4. FINANCING

Background

Public transit is typically operated on a very thin margin, with nearly all revenue being utilized for capital and operating costs. When looking at historical data for costs and revenues, they are often equal. While this may mean that all available funding was spent on needed service, it does not mean that all needed service was able to be provided. For future planning, it is important to understand not just what has been spent on service in the past, but the amount that would be needed to provide the level of service that is necessary to fully meet the needs in the state.

Prior planning efforts, such as those discussed in Chapter 1, have gauged future needs in various ways. The 2009 Iowa Passenger Transportation Study based future costs on a historic trend of capital and operating costs, as well as annual incremental costs associated with addressing unmet "baseline," or transit dependent, and "choice" demand. Baseline demand was defined uniformly for the state and would include increased service frequency for small and large urban fixed route systems, expanding daily service hours for large urban systems, and expanding daily regional paratransit trips. Choice demand would enhance service to the point that public transit travel times would be more competitive with travel by personal vehicle. The 2017 update to the State Transportation Plan, Iowa in Motion 2045, based its transit cost estimates off a combination of historic trends and the baseline demand identified in the 2009 study.

For this plan, the Transit Needs Survey conducted in March 2019 provided input from the State's 35 public transit agencies on the additional personnel, vehicles, and facilities needed to provide their desired level of service for the short-range horizon of 2030 and the long-range horizon of 2050. It is important to forecast what the costs to meet these needs may be and what amount of revenue is likely to be available. This chapter addresses that by forecasting costs based on historic operating costs along with anticipated staff, facility, and vehicle needs, and forecasting revenues based on historical funding levels. The most critical piece of information presented in this chapter is the shortfall between anticipated future costs and revenues. The chapter also includes potential revenue options to help close the gap between the two.

Historic Costs and Revenues

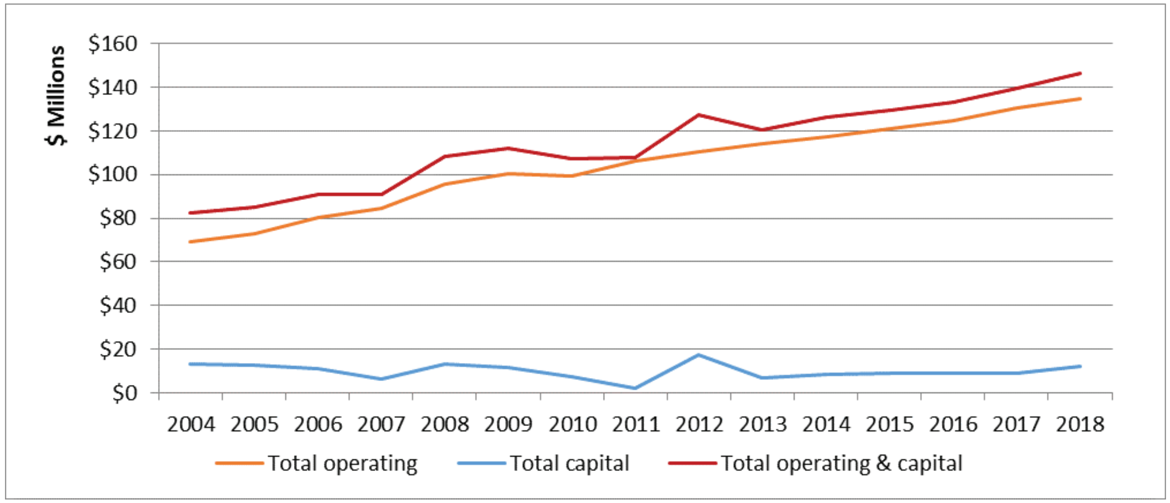
Costs and revenues for public transit from 2004 to 2018 were reviewed and average annual amounts were determined. Capital costs for public transit were calculated from reported totals of Section 5309 Capital Investment Program and Section 5339 Bus and Bus Facilities Formula Grant projects, Congestion Mitigation Air Quality (CMAQ) funding dedicated to transit vehicle replacements, and Public Transit Infrastructure Grant (PTIG) projects. For operations costs, reported annual operating costs from the transit agencies were used. Overall average annual costs between 2004 and 2018 are shown below in Figures 4.1 and 4.2. As shown, operating costs comprise a majority of the overall costs at 91.37 percent with capital expenditures representing roughly 8.63 percent.

Figure 4.1: Historic average annual transit operating and capital costs, 2004-2018 ($ millions)

	2004 - 2018 average costs
Capital	$9.824
Operating	$104.076
Total	**$113.900**

Source: Iowa DOT

Figure 4.2: Historic transit operating and capital costs (2004 – 2018)

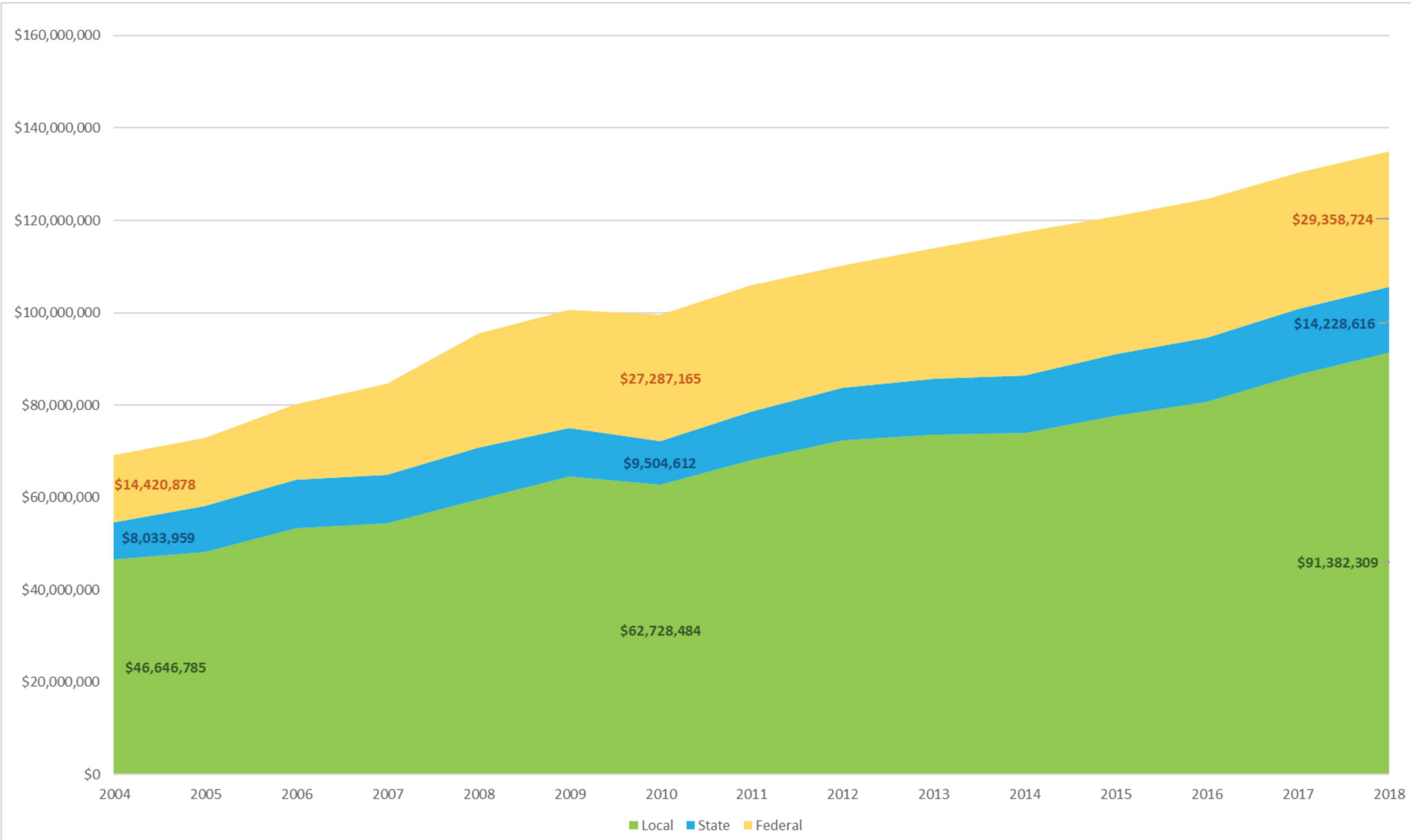


Source: Iowa DOT

Historic operating costs can also be broken out into federal, state, and local funding sources. Figure 4.3 shows this breakout for operating costs from 2004-2018. While the percentage of overall funding from each level varies from year to year, across time they are relatively consistent. The average annual percentage of operating costs funded by federal sources was 23.86 percent, state sources was 11.16 percent, and local sources was 64.98 percent.

As discussed in the introduction, transit revenues and costs are often the same, so the same historic information was used to understand trends of historic costs and revenues. These historic trends were used to help inform and validate projected costs from 2019 through the long-range planning horizon of 2050.

Figure 4.3: Historic transit operating funding (2004 – 2018)



Source: Iowa DOT

4.1. What are the anticipated costs?

The costs associated with nearly all goods and services typically increase over time, including those in transportation. The term for this increase in costs over time is inflation, which is often expressed as a rate or index. While the Construction Cost Index (CCI) is often referenced in the transportation industry for road construction, this modal Plan uses a few different indices to measure inflation for the construction of transit facilities, cost of transit vehicles, and compensation for transit employees.

The Producer Price Index (PPI) is utilized for calculating the inflation for transit facilities. Transit facilities could include everything from bus stops and park and ride commuter lots to vehicle storage buildings and maintenance bays. To approximate transit facility construction inflation rates, data from the United States Department of Labor – Bureau of Labor Statistics for new non-residential building construction in the Midwest from 2014-2018 was used for the basis of this calculation, which resulted in an inflation rate of 2.14 percent per year.

