

# Northstar Commuter Rail Extension Feasibility Assessment

## Appendix J – Technical Memorandum on Operating and Maintenance Costs

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Photo Credit: Dave Gonzalez

Prepared for



by



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## **1. Introduction**

This Technical Memorandum describes the main drivers of Northstar’s operating and maintenance (O&M) costs and the methodology used to calculate the O&M costs for four proposed Service Alternatives under consideration.

## **2. Assumptions**

The following four Service Alternatives are proposed to expand Northstar Service to St. Cloud, MN:

- Minimum Service Alternative
  - One peak direction trip – morning and afternoon peak periods
- Minimum Bi-Directional Service Alternative,
  - One peak direction, one off-peak direction – morning and afternoon peak periods
- Northstar Express Service Alternative
  - One peak direction Express, one off-peak direction Express – morning peak period
  - One peak direction Express, one off-peak direction Express – afternoon peak period
- Bi-Directional Service Alternative
  - Two peak direction, one off-peak direction – morning peak period
  - Three peak direction, two off-peak direction – afternoon peak period
    - One additional SB train from Big Lake to Minneapolis
  - One late evening NB trip from Minneapolis to St Cloud

To facilitate providing midday service between Minneapolis and St. Cloud, a Northstar Midday Shuttle Bus option was identified that could be included in any of the four proposed Service Alternatives. An express bus operated by St. Cloud Metro Bus would run on weekdays, departing St. Cloud mid-morning, operating non-stop to Minneapolis and returning to St. Cloud mid-afternoon. The Northstar Midday Shuttle has two important advantages: It provides the midday service in both directions that was requested at public meetings and it also avoids operating Northstar commuter trains during the BNSF’s midday maintenance window.

Detailed information on the operating assumptions and schedules for each Service Alternative are included in Appendices B, C, D, and E.

To estimate the O&M costs for each alternative, the following assumptions were made:

1. Service to St. Cloud would be provided within the existing Northstar commuter rail service framework currently provided by BNSF and Metro Transit.
2. The O&M costs will be substantially different for each Service Alternative due to differences in train operations, train sets, train crews, and number of stations in each alternative.
3. Each alternative’s Scheduled Miles (annual revenue and deadhead trip miles operated under the normal weekly schedule) were calculated based on the proposed schedules and crew sheets developed for regular weekly service. Crew sheets show both the scheduled revenue and deadhead trips proposed for each alternative.

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4. The Scheduled Miles for each alternative were used to calculate the following:
  - a. Locomotive fuel consumption and cost.
  - b. Locomotive and passenger car maintenance expenses based on miles of usage per year and the FRA time-based inspections for each piece of equipment regardless of number of miles operated. (Example: 92-Day Inspection, etc.).
  - c. Other costs that are driven by miles including BNSF ROW maintenance and liability insurance costs for train operations.
5. BNSF Train Crew Labor (and costs that are calculated based on train crew labor such as health and welfare, insurance, crew service expense, etc.) were calculated for each alternative based on the proposed train schedules and crew sheets. The proposed St. Cloud extension requires that some existing long crew days (currently around 19 hours daily compensation per crew) be broken into two separate crews of minimum 8-hour days because of the Federal Railroad Administration (FRA) Hours of Service limitations. In addition to time, train crews also have mileage components in their compensation rates that affect when overtime is paid. Conductors and locomotive engineers are paid at different rates and may have different overtime requirements. To simplify calculations, BNSF crews were considered a single unit containing one engineer and one conductor. The actual compensation for some crews may decrease even if the number of crews on Northstar increases.
6. An option that can be considered for each Service Alternative is a “Northstar Midday Shuttle Bus” that would operate round trip between St. Cloud and Minneapolis. Operating cost data was developed for Midday Shuttle Bus through discussions with St. Cloud’s Metro Bus service.
7. The crew van expense is for transporting train crews between St. Cloud and Big Lake Maintenance Facility for the Service Alternative that proposes a midday layover for one train in St. Cloud.
8. The electricity utility cost for 480VAC standby power will increase to accommodate additional trains connecting to standby power. There will also be additional utility costs related to the new station at St. Cloud and the center platform Big Lake station.
9. Snow plowing expenses will increase for alternatives requiring the addition of a new storage/servicing track at the Big Lake Maintenance Facility and new station platforms at St. Cloud and Big Lake.
10. It is understood that expensed maintenance costs incurred by BNSF will increase once proposed infrastructure needed to support extended Northstar service is constructed. Due to the nature of the cost sharing structure between BNSF and Metro Transit, the increase in O&M costs will be negotiated at a later date and is not included in the O&M costs for any Service Alternative.

