.4.

Table 3.4 **CMTA’s BPS Routine Maintenance Audits**

Audit Name	Description of Audit Objective
Ready Line	Measurement of the “final” product of each contractor’s maintenance shop. Vehicles assigned for pull-out are inspected for elements that would indicate that the bus is not ready for service.
PMI Process Audit	Audit to review the processes used by contractors to perform preventive maintenance work on revenue vehicles. PMI Process Audit is performed on a unit, identified by the contractor, as recently having gone through a PM Inspection. Findings are noted and graded. Findings serve a dual purpose: first, to determine a contractor’s adherence to the CMTA PMI program; and second, to aid contractors in identifying opportunities for improvement.
PMI Process Audit Re-Inspection	A re-inspection of a unit that has had a PMI Audit to review the repairs performed to correct the identified issues. Repairs are documented in an acceptable/unacceptable fashion, thereby establishing a standard for the quality of acceptable repairs.

Table 3.4 **CMTA’s BPS Routine Maintenance Audits continued**

Fuel and Service Audit	Measures contractors’ ability to fuel, clean, and service units in preparation for the next service period.
Road Call Process Review	A review of all chargeable road calls a contractor incurs during each month. The review also allows BPS VM to accurately calculate how many Road Calls each contractor incurs for reporting, trend analysis, and performance measurement. Road Call specifics will be discussed between the BPS and contractor to better understand and agree on how to better provide safe, clean, and reliable vehicles.
Work Order Quality Audit	Audit used to measure the contractor’s ability to accurately identify, repair, and test repairs performed on units. Work Orders are reviewed to ensure the time, parts, and repair processes are appropriate responses for the identified issues.
Herzog Process Review	An in-process inspection to verify that maintenance actions are being performed to OEM and FRA guidelines.
Herzog Quarterly Maintenance Plan Review	Review of all scheduled maintenance actions calendar day-based and hours-based as defined in the maintenance plan to verify “on-time” performance. This also serves to identify plan items that may or may not be listed/necessary.
DVIR Audit	Daily Vehicle Inspection Report Audit is used to measure a contractor’s process to: <ul style="list-style-type: none"> <li>■ inspect a vehicle and note issues prior to pulling out for service</li> <li>■ accurately note defects experienced while in service</li> <li>■ assess the maintenance department’s response to issues identified by operators,</li> </ul>
OEM Parts Audit	Review of parts used to repair vehicles to ensure the quality is of original equipment manufacturer (OEM) standard equivalent or better.
Tire Audit	Field inspection of tires mounted on units that are used in service to make sure they meet or exceed CMTA’s minimum tire standards, thereby helping to provide a safe vehicle. Any issues identified are immediately reported to the contractor for correction.
Other, as needed	As weaknesses are identified in other audits, the QA team may perform a focused audit of a particular vehicle component or maintenance process. These focused audits are not intended to become part of the regular pattern of QA. Rather, they provide information about an area which may need additional attention by the contractor’s maintenance management.
Line Inspections	While not an audit of a particular contractor, the QA Specialists play a crucial role in performing line inspections at the factory when new vehicles are purchased.

Source: Capital Metro’s Bus and Paratransit Services (BPS) Vehicle Maintenance (VM) Program Plan, May 2015.

The exact audits conducted each month will vary, with a focus placed on areas of concern that were highlighted in previous audits.

The QA Team spends an equal amount of time assisting contractors. The QA Team is tasked with helping the contractor solve problems (e.g., Spear usage, ITS installation, DVR issues, accidents, fleet defect investigation, and NHTSA recalls). The QA Team will train the contractors, share knowledge, and spend time coaching and counseling on how to better maintain the fleet. Accordingly, the

QA Team is ultimately measured by how well they are addressing the problems that occur at each contractor facility. Each QA Specialist is assigned one or more contractors for which they take the lead on oversight. Additionally, the QA specialists support each other in performing audits and managing contractors. While a contractor may see one specialist more frequently than the others, each QA specialist is charged with developing good rapport with all contractors and understanding the oversight needed at each facility.

Capital Metro conducts monthly audits of its operating contractors and records the results in Excel spreadsheets. Iknow reviewed Capital Metro’s audit spreadsheets for McDonald Transit, MV Transportation (both bus and paratransit), Ride Right, and Herzog Transit Services, and found that they were comprehensive and up-to-date in most categories.

#### **5.4.4 Preventive Maintenance Inspections (PMIs)**

Preventive maintenance inspections (PMIs) are uniquely developed for each type of vehicle or piece of equipment. These are available in Spear. Capital Metro’s contracts with service providers have mandatory requirements regarding performing PMIs.

#### **5.4.5 MAP-21/State of Good Repair**

One of the main elements of the recently enacted legislation Moving Ahead for Progress in the 21st Century (MAP-21) is the concept of “state of good repair” (SGR). This legislation requires public transportation agencies that receive federal assistance or grant money to develop an asset management plan. This plan needs to touch on several elements; at a minimum, it needs to address an agency’s inventory, condition assessment, and investment prioritization.

The FTA’s Asset Management Guide defines “transit assets” as rolling stock, right-of-way, stations, facilities, systems, and equipment. The guide also defines “transit asset management” as a strategic and systematic process through which an organization procures, operates, maintains, rehabilitates, and replaces transit assets to manage their performance, risks, and costs over their life cycle to provide safe, cost-effective, reliable service to current and future customers. It defines an “asset management business plan” as a document that outlines the implementation activities, roles, responsibilities, resources, and timelines needed to address an agency’s asset management policy and strategy.

The Moving Ahead for Progress in the 21st Century Act (MAP-21), whose requirements were affirmed in the Fixing America’s Surface Transportation Act (FAST), requires the development and ongoing management of a system to capture and describe public transportation assets.

Capital Metro uses Spear as its asset management system. The current implementation contains master equipment records for all transit asset types and physical infrastructure, including rolling stock vehicles (bus, nonrevenue, paratransit, railcar, etc.), facilities/stationary assets, linear/fixed guideway, and systems equipment. All Capital Metro assets, which are required to be included in the Transit Asset Management Plans and to be reported to the National Transit Database (NTD), are included in Spear, except for the following:

- Park and Ride components
- Linear guideway broken down into tangent track and curved track
- Security assets
- IT software assets.

In 2016, Capital Metro added new database fields in Spear to capture additional data required for the Transit Asset Management Plans. The new fields are:

- Useful Life Benchmark
- Condition
- Priority Rating
- Security Rating
- Safety Rating
- Retirement Date
- Percentage of Capital Responsibility.

Capital Metro set a November 1, 2016 deadline to have the above-referenced information entered into Spear, excluding the security and IT software assets. Capital Metro intends to submit its completed information to the NTD in the voluntary FY2017 reporting year.

#### **5.4.6 Performance Measurement**

A variety of performance measurements are collected from the individual service providers to measure their performance. Capital Metro groups performance measurements into three categories.

