

# City of Madison

DEPARTMENT OF



TRANSPORTATION

## **Metro Facility Analysis**

December 31, 2018

**Executive Summary**

## ES.1 Introduction

Several major infrastructure decisions that have implications for the next 30 years lie before Metro Transit. Portions of their current bus storage facility are over 100 years old, the facility is storing 30 percent more buses than it was designed for, and it has been almost 40 years since the building received a major infrastructure upgrade. Metro bus service is at capacity and Metro cannot respond to requests for additional service because they do not have the rolling stock to respond to those needs – a consequence of the limitations of the current bus storage facility.

Proposals and site-specific studies have been performed over the past 14 years to address components of this problem. Some of the recommendations from these reports are currently being implemented (improvements to the 1101 East Washington Ave facility), while others have been dismissed because of high infrastructure costs (Nakoosa satellite facility).

This report studies both alternative sites, and courses of action (scenarios) that would provide a template for Metro infrastructure investment over the next two decades. Scenarios represent not just projects, but a sequence and timing of actions that meet Metro's needs until 2050. This report evaluates the scenarios using criteria based on service needs and infrastructure desires. There are three criteria groupings used to evaluate facility scenarios. They include:

- Critical needs – needs that every scenario addresses. They include:
  - Improving safety, both driver and environmental.
  - Accommodating Bus Rapid Transit Vehicles
  - Accommodating Electric Vehicles
  - Providing more bus storage.
- Other needs – needs that are addressed to different degrees between the scenarios. They include:
  - Financial feasibility, both in Capital Improvement Program costs as well as debt service.
  - Cost Effectiveness, both in Net Present Value (NPV) of the costs of bus operating costs (time spent traveling without passengers.)
- Desires – characteristics that would be beneficial for metro, but not essential. They include:
  - Ability to satisfy the Federal Transit Authority local match requirements for Bus Rapid Transit.
  - Preserve the ability to fully relocate Metro facilities from the 1101 East Washington Ave facility.
  - Having control of the property at the end of the analysis period, eliminating being subject to rent renegotiation or possible removal.
- Intangibles – characteristics that are difficult to quantify and monetize. These could include:
  - Factors that could impede implementation, such as not having an available site identified.

## ES.2 Alternative Sites

Several sites have been identified as being potential hosts for either Metro's main center of operations, or as a satellite bus facility. The following paragraphs summarize alternative sites.

- 1101 East Washington Avenue – Primary Site  
Metro's current single bus facility at 1101 East Washington Avenue is relatively central to Madison and Metro's service area. It holds 215 standard 40-foot buses on about 10 acres (including parking

and administration). The facility cannot accommodate additional buses needed for service expansion.

- Highway 30 Site – Primary or Satellite Site – Madison enlisted the services of Mead & Hunt and Kueny Architects LLC to prepare a generic site design and cost estimate for programming purposes to evaluate the cost effectiveness of constructing a new facility versus purchasing and repurposing an already constructed facility. The generic site is referred to being located near Highway 30 and Packers Avenue, a location relatively efficient for Metro operations. However, the generic site design and cost estimate could apply to facilities at other locations. The generic site design and cost estimate is broken into three phases. They include:
  - Phase 1 – Site and utility work, 15 articulated buses, 40 regular buses, 1 wash/service island, and 6 maintenance bays.
  - Phase 2 – Office support space, 10 articulated buses, 120 regular buses, 1 wash/service island, and 12 maintenance bays.
  - Phase 3 – Additional office support space, 5 articulated buses, 85 regular buses, and 10 maintenance bays.

- The former Kraft/Oscar Mayer site near Highway 30 and Packers Avenue – The site is now owned by Reich Brothers Holdings and the City has the opportunity to lease or purchase Buildings 43 and 50 on the north side of the site. It would be suitable for a satellite facility to supplement a larger facility. Additional buildings could make it suitable to host all of Metro’s operations. An existing rail crossing exists on the site that could be used to access the North Transfer Point. The following are the characteristics of the site:



Figure ES.2-1 Location of the Oscar Mayer site

- Building 43 – 36 regular buses, or a combination of articulated buses and regular buses, and a bus wash.
- Building 50 – 24 regular buses, or a combination of articulated buses and regular buses.
- Area – The northern portion of the site which includes Buildings 43 and 50 encompasses about 15 acres, which depending on site configuration, could be enough land for a full relocation of the 1101 East Washington Ave facility.