O&M costs were calculated using the assumptions described above.

### 3. O&M Cost Calculations

O&M costs were developed in partnership with Metro Transit. Metro Transit provided their 2020 Northstar O&M budget and an estimation of O&M costs for each Service Alternative based on Scheduled Miles. The following sections document the information received from Metro Transit and the methodology used for estimating each Service Alternative’s O&M costs.

#### 3.1. O&M Cost Criteria

O&M costs are based directly on the operating characteristics of a service. Northstar’s operating characteristics were identified and used to develop O&M unit cost criteria that could be applied to the proposed Service Alternatives to calculate O&M costs. The identified operating characteristics are listed below:

1. Number of Stations
2. Maintenance and Storage Facility
3. Operating Train Sets
4. Locomotives
5. Train Cars
6. Staffing
7. BNSF Train Crews
8. Weekly Crew Van Trips
9. Scheduled Miles

Table 1 summarizes the operating characteristics for existing Northstar service and proposed Service Alternatives.

**Table 1: Operating Characteristics for Existing Service and Proposed Service Alternatives**

	Existing Northstar Service	Minimum Service Alternative	Minimum Bi-Directional Service Alternative	Northstar Express Service Alternative	Bi-Directional Service Alternative
Number of Stations	6	8	8	7	8
Number of Maintenance and Storage Facilities	1	1	1	1	1
Number of Operating Train Sets	4	4	5	5	5
Number of Locomotives	6	6	7	7	7
Number of Train Cars	19	19	23	23	23
Staffing Levels (Mechanical, Administrative, Clerical)	36	36	40	40	40
Number of BNSF Train Crews	6	6	8	8	8
Scheduled Miles	148,795	210,558	224,939	280,628	356,761

### **3.2. O&M Cost Categories**

Northstar O&M costs were broken down into the following categories:

1. Labor and Benefits
2. Contracted Services
3. Materials, Parts & Supplies
4. Other Expenses
5. Allocated Expenses

The methodologies for estimating O&M costs for each of the cost categories are included in the following sub-sections.

#### **3.2.1. Labor and Benefits**

The Labor and Benefits portion of O&M costs is dependent on the number of people working to operate and maintain Northstar’s maintenance and storage facility, locomotives, train cars, and stations. Metro Transit provided three employee designations in their O&M costs: Mechanic, Administrative, and Clerical. Metro Transit currently employs 26 mechanics, 6 administrative employees, and 4 clerical employees to operate and maintain Northstar service.

For the Service Alternatives requiring an additional trainset to be added to the Northstar fleet, the following employees will be added to the Labor and Benefits budget:

- 2 additional mechanics
- 1 additional administrative employee
- 1 additional clerical employee

The estimated overtime budgets for mechanics, administrative employees, and clerical employees for each Service Alternative were calculated by increasing the 2020 budget proportionally by the number of new employees.

It is assumed that new employees will be full time and have the accompanying benefits packages. Metro Transit benefits include vacation days, sick days, holidays, pension, FICA, insurance, workers’ compensation, post-retirement, and tool allowance. The overall benefits budget for each Service Alternative were estimated by increasing the 2020 budget proportionally by the number of new employees. The percentage of budget allocated to each sub-benefit for 2020 was carried forward for each Service Alternative.

The proposed labor staffing for existing service and proposed Northstar Service Alternatives are presented in Table 2.

**Table 2: Proposed Labor Staffing for Existing Service and Proposed Service Alternatives**

	Existing Northstar Service	Minimum Service Alternative	Minimum Bi-Directional Service Alternative	Northstar Express Service Alternative	Bi-Directional Service Alternative
Number of Mechanics	26	26	28	28	28
Number of Administrative Employees	6	6	7	7	7
Number of Clerical Employees	4	4	5	5	5
<b>Total Labor Staff</b>	<b>36</b>	<b>36</b>	<b>38</b>	<b>38</b>	<b>38</b>

**3.2.2. Contracted Services**

Metro Transit contracts some services needed to operate and maintain Northstar service. Contracted services were broken down into the five categories below:

1. Security
2. BNSF Administrative Services
3. BNSF Running Roadway
4. BNSF Commuter Train Operations
5. Other Maintenance

In addition to the above, contracted services also include costs for crew van transportation and an option for midday bus service. Costs of contracted services were estimated for each of the Service Alternatives based on the 2020 budgets for the five categories shown above.