The PPI was also used as the index for calculating the inflation for transit vehicles such as the buses. To approximate these rates, data from Federal Research Economic Data – Economic Research Division for truck and bus bodies from 1982-2019 was used for the basis of this calculation, which resulted in an inflation rate of 2.41 percent per year.

Lastly, the Employment Cost Index (ECI) was utilized for calculating the inflation for paying transit personnel such as bus drivers and administrative staff. Data from the United States Department of Labor – Bureau of Labor Statistics for the change in total compensation and cost of labor between 2009 and 2019 was used for the basis of this calculation, which resulted in an inflation rate of 2.20 percent per year.

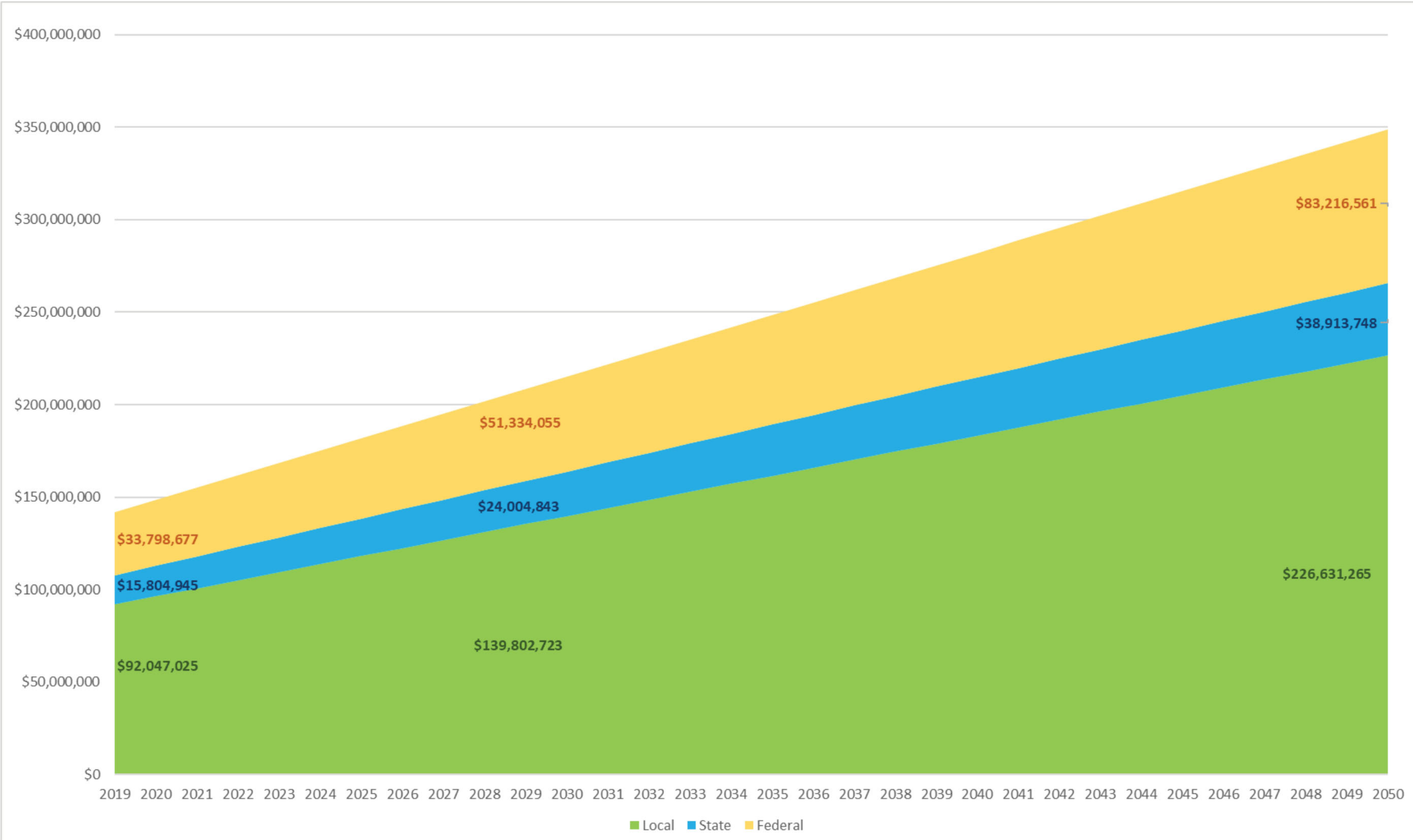
Projected Costs

Anticipating future expenses is a challenge in that it must include costs of products and services inflated into the future for reasons explained in the earlier sections of this chapter. Additionally, to fully account for anticipated needs, these cost forecasts must also consider projected service expansion, expanding the bus fleet, as well as adding additional personnel such as drivers to support those service expansions. The following sections break down the projected costs into operating expenses and capital expenses in order to describe the methodology used to calculate the cost projections.

Operating Expenses

Forecasting operating expenses represented a combination of a few different approaches, due to the fact that operations involve a wide variety of activities that occur within public transit. These activities include such things as personnel costs, including pay and benefits, fuel costs, and vehicle and building maintenance costs. Operating costs were largely projected based on historical expenditures on operations. Operations costs from 2004-2018 were reviewed, and the average annual percent change during this timeframe was 4.95 percent per year. This rate was applied to forecast operations costs for each year from 2019-2050. These annual costs were divided into federal, state, and local revenue sources based on the average historical percentage of each, as shown in Figure 4.4.

Figure 4.4: Forecasted transit operating costs (2019 – 2050)



Source: Iowa DOT

Personnel Needs

In addition to calculating operations costs based on historical trends, additional future personnel costs were calculated based on feedback provided by the transit agencies in the Transit Needs Survey conducted in March 2019. Responses in that survey included estimates for the number of additional administrative, maintenance, and driver personnel that are collectively needed to support transit operations now (i.e., current vacancies) and by the years 2030 and 2050.

Types of public transit employees:

- **Administrative:** employees responsible for conducting payroll, dispatching vehicles, marketing and outreach, planning, and analysis-related activities.
- **Maintenance:** employees performing basic repairs and maintenance actions on the vehicle or facilities, such as a mechanic.
- **Drivers:** employees responsible for operating revenue vehicles to pick up and drop off passengers.

The current annual salaries for these positions were estimated based on data from an Iowa Public Transit Association survey and Bureau of Labor Statistics State Occupational Employment and Wage estimates. In order to project these personnel costs, the analysis relied on the ECI trend discussed earlier to represent the inflated costs of hiring and employing projected personnel through 2050. The ECI trend includes both the costs of benefits and wages. ECI was estimated on a quarterly basis for a period between 2009 and 2019 for State and local government workers. The average ECI across this period was 2.2 percent, and this was used for the personnel cost inflation rate.

Figure 4.5 depicts the forecasted additional transit personnel costs through 2050. As shown, bus drivers represent the majority of all transit agency additional personnel needs. This trend was consistent between all sizes of transit agencies, regardless of whether they were in an urban or rural region.