- The former Cub Foods site on Nakoosa Trail – This site was purchased by the City for municipal fleet use, and part of the site would be available for a Metro facilities site. This alternative site would have the following features.
  - 20 standard buses
  - 36 articulated buses
  - 2 wash/service island
  - 9 service bays
  - Area – the portion of the site available is about 5.75 acres, which is sufficient for a satellite facility but would not allow Metro to relocate all buses and services from the 1101 East Washington Ave facility.

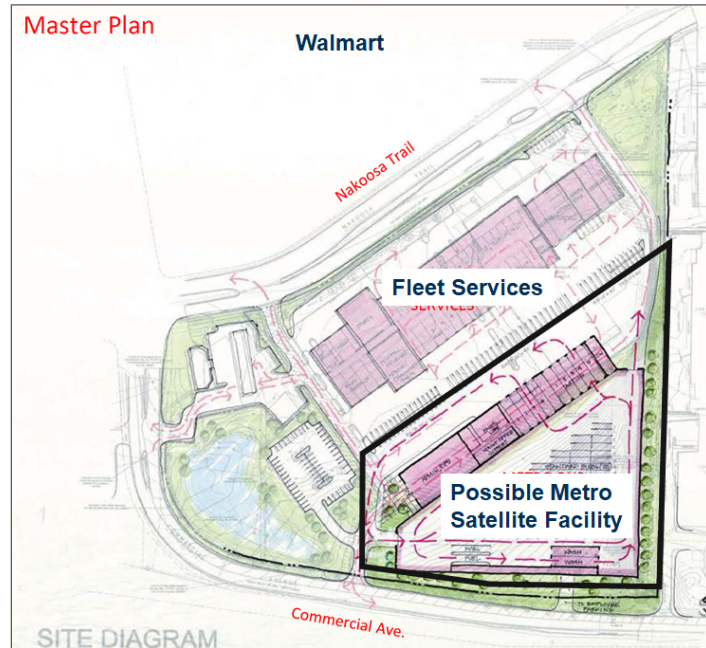


Figure ES.2-2 Nakoosa Trail Site Plan

The topography of the Nakoosa site increases construction cost. Also, a Metro use of this site would prevent fleet or other City services from using it in the future.

- East and West Locations – It has been suggested that Metro might operate more efficiently if there were two sites serving the City, one on the west side and one on the east side. This alternative site assumes one east and one west site near the transfer points. For the purposes of this analysis, each site was assumed to have the following features:
  - 120 standard buses
  - 20 to 25 articulated buses
  - 1 wash/service island
  - 14 service bays
  - Office support space.

**ES.3 Scenarios**

As mentioned, scenarios combine alternative sites and involve different building improvements, in different locations, with different implementation periods. These scenarios are detailed in Section 2 of this report and are summarized by the following graphic Figure ES.3-1.

Scenario 1	Scenario 1a	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
<ul style="list-style-type: none"> <li>•Repair East Washington</li> <li>•Rent Oscar Mayer 43 &amp; 50 as a satellite facility long-term</li> </ul>	<ul style="list-style-type: none"> <li>•Repair East Washington</li> <li>•Buy Oscar Mayer 43 &amp; 50 as a satellite facility long-term</li> </ul>	<ul style="list-style-type: none"> <li>•Repair East Washington</li> <li>•Rent Oscar Mayer 50 as a satellite facility temporarily</li> <li>•Phased move to Hwy 30 facility</li> <li>•Eventually close East Washington</li> </ul>	<ul style="list-style-type: none"> <li>•Rent Oscar Mayer 43 &amp; 50 as a satellite facility long-term</li> <li>•Immediate (2023) move to Hwy 30 facility</li> <li>•Close East Washington</li> </ul>	<ul style="list-style-type: none"> <li>•Repair East Washington</li> <li>•Nakoosa as satellite facility</li> </ul>	<ul style="list-style-type: none"> <li>•Repair East Washington</li> <li>•Phased Move to Hwy 30</li> <li>•Eventually close East Washington</li> </ul>	<ul style="list-style-type: none"> <li>•Repair East Washington</li> <li>•Use Hwy 30 (or other site) as satellite facility</li> </ul>	<ul style="list-style-type: none"> <li>•Small East Washington repair</li> <li>•East satellite facility</li> <li>•West satellite facility</li> <li>•Close East Washington</li> </ul>