##### **1. Customer Impact**

- *Road Calls*. Displays the miles between mechanical road calls information for each contractor (3- to 6-month trend), including a list of all road calls by category (mechanical, electrical, fare box, tires, other, etc.).
- *Mechanical Lost Time*. A report of the amount of service that was not provided due to mechanical failures (3- to 6-month trend).

##### **2. Current State of the Fleet**

- *PM Timeliness*. Charts depicting the timeliness of mileage-based and time-based PMs for each facility.
- *Quality Assurance Scores*. A list all audit results for each contractor and associated scores, providing a 3- to 6-month view of scores over time to display the trend.
- *Commentary* provided by the VM QA Coordinator elaborating on what the QA scores reveal about each contractor's performance.
- *Contractor Incentives and Disincentives*. A list of all possible incentives and disincentives related to maintenance and assessed for each contractor each month, including total dollar impact.

##### **3. Future State and Trends**

- *Scheduled versus Unscheduled Maintenance*. Shows whether the contractor is managing PM process properly and/or whether the maintenance standard is adequate to achieve this balance.
- *Projects and Campaigns*. Vehicle projects being managed and campaigns or reconfiguration requests under consideration.

Iknow reviewed the monthly performance reports for several of CMTA's key service providers, including McDonald Transit Associates, MV Transportation, Ride Right, and Rosemark. Specifically, we reviewed the December 2015 report, which included data for the full 2015 calendar year, and



the individual monthly reports through August 2016. All the reports covered the three groups of performance metrics listed previously.

#### **5.4.7 Enterprise Asset Management System**

Accurate tracking of information through the entire life cycle of an asset is critical to transit asset management. Asset data needs to be consistently defined, captured, shared, and retained across each phase of the supporting business processes—planning, building (capital works), operations, and maintenance. Consequently, the information systems supporting each of these business areas need to be capable of accessing, capturing, and maintaining asset data for enterprise-wide needs.

Capital Metro’s current computerized maintenance management system (CMMS) is a Spear 4i, a commercial software product offered by Spear Technologies, Inc. Spear Technologies provides enterprise asset management systems and services for maintenance and materials management of moving and infrastructure assets. Spear 4i helps increase asset utilization, extend asset life cycles, increase worker productivity, improve safety, minimize inventory, and increase warranty recovery, as well as manage moving and linear assets, such as buses, rail vehicles, aircrafts, airports, tracks, mines, and roadways. Spear Technologies, Inc., was founded in 1997 and is headquartered in San Francisco, California. As of April 20, 2006, Spear Technologies operates as a subsidiary of Hansen Information Technologies.

Spear minimizes the need for paper records and provides extensive real-time information on the status of the fleet, maintenance personnel, and schedule requirements. Almost all maintenance functions and activities are entered into this database, and all employees have access to varying levels of the data to assist them in the performance of their responsibilities. Mechanics on the shop floor enter all information pertaining to their preventive maintenance inspections, repairs, and other work orders. Mechanics are able to access repair manuals, standard operating procedures (SOPs), and other information directly pertinent to the vehicle they are repairing. A benefit of the system is that it integrates information from not only the maintenance functions, but also materials management and human resources.

Some of the features of the current system in support of maintenance operations are detailed work orders of various types; templates for more commonly used work order types; equipment and configuration listings for vehicles, facilities, infrastructure, and linear assets; team member timekeeping; warranty and component movement; capturing costs of labor and materials for in-house rebuilt components; and cost and performance reporting from the historical database. The material inventory side of the system includes bill of materials; cycle count; inventory forecasting; material issue; material receipts, returns, adjustments and transfers; picklists; putaways; material stock requisitions; and cost and performance reporting from the historical database.

CMTA’s Chief Information Officer confirmed that the CMTA’s current Spear implementation will be upgraded or replaced within the next two fiscal years.

#### **5.4.8 Capital Metro’s Triennial Review of Maintenance-Related Issues**

Capital Metro’s 2015 Triennial Review stated “During this Triennial Review of CMTA, no deficiencies were found with the FTA requirements for maintenance.”

## 6. Audit Findings of Transit Operation and Maintenance

In this section, we present our audit findings of vehicle transit operation and maintenance functions. The findings follow four lines of analysis.

1. **Analysis of Service Providers’ Contracts.** Because all vehicle transit operation and maintenance functions are outsourced, Iknow started by reviewing the contracts between Capital Metro and six of its major service providers.
2. **Condition Assessment of the Fleet and Facilities.** For each mode, Iknow spoke with the contracted service providers about their current maintenance practices and procedures, conducted inspections of the maintenance facilities, observed in-process maintenance activities, and performed visual examinations of the interior and exterior conditions of a sample of vehicles.
3. **Review of Monthly Reports Submitted by Service Providers.** Iknow reviewed the monthly status reports that are prepared and submitted by Capital Metro’s primary service providers. An emphasis was placed on the FY2015 monthly reports, the last year of the Quadrennial Performance Review period.
4. **External Benchmarking.** Iknow analyzed data from the National Transit Database for similar transit agencies. Because of the Review’s focus on maintenance, we used the performance metric Miles Between Road Calls (MBRC).

### 6.1 Analysis of Service Providers’ Contracts

Because the 2016 Quadrennial Performance Review’s focus is on vehicle transit operation and maintenance functions, Iknow reviewed several of the major contracts that had maintenance activities as part of their scope of work. Table 3.5 lists the contract title for five large service providers that perform maintenance-related services on Capital Metro assets, sorted by contract award date.

Table 3.5 **Major Capital Metro Contracts That Include Maintenance Activities**

	<b>Subcontractor Name</b>	<b>Contract Title</b>	<b>Award Date</b>
1	McDonald Transit Associates, Inc.	Contracted Fixed Route Services	April 23, 2012
2	MV Transportation, Inc.	Contracted Paratransit Services	April 23, 2012
3	Ride Right LLC	North Base Paratransit Services	January 29, 2014
4	Herzog Transit Services, Inc.	Commuter Rail—Operations, Dispatch & Maintenance	July 8, 2015
5	Rosemark	Building and Equipment Maintenance at North Ops	May 23, 2016

Source: Capital Metro’s Procurement Department.