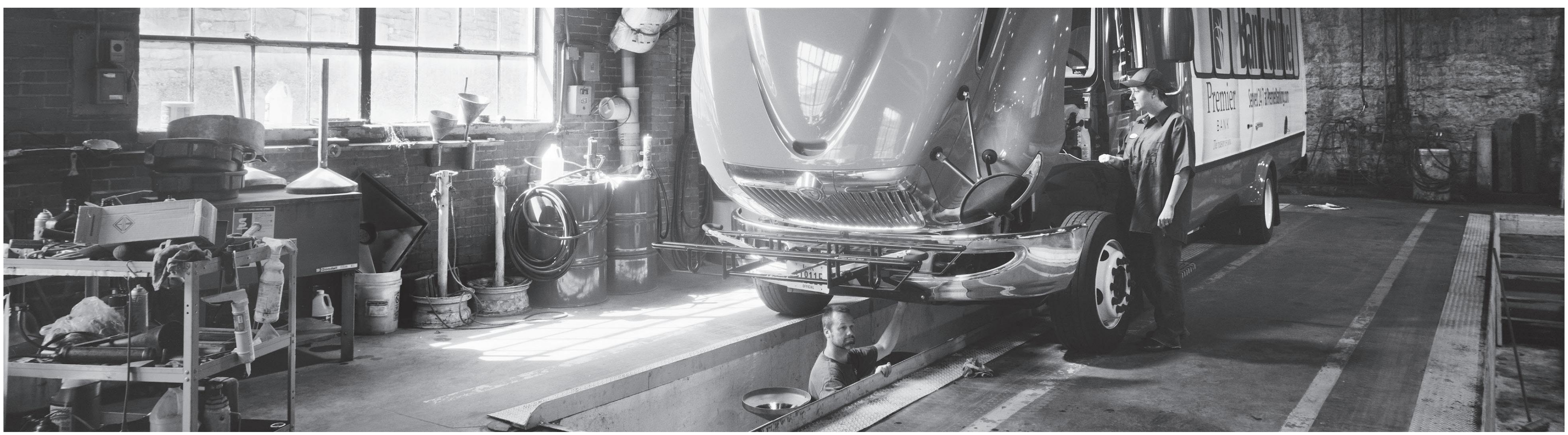
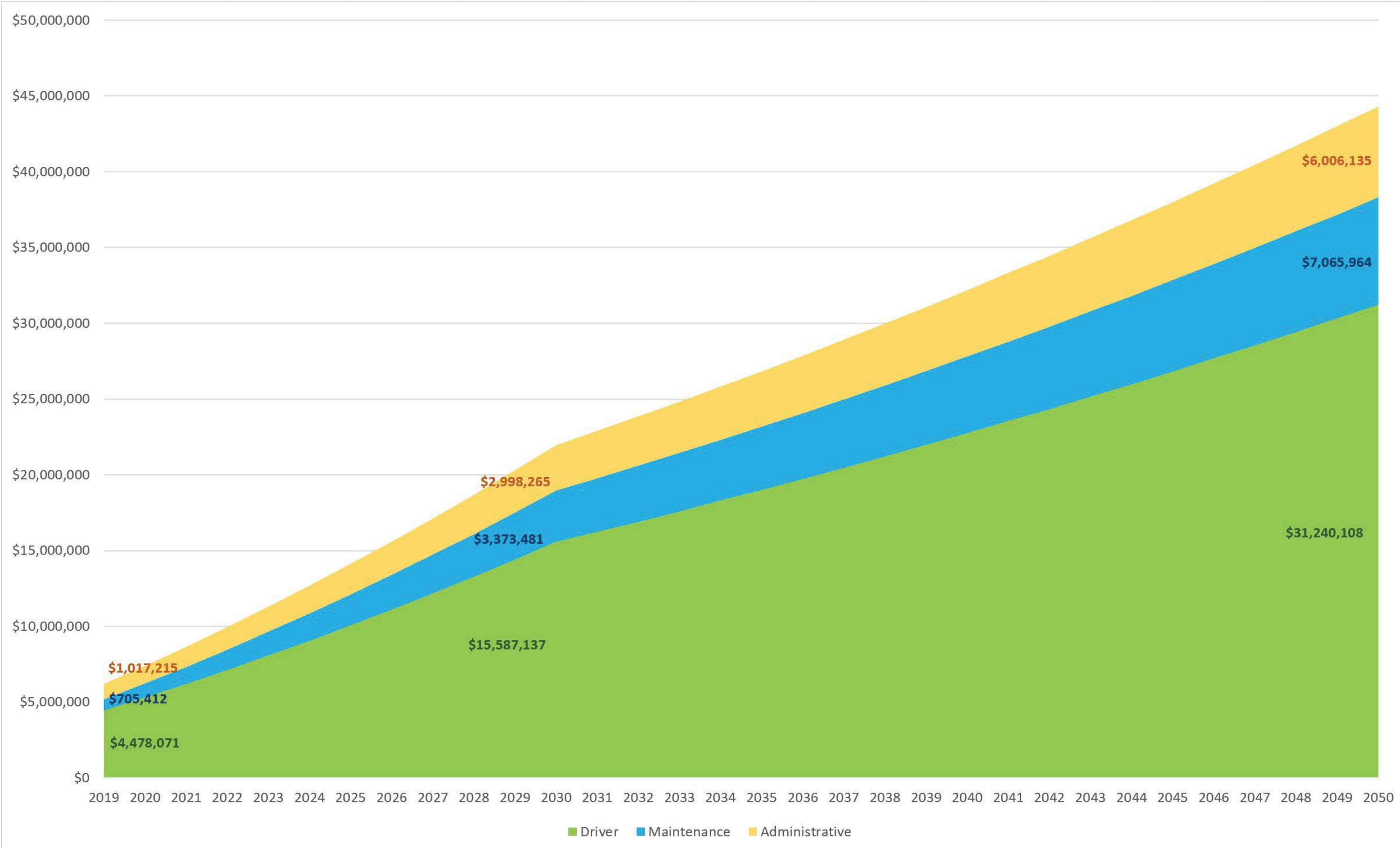


Figure 4.5: Forecasted additional transit personnel costs (2019 – 2050)



Source: Iowa DOT

Capital Expenses

Unlike operational costs, which reflect the day-to-day expenses of conducting transit activities, capital expenses represent investments in items such as infrastructure, vehicles, or equipment. This can include passenger vehicles like buses and vans, maintenance and storage buildings, maintenance equipment, bus stops and bus shelters, park and ride commuter lots, and administrative buildings. The capital expenses calculated for this Plan grouped these costs into two broader categories of facilities and vehicles, relying exclusively upon transit agency feedback to the Transit Needs Survey from March 2019.

Facility Needs

Transit facility needs were determined through results of the Transit Needs Survey from March 2019, which asked agencies to estimate the overall square footage needed by 2030 and 2050 by facility type. The number of needed bus shelters and park and ride locations were also requested.

Types of public transit facilities:

- **Vehicle storage:** areas and buildings that serve as storage and protection for transit vehicles such as buses.
- **Vehicle maintenance:** areas where basic repairs and maintenance activities take place. These can also include wash racks and wash bays.
- **Administrative office:** areas that support the internal staff operations of the transit agency, such as office activities.
- **Bus shelter:** enclosures to protect passengers as they wait at transit stops along established bus routes.
- **Park and ride:** parking lots where passengers can leave their vehicles while they take the bus. Park and ride lots can be constructed in a variety of configurations with surface types consisting of gravel (mainly in rural settings) or pavement.

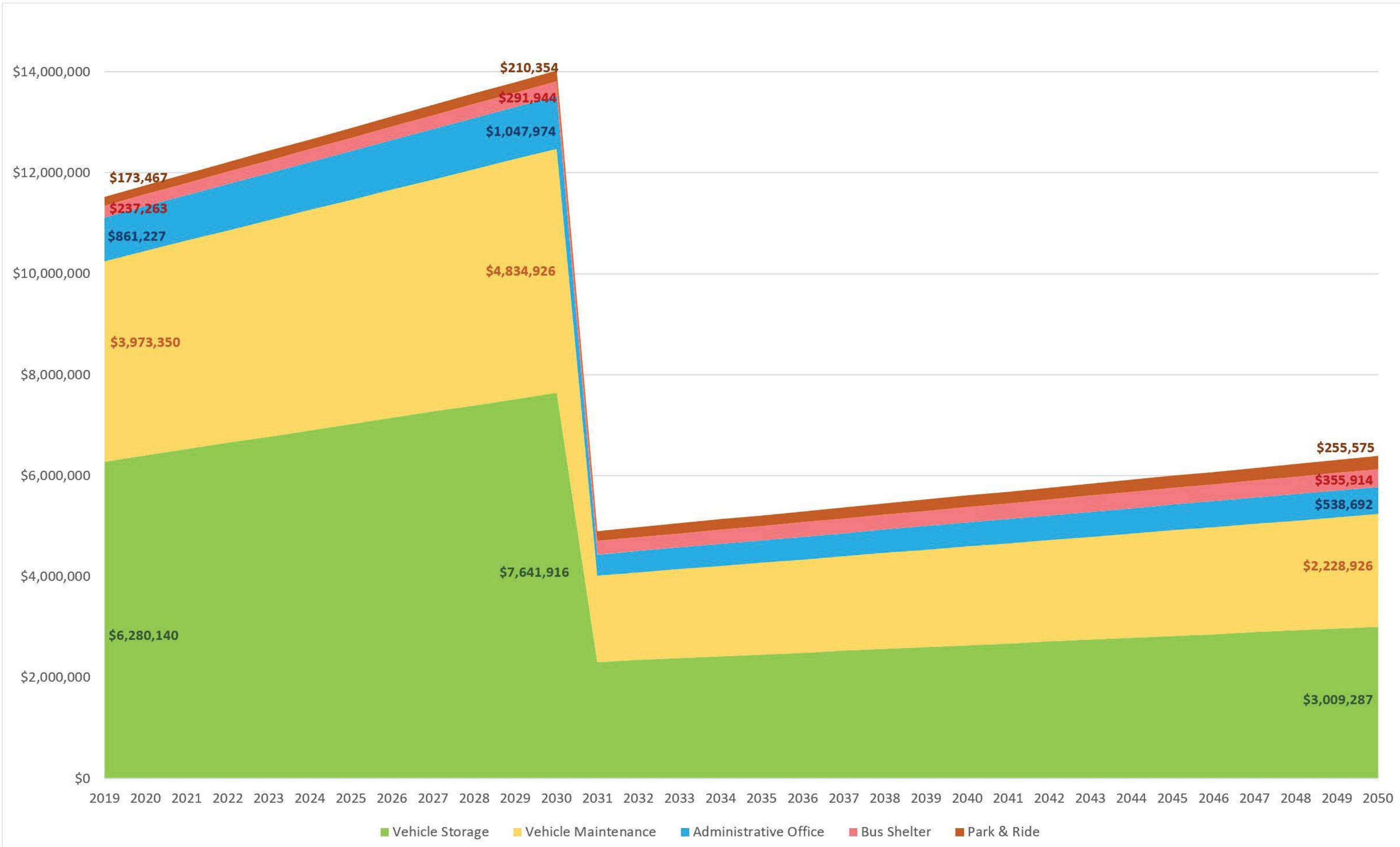
Average costs for bus shelters were determined through previous research conducted by a consultant partner, LT Leon Associates Inc., for a bus stop Americans with Disabilities Act (ADA) compliance assessment in 2018,[17] by averaging bus shelter costs from several agencies. Park and ride costs were derived from the 2014 Iowa Park and Ride System Plan and broken down further into gravel lots and paved lots. For the remaining facility types, a 2015 National Cooperative Highway Research Program (NCHRP) study[18] on transit facility construction cost estimates was utilized.

These facility costs were adjusted to account for future inflation by using an average of the PPI. A five-year average between 2014 and 2018 was calculated for a result of 2.14 percent. This rate was used to project the costs of the facility needs from the Transit Needs Survey to the short-term planning horizon of 2030 and the long-term planning horizon of 2050, as shown in Figures 4.6 and 4.7. These figures show the same information formatted in different ways.

