



**MPO Staff Report
Technical Advisory Committee: June 12, 2019
MPO Executive Board: June 19, 2019**

RECOMMENDED ACTION: Update of the CAT/UND Shuttle Merger Study.

Matter of Update of the CAT/UND Shuttle Merger Study.

Background:

Cities Area Transit and University of North Dakota have been having continued discussions about merging the two systems. Essentially, the merger is conceptually considered that UND would contract with CAT to operate a public transportation service like the current UND Campus Shuttle system.

In March SRF started more in-depth review of costs and put a report together for a review by CAT and UND. On April 24th CAT and UND met with the MPO and SRF to go over the costs and discuss if this is still a viable venture. Since then a more in-depth review of what it would cost for CAT to run the campus shuttle service. A final cost is still being worked on and will be presented soon.

On April 24th the possibility of this merger was presented to the public. A meeting was held in the Lecture Bowl in the Memorial Union on the UND campus. While it was open to the public it was held a time that the students could attend and get information. A meeting was also held that day in Grand Forks City Hall aimed at the general public. The last day for comments was May 10th.

At the start of this study it was thought that if CAT started running the campus shuttle service it would be for the 2019-2020 school year. UND has decided to run the campus shuttle for the 2019-2020 school year. CAT would start running the service on Aug. 2020.

In May a five-year cost comparison was put together. Cost of service done by CAT was compared over a five-year period with that of costs if UND continued with the service as they have it today. Negotiations are still on going.

Findings and Analysis:

- Update

Support Materials:

- Current operating cost analysis summary.
- Five Year Cost Comparison



To: Teri Kouba, Senior Transportation Planner
Grand Forks/East Grand Forks MPO
255 North 4th Street
Grand Forks ND 58203

From: William Troe, Principal

Date: May 9, 2019

Subject: UND – CAT Transit Integration Feasibility Study

Purpose of Memo

The purpose of this memorandum is to document refined cost estimates for Cities Area Transit (CAT) operating the UND on-campus shuttle routes. Original estimates presented to the working committee on April 24, 2019, reflected the current CAT service parameters. The cost model results reported in April were based on budget information known at the time. In the interim, CAT has been working on developing final 2019 budget estimates, which reflect a higher annual operating cost as revenue hours and miles are anticipated to increase (even without adding shuttle service parameters). Figures presented in this memo represent the updated revenue hour, revenue miles and peak vehicles parameters for 2019.

Revised Financial Analysis

Updated costs were developed using budget information for 2019 input into CAT's three-part allocation model. Parameters included are:

- Revenue hours of service: This measure is a surrogate for estimating the annual cost of drivers assigned to routes.
- Revenue miles of service: Maintenance costs are reflective of the level of use of each bus while in service. Revenue miles are an appropriate measure of the level of use tied to maintenance costs and are used to estimate the maintenance cost element.
- Peak buses in service: This parameter is used to estimate the administrative costs associated with providing service.

Administration costs per peak vehicle for the 2019 budget year are estimated to be \$64,332. The proposed shuttle concept requires three peak period vehicles for a total administration element charge of \$192,996.

The updated per revenue hour cost is estimated to be approximately \$37.5638 and the updated revenue mile estimate is approximately \$1.51676 per mile.

The cost formula is as follows:

$$\text{UND Shuttle Cost} = \text{Revenue Hours} \times \$37.5638 + \text{Revenue Miles} \times \$1.51676 + \text{Peak Buses} \times \$64,332$$

Calculations

Table 1 shows the updated cost of providing the current level of shuttle service through CAT.

Table 1. UND Shuttle Service through CAT – Operational Cost Calculation

Item	Units ¹	Cost per Unit	Annual Cost
Revenue Hours	5,096	\$37.5638	\$191,425
Revenue Miles	47,499	\$1.51676	\$72,044
Peak Buses	3	\$64,332	\$192,996
Total			\$456,465

Note: 1 – Units estimated by CAT and reflect added miles/hours due to travel from/to transit garage. Previous figures were estimates for 2018-19 school year and included the affects of days service was cancelled due to weather.

Estimates included in Table 1 reflect operating cost only. The estimate of \$25,000 to \$30,000 annually for vehicle replacements on a 10 to 12 year cycle need to be added.

As a comparison, the original estimate for service was \$446,048.

Administration Cost Allocation – Peak Bus Element

Based on application of model, the Grand Forks and East Grand Forks cost allocation for administrative costs could decline with the addition of UND as a partner. Table 2 documents the potential Administrative allocation across each budget element incorporated into the model. For 2019, including UND as a partner **reduces** the Grand Forks and East Grand Forks allocations by:

- Grand Forks: \$115,000
- East Grand Forks: \$33,000

Including the university area shuttle in the CAT family of services has both incremental and shared/non-incremental costs in the model. Incremental costs will increase the overall CAT operating costs by adding to insurance costs, utility costs, some administrative services costs charged by the city, etc. The estimated incremental costs sum to approximately \$44,285 of the \$192,997 annual 2019 administrative cost allocation.