Iknow’s review of the individual contracts yielded the following observations and insights:

1. **The contracts are quite lengthy and complex.**
2. **Maintenance activities on vehicles and facilities have been outsourced to contractors.** In most cases, Capital Metro retains ownership of the assets.
3. **The performance targets were inconsistent and many varied from contract to contract, even for the same transit mode.**
4. **The contracts' stated performance targets were too low.** For example, McDonald's Miles Between Road Calls metric is set at 5,500 miles. However, benchmarking from similar transit agencies suggests that the target should be set significantly higher. See Section 6.4, Benchmarking Findings.
5. **The penalties for noncompliance were too low.** For example, one of the contract requirements for bus repairs states "Major repair work must be completed no later than twenty (20) working days from the time it is reported." Failure to complete major repair work within this timeframe will result in a penalty of \$100 per day. The Missed Trip penalty is \$100 per incident.
6. **The contracts had many mandatory requirements that built in a higher cost structure.** For example, the contracts define mandatory key staff positions, require Capital Metro to approve all new hires for these key positions, and assess financial penalties when vacant positions are not filled within sixty calendar days. Contractors should be able to staff their organizations as they see fit to satisfy the contract's performance goals.
7. **The value of these contracts is significant.** The value of these five contracts total more than \$368 million.
8. **The quality of the contracts has improved over time.**

Table 3.6 **Value of Six Major Capital Metro Contracts**

	<b>Subcontractor Name</b>	<b>Contract Title</b>	<b>Contract Value</b>
1	McDonald Transit Associates, Inc.	Contracted Fixed Route Services	\$171,492,749.55
2	MV Transportation, Inc.	Contracted Paratransit Services	\$53,202,551.13
3	Ride Right LLC	North Base Paratransit Services	\$24,556,227.95
4	Herzog Transit Services, Inc.	Commuter Rail—Operations, Dispatch & Maintenance	\$117,580,748.90
5	Rosemark	Building and Equipment Maintenance at North Ops	\$1,578,188.00
	<b>TOTAL</b>		<b>\$368,410,465.53</b>

Source: Capital Metro's Procurement Department.

Highlights of the maintenance-related services for the five contracts are presented on the following pages.

**6.1.1 McDonald Transit Associates, Inc.**

Ref. No.	Capital Metro Contract No.	Award Date	Contract Term
1	126137	April 23, 2012	June 2012 to September 30, 2015 (Approximately 39 months). Four optional one-year renewals are permitted.

<b>Contract Title</b>	<b>Contracted Fixed Route Services</b>
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<b>Contractor Name</b>	McDonald Transit Associates, Inc.
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<b>Maintenance-Related Scope of Services (Highlights)</b>	<p>McDonald Transit Associates shall provide safe, reliable, and dependable public transportation services to customers in the Capital Metro service area. The service includes fixed-route bus service.</p> <p>McDonald will provide all personnel necessary to perform the services and all other goods and services needed to deliver the services. Unless explicitly stated as a Capital Metro responsibility, McDonald is responsible for all equipment, supplies, staff, effort, and management services necessary to operate a high-quality public transportation service.</p> <p>Capital Metro will provide all vehicles and fuel required for scheduled service.</p> <p>Capital Metro will provide a facility for the service option. The facility provided for this service is the Main Operations and Maintenance Facility located at 2910 East Fifth Street, Austin, Texas 78702. Capital Metro staff will continue to occupy portions of this building.</p> <p>Capital Metro will provide water, sewer, and electrical utilities.</p> <p>McDonald shall be responsible for the ongoing routine maintenance of the buildings and equipment. McDonald shall be responsible for building maintenance of the Vehicle Maintenance building, Service Island building, Administration building, bus parking lot, bus yard canopy, gates, fencing, CNG building, sludge pond, yard lights, emergency generator, and all structures, equipment, and machines.</p> <p>McDonald is responsible for maintenance and repair work of Capital Metro-owned NRVs.</p> <p>McDonald is required to utilize Capital Metro’s maintenance management system (Spear 4i) to effectively record and manage building and equipment maintenance activities.</p> <p>McDonald is directly responsible and accountable for all Capital Metro property in accordance with the requirements of the contract. This includes Capital Metro property in the possession or control of a subcontractor. McDonald shall establish and maintain a system in accordance with this section to control, protect, preserve, and maintain all Capital Metro property. McDonald shall maintain and make available the records and account for all Capital Metro property until relieved of that responsibility.</p>
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McDonald shall maintain property control and accountability of manufacturing or assembly drawings; installation, operation, repair, or maintenance instructions; and other similar information furnished to McDonald by Capital Metro or generated or acquired by McDonald under the contract.

McDonald shall be responsible for the proper care, maintenance, and use of Capital Metro property in its possession or control from the time of receipt until properly relieved of responsibility, in accordance with sound industrial practice and the terms of the contract.

McDonald's maintenance program shall provide for disclosure of need for and the performance of preventive maintenance; disclosure and reporting of need for capital rehabilitation; and recording of work accomplished under the program.

McDonald's preventive maintenance program shall include at least:

1. Inspection of buildings at periodic intervals to assure detection of deterioration and the need for repairs;
2. Inspection of plant equipment at periodic intervals to assure detection of maladjustment, wear, or impending breakdown;
3. Regular lubrication of bearings and moving parts in accordance with a lubrication plan;
4. Adjustments for wear, repair, or replacement of worn or damaged parts and the elimination of causes of deterioration;
5. Removal of sludge, chips, and cutting oils from equipment that will not be used for a period of time;
6. Taking necessary precautions to prevent deterioration caused by contamination, corrosion, and other substances; and
7. Proper storage and preservation of accessories and special tools furnished with an item of plant equipment but not regularly used with it.

McDonald's maintenance program shall provide for disclosing and reporting the need for major repair, replacement, and other capital rehabilitation work for Capital Metro property in its possession or control.

McDonald shall keep records of maintenance actions performed and any deficiencies in the Capital Metro property discovered as a result of inspections.

Training and certification of maintenance personnel for all vehicles shall be the responsibility of McDonald.

Capital Metro will provide some large capital equipment required to maintain vehicles. Equipment provided by Capital Metro will be maintained by McDonald according to the OEM specifications and Capital Metro PM program.

Capital Metro will provide existing major shop equipment such as bus lifts, portable bus lifts, jack stands, special tools, portable fans, specialized test equipment, a/c servicing machines, etc.

McDonald is responsible for the preventive maintenance program on all of the building systems and the shop and garage equipment. Capital Metro will identify the Preventive

	Maintenance Inspections required for the facility at 2910 East Fifth Street, and for the CMTA Annex at 624 North Pleasant Valley.
<b>Contract Amount</b>	\$171,492,749.55

### 6.1.2 MV Transportation, Inc.

Capital Metro provides ADA complementary paratransit services through a mix of Capital Metro employees and contracted service providers. Capital Metro is responsible for coordinating these resources to provide high-quality and sustainable paratransit service called “MetroAccess.”

Capital Metro employees oversee the contractors and manage the Eligibility Department and the CMTA Control Center operations. Capital Metro’s Eligibility Department is responsible for maintaining the integrity of passenger account information, and determining eligibility for ADA paratransit service. The CMTA Control Center is comprised of Reservations, Scheduling, and Dispatch for Capital Metro’s ADA paratransit services. The CMTA Control Center is responsible for receiving all requests for customer trip requests based on the appropriate level of eligibility granted to the customer by the Eligibility Department. The CMTA Control Center must then coordinate the provision of services by efficiently scheduling trips to one of the various Capital Metro paratransit service providers. Capital Metro is also responsible for all other duties required to successfully operate the paratransit program, including, but not limited to, budgeting, annual reporting, public outreach, regional coordination, complaint resolution, and federal compliance.