17 LT Leon Associates Inc. Technical Memorandum “ADA Requirements for Transit Facilities”, April 4, 2018.

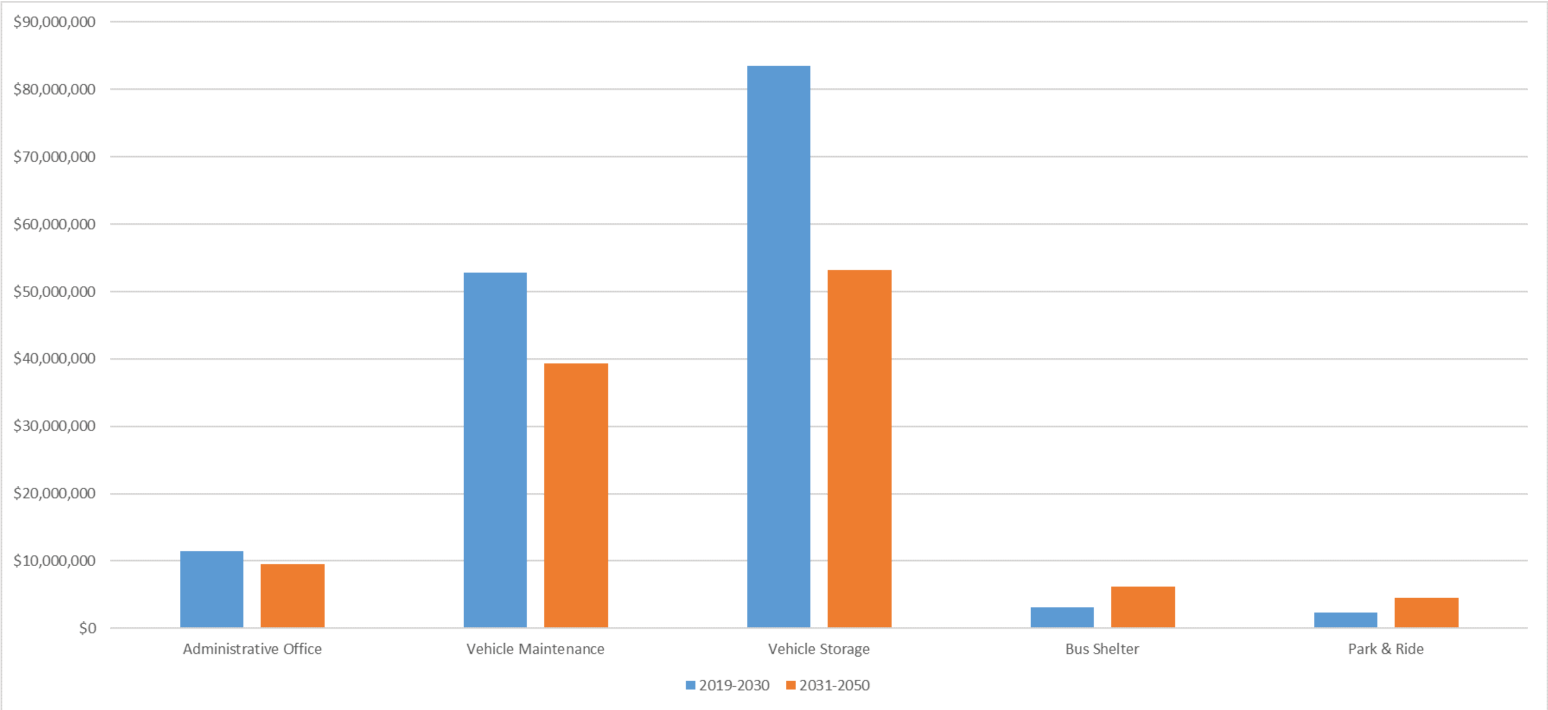
18 National Academies of Sciences, Engineering, and Medicine 2015, “Independent Cost Estimates for Design and Construction of Transit Facilities in Rural and Small Urban Areas,” https://www.nap.edu/catalog/22086/independent-cost-estimates-for-design-and-construction-of-transit-facilities-in-rural-and-small-urban-areas.

Figure 4.6: Forecasted transit facility costs (2019 – 2050)



Source: Iowa DOT

Figure 4.7: Forecasted transit facility costs (2019 – 2050)



Source: Iowa DOT

As can be seen in Figures 4.6 and 4.7, less needs are identified in the long-term timeframe of 2031-2050 than in the short-term timeframe of 2019-2030. This is based on survey results, which identified needed facility square footage by those dates, and facility needs were not blended between the short and long-range planning horizons. This indicates that facility needs were prioritized for the short-term future, and once most of those needs were met, additional facility needs would decrease into the future. The inverse is true for bus shelters and park and ride facilities, which show a higher need in the long-term timeframe. This may be related to continued growth in urban areas and the need to accommodate transit riders and commuters in those areas.

Another conclusion based on these results is that vehicle storage facilities are a significant need across all transit agencies. These types of facilities help maintain and protect transit vehicles such as buses, which prolongs their lifespan. Protecting and prolonging the life of vehicles will help decrease the cost of performing maintenance and repairs. As will be discussed, vehicle replacement needs represent a significant capital expense. As vehicle maintenance needs occur with increasing regularity, it drastically increases the overall operation costs described earlier in this chapter.

Vehicle Needs

Like the transit facilities, vehicle needs were also obtained from the Transit Needs Survey in March 2019. The survey asked how many of each type of vehicle agencies currently need, and how many additional vehicles of each type they will need by the years 2030 and 2050.

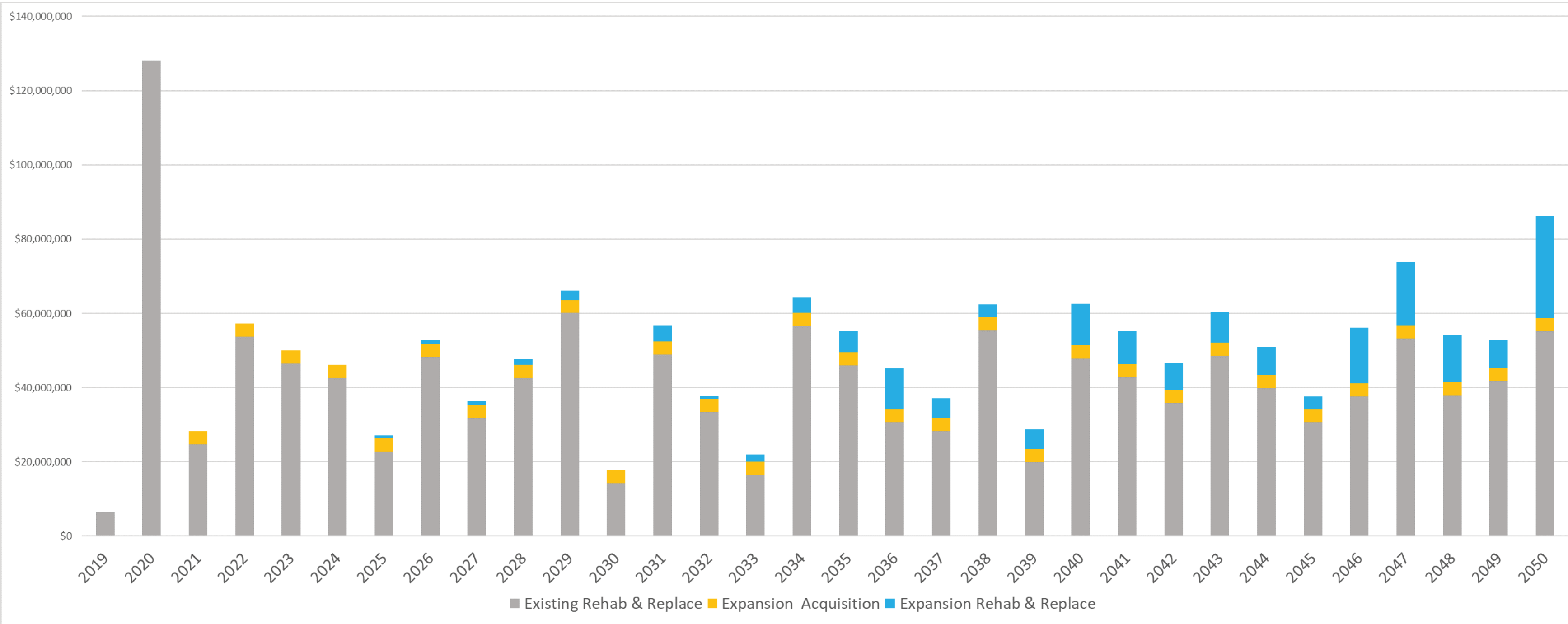
Types of public transit vehicles:

- **Sedan, Standard Van, Minivan, Conversion Van:** 7- to 15-passenger vehicles, which may or may not be wheelchair lift equipped, with useful life up to 100,000 miles and 4 years.
- **Light Duty Bus:** up to 25-passenger vehicles with useful life of 120,000 miles and 4 years.
- **Medium Duty Bus:** up to 30-passenger vehicles with useful life of 200,000 miles and 7 years.
- **Heavy Duty Bus:** up to 40-passenger vehicles with useful life of 300,000 to 350,000 miles and between 10 and 12 years.
- **Medium, Heavy Trolley:** up to 40-passenger vehicles like buses but exterior (and usually interior) designed to look like a streetcar from the early 1900s, and useful life of 13 years.

Once the quantity and types of vehicle needs were known and distributed evenly across the short-range planning horizon of now through 2030 and the long-range planning horizon of 2031 through 2050, this information was entered into an analysis tool designed to optimize future investment in transit vehicles. This software, called TERM-Lite, was developed by the Federal Transit Administration (FTA) Office of Budget and Policy and designed to account for typical rehabilitation, refurbishment, or replacement timelines for vehicles, while also factoring in vehicle condition and mileage of the existing vehicle fleet.