Figure ES.3-1 Scenarios

**ES.4 Evaluation Criteria and Analyses**

The evaluation criteria directly correspond to the identified needs. The study conducted several analyses to evaluate how well a scenario satisfies a need. As mentioned, the “critical needs” are satisfied with each scenario because they are fundamental to the action. For example, the City of Madison is going to build a facility that provides safety for drivers and workers. “Other needs” represent needs that vary between the scenarios, such as financial feasibility and cost effectiveness. These needs are differentiators between the scenarios. To evaluate these other needs, this study performed:

- A net present value (NPV) of the costs of each alternative.
- A deadhead analysis that helped quantify the operational costs associated with having buses travel empty from a satellite location.
- Estimates of probable construction costs for the improvements within each scenario.
- Snapshots of the yearly debt service associated with each scenario in the year 2025 and 2030.

**ES.5 Critical Needs**

All scenarios evaluated, except for the do nothing alternative, satisfy the critical needs. They address safety within the metro facilities for drivers as they maneuver within the facilities. They also address other needs, such as air quality, availability of restrooms, and reasonable support facilities for drivers and support staff such as break and training rooms. All scenarios evaluated, provide additional bus storage, which in turn provides the ability to expand service. All scenarios provide the ability to store and maintain Bus Rapid Transit vehicles, specifically 60-foot articulated buses. And all scenarios provide the ability to transition metro’s fleet to electric buses by the year 2035.

## ES.6 Other Needs

### A. Financial feasibility

#### 1. Capital Improvement Program

Alternatives and scenarios vary considerably in their ability to be programmed within the City's Capital Budget. If a scenario cannot be realistically programmed within the Capital Budget – it does not matter if it is most cost-effective or addresses other needs more effectively. Generally, alternatives or scenarios that include fully relocating the East Washington facility consume a considerable amount of the City's Capital Budget. Providing over \$150 million dollars for Metro facility needs, even if spread between 10 and 20 years, prevents many other City initiatives from being addressed in the Capital budget.

#### 2. Debt Service

Currently it is the City's policy to assign debt service costs to the agency if it is considered an enterprise agency. Police, fire, finance, planning, etc. are considered City services, not enterprise agencies, and do not shoulder the debt service in their operating budgets. Metro is considered an enterprise agency and must absorb debt service associated with these improvements within its operating budget. The annual debt service associated with these scenarios can range from \$7 to \$30 million and therefore have considerable impact on Metro's operating budget. In 2019 the City of Madison will contribute \$14 million towards Metro's operating budget. The debt service associated with these alternatives could increase the City's contribution to Metro's operating budget by 50 to 200 percent or more.

### B. Cost Effectiveness

#### 1. Net Present Value of Costs

The study performed a net present value analysis of the costs associated with each alternative and scenario. A Net Present Value (NPV) analysis monetizes the benefits and costs of an alternative or scenario over a period of time, taking into the effects of inflation and the cost of money. Since the benefits of increased safety, increased storage (and associated service expansions), BRT accommodation, and electric buses are the same for all scenarios, only a NPV of the costs associated with each alternative are analyzed. This report performed the NPV analysis of costs using the procedures outlined in White House Advisory Circular A-94. The study performed the analysis using a range of discount rates and end-year rehabilitation strategies.

#### 2. Operating Costs

Much of Metro's operating costs is associated with labor and fuel. Therefore, keeping buses in service while traveling reduces operating costs. Deadheading is when a bus travels out of service to the start of a route, or travels out of service from the end of a route to the bus barn. Deadheading increases operating costs and the location of Metro's storage facilities affects the amount of deadheading. The study analyzed the annual deadhead costs associated with each of the scenarios using Trapeze software, the existing route structure, and logical modifications associated with satellite facility locations. The change in annual operating costs ranged from \$0 to \$1.2 million. Section 3 of this report provides more information regarding the deadhead analysis.