Security and Other Maintenance costs were calculated based on the number of stations in the corridor; as the number of stations increase, Security and Other Maintenance costs will increase proportionally. Because Target Field Station serves multiple transportation modes in addition to Northstar, Metro Transit indicated that the 2020 Northstar Contracted Services budget does not include costs for Target Field Station. A per station cost was calculated for Security and Other Maintenance based on 6 stations in the corridor. For each new station proposed by a Service Alternative, the Security and Other Maintenance costs were increased proportionally.

The BNSF Administrative Services category includes the cost of the local BNSF Northstar commuter rail service management team, as well as Northstar’s share of the train dispatching and system passenger management costs. Northstar’s share of the costs are calculated per train mile for the total passenger, commuter, and freight train miles operated in the Northstar corridor. For each of the four Service Alternatives, the BNSF Administrative Services cost was increased based on the additional Northstar Scheduled Miles proposed.

The BNSF Running Roadway cost is calculated by BNSF based on the Scheduled Miles and the amount of physical plant (track, structures, signals, etc.) in the Northstar corridor. This category includes the cost of maintaining existing track, structures, Centralized Traffic Control (CTC) control points, signals, Positive Train Control (PTC) equipment, grade crossings, drainage facilities, and other right-of-way maintenance items. Each of the four Service Alternatives increases both the number of Northstar trains and the



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amount of infrastructure needed to maintain fluid corridor operations. The level of detail available was not sufficient to accurately calculate the changes in expensed maintenance costs for infrastructure needed to accommodate the four Service Alternatives. BNSF Running Roadway costs were estimated by increasing the 2020 Running Roadway costs proportionally by the proposed Scheduled Miles for each Service Alternative.

BNSF Commuter Train Operations costs include labor and related costs for BNSF train crews that operate Northstar service and were calculated using detailed information on current operations provided by BNSF. Proposed schedules and crew sheets were developed for each of the four Service Alternatives. The crew sheets detail the starting and ending duty times of individual trips, trip miles, layover times, and the compensated hours of service, for each crew and each alternative. To compute the annual BNSF Commuter Train Operations cost per alternative, an average cost per BNSF crew was developed for the 2020 budget and multiplied by the number of BNSF crews that were needed to operate each of the four Service Alternatives.

Included in Contracted Services is an Easement (or access) Fee charged by BNSF for Northstar's use of the corridor. This fee is calculated by BNSF based on system capacity and revenue considerations. The information provided was insufficient to calculate this expense for each of the four Service Alternatives. The Easement Fee and BNSF Running Roadway Expense are both items that are subject to negotiation with BNSF.

#### 3.2.3. Materials, Parts & Supplies

The Materials, Parts, and Supplies budget includes fuel, locomotive and passenger car parts, system repair parts, office supplies, and small equipment. This category is dependent on the amount of equipment and the miles traveled by the equipment. Although maintenance cycles are not solely dependent on miles traveled (some are time-based), it is assumed that this additional cost is covered in other areas of the operating cost such as "Labor and Benefits" because the maintenance will be completed by the additional employees. Materials, Parts, and Supplies costs for each Service Alternative were calculated using the proposed number of Scheduled Miles estimated for that alternative. See Table 1 for the scheduled miles for existing Northstar service and proposed Service Alternatives.

#### 3.2.4. Other Expenses

The Other Expenses category includes costs for the station and maintenance facility utilities, insurance, and small equipment rentals. Station utility costs were estimated for each Service Alternative based on the total number of stations. Utilities for the Big Lake Maintenance facility were increased by the number of locomotives and train cars in service under each Service Alternative. Insurance and small equipment rentals were increased based on Scheduled Miles for each Service Alternative. See Table 1 for the number of locomotives and train cars for existing service and proposed Northstar Service Alternatives.

#### 3.2.5. Allocated Expenses

Allocated Expenses include Modal, A-87 Support Service, and Met Council categories. According to Metro Transit, the only category expected to change under any of the proposed Service Alternatives is



A-87 Support Service. The cost for A-87 Support Service for each of the Service Alternatives was calculated as 25.4% of the total Labor cost. Modal and Met Council costs remained equal to 2020 values for each Service Alternative.

## 4. Presentation of Annual O&M Costs

Table 3 presents the estimated annual O&M costs in 2025 dollars for existing Northstar service and the four Service Alternatives.