Figure 4.8 depicts the forecasted costs of replacing the existing transit vehicle fleet, in addition to vehicle expansion needs that the transit agencies indicated in the Transit Needs Survey. As shown, backlogged vehicles that are beyond their expected useful lives were front loaded into the forecast. This is based on an unconstrained funding scenario, although the reality is that a number of backlogged vehicles will not be replaced for a period of years after 2020. After 2030, expansion vehicle rehabilitation and replacements increasingly account for greater portions of overall vehicle costs.

Figure 4.8: Forecasted transit vehicle costs (2019 – 2050)



Source: Iowa DOT

Cost Estimate Conclusions

Overall future cost estimates are higher than historic average expenditure trends. This is primarily due to the incorporation of additional personnel, facility, and vehicle needs that were reported in the March 2019 Transit Needs Survey by the transit agencies. As discussed earlier, vehicle expenses in particular are much higher. This is partially due to the increasing numbers of transit vehicles that are continuing to be utilized beyond their useful life. These older vehicles result in much higher costs to maintain and repair over time, which increases operational costs. Older vehicles are also less fuel efficient compared to more modern vehicles and electric or hybrid buses. As such, vehicle replacement has become a higher priority within recent years, and this is expected to continue until the backlog for 2019-2020 has been completely addressed.

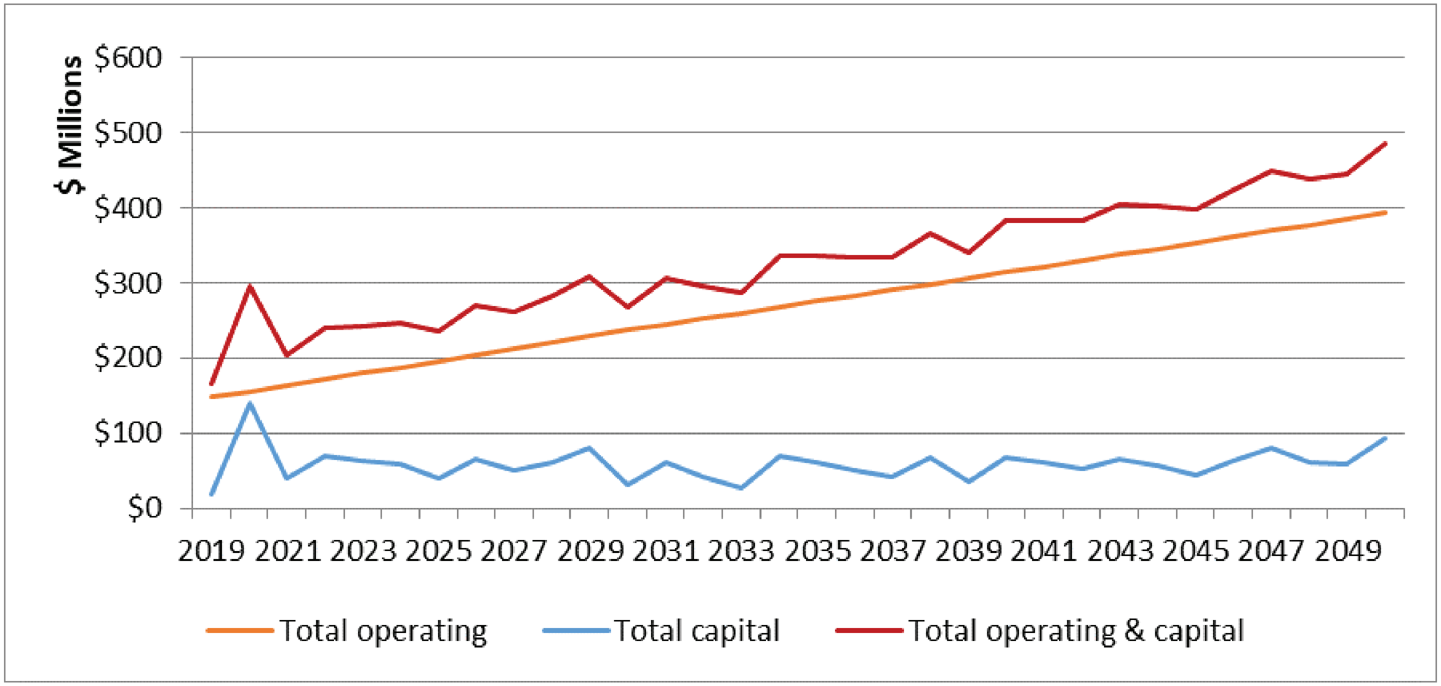
Figure 4.9 shows the average annual projected operating and capital costs for the short-term timeframe of 2019-2030 and the long-term timeframe of 2031-2050, as well as the average annual costs for the overall time period of 2019-2050. Figure 4.10 depicts the overall forecasted costs, which includes operating and capital expenses. This cost forecast will be compared to the forecasted revenue (discussed next in Section 4.2) in Section 4.3, which examines the overall shortfalls. Understanding the shortfalls will assist with identifying potential mechanisms to generate additional revenue.

Figure 4.9: Average annual projected transit operating and capital costs ($ millions)

	2019 - 2030 average annual costs	2031 - 2050 average annual costs	2019 - 2050 average annual costs
Capital	$59.770	$57.933	$58.622
Operating	$192.068	$318.358	$270.999
Total	**$251.837**	**$376.290**	**$329.620**

Source: Iowa DOT

Figure 4.10: Forecasted transit operating and capital costs (2019 – 2050)



Source: Iowa DOT

4.2. What is the expected revenue?

Projected Revenue

Operating Funding

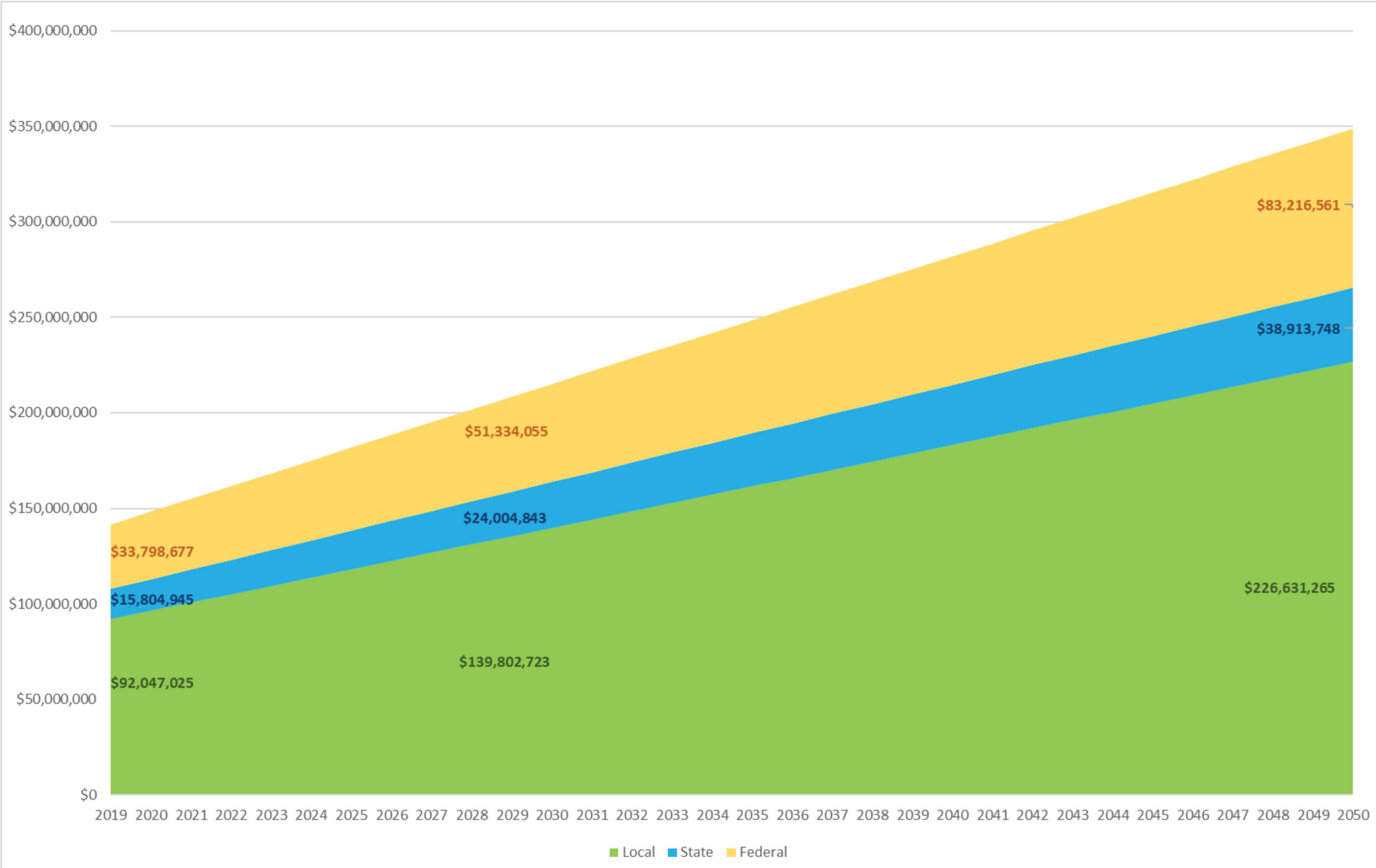
Operational funding was calculated by using historical trends in federal transit assistance, state transit assistance, and local funding sources between 2004 and 2018. This trend was projected out to 2050 in order to forecast expected funding amounts, as shown in Figure 4.11. On average, federal funds account for approximately 23.86 percent of the budget, while state funds account for 11.16 percent. The remaining portion is covered by local funding at 64.98 percent of total funding.