In 2012, Capital Metro’s strategy was to contract with multiple-service providers to provide MetroAccess paratransit trips. The service providers are responsible for managing their own fleets, drivers, maintenance, supervisors, technology, and safety programs under the terms and conditions outlined in their contracts.

During the 2012–2015 audit period, Capital Metro used three service providers.

1. **MV Transportation, Inc.** (509 Thompson Lane, Austin, TX 78742 [South Base]). MV operates a Capital Metro-owned fleet of Champion and Mobility Ventures lift-equipped vehicles. MV uses the Capital Metro-owned administrative office and maintenance facility located on Thompson Lane. MV provides an estimated 23,200 service hours per month with a mix of Champion lift-equipped vehicles, sedans, and small paratransit accessible vehicles.
2. **LeFleur Transportation.** (1834 Ferguson Lane, Austin, TX [North Base]). LeFleur provided service using a mix of Chrysler Town & Country minivans and Ford Hi-top lift-equipped vans.
3. **Austin Ride Right.** (1834 Ferguson Lane, Austin, TX [North Base]). Ride Right replaced LeFleur and started providing a portion of Capital Metro’s paratransit services on May 1, 2014. Monthly service hour estimates are approximately 7,800 to 8,000.

In this section, we describe the maintenance-related terms in the MV Transportation contract. Highlights of the Austin Ride Right contract are summarized in the next section.

Ref. No.	Capital Metro Contract No.	Award Date	Contract Term
2	126138	April 23, 2012	June 2012 to September 30, 2015 (Approximately 39 months). Three optional one-year renewals are permitted.

<b>Contract Title</b>	<b>Contracted Paratransit Services</b>
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<b>Contractor Name</b>	MV Transportation, Inc.
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<b>Maintenance-Related Scope of Services (Highlights)</b>	<p>MV Transportation shall provide safe, reliable, and dependable paratransit services to customers in the Capital Metro service area. Unless explicitly stated as a Capital Metro responsibility, MV is responsible for all equipment, supplies, staff, effort, and management services necessary to operate a high-quality public transportation service.</p> <p>MV shall work with Capital Metro to ensure a well-coordinated transition from existing services provided by StarTran to services provided under this contract. MV must work with Capital Metro to provide paratransit customers with a seamless transition that aims to provide customers with high-quality and uninterrupted service throughout this process.</p> <p>MV will take possession of Capital Metro revenue vehicles in accordance with the terms and conditions outlined in the contract. Capital Metro will transfer maintenance responsibilities to MV, while Capital Metro maintains ownership of the vehicle assets. The Service Provider will perform maintenance on Capital Metro fleet vehicles and on-board vehicle equipment to standards established by Capital Metro.</p> <p>Capital Metro will provide a fleet made up of air-conditioned, accessible paratransit vehicles ranging in model types and years. An adequate number of vehicles will be made available to MV to assure a 20 percent spare ratio (+/- 2 percent.) MV shall use the vehicles supplied by Capital Metro.</p> <p>MV shall be responsible for all vehicle maintenance and shall maintain records for same. Maintenance will be performed to original equipment manufacturer (OEM) standards and/or Capital Metro’s written instructions or specifications. OEM or better replacement parts will be used.</p> <p>MV shall provide a description of the maintenance program. This plan shall include, at a minimum, preventive maintenance, mechanic training, shop safety, engine and transmission rebuilding, corrective repairs, warranty administration and body repairs for Capital Metro’s specific fleet of vehicles.</p> <p>MV is responsible for all routine preventive maintenance, major repair, running repairs, body work of any type, electronics systems, servicing, road calls, corrective repairs, and daily and detailed cleaning necessary to keep Capital Metro-furnished vehicles in a safe, reliable and well-maintained condition, assuring that all on-board systems are fully functional and operational.</p> <p>Maintenance schedules are maintained in the Spear 4i system for each vehicle type. Failure to adhere to the schedule will be cause for Capital Metro to remove the vehicle from service. Such action does not relieve MV’s obligation to provide service under the terms of the contract. MV shall adhere to the schedule for:</p>
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- PM inspections
- PM repetitive
- Transmission fluid changes
- Fire extinguisher inspection
- Amerex fire suppression system inspection
- Texas State inspection
- Wheelchair ramp /lift inspection
- HVAC inspection
- Electronics (camera system) inspection

The scope of the PM program for Capital Metro vehicles will not be compromised or reduced, as it is essential for the continued service life of the vehicles. It is to be considered as a minimum amount of effort required for fleet vehicles at their present age and mileage. No modifications to the PM Program are to be made without written approval from Capital Metro.

MV shall be totally responsible to maintain the vehicles, including tires, in “like-new” condition less allowable wear and tear. Replacement tires are to be OEM quality or a grade better and must be provided by the contractor.

MV shall follow the preventive maintenance schedule. The maintenance shall be performed according to the manufacturer’s warranty guidelines.

For every Preventive Maintenance Inspections (PMI), MV shall complete a Capital Metro inspection checklist form, complete the appropriate Repetitive work, identify in Spear all defects found for repair, complete all identified repair work, document repairs in Spear, sign the PMI forms, and place it on file for all inspections. Regular preventive maintenance inspections are to be conducted at 3,000-mile intervals or as identified by OEM maintenance standards, whichever is more frequent. The PM Inspection is considered late at 3,001 miles. No vehicle is to be operated in service by the Service Provider if it is late for a scheduled PMI.

All repairs required from the PM Inspection are to be completed prior to the vehicle being returned to revenue service. Any exceptions must be approved in advance by Capital Metro and cannot affect safety and reliability. Failure to adhere to this schedule will result in a vehicle being removed from service by Capital Metro. Such action does not relieve Service Provider’s obligation to provide service under the terms of the contract.

MV shall be responsible for maintenance of the administration building, vehicle maintenance area, service island area, all parking lots, gates, fencing, yard lights, emergency generator, all other structures, equipment, and machines.

MV shall perform normal maintenance of the facilities in accordance with sound industrial practice, including protection, preservation, and repair of the facilities and normal parts replacement for equipment. In addition, the maintenance shall include, but not be limited to the following:

1. Annual inspection and certification of existing back-flow protection device on the 2” water line for the bus wash system.



2. Annual industrial waste/discharge permit for the existing sludge/grease traps located on site underground.
3. Annual cost of having sludge/grease pit emptied and disposal of contents at a licensed hazardous waste disposal site and tracking of hazardous waste according all local, state, or other applicable regulations or EPA guidelines.
4. Disposal of reclaimed motor oil.
5. Annual inspection of existing irrigation system and replacement of damaged parts.
6. Plumbing lines and equipment repair.
7. Exterior lighting and high-bay maintenance light bulb replacement.
8. Bus wash gantry system annual maintenance and repair.