**Table 3: Annual O&M Costs for Existing Northstar and Proposed Service Alternatives (2025\$)**

	Existing Northstar Service (millions)	Minimum Service Alternative (millions)	Minimum Bi-Directional Service Alternative (millions)	Northstar Express Service Alternative (millions)	Bi-Directional Service Alternative (millions)
Labor and Benefits	\$5.9	\$5.9	\$6.6	\$6.6	\$6.6
Contracted Services	\$9.5	\$11.7	\$13.3	\$13.6	\$15.2
Materials, Parts & Supplies	\$2.8	\$4.0	\$4.3	\$5.3	\$6.8
Other Expenses	\$3.8	\$5.1	\$5.5	\$6.6	\$8.2
Allocated Expenses	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0
<b>Total O&amp;M Costs</b>	<b>\$25.0</b>	<b>\$29.7</b>	<b>\$32.7</b>	<b>\$35.1</b>	<b>\$39.7</b>

Note:

- O&M costs do not include access fees or expensed maintenance costs for proposed infrastructure projects

## 5. Summary

Using the assumptions and methodology described above, O&M costs for the proposed Northstar Service Alternatives were estimated in coordination with Metro Transit and BNSF. Attachment 1 presents the detailed O&M costs.

# Attachment 1

Detailed Operating and Maintenance Costs

## Northstar Commuter Rail Extension Operating and Maintenance Cost Budget

	2020 Northstar Budget	2020 Unit Cost	Units	Basis	Minimum Service Alternative Budget	Minimum Bi-Directional Service Alternative Budget	Northstar Express Service Alternative Budget	Bi-Directional Service Alternative Budget
<b>SECTION 1.0 LABOR AND BENEFITS</b>								
<b>Labor</b>								
<b>Mechanics Budget</b>	\$1,702,253	\$65,471	\$/Mechanic	Number of Mechanics	\$1,702,253	\$1,833,195	\$1,833,195	\$1,833,195
Overtime	\$232,727	\$8,951	\$/Mechanic	Number of Mechanics	\$232,727	\$250,630	\$250,630	\$250,630
<b>Administrative</b>	\$810,970	\$135,162	\$/Administrative Staff	Number of Admin Staff	\$810,970	\$946,132	\$946,132	\$946,132
Overtime	\$12,267	\$2,045	\$/Administrative Staff	Number of Admin Staff	\$12,267	\$14,312	\$14,312	\$14,312
<b>Clerical</b>	\$154,510	\$38,627	\$/Clerical Staff	Number of Clerical Staff	\$154,510	\$193,137	\$193,137	\$193,137
Overtime	\$22,708	\$5,677	\$/Clerical Staff	Number of Clerical Staff	\$22,708	\$28,385	\$28,385	\$28,385
<b>Subtotal Labor</b>	<b>\$2,935,436</b>				<b>\$2,935,436</b>	<b>\$3,265,791</b>	<b>\$3,265,791</b>	<b>\$3,265,791</b>
<b>Benefits</b>								
Vac / Sick / Holiday	\$435,840	15%	% of labor	Total Labor Budget	\$435,840	\$484,889	\$484,889	\$484,889
Pension	\$209,358	7%	% of labor	Total Labor Budget	\$209,358	\$232,919	\$232,919	\$232,919
FICA	\$250,043	9%	% of labor	Total Labor Budget	\$250,043	\$278,183	\$278,183	\$278,183
Insurance	\$943,830	32%	% of labor	Total Labor Budget	\$943,830	\$1,050,050	\$1,050,050	\$1,050,050
Workers Comp	\$200,000	7%	% of labor	Total Labor Budget	\$200,000	\$222,508	\$222,508	\$222,508
Post Retirement		0%	% of labor	Total Labor Budget	\$0	\$0	\$0	\$0
Tool Allowance	\$16,450	1%	% of labor	Total Labor Budget	\$16,450	\$18,301	\$18,301	\$18,301
<b>Subtotal Benefits</b>	<b>\$2,055,521</b>				<b>\$2,055,521</b>	<b>\$2,286,850</b>	<b>\$2,286,850</b>	<b>\$2,286,850</b>
<i>Subtotal Labor and Benefits (2020\$)</i>	<i>\$4,990,957</i>				<i>\$4,990,957</i>	<i>\$5,552,641</i>	<i>\$5,552,641</i>	<i>\$5,552,641</i>
<i>Subtotal Labor and Benefits (2025\$)</i>	<i>\$5,927,691</i>				<i>\$5,927,691</i>	<i>\$6,594,796</i>	<i>\$6,594,796</i>	<i>\$6,594,796</i>
<b>SECTION 2.0 CONTRACTED SERVICES</b>								
Security	\$4,213	\$602	\$/Station&Facility	Number of Stations/Facilities	\$5,417	\$5,417	\$4,815	\$5,417
BNSF Administrative services	\$567,563	\$4	\$/Mile	Annual Scheduled Miles	\$803,153	\$858,008	\$1,070,426	\$1,360,831
BNSF Running Roadway	\$1,249,501	\$8	\$/Mile	Annual Scheduled Miles	\$1,768,156	\$1,888,920	\$2,356,563	\$2,995,894
BNSF Commuter Train Operations	\$3,536,132	\$589,355	\$/Train Crew	Number of BNSF Train Crews	\$3,536,132	\$4,714,843	\$4,714,843	\$4,714,843
Crew Van Trips*		\$80	\$/Trip	Annual Number of Crew Van Trips	\$41,714	\$41,714	\$41,714	\$41,714