Table 2. Administration Cost Budget Items - Amount and Allocation

Budget Item	Model Administration Allocation to UND	Allocation Source			Incremental Cost of Adding UND
		Transfer from GF or EGF			
		Total	GF Portion	EGF Portion	
Administration Staff Wages/Benefits	\$32,688	-\$25,187	-\$19,591	-\$5,596	\$7,501
Police/Fire Protection/IT (By City Departments)	\$51,526	-\$39,703	-\$30,881	-\$8,822	\$11,823
Maintenance Supplies	\$8,655	-\$6,669	-\$5,187	-\$1,482	\$1,986
Utilities	\$20,954	-\$16,146	-\$12,558	-\$3,588	\$4,808
Contracted Services (Advertising/Printing/Auditing)	\$28,889	-\$22,260	-\$17,314	-\$4,946	\$6,629
Building/Grounds Maintenance	\$11,314	-\$8,718	-\$6,781	-\$1,937	\$2,596
Insurance/Taxes	\$14,430	-\$11,119	-\$8,672	-\$2,447	\$3,311
Other	\$24,541	-\$18,910	-\$14,684	-\$4,226	\$5,631
TOTALS	\$192,997	-\$148,712	-\$115,668	-\$33,044	\$44,285

Notes:

Rounding error exists and explains deviation from previous totals reported.

UND Model Allocation - Administrative Cost element distributed based on Peak Buses

Transfers - Reductions observed in Cost Allocation Model line item values when UND is included as a cost partner

Incremental Cost of Adding UND - Increased CAT Administration costs as responsibilities expand with shuttle route operations

Each cell in the table represents the cost by budget line item, but looking at each cell pushes the intent of the cost model, which is simply a locally accepted tool/method for distributing costs between service partners.

A logical argument can be established that of the approximately \$193,000 in administrative costs assigned to the university through the allocation model, a minimum of \$44,000 should be included in the university assigned element as it represents the **incremental cost for 2019 to CAT**. The remaining \$149,000 falls into the category of it is a business decision between university and city administration as to how to allocate the costs.



To: Teri Kouba, Senior Transportation Planner
Grand Forks/East Grand Forks MPO
255 North 4th Street
Grand Forks ND 58203

From: William Troe, Principal

Date: June 5, 2019

Subject: UND – CAT Transit Integration Feasibility Study: Five Year Operating and Capital Cost Estimates

Purpose of Memo

As part of their due diligence the university has requested a five-year estimate of costs that include operating and annualization of capital costs for the shuttle. The purpose of this memorandum is to document the assumptions and estimates of future costs for the shuttle operated by CAT relative to the costs associated with the university retaining operating responsibility.

Future Cost Assumptions

Forward extrapolation of the estimated operating costs for either a system operated by the university or by CAT requires incorporation of a number of assumptions. Central to the estimate is addressing the volatility the university has experienced in costs, which are mainly associated with variable vehicle rent costs. Change in labor costs from one year to the next is relatively consistent, however, vehicle rent varies substantially. Over the last five-years, as documented in an earlier memo, vehicle rent has been as low as \$25.00 per vehicle hour to over \$52.00 per hour, a range of close to 110 percent. Addressing the volatility is critical in making a fair comparison between the operator concepts.

As critical as considering the range in vehicle rental costs is addressing the sustainability of the 2020 assumption that Grand Forks would permit a portion of the administrative cost saving identified through application of the cost allocation model to be used to pay down the model cost to the university. For 2020, the city has agreed to re-assign \$94,700 of the \$115,700 in administrative cost “savings” to the university to offset higher operating costs with CAT as the operator. While the city has agreed to re-allocation for 2020, a plan for the future needs to be addressed before the due diligence step by either the city of Grand Forks or the university is complete. Additionally, there needs to be an understanding of what the “savings” may be in the future relative to overall service cost. If service costs for the shuttle increase and the “savings” stays constant at \$115,700, there will be a point in the near future where the “savings” would be exhausted. In the years after that point, the university’s responsibilities would likely have to grow to cover the balance. Whether the

“savings” will grow over time (consistent with budget increases) is a determinant that will need to be identified.

Other key assumptions incorporated into the five-year future cost estimates:

- CAT operating costs would increase by approximately 2.7 percent per year, which is consistent with the cost per revenue change between 2012 and 2019.
- University annual change in costs are 3.3 percent per year, consistent with the trendline slope (average annual change) of bus rental rates over the period from 2012 to 2018.
- Annualize capital costs for bus replacements were estimated to be \$25,000, which represents the 20 percent local match for three buses of a cost of \$500,000 each. The annualization period is 12 years, which is a conservative estimate of how often buses would be replaced. Daily mileage would not be as much as the typical CAT bus. Thus, there is a good likelihood that maintenance costs would be less than the typical route CAT bus and the 10-year replacement schedule could be extended.
- University operated costs need to address the volatility in rental costs. Thus, cost estimates using the trendline rate and the upper and lower rate of one standard deviation above and below the average. Incorporating costs for each of the three rates will address the potential volatility in rental rates over the last five years.
- For either the service being operated by CAT or the university, the starting operating cost was \$361,800, which represents the university cost for 2020 from applying the average trendline rental rate.
- The \$94,700 in Administrative cost “savings” transferred from Grand Forks to the university requires discussion. The current “savings” totals \$115,700 (which based on the workings of the cost allocation model would increase each year as long as the system characteristics of revenue miles, revenue hours, and buses are relatively similar to the current). Thus, there is some added capacity to transfer additional funds in the future as long as Grand Forks agrees. A concern is that the allowable tax levy is at the 5 mil limit and additional funding above what is generated by the transit mil levy must come from the general fund or other sources.

Table 1 documents the results of the five-year cost estimate analysis. Information in the table includes:

- Estimates of annual operating costs for the shuttle assuming a similar operating plan as the current (three daytime and one night route).
- UND allocated cost – Represents the fully allocated operating cost less the committed \$94,700 transfer from Grand Forks.

- The column labeled GF Remaining Admin “Savings” represents the remainder of the allocation model reduction in the Grand Forks allocation less the \$94,700 transfer in 2019. Future year estimates reflect an increase at the CAT annual cost escalation rate, which the allocation model is tied to.

Key takeaways from the information presented are:

- As a