MV shall perform any maintenance work directed by Capital Metro in writing. MV shall notify Capital Metro in writing when sound industrial practice requires maintenance in excess of the normal maintenance program.

MV shall keep records of all work done on the facilities and shall give Capital Metro reasonable opportunity to inspect these records. All records related to asset management, maintenance, and disposal will be documented in the Spear 4i asset management system. When facilities are disposed of under this contract, MV shall deliver the related records to Capital Metro or, if Capital Metro directs, to third persons.

MV shall be responsible for the proper care, maintenance, and use of Capital Metro property in its possession or control from the time of receipt until properly relieved of responsibility, in accordance with sound industrial practice and the terms of the contract. The removal of Capital Metro property to storage, or its contemplated transfer, does not relieve MV of these responsibilities.

MV's maintenance program shall provide for:

1. Disclosure of need for and the performance of preventive maintenance;
2. Disclosure and reporting of need for capital rehabilitation; and
3. Recording of work accomplished under the program.

Preventive maintenance is maintenance performed on a regularly scheduled basis to prevent the occurrence of defects and to detect and correct minor defects before they result in serious consequences. An effective preventive maintenance program shall include at least:

1. Inspection of buildings at periodic intervals to assure detection of deterioration and the need for repairs;
2. Inspection of plant equipment at periodic intervals to assure detection of maladjustment, wear, or impending breakdown;
3. Regular lubrication of bearings and moving parts in accordance with a lubrication plan;
4. Adjustments for wear, repair, or replacement of worn or damaged parts and the elimination of causes of deterioration;
5. Removal of sludge, chips, and cutting oils from equipment that will not be used for a period of time;

	<p>6. Taking necessary precautions to prevent deterioration caused by contamination, corrosion, and other substances; and</p> <p>7. Proper storage and preservation of accessories and special tools furnished with an item of plant equipment but not regularly used with it.</p> <p>MV’s maintenance program shall provide for disclosing and reporting the need for major repair, replacement, and other capital rehabilitation work for Capital Metro property in its possession or control.</p> <p>MV shall keep records of maintenance actions performed and any deficiencies in the Capital Metro property discovered as a result of inspections.</p> <p>MV is responsible for the preventative maintenance program on all of the building systems and the shop and garage equipment.</p>
<b>Contract Amount</b>	\$53,202,551.13

### 6.1.3 Ride Right LLC

Ref. No.	Capital Metro Contract No.	Award Date	Contract Term
3	132939	January 29, 2014	May 1, 2014 to September 30, 2019
<b>Contract Title</b>		<b>North Base Paratransit Services</b>	
<b>Contractor Name</b>		Ride Right LLC (dba Austin Ride Right LLC)	
<b>Maintenance-Related Scope of Services (Highlights)</b>		<p>Ride Right shall provide safe, reliable, and dependable paratransit services to customers in the Capital Metro service area. Unless explicitly stated as a Capital Metro responsibility, Ride Right will supply staffing, facility, small paratransit vehicles, and equipment necessary to operate a high-quality public transportation service.</p> <p>A minimum of forty-three (43) revenue vehicles are required for this work at startup. Ride Right shall be responsible for providing any additional revenue vehicles needed as spares. Spare revenue vehicles would allow for one or more of the revenue vehicles to be out of service for a maintenance routine, accident, or any other activity or condition that would not allow a revenue vehicle to be placed into service. These spare revenue vehicles must be of the same type, color, and configuration as the 43 revenue vehicles.</p> <p>Ride Right will take possession of Capital Metro revenue vehicles in accordance with the terms and conditions outlined in the contract. Capital Metro will transfer maintenance responsibilities to Ride Right, while Capital Metro maintains ownership of the vehicle assets. Ride Right will perform maintenance on Capital Metro fleet vehicles and on-board vehicle equipment to standards established by Capital Metro.</p> <p>Ride Right shall provide a description of the maintenance program. This plan shall include, at a minimum, preventive maintenance, mechanic training, shop safety, engine and transmission rebuilding, corrective repairs, warranty administration and body repairs for Capital Metro’s vehicle fleet.</p> <p>Ride Right shall be responsible for all vehicle maintenance and shall maintain records for same. Maintenance will be performed to original equipment manufacturer (OEM)</p>	

standards and/or Capital Metro’ written instructions or specifications. OEM or better replacement parts will be used.

Ride Right is responsible for all preventive maintenance, major repairs, minor repairs, running repairs, body work of any type, electronics systems, servicing, road calls, corrective repairs, and daily and detailed cleaning necessary to keep their vehicles in a safe, reliable, and well-maintained condition, assuring that all on-board systems are fully functional and operational. Contractor shall either perform all or part of the work using contractor’s personnel, and/or shall utilize subcontractor(s) to perform all or part of the work. In either case, the contractor is responsible for assuring that the work is performed by qualified personnel.

Ride Right shall schedule maintenance activities to assure a sufficient supply of safe, reliable, and clean revenue vehicle for service every day. The following are vehicle maintenance activities that are expected to be performed on a scheduled basis. The schedule of maintenance tasks is to be a component of the Maintenance Program supplied to CMTA by Ride Right. Examples of scheduled maintenance tasks are:

- PM inspections
- Engine fluid changes
- Transmission fluid changes
- Fire extinguisher inspection
- Texas State inspection
- Electronics (camera system) inspection

In the schedule of maintenance tasks, Ride Right shall state the mileage or time interval for each major task; e.g., PM Inspection at 3,000 miles or 60 calendar days.

Revenue vehicles shall not be operated in service if they are past due for a PM Inspection, or any safety related task.

Ride Right shall follow the maintenance schedule as prescribed by the manufacturer for the revenue vehicle and for how it is operated.

Ride Right shall maintain accurate records of defects found and work performed.

All repairs required from the PM Inspection are to be completed prior to the vehicle being returned to revenue service. Any exceptions must be approved in advance by CMTA and cannot affect safety and reliability. Failure to adhere to this schedule will result in a vehicle being removed from service by CMTA. Such action does not relieve Ride Right’s obligation to provide service under the terms of the contract.

Ride Right’s Preventative Maintenance program must be approved by CMTA and submitted for approval prior to contract start up.

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<b>Contract Amount</b>	\$24,556,227.95
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### 6.1.4 Herzog Transit Services, Inc.