Midday Bus Option**		\$629	\$/Round-Trip Bus Service	Annual Number of Midday Bus Round-Trips	\$163,537	\$163,537	\$163,537	\$163,537
Other Maint	\$2,658,368	\$443,061	\$/Station	Number of Stations	\$3,544,491	\$3,544,491	\$3,101,429	\$3,544,491
<b>Total Contracted Services (2020\$)</b>	<b>\$8,015,778</b>				<b>\$9,862,600</b>	<b>\$11,216,930</b>	<b>\$11,453,329</b>	<b>\$12,826,728</b>
<b>Total Contracted Services (2025\$)</b>	<b>\$9,520,229</b>				<b>\$11,713,675</b>	<b>\$13,322,194</b>	<b>\$13,602,962</b>	<b>\$15,234,129</b>
<b>SECTION 3.0 MATERIALS, PARTS &amp; SUPPLIES</b>								
Fuel	\$1,424,615	\$10	\$/Mile	Annual Scheduled Miles	\$2,015,958	\$2,153,647	\$2,686,829	\$3,415,761
Repair parts - Locomotives/Cars	\$671,033	\$5	\$/Mile	Annual Scheduled Miles	\$949,572	\$1,014,427	\$1,265,571	\$1,608,918
Repair parts - systems	\$270,555	\$2	\$/Mile	Annual Scheduled Miles	\$382,860	\$409,009	\$510,268	\$648,702
Office & Shop Supplies / small equipment	\$17,783	\$0	\$/Mile	Annual Scheduled Miles	\$25,165	\$26,884	\$33,539	\$42,638
<b>Total Materials, Parts &amp; Supplies (2020\$)</b>	<b>\$2,383,986</b>				<b>\$3,373,554</b>	<b>\$3,603,966</b>	<b>\$4,496,207</b>	<b>\$5,716,020</b>
<b>Total Materials, Parts &amp; Supplies (2025\$)</b>	<b>\$2,831,428</b>				<b>\$4,006,724</b>	<b>\$4,280,381</b>	<b>\$5,340,083</b>	<b>\$6,788,838</b>
<b>SECTION 4.0 OTHER EXPENSES</b>								
<b>Utilities</b>								
<b>Stations</b>								
Electric	\$245,504	\$40,917	\$/Station	Number of Stations	\$327,339	\$327,339	\$286,421	\$327,339
Gas	\$18,836	\$3,139	\$/Station	Number of Stations	\$25,115	\$25,115	\$21,976	\$25,115
Water	\$16,536	\$2,756	\$/Station	Number of Stations	\$22,048	\$22,048	\$19,292	\$22,048
<b>Big Lake Maintenance Facility</b>								
Electric	\$303,417	\$12,137	\$/Cars and Locomotives	Number of cars and locomotives	\$303,417	\$364,101	\$364,101	\$364,101
Gas	\$28,403	\$1,136	\$/Cars and Locomotives	Number of cars and locomotives	\$28,403	\$34,083	\$34,083	\$34,083
Water	\$16,306	\$652	\$/Cars and Locomotives	Number of cars and locomotives	\$16,306	\$19,567	\$19,567	\$19,567
Refuse	\$1,866	\$75	\$/Cars and Locomotives	Number of cars and locomotives	\$1,866	\$2,239	\$2,239	\$2,239
Telephone	\$0	\$0		N/A	\$0	\$0	\$0	\$0
<b>Insurance</b>								
Insurance - liability	\$2,486,898	\$17	\$/Mile	Annual Scheduled Miles	\$3,519,184	\$3,759,542	\$4,690,299	\$5,962,768
Insurance - Retention		\$0		N/A	\$0	\$0	\$0	\$0
<b>Leases and Rentals</b>								
Leases and Rentals - small equip	\$49,726	\$0.33	\$/Mile	Annual Scheduled Miles	\$70,367	\$75,173	\$93,783	\$119,227
<b>Total Other Expenses (2020\$)</b>	<b>\$3,167,492</b>				<b>\$4,314,044</b>	<b>\$4,629,207</b>	<b>\$5,531,762</b>	<b>\$6,876,487</b>
<b>Total Other Expenses (2025\$)</b>	<b>\$3,761,987</b>				<b>\$5,123,731</b>	<b>\$5,498,046</b>	<b>\$6,569,997</b>	<b>\$8,167,110</b>
<b>SECTION 5.0 ALLOCATED EXPENSES</b>								
Modal	\$1,623,307	0.0%	% of Increased Labor	Direct Labor Cost	\$1,623,307	\$1,623,307	\$1,623,307	\$1,623,307
A-87 Support Service	\$311,151	25.4%	% of Increased Labor	Direct Labor Cost	\$311,151	\$311,151	\$311,151	\$311,151
Met Council	\$558,148	0.0%	% of Increased Labor	Direct Labor Cost	\$558,148	\$558,148	\$558,148	\$558,148
<b>Total Allocated Expenses (2020\$)</b>	<b>\$2,492,606</b>				<b>\$2,492,606</b>	<b>\$2,492,606</b>	<b>\$2,492,606</b>	<b>\$2,492,606</b>
<b>Total Allocated Expenses (2025\$)</b>	<b>\$2,960,434</b>				<b>\$2,960,434</b>	<b>\$2,960,434</b>	<b>\$2,960,434</b>	<b>\$2,960,434</b>
<b>Total Operating Expenses (2020\$)</b>	<b>\$21,050,819</b>				<b>\$25,033,762</b>	<b>\$27,495,351</b>	<b>\$29,526,544</b>	<b>\$33,464,482</b>
<b>Total Operating Expenses (2025\$)</b>	<b>\$25,001,769</b>				<b>\$29,732,256</b>	<b>\$32,655,852</b>	<b>\$35,068,272</b>	<b>\$39,745,307</b>
<b>Incremental Increase over 2020 (2025\$)</b>	<b>-</b>				<b>\$4,730,487</b>	<b>\$7,654,082</b>	<b>\$10,066,503</b>	<b>\$14,743,538</b>