Table ES.6-1 summarizes the results of the analysis. The table also shows the Net Present Value of costs per bus and debt service needed for each Alternative site. Alternative sites that use existing buildings have the lowest Net Present Value of costs.

Table ES.6-1 Net Present Value Analysis Summary

Facility Type	Primary	Satellite	Primary/ Satellite	Primary	Satellite	Satellite	Primary
Alternative Site	1101 East Wash	Hwy 30 Phase 1	Hwy 30 Phase 1&2	Hwy 30 Phase 1,2&3	Oscar Mayer	Nakoosa	East and West
Number of buses	215	55	185	273	60	56	280
Capital Improvement Program							
Total CIP (2019-2024)	\$57.1M	\$70.3M	\$138.8M	\$168.2M	\$13-\$19.0M	\$49.8M	\$200.5M
CIP cost per bus	\$266K	\$1,280K	\$750K	\$616K	\$267K	\$890K	\$716K
Debt Service							
2025 Debt service 10yr, 3%	\$6.7M	\$8.2M	\$16.3M	\$19.7M	\$1.9M	\$5.8M	\$23.5M
2025 Debt service 20yr, 3%	\$3.8M	\$4.7M	\$9.3M	\$11.3M	\$1.1M	\$3.4M	\$13.5M
Net Present Value 7% Nominal Discount Rate							
NPV of costs 7%	\$46M*	\$52M	\$105M	\$127M	\$18M*	\$37M	\$163M
NPV cost per bus 7%	\$215k*	\$952k	\$566k	\$465k	\$304k*	\$655k	\$583k
Operating Costs							
Added Annual Deadhead Op Cost	\$0M	\$0M	+\$1.1M	+\$1.1M	\$0	\$0M	+\$0.9M
*Includes \$60M rehabilitation in 2045 CIP = Capital Improvement Program							
NPV = Net Present Value of costs for facility life until 2050							
Objective: House 270 buses in a primary facility, or in a primary facility with a satellite							

Table ES.6-2 provides the Net Present Value of the scenario costs. Scenarios that use existing buildings tend to have the lowest Net Present Value of costs.

Table ES.6-2 Net Present Value of Scenario Costs

	Scenario 1	Scenario 1A	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
	Upgrade 1101 East Washington	Upgrade 1101 East Washington	Upgrade 1101 East Washington	Small upgrade to 1101 East Washington	Upgrade 1101 East Washington	Upgrade 1101 East Washington	Upgrade 1101 East Washington	East Facility - 2028
	Rent Oscar Mayer Bldgs 43 &50	Buy Oscar Mayer Bldgs 43 &50	Rent Oscar Mayer Bldg 43	Rent Oscar Mayer Bldg 43 & 50	Nakoosa Satellite Facility in 2023	Phased Move to Hwy 30 Site by 2033	Hwy 30 Satellite - 2023	West Facility - 2023
			Phased Move to Hwy 30 Site by 2033	Immediate Move to Hwy 30 Site in 2024				
Net Present Value 5%	\$95M*	\$70M*	\$129M	\$112M	\$114M*	\$111M	\$83M*	\$138M
Net Present Value 7%	\$83M*	\$65M*	\$130M	\$113M	\$100M*	\$109M	\$82M*	\$131M
Net Present Value 10.2%	\$70M*	\$57M*	\$118M	\$104M	\$84M*	\$97M	\$76M*	\$115M
*Includes \$60M rehabilitation in 2045 CIP = Capital Improvement Program								
NPV = Net Present Value of costs for facility life until 2050								



C. Potential Offsetting Costs

If all Metro activities were moved from the 1101 East Washington Ave. facility, that property would be available to sell. Additionally, the resulting redevelopment of the parcel could provide a tax base, generating property tax revenue for the City.