Ref. No.	Capital Metro Contract No.	Award Date	Contract Term
5	137666	July 8, 2015	October 1, 2015 to September 30, 2022 (7 years)
<b>Contract Title</b>		<b>Commuter Rail—Operations, Dispatch &amp; Maintenance</b>	
<b>Contractor Name</b>		Herzog Transit Services, Inc.	
<b>Maintenance-Related Scope of Services (Highlights)</b>		<p>Herzog shall operate, manage, and staff Cap Metro’s transportation services in the Central Subdivision with train engineers and train engineer supervision.</p> <p>Herzog shall operate and maintain the Dispatch Control Center (DCC) located at North Operations facility at 9315 McNeil Road, Austin, Texas continuously (24 hours per day, 7 days per week, and 365 days per year). From the Dispatch Center, Herzog shall provide train dispatching services for the entire 112 miles of the CMTA Railroad (CMTY).</p> <p>Herzog shall perform track inspection and maintenance, special-work inspection and maintenance, bridge inspection and maintenance, culvert inspection and maintenance, grade-crossing surface inspection and maintenance, drainage ditch inspection and maintenance, vegetation control, and rail polishing on the contract Service Property as part of its maintenance way services responsibilities.</p> <p>Herzog shall enter five years of historical maintenance data into the Asset Management System within the first 60 days of service commencement date. This information may reside in several different databases and, in some cases, hardcopy form.</p> <p>Where additional historical data is required for scheduling of tests, inspections, and maintenance activities, such as rail and tie maintenance, Herzog shall be required to enter data from manual records.</p> <p>All required tests, inspections, and preventive maintenance activities shall be scheduled from the historical last date. All monthly, quarterly, and yearly required tests, inspections, and preventive maintenance records shall be delivered to the Agency electronically, monthly, quarterly, and annually.</p> <p>Herzog shall establish computerized work orders in the Asset Management System.</p> <p>Herzog shall provide CMTA weekly maintenance activity reports for all scheduled Maintenance of Way (MOW) work.</p> <p>Herzog shall maintain all of the Service Property main track and sidings at CMTA Class IV or higher.</p> <p>Herzog shall conduct all track and right-of-way inspections.</p> <p>Herzog shall perform inspections, maintenance, and test all wayside, interlocking, control point, highway-rail grade crossing warning system, communications, defect detectors and DMS signs located within limits of the Service Property in accordance with all applicable regulations, and recommended practices established by federal, state, and local bodies including but not limited to FRA, APTA, AREMA, MUTCD,</p>	

	<p>TXMUTCD, Original Equipment Manufacturer (OEM), suppliers and subsuppliers as part of the wayside signal and communications maintenance services.</p> <p>Herzog shall be responsible for all maintenance, and shall maintain records for same. Maintenance will be performed to original equipment manufacturer (OEM) and FRA standards and/or CMTA’s written instructions or specifications. OEM or better replacement parts will be used.</p> <p>Herzog is responsible for all OEM preventive and unscheduled maintenance including major repair, overhauls, running repairs, body work of any type, electronics systems, servicing, corrective repairs, daily and detailed cleaning as stated by OEM necessary to keep CMTA-furnished vehicles in a safe, reliable, and well-maintained condition, assuring that all on-board systems are fully functional and operational.</p> <p>Herzog shall develop and implement a Comprehensive Preventive Maintenance, Inspection and Cleaning Program which address FRA inspection requirements, CMTA, and OEM inspection, maintenance and cleaning standards, no later than 120 days after the Notice to Proceed. Included in the Preventive Maintenance Inspection and Cleaning Program will be all related inspection forms. This program shall be approved by CMTA and appropriately designed and maintained for CMTA fleet.</p> <p>Herzog shall inspect and maintain the fleet to the applicable FRA, CMTA and OEM standards.</p> <p>Herzog shall conduct monthly inspections of the NorthOps Facility. Herzog is responsible for the maintenance and repairs of the aboveground storage tank and fueling station.</p> <p>CMTA will provide an initial spare parts inventory. Thereafter, the Contractor is responsible for purchasing spare parts and ensuring there is sufficient quantity of spare parts on hand to meet fleet availability requirements.</p> <p>Herzog shall use the Spear Asset Management System provided by CMTA and shall retain all necessary records to document the work, track resource utilization, schedule work, and forecast requirements as set forth in Asset Management System.</p> <p>Herzog shall establish and implement a Training Program plan.</p> <p>Other services that will be performed by Herzog include incident management, notification of service delays, and recording all incidents and notification information in the CMTA-provided rail incident management system (OrbCad).</p>
<b>Contract Amount</b>	\$117,580,748.90

### 6.1.5 Rosemark

Ref. No.	Capital Metro Contract No.	Award Date	Contract Term
6	200070	May 23, 2016	August 6, 2016 to August 5, 2018 (2 years)
<b>Contract Title</b>		<b>Building and equipment maintenance at North Ops</b>	
<b>Contractor Name</b>		Ben Fitzgerald Real Estate Services, LLC, dba Rosemark	
<b>Maintenance-Related Scope of Services (Highlights)</b>		<p>Rosemark will provide 24-hour building and preventive maintenance services for the North Operations and Maintenance Facilities, which is located at 9315 McNeil Road, Austin, Texas.</p> <p>Rosemark is responsible for the ongoing routine and preventive maintenance of the facility buildings and equipment. Rosemark is responsible for the building maintenance of the Vehicle Maintenance and Administration building, Service Island building, bus parking lot, employee parking lot, rail-maintenance building, gates, fencing, yard lights, emergency generator, and all structures, equipment, and machines. Rosemark is responsible for the entire site, except for other contractors’ areas of responsibility such as vehicles, rail cars, security, IT data, phones, etc.</p> <p>Rosemark is responsible for the preventive maintenance of all building systems and the shop and garage equipment. Capital Metro will identify the preventive maintenance inspections required for the facility. Rosemark has full responsibility for the maintenance, proper use, and handling of shop, major shop equipment, air handling equipment, bus lifts, heaters, water piping, bus wash, air compressors, oil and grease delivery systems, or any such equipment. It is expected that this type of equipment will last throughout the term of this contract with proper care and maintenance by Rosemark. It is Rosemark’s responsibility to provide for the care and maintenance of all such equipment, including special tools.</p> <p>Capital Metro will provide and pay for water, sewer, and electrical utilities. Rosemark shall maintain all systems to insure safe and efficient use.</p> <p>Capital Metro provides the facility with some large capital-vehicle maintenance equipment. Equipment provided by Capital Metro will be maintained by Rosemark according to the OEM specifications.</p> <p>Other contractors’ equipment used for vehicles and rail operations shall be maintained by those contractors.</p> <p>All work repair orders and preventive maintenance tasks shall be documented in the Spear asset management system.</p>	
<b>Contract Amount</b>		Not to exceed \$1,578,188	

### 6.2 Condition Assessment of the Fleet and Facilities

I know conducted numerous visual inspections of Capital Metro’s revenue vehicles, maintenance facilities, yards, and passenger stations. The focus of these inspections was to personally observe the overall condition of the vehicle fleet, the maintenance work being performed, the equipment and

tools used to service the vehicles, the stockrooms and inventory holding locations, and the degree of cleanliness of the facilities. During the course of the audit, I know personnel formally toured each location and visited each of them several times and during most shifts. Repair, fueling, cleaning, and other major maintenance activities were observed and evaluated.