Federal Transit Assistance
The Federal Transit Administration of the U.S. Department of Transportation administers programs offering financial assistance for capital, operating, planning, and training assistance of local public transportation. For operations, the two most significant sources of funding are Urbanized Area Formula Funding (Section 5307) and the Rural Area Formula Funding (Section 5311).

State Transit Assistance (STA)
Iowa devotes an amount equal to four percent of the fees for new registration collected on sales of motor vehicle and accessory equipment to support public transit. Funding is distributed by an STA formula that is based on each transit system's performance during the previous year in terms of rides, miles, and local funding support. These formula funds are usable for support of any operating, capital, or planning expenses related to the provision of public passenger transportation.

Local Transit Funding
Local funding support for transit includes fares or contributions received from riders, revenues from contracts with social service agencies, student fees, and taxes levied by local cities and counties. Cities are allowed under the Iowa Code to levy a dedicated property tax for transit of 95 cents per $1,000 assessed valuation. Other local tax funding comes from general fund levies and "trust and agency" levies.

Figure 4.11: Forecasted transit operating funding (2019 – 2050)



Source: Iowa DOT

Capital Funding

Funding for capital projects and expenditures was calculated by examining historical trends in Bus and Bus Facilities Formula Grants, Discretionary Competitive funding, Public Transit Infrastructure Grants (PTIG), and Congestion Mitigation and Air Quality (CMAQ) funding. There are some additional funding programs that can fund public transit vehicles and infrastructure. These include competitive grants through Iowa's Clean Air Attainment Program (ICAAP), and Surface Transportation Block Grant (STBG) funds that are distributed to the State's metropolitan planning organizations (MPOs) and regional planning affiliations (RPAs). These sources have not been included in the revenue projections as the amount spent for transit projects varies considerably from year to year.

5339 Funding
Bus and Bus Facilities Formula Grants (Section 5339) are used to finance capital projects to replace, rehabilitate, and purchase buses and related equipment, or to construct bus-related facilities. This is a formula program with state apportionments based on population size; the funding is provided as a statewide appropriation for small urban and regional transit systems. Iowa receives individual allocations for each large urban transit system serving populations between 50,000 and 200,000, but the large urban funds are pooled since individual allocations would not allow for bus purchases on an annual basis. All funds are spent on vehicle replacements rather than on expansion vehicles or bus-related facilities and are distributed utilizing the vehicle rankings of the Public Transit Management System (PTMS), which prioritizes bus replacements based on age and mileage of vehicles. Transit systems serving populations of more than 200,000 receive direct allocations from the Federal Transit Administration and are not included in the statewide distribution through PTMS.

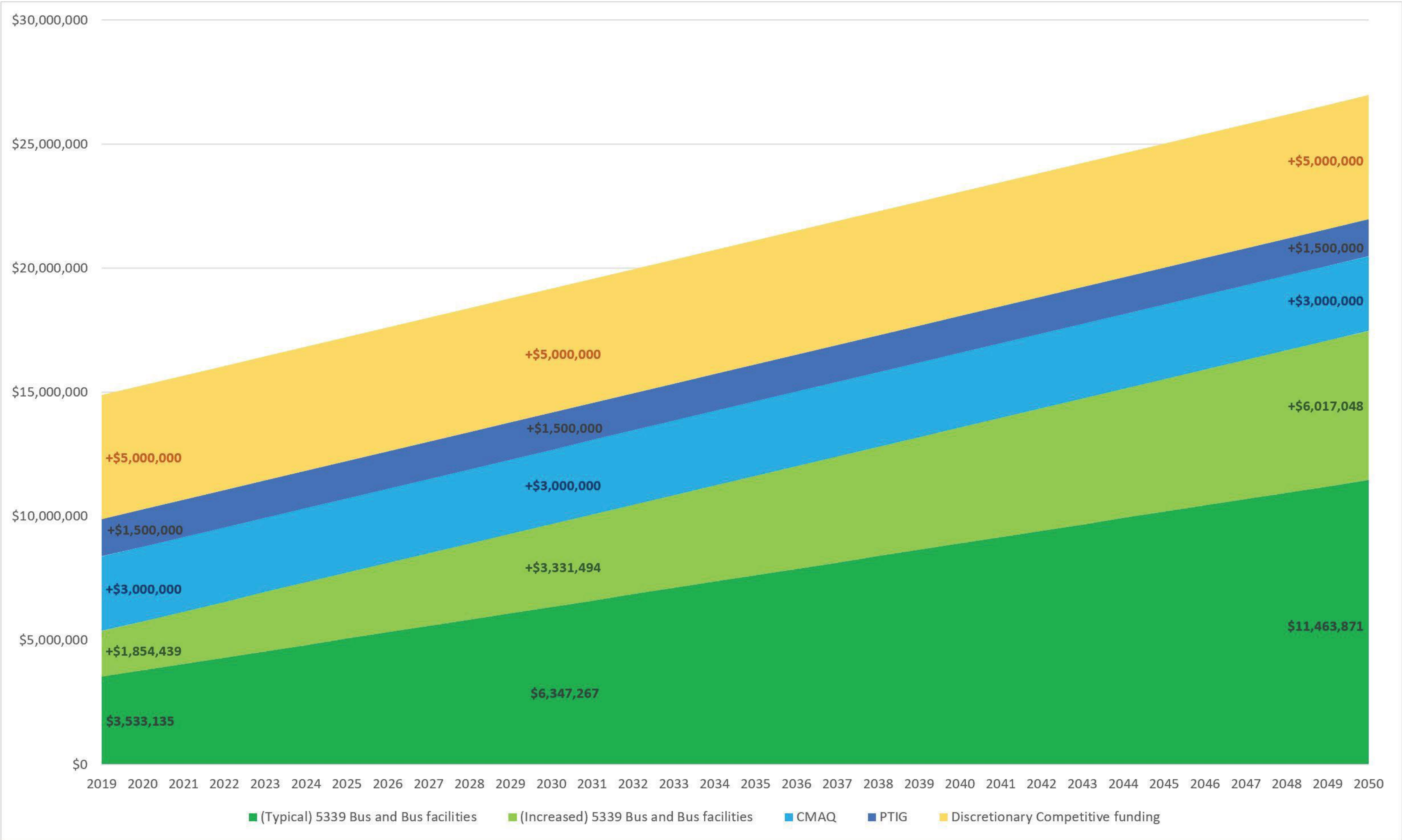
Discretionary Funding
Discretionary competitive funding is a federal funding source in which all states compete for funds nationally to be used for bus replacement. Should Iowa be awarded this funding, PTMS is utilized to prioritize applications.

Congestion Mitigation and Air Quality (CMAQ) Funding
CMAQ funds Iowa's Clean Air Attainment Program (ICAAP) and helps finance transportation projects and programs that result in attaining or maintaining federal clean air standards. A portion of Iowa's CMAQ funding is awarded through a competitive grant program; transit improvements such as construction of new facilities and bus expansion projects are eligible expenses. In recent years, Iowa has also allocated $3 million annually to statewide bus replacement. The $3 million annual allocation is the only portion of Iowa's CMAQ funding that is shown in the projections; competitive grant awards for transit are not included.

Public Transit Infrastructure Grant (PTIG)
This program is funded by an annual appropriation by the state legislature to fund some of the vertical infrastructure needs of Iowa's transit systems. Projects can involve new construction, reconstruction, or remodeling, but must include a vertical component to qualify. Projects are evaluated based on the anticipated benefits to transit, as well as the ability to complete the projects quickly.

Figure 4.12 shows the forecasted transit capital funding to the year 2050. As shown, PTIG, CMAQ, and Discretionary Competitive funding sources have been held constant at $1.5 million, $3 million, and $5 million, respectively, through the long-term planning horizon of 2050. Historical trends for Section 5339 funds have generally increased over time and were projected to continue to do so through 2050. Starting in 2018, these funds have received an additional annual boost through congressional appropriations. This is reflected in Figure 4.12 as increased 5339 funding and projected to 2050, but is shown separately from the typical 5339 funding forecast due to the limited trend information available.

Figure 4.12: Forecasted transit capital funding (2019 – 2050)



Source: Iowa DOT

Funding Scenarios

The operating and capital revenue projections discussed previously were combined and projected out to 2050. Average annual Iowa DOT revenues (Figure 4.13) over the life of the Plan were then calculated for two different scenarios, which differ based on availability of PTIG funding, discretionary funding, and the inclusion of additional Section 5339 funding. PTIG funding is dependent on an annual appropriation from the state legislature. As mentioned earlier, available capital funding from discretionary funds and Section 5339 funds have varied in the past. Discretionary funding is dependent upon Congressional appropriation and competitive with other states across the nation, making this an unpredictable source of funds. Additionally, Section 5339 funding has increased significantly in recent years; however, it is unknown if this increased amount will continue into the future.

Given the variability of these two sources of funds, only CMAQ and the pre-2018 Section 5339 funding levels were used to forecast a baseline or typical funding scenario. PTIG, discretionary funds, and the increased amount of Section 5339 since 2018 were added as part of an increased funding scenario in order to generate an alternative funding scenario for comparison. Having two scenarios of typical funding and optimistic funding levels helps illustrate the potential range of public transit revenue that Iowa can expect to receive in the future.