\* Crew Van service is not separated out for 2020 Northstar budget; per trip cost was provided by Passenger Transportation Inc.

\*\*Midday Bus Service is an option for all Service Alternatives; per round-trip cost was provided by the St. Cloud Metropolitan Transit Commission

Metro Transit Labor Calculations	2020 Northstar Service	2020 Units	Unit Description	Basis	Minimum Service Alternative Budget	Minimum Bi-Directional Service Alternative Budget	Northstar Express Service Alternative Budget	Bi-Directional Service Alternative Budget
Number of Mechanics	26	2	Crew/Operating Trainset	Assumed 2 more per additional train set	26	28	28	28
Number of Administrative Staff	6	1	Admin/Operating Trainset	Assumed 1 more per additional train set	6	7	7	7
Number of Clerical Staff	4	1	Cleric/Operating Trainset	Assumed 1 more per additional train set	4	5	5	5

Operating Components	2020 Northstar Service	Minimum Service Alternative	Minimum Bi-Directional Service Alternative	Northstar Express Service Alternative	Bi-Directional Service Alternative
Number of Stations	6	8	8	7	8
Number of Maintenance Facilities	1	1	1	1	1
Number of Daily Midday Bus Round-Trips**	0	1	1	1	1
Number of Operating Trainsets	4	4	5	5	5
Number of Locomotives	6	6	7	7	7
Number of Cars	19	19	23	23	23
Total Number of Metro Transit Staff	36	0	0	0	0
Number of BNSF Train Crews	6	6	8	8	8
Number of Daily Crew Van Trips*	0	2	2	2	2
Annual Scheduled Miles	148,795	210,558	224,939	280,628	356,761

\* Crew Van service is not separated out for 2020 Northstar budget; per trip cost was provided by Passenger Transportation Inc.

\*\*Midday Bus Service is an option for all Service Alternatives; per round-trip cost was provided by the St. Cloud Metropolitan Transit Commission