I know found that all contractors have the necessary facilities, personnel, tools, work orders/ instructions, and access to Spear to accomplish their responsibilities and provide high-quality services. The facilities and vehicles are well maintained and they present a professional and competent image of Capital Metro to its riders and other CMTA stakeholders.

### **6.2.1 Fleet**

The good physical and operating condition of the fleet, along with timely repairs and preventive maintenance inspections (PMIs), demonstrate that Capital Metro is able to define and administer a successful maintenance strategy, maintenance standards, and contract oversight. Highlights of the assessment by mode are presented below.

#### **6.2.1.1 Bus**

I know toured the two bus maintenance facilities located at 2910 East Fifth Street and 9315 McNeil Road. We observed maintenance in progress and inspected buses in the shop and in the yard. We also rode buses on several lines and reviewed repair and maintenance service data.

We found the Capital Metro bus fleet to be in good condition. Bus interiors and exteriors were consistently clean. Maintenance was being done according to CMTA standards.

#### **6.2.1.2 Rail**

I know toured the rail maintenance facility located at 9315 McNeil Road. We observed maintenance in progress, inspected cars in the shop and on the line, rode cars on the line, and reviewed maintenance service data. The MetroRail fleet exhibits a high level of reliability. Rolling stock appears to be in excellent condition. Interiors and exteriors of cars inspected in the shop and on the line were clean.

Riding cars on the line was uneventful; no problems were encountered. No delays were experienced and no defects were noticed in passenger-observable systems, e.g., propulsion, braking, air conditioning, doors, and public address.

#### **6.2.1.3 Paratransit**

I know toured the paratransit maintenance facility located at 509 Thompson Lane. We observed maintenance being performed on several paratransit vehicles. The fleet was found to be in good working condition and very presentable.

### **6.2.2 Facilities**

Overall, facility maintenance is very good. Maintenance facilities felt cramped and several people commented on the lack of space for expansion. However, even in tight quarters, vehicle servicing was being carried out and the facilities were generally clean, well lit, appropriately ventilated, and had all the necessary safety equipment (e.g., fire extinguishers, floor markings, etc.).

The administrative buildings are consistently clean. Building exteriors and grounds are well maintained.

### 6.3 Review of Monthly Reports Submitted by Service Providers

Iknow reviewed the monthly status reports of the following Capital Metro service providers:

- MV Transportation (Bus)
- MV Transportation (Paratransit)
- Ride Right
- McDonald Transit (Travis Transit Management)

We reviewed data primarily from the 2015 calendar year. The information provided in the reports was thorough and typically consisted of the following sections:

- Service Overview
  - Daily Operations Monthly Summary Report
  - Service Performance Indicators
  - On-Time Performance Action Plan
- Staffing Overview
  - Staff Roster
- Customer Service Overview
  - CCRs by Category for the Month
  - Total CCRs by Category—Rolling 13-Month Summary
- Safety & Training Overview
  - Monthly Accident Summary
  - Monthly Accident/Incident Log
  - Safety Action Plan
- Maintenance & Facilities Overview
  - Monthly Vehicle Failure Summary
  - Road Call Summary
  - PMI Report
  - Maintenance Action Plan
- Financial Reporting
  - Review of Invoice

The reports generally included action plans that addressed issues that had arisen during the previous month(s).

An interesting finding from these reports is that early in the contract term, new service providers often struggle to achieve the performance targets specified in their contracts. For example, MV Transportation, which started providing service on May 28, 2015, presented the following performance indicators for 4Q2015.



**Table 3.7 Key Performance Indicators for MV Transportation**  
*October to December 2015*

Exceeds Standard   
 Meets Standard   
 Below Standard   
 Far Below Standard

Month	Fixed Route/ UT On Time Performance >= 82.00 %	BRT On Time Performance >= 82.00 %	Miles Between Mechanical Road Calls > 5,500 Miles	Vehicle Accidents ≤ 0.98/100,000 Miles	Chargeable Complaint Rate ≤ 16/100,000 Boardings
October 2015	65.81%	74.39%	1,930	1.37	6.05
November 2015	64.98%	70.27%	1,997	1.23	7.92
December 2015	74.33%	77.71%	1,962	1.68	6.54
Rolling 13 Months	68.37%	74.12%	1,963	1.43	6.84

Source: MV Transportation Monthly Status Report, December 2015.

This pattern is typical during the first 6 to 18 months of a new contract as the services provider defines and implements its policies and practices.

The start-up issues encountered by a new service provider may be compounded by “cutting corners” from the previous provider, once the previous provider knows that his contract is being terminated.

### 6.4 Benchmarking Findings

Iknow analyzed the performance of the maintenance functions for bus, rail, and paratransit (demand response) by comparing Capital Metro with several similarly sized transit agencies. Because the focus of the 2016 Quadrennial Performance Review is on operations and maintenance, we analyzed data on Miles Between Road Calls (MBRC) that were submitted to the National Transit Database, Form S10 for Vehicle Miles and Form R20 for Mechanical Failures, for 2014. For Capital Metro, we used the annual average over the five-year audit period (2011–2015) and used only purchased (outsourced) transportation.

For the benchmarking cohort, we selected 11 members from the American Bus Benchmarking Group (ABBG). The ABBG was established on April 1, 2011, to provide a confidential forum for mid-sized bus organizations in America to learn from each other by comparing performance, sharing experiences, and identifying best practices. Capital Metro is a member of the ABBG.

The findings for bus, rail, and paratransit are presented in Tables 3.8, 3.9, and 3.10, respectively, and show that Capital Metro is in the bottom tier for bus and rail and about average for paratransit.

Table 3.8 **Bus Benchmark Comparison—Miles Between Road Calls (MBRC), 2014**

Transit Agency	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles Between Road Calls
Utah Transit Authority	977	112	16,466,614	15,121
Greater Cleveland RTA	1,278	52	15,471,663	11,633
Regional Transit Service—Rochester	71	39	1,239,632	11,269
Central Florida RTA	1,489	220	16,604,644	9,716
Pinellas Suncoast Transit	309	879	10,217,318	8,600
Spokane Transit Authority	647	258	5,911,102	6,532
OmniTrans (San Bernadino)	521	810	8,520,295	6,401
Rhode Island PTA	497	1,215	9,691,952	5,661
Lane Transit District	446	177	3,258,365	5,230
Fort Worth Transportation Authority	782	535	4,862,147	3,692
Niagara Frontier Transit Authority	951	1,986	10,547,659	3,591
<b>Capital Metro*</b>	<b>1,892</b>	<b>818</b>	<b>11,261,744</b>	<b>4,156</b>

Source: National Transit Database, Form S10 for Vehicle Miles and Form R20 for Mechanical Failures; Iknow analysis.  
 \*Capital Metro data is the annual average over the five-year audit period (2011–2015) and captures only purchased (outsourced) transportation.