Figure 4.13: Average annual public transit revenue, 2019 - 2050 ($ millions)

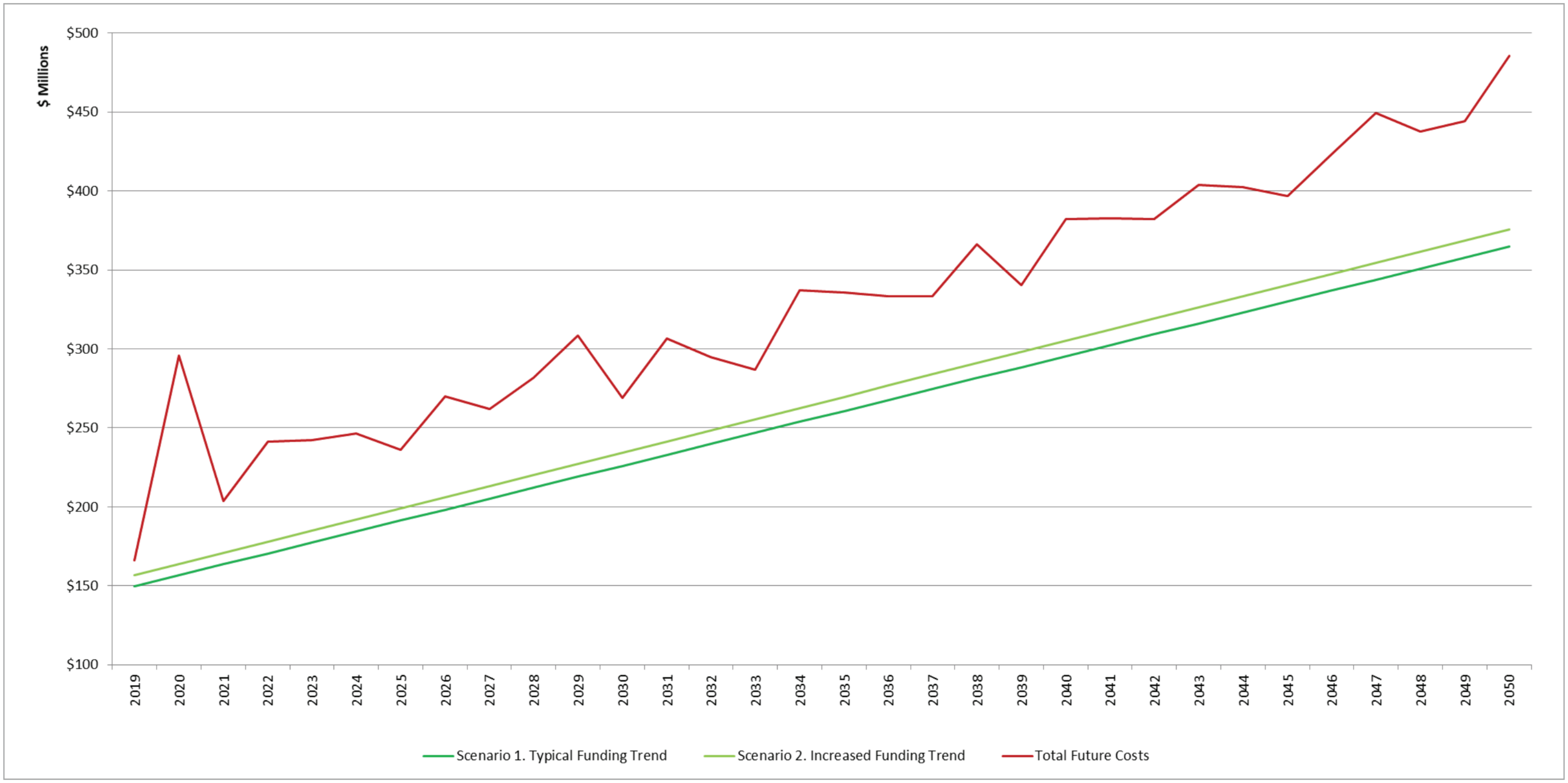
	Average Annual Iowa DOT revenue
Scenario 1. Typical funding	$255.70
Scenario 2. Increased funding	$266.14

Source: Iowa DOT

4.3. What are the shortfalls?

The anticipated future costs and expected revenues are compared in order to identify financial gaps. These gaps represent shortfalls in transit funding that will need to be addressed in order to support the operating and capital investments that have been identified as priorities. As shown in Figure 4.14, total future costs exceed available revenues in both funding scenarios.

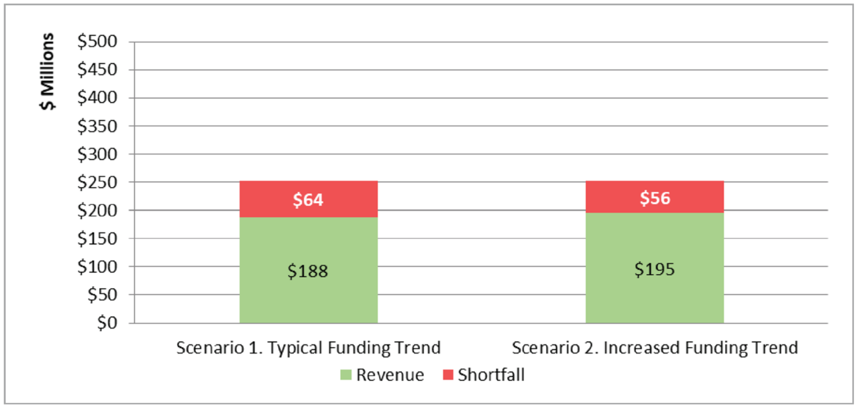
Figure 4.14: Forecasted costs and funding scenarios (2019 – 2050)



Source: Iowa DOT

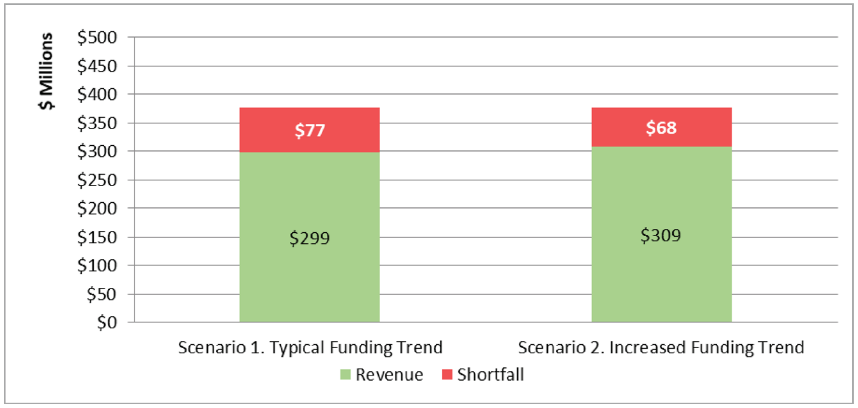
Figures 4.15 and 4.16 represent the average annual funding shortfalls expected to occur by the short-range and long-range planning horizons. Regardless of the funding scenario, these shortfalls are expected to increase as time goes on. Between 2019 and 2030, the optimistic increased funding estimate leaves an average shortfall of $56 million, while the conservative estimate of typical funding leaves a shortfall of $64 million. By 2050, these shortfalls will increase to $68 million and $77 million, respectively.

4.15: Forecasted average annual funding shortfall (2019 – 2030)



Source: Iowa DOT

Figure 4.16: Forecasted average annual funding shortfall (2031-2050)



Source: Iowa DOT

Implications of the shortfall

- Expanding storage facilities will decrease the overall operational costs of maintaining vehicles over time. However, the number of vehicles beyond useful life right now may result in vehicles being prioritized over facilities.
- Impacts to operational funding may affect facilities or vehicles in terms of deferred maintenance and the hiring or retention of personnel.
- Decreasing staff levels as a cost saving measure, particularly drivers, will result in a decrease to overall transit service, further limiting farebox revenue and additional sources of funding.
- If shortfalls in transit funding are not addressed, priority operating and capital investments cannot be supported.

4.4. Potential Revenue Sources

With the funding shortfall and its impacts noted in the previous section, it becomes imperative to examine other potential sources of revenue. Additionally, it is prudent to continuously evaluate alternative funding sources for public transit and passenger transportation services for their advantages, disadvantages, and overall viability. This is particularly important as circumstances change, or, as in the case of this Plan, agencies work to rightsize transit service and reduce the number of capital assets that are beyond their useful lives.

Input was gathered from a variety of stakeholders on potential mechanisms or enhancements that could be made to more efficiently support Iowa's public transit system and to rightsize transit service. This feedback resulted in the list shown in Figure 4.17, which indicates the type of mechanism proposed, as well as potential advantages and disadvantages of implementing it.

Figure 4.17: Potential revenue sources

Type of Financing	Description/Mechanism	Advantages	Disadvantages
Population Threshold for Regional Transit Districts (Iowa Code 28M.2)	Reduce population threshold for Regional Transit District (RTD) formation for counties from 175,000 to 90,000. The current RTD population threshold restricts regional districts to Polk County and contiguous counties in central Iowa and Linn County and contiguous counties in eastern Iowa. Reducing the population threshold would allow an additional seven counties to collaborate on transit funding through the formulation of a multi-city/county RTD to do so.	• Increases the number of authorized RTDs.	• Requires modification to existing legislation.
Property Tax (Iowa Code 28M.5)	Increase the property tax cap from $0.95 to $1.45 per $1,000 of taxable valuation for Regional Transit Districts and municipal transit levies. Two cities are currently capped (Iowa City and Windsor Heights), and more will reach the cap in the future.	• Collection and administration process already in place. • Broad coverage.	• Can be an equity issue when costs are passed on to homeowners. • Generally unpopular with taxpayers.
Local Option Sales Tax (Iowa Code 422B)	Enable Regional Transit Districts (RTDs) to levy local option sales taxes to meet the public transportation needs of those who work and live in their district. This taxing authority can be used in conjunction with a number of infrastructure projects, but often is associated with transportation. Iowa RTDs, currently only available to counties with at least 175,000 residents, have the power to implement a property tax of up to 95 cents per $1,000 of assessed value; municipalities also have this authority, but it cannot be used in conjunction with an RTD levy.	• Collection and administration process already in place. • Revenue generated locally and available for local public transit priorities.	• Not proportional to transit system usage. • Fluctuates with economic cycles.