Rough estimates of the 1101 East Washington Ave. facility value range from between \$10 and \$12 million. The parcel is in Urban Design District 8 and is zoned for traditional employment. Madison’s property tax mill rate is 24.5 and the City receives about 37 percent of the property tax generated by a parcel. If one assumes that no TIF funding affects property tax revenues for the parcel, the City would receive about \$0.9 million yearly in property tax ( $\$100M \times 24.5 / 1000 \times 0.37$ ). While an important revenue source, this amount would not offset the debt service payments needed to fully relocate from the 1101 East Washington Ave facility, which could range from \$10 to \$20 million per year, depending on the term and facility. This is also true, even if one considers money (and debt service saved) by not investing \$57 million in infrastructure improvements at 1101 East Washington Ave facility. Figure ES-6.1 illustrates the cash flow situation. The left side of the graph shows the cash flow debt service if the 1101 East Washington Ave facility is both kept and improved. The right side of the graph shows the property tax revenue that would be gained from the redevelopment of the 1101 East Washington Ave facility, compared with the debt service that would be needed to build a facility large enough to relocate from the 1101 East Washington Ave facility.

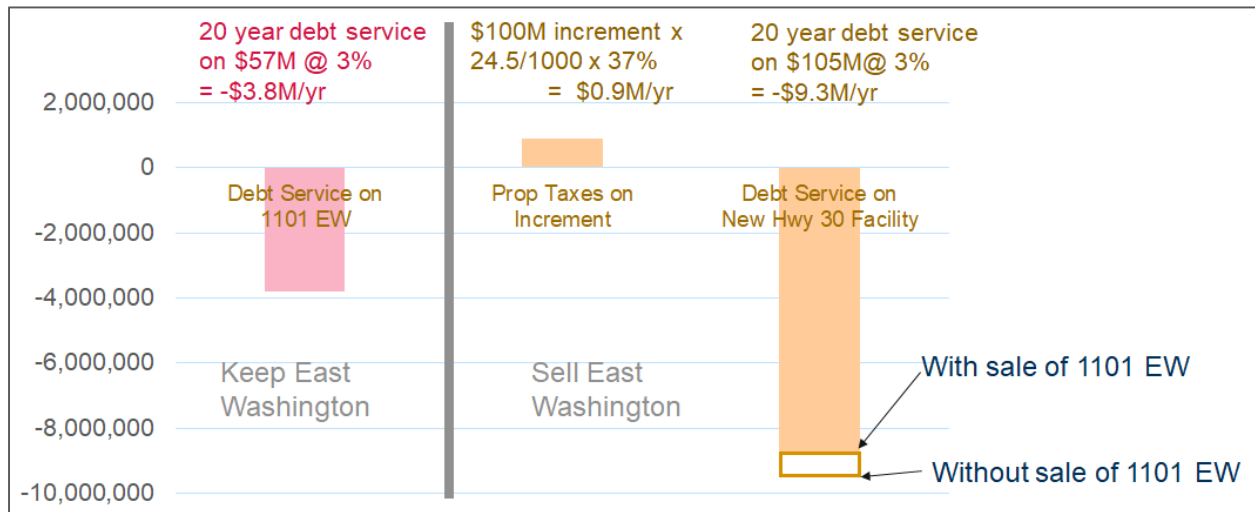


Figure ES-6.1 Potential offsetting costs

ES.7 Desires

Desires are characteristics of scenarios that are not essential for Metro, but provide benefits to the agency and its mission.

A. Ability to satisfy local Match Requirement for FTA Small Starts Grant

Madison is able to count the portion of an infrastructure improvement allocated for Bus Rapid Transit towards satisfying the local match requirement for an FTA Small Starts Grant. One condition is that the City of Madison must own the improvement. Therefore, Scenario 1, which only rents from the Oscar Mayer site, would not qualify as a local match for a Small Starts Grant. All other scenarios would be able to have a portion of the property and construction costs count towards the local match.

B. Preserve the ability to relocate the 1101 East Washington facility 20 years in the future.

The current 1101 East Washington Facility without administrative offices occupies 10.2 acres. At some point in the future the City may desire to relocate operations from this facility. It is estimated that to accommodate 285 buses, a site of 16 acres would be needed. Ultimately, sites such as the Oscar Mayer site, and a possible Highway 30 site, could accommodate a full relocation and closure of the 1101 East Washington Ave. facility.

C. Having control of the site at the end of the analysis period.

The City of Madison values the ability to control a site beyond the use period. Having this ability allows the City to continue operations at the site, or pursue a different course of action, without having rental agreements influence or force the decision. The scenario that uses rented facilities (Scenario 1) does not give the City the ability to control the property after the analysis period.

**ES.8 Summary of Scenario Evaluation**

The following table briefly summarizes how each scenario, which implements the alternatives over a period of time, satisfies Metro’s needs. A more complete explanation is provided in relevant sections of this report.

**Table ES.8-1 Scenario Evaluation**

	Scenario 1	Scenario 1A	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	
	Upgrade 1101 East Washington	Upgrade 1101 East Washington	Upgrade 1101 East Washington	Small upgrade to 1101 East Washington	Upgrade 1101 East Washington	Upgrade 1101 East Washington	Upgrade 1101 East Washington	East Facility - 2028	
	Rent Oscar Mayer Bldgs 43 & 50	Buy Oscar Mayer Bldgs 43 & 50	Rent Oscar Mayer Bldg 43  Phased Move to Hwy 30 Site by 2033	Rent Oscar Mayer Bldg 43 & 50  Immediate Move to Hwy 30 Site in 2024	Nakoosa Satellite Facility in 2023	Phased Move to Hwy 30 Site by 2033	Hwy 30 Satellite (Phase 1 only) - 2023	West Facility - 2023	
<b>Critical Needs</b>									
Driver and Worker Safety	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Accommodate BRT & Elect Buses	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Bus Storage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<b>Other Needs</b>									
Feasibility – CIP 2019-2028	\$70M	\$80M	\$206M	\$160M	\$119M	\$203M	\$117M	\$268M	
Feasibility – CIP 2019-2040	\$70M	\$80M	\$248M	\$205M	\$119M	\$246M	\$117M	\$268M	
Feasibility – Debt Service 2025+	\$8.2M	\$9.4M	\$14.0M	\$18.8M	\$14.0M	\$13.7M	\$13.6M	\$15.4M	
Feasibility – Debt Service 2030+	\$5.5M	\$6.6M	\$22.0M	\$18.8M	\$12.0M	\$22.0M	\$1.8M	\$29.5M	
Cost Eff - NPV of Costs 7%	\$83M*	\$64M*	\$129M	\$113M	\$100M*	\$110M	\$82M*	\$131M	
Cost Eff - Increase in Annual Deadhead Costs	\$0M	\$0M	+\$1.1M	+\$1.1M	\$0M	+\$1.1M	+\$0.2M	+\$0.9M	
<b>Desires</b>									
Satisfy FTA local match	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Preserve ability to relocate from 1101	No	Possibly	Yes	Yes	No	Yes	No	Yes	
Control of property	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<b>Intangibles</b>									
Property Currently Available?	NA	Yes	No	No	No	No	No	No	
Other?									
*Includes \$60M rehabilitation in 2045 CIP = Capital Improvement Program NPV = Net Present Value of costs for facility life until 2050 +Debt service at 3% - 10yr note									

**ES.9 Observations and Recommendations**

Addressing bus storage and obtaining a satellite facility for Metro is a primary objective in area plans.

- It is Strategy 2a in the Landuse and Transportation element of the Imagine Madison Comprehensive Plan, and it is also a prerequisite for implementing Strategies 1a, and b.
- It is called out as a need in the Madison in Motion Transportation Plan
- It is recommended in the 2013-2017 Transit Development Plan (MATPB), and is a prerequisite to accomplishing other service improvements presented in the plan.
- It is recommended in the Regional Transportation Plan 2050 (MATPB)

This study recommends:

- Continuing to use 1101 East Washington Ave as the primary facility for Metro operations.
- Further investigation and pursuit of purchasing the Oscar Mayer site.

This recommendation has:

- The lowest capital expenditure and corresponding debt service.
- The lowest net present value of costs.
- No increase in operating (deadhead) costs.
- The ability to count towards FTA Small Starts local match.
- The lowest housing cost per bus.

Current conditions provide the opportunity to cost-effectively address bus storage capacity and a key recommendation in current planning documents. Providing additional bus storage also allows Metro to address other strategic initiatives, such as peripheral service and BRT, to serve the metropolitan area.