Table 3.9 **Rail Benchmark Comparison—Miles Between Road Calls (MBRC), 2014**

Transit Agency	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles Between Road Calls
Utah Transit Authority	8	51	6,459,518	109,483
Greater Cleveland RTA	20	13	843,922	25,573
Niagara Frontier Transit Authority	3	64	917,943	13,701
<b>Capital Metro*</b>	<b>7.6</b>	<b>9.2</b>	<b>302,043</b>	<b>17,979</b>

Source: National Transit Database, Form S10 for Vehicle Miles and Form R20 for Mechanical Failures; Iknow analysis.  
 \*Capital Metro data is the annual average over the five-year audit period (2011–2015) and captures only purchased (outsourced) transportation.

Table 3.10 **Paratransit (Demand Response) Benchmark Comparison—Miles Between Road Calls (MBRC), 2014**

Transit Agency	Major Mechanical Failure	Other Mechanical Failure	Vehicle Miles	Miles Between Road Calls
Central Florida RTA	36	108	10,329,887	71,735
Pinellas Suncoast Transit	14	16	1,902,979	63,433
OmniTrans (San Bernadino)	15	45	3,584,043	59,734
Lane Transit District	28	2	1,631,016	54,367
Utah Transit Authority	57	8	3,150,828	48,474
Fort Worth Transportation Authority	202	42	4,206,443	17,240
Niagara Frontier Transit Authority	46	73	1,928,739	16,208
Spokane Transit Authority	106	131	2,761,372	11,651
Regional Transit Service—Rochester	20	4	247,853	10,327
Rhode Island PTA	199	321	3,931,409	7,560
<b>Capital Metro*</b>	<b>78</b>	<b>88</b>	<b>3,797,811</b>	<b>22,906</b>

Source: National Transit Database, Form S10 for Vehicle Miles and Form R20 for Mechanical Failures; Iknow analysis.

\*Capital Metro data is the annual average over the five-year audit period (2011–2015) and captures only purchased (outsourced) transportation.

## 7. Improvement Recommendations

This section presents the improvement recommendations for Capital Metro’s vehicle transit operation and maintenance functions. Its purpose is to satisfy Section 451.454(b)(2) of the State of Texas Transportation Code, which states one purpose of the audit is to provide “information to the authority to assist in making changes for the improvement of the efficiency and effectiveness of authority operations.”

Iknow’s recommendations are presented in four groups:

- Contracts
- Contract Oversight
- Systems and Documentation
- Vehicle Acquisition

### Contracts

*The importance of the specific terms and arrangements in Capital Metro’s contracts with its transit service providers to Capital Metro’s transit services cost and quality cannot be understated. Iknow’s analysis of CMTA’s major contracts have identified several strategies that can help Capital Metro obtain better maintenance-related services at lower costs.*

1. Define contract performance by primarily using higher-level, strategic performance indicators. We recommend using metrics such as customer satisfaction, repeat ridership, preventable accidents, and miles between road calls as some of these higher-level performance indicators.

We are aware of the monthly Customer Satisfaction Composite Index recently developed for the CMTA's Board of Directors. The Index includes actual results for customer complaints, on-time performance, passenger and vehicle accidents, and miles between road calls. We believe that this type of scorecard should be developed for all CMTA service providers and be used as the basis for contract compliance.

2. Set more aggressive goals for the strategic performance indicators. For example, pushing the target of Miles Between Road Calls from 5,500 miles to 10,000 or 12,000 miles (which is achieved at other similar transit authorities) will challenge contractors' maintenance staffs to think more creatively about how to care for the vehicle fleet.
3. Standardize these strategic metrics and performance targets across all vehicle modes and all transit services contracts.
4. Eliminate lower-level performance metrics that can have an adverse or negative impact on the strategic metrics. For example, by penalizing late arrivals, a driver who is stuck in traffic congestion may speed or drive recklessly to make up the lost time.

We acknowledge that in this specific example, there are contract clauses for Excusable Delays. Specifically, if a contractor failed to meet the on-time performance standard and it can be demonstrated that a particular route has an issue with the schedule (or was impacted by construction, a major accident, etc.), then Capital Metro staff can approve an exception for that route and the on-time performance will be recalculated without that route's data for the purpose of calculating incentives and disincentives. The point we are trying to make with this recommendation is that the performance metrics must be mutually supportive and aligned.

5. Eliminate many of the mandatory requirements in current contracts in order to give contractors more leeway in defining and establishing their own policies and practices for performing the work. For example, as discussed in Section 3.1, current CMTA contracts define a specific number of mandatory key staff positions, require Capital Metro to approve all new hires for these key positions, and assess financial penalties when vacant positions are not filled within sixty calendar days. Contractors should be able to staff their organizations as they see fit to satisfy the contract's performance goals.
6. Increase the size of the penalties for not meeting the contracts' performance goals and more rigorously enforce compliance.
7. Consider bringing back in-house some of the outsourced maintenance-related support functions and processes. These could include materials purchasing, logistics, inventory control, and PMI scheduling.
8. Consider breaking the current megacontracts into multiple contracts with smaller, more-defined scopes of work. This may open up more competition, lower prices, and encourage greater supplier diversity.

**Contract Oversight**

9. Assess the current staffing levels of the contract oversight function and add additional staff if more oversight is necessary to support contract compliance. CMTA may want to consider augmenting its staff with business intelligence, predictive analytics, data mining, and other skill sets to find and make changes to the contract terms and conditions to improve contractors' overall performance.

**Systems and Documentation**

10. Accelerate the upgrade or replacement of Spear. The current Spear system is scheduled to be upgraded or replaced in 2017 or 2018. Because this application is the primary tool for managing all of Capital Metro's assets, Capital Metro's asset maintenance is performed completely by contractors, and MAP-21 requirements will necessitate having robust documentation for all assets, we recommend accelerating Spear's upgrade or replacement.
11. Strengthen Capital Metro's document management/content management infrastructure. Maintenance-related content, including contract clauses, maintenance-related standard operating procedures (SOPs), work instructions (WIs), original equipment manufacturer (OEM) maintenance and repair manuals, and all other relevant documentation, should be complete, accurate, up-to-date, and accessible by all third-party contractors, either through Spear or a separate document management system.

**Vehicle Acquisition**

12. Fully consider the "cost of complexity" and the "cost of maintenance" in any decision to procure new vehicles and other capital investment. Specifically, develop adequate financial models for evaluating the complexity-related and ongoing maintenance-related costs, such as greater inventory carrying and obsolescence costs and greater training expenses.