Type of Financing	Description/Mechanism	Advantages	Disadvantages
Rebuild Iowa Infrastructure Fund (RIIF) (Iowa Code 8.57(5))	Sustain the Rebuild Iowa Infrastructure Fund (RIIF) to help with a variety of transit projects including maintenance facility improvements, construction of bus storage buildings, and repair of bus shelters. In the past, RIIF expenditures have been reduced or eliminated for some programs; sustaining this amount of funding would help ensure continued transit infrastructure improvements.	• Collection and administration process already in place.	• Not guaranteed • Used for several different competing purposes • Dependent on collection of gaming revenues
State Transit Assistance (STA) (Iowa Code 321.145(2)(a) (1))	Increase State Transit Assistance (STA) standing appropriation from 4 percent to 5 percent (equivalent to the state sales tax) of the fees for new registration collected on sales of motor vehicle and accessory equipment to support public transportation. Most of this funding is distributed by the STA formula that is based on each transit system's performance during the previous year in terms of rides, miles, and local funding support. These formula funds are usable for support of any operating, capital, or planning expenses related to the provision of public passenger transportation.	• Collection and administration process already in place.	• Many competing needs.
Vehicle Rental/ Leased Car Sales Tax	Add vehicle rental/leased car sales tax to support public transit. Iowa currently devotes a portion of new vehicle registrations to fund public transit. Vehicle rental and lease taxation would place a premium on the usage of such personal transportation options compared to other more cost-effective modes of transit.	• Collection and administration process already in place. • Provides revenue source based on ability to pay. • Proportional to cost of vehicle.	• Requires enabling legislation • Not proportional to transit system usage. • May discourage rental/leasing of vehicles. • Fluctuates with economic cycles.
TNC Tax	Establish Transportation Network Company tax. Research shows that TNCs increase the number of vehicle trips by users and draw riders away from alternative transit and mobility options, thus decreasing the operating revenue of the bus systems. Taxation of TNC usage would balance the return-on-investment of the public transportation infrastructure versus the net negative impacts of congestion and increased road surface deterioration. Additionally, TNC usage and ridership data would be shared with the state for planning purposes in order to more effectively analyze trends in transportation infrastructure and forecast future needs. Adequate planning becomes a challenge when vital transportation data is obscured or denied outright.	• Discourages single-occupant vehicle usage. • Enables better data sharing of road usage by TNCs.	• Requires enabling legislation. • Fluctuates with economic cycles.

Sources: Iowa DOT, Iowa Public Transit Association

4.5. Economic Impact of Public Transit

In addition to public transit being a vitally important service for residents of the state, part of the justification for considering additional funding mechanisms such as those discussed in the prior section is the positive economic impact that public transit provides. Being cognizant of transit's impact on society, commerce, and the public good is important in a general sense; in the case of this Plan, it will also serve as direct input into one of its long-term strategies described in Chapter 3. This strategy is categorized under the 'Funding Goal Area' with the stated intent to "Conduct a benefit-cost analysis or economic impact study for all transit services and projects in order to measure the impact and overall benefit to social welfare."

Conducting a robust benefit-cost analysis is not the intent of this section, as it is already a stated strategy to be implemented after the publication of this plan. However, background research was done in order to better understand the value of doing this, as well as understanding the necessary inputs and methodology so that this could be tailored to Iowa's public transit system. The study discussed below is presented as an example of research that helps quantify the economic benefit of public transit; further research would be needed to fully address this topic for Iowa.

Background research

The study used to inform the proposed strategy on benefit-cost analysis and justify investment in the public transit system was conducted by the Upper Great Plains Transportation Institute of North Dakota State University and published by and for U.S. DOT's National Center for Transit Research (NCTR) in 2014, titled "Cost-Benefit Analysis of Rural and Small Urban Transit."[19] The intent of the study was to create a methodology for quantifying the benefits of public transit services in smaller communities. This type of quantification of services has generally gone unaddressed and unmeasured in past studies as most have focused on much larger urban transit systems. Given the smaller size of Iowa's transit systems in comparison to places like San Francisco, New York, and elsewhere, as well as the coverage of Iowa's regional transit systems across wide swaths of rural area, a study like North Dakota State's research is very applicable for informing this Plan and any subsequent benefit-cost analyses. For Iowa, the "small urban areas" referenced in the study would include service in metropolitan areas between 50,000 and 200,000 population, and the "rural areas" would include Iowa's small urban and regional transit systems.

According to Dr. Jeremy Mattson, a researcher from North Dakota State University, their study of small urban and rural transit systems revealed benefits that could be quantified and categorized into three types:

- **Transportation cost savings:** costs that would have been incurred if the transit rider used a different mode in absence of transit
- **Low-cost mobility benefits:** benefits of trips made that would otherwise have been foregone in the absence of transit
- **Economic impacts:** economic activity resulting from the existence of transit operations

19 "Cost-Benefit Analysis of Rural and Small Urban Transit", 2014, Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University: https://www.nctr.usf.edu/wp-content/uploads/2014/07/77060-NCTR-NDSU031.pdf

In Figure 4.18, an overall summary of transit benefits and costs are monetized and presented on a per trip basis. The total benefit amount was divided by the total cost amount in order to determine the benefit-cost ratio, which can then be compared between small urban and rural transit services. Figure 4.18 highlights the national results from North Dakota State study and can serve as a rough approximation or starting point when attempting to perform a similar analysis in Iowa.

As shown, while transit service in rural areas showed a much higher benefit per trip compared to small urban service, it was the cost to operate transit service in rural areas that brought the benefit-cost ratio down and tilted it in favor of small urban areas. That being said, it should be noted that both types of transit service resulted in a ratio greater than 1.0, which indicates that there is a positive return on investment for transit service. In other words, for every dollar spent on public transit, it provided greater than one dollar in benefit in return.

Figure 4.18: National summary: transit benefits, costs, and their analysis results[20]

Transit Benefits	Small Urban Areas Benefit per Trip	Rural Areas Benefit per Trip
Vehicle cost savings	$0.32	$0.38
Chauffeuring cost savings	$0.56	$1.21
Taxi cost savings	$1.04	$1.34
Travel time cost savings	-$0.47	-$0.58
Accident cost savings	$0.07	$0.15
Emission cost savings	-$0.01	-$0.49
Cost of foregone medical trips	$4.16	$6.65
Cost of foregone work trips	$4.24	$5.00
Cost of other foregone trips	$0.52	$0.83
Total Transit Benefits	*$10.43*	*$14.49*
Transit Costs	**Cost per Trip**	**Cost per Trip**
Operational expenses	$4.49	$10.78
Capital expenses	$0.33	$1.03
Total Transit Costs	*$4.83*	*$11.81*
Benefit-Cost Ratio	***2.16***	***1.20***

Source: North Dakota State University – Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute

20 "Measuring the Benefits of Transit Services", May 23, 2019 Iowa Passenger Transportation Summit, Jeremy Mattson, PhD, Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University.

While the results may address the 'Transportation cost savings' and 'Low-cost mobility benefits' categories for quantifying the overall benefit of public transit, the researchers also examined transit's economic impact. There are a number of perspectives and factors that could be utilized when trying to quantify economic impact; however, the study focused on comparisons of financial investment in public transit through funds spent outside the transit area and inside the transit area. Expenditures, such as on large capital assets like buses, in most cases involve the procurement of vehicles from outside the transit service area. As a result, these costs were considered to have a negative economic effect on the local area as those investments represent local funding that is leaving the area. On the other hand, operating costs are generally spent on purposes such as maintenance and supplies that can be acquired locally, and so could be summarized as having a positive economic impact on the local area, in addition to indirect impacts such as job creation and sustainment for local employers.

Figure 4.19: Benefit-cost ratios for Iowa in small urban and rural areas*[21]

	Small Urban Areas			Rural Areas
State	Fixed-Route	Demand-Response	Total	Total
Iowa	3.69	0.82	3.22	1.87

**For Iowa, "small urban areas" would include service in metropolitan areas between 50,000 and 200,000 population, and "rural areas" would include Iowa's small urban and regional transit systems.*

Source: North Dakota State University – Small Urban and Rural Transit, Upper Great Plains Transportation Institute

21 "Cost-Benefit Analysis of Rural and Small Urban Transit", 2014, Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University: https://www.nctr.usf.edu/wp-content/uploads/2014/07/77060-NCTR-NDSU031.pdf

When the economic framework from the study was applied to the state of North Dakota, they found that the results also displayed a net benefit in terms of economic impact. The study found that in North Dakota, every $1 spent on public transit produced $1.35 as a net economic output, with $0.57 worth of benefit added to the economy as local gross domestic product – a $0.37 net increase to local wages when travel time costs are factored in. Additionally, for every $1 million in investment, 10.3 jobs were produced in the local area.

The researchers of the study took the economic model further and calculated the benefit-cost for all states in which data was available from the FTA's National Transit Database (NTD). In Figure 4.19, North Dakota State's findings generally showed a net benefit across Iowa's transit systems; only demand-response transit service in small urban systems showed a net loss at 0.82. When compared nationally with other transit systems (for which reported data was available), Iowa ranked 5th in the nation overall for the benefit-cost ratio of small urban systems, and 8th for rural transit systems. This ranking was determined out of 46 states for small urban area transit systems and 48 states for rural area transit systems. Missing states were due to insufficient data for those areas.

Implications of a benefit-cost analysis

- Models exist that can attempt to quantify net benefit and economic impact, which can serve as a starting point for conducting similar analyses for Iowa's public transit services.
- Results show that through a broad statewide examination of reported data, Iowa ranks highly compared to other states in terms of benefit-cost for providing small urban and rural transit service.
- Positive benefit-cost analysis and economic impact assessments can help justify the implementation of alternative revenue generating mechanisms to fund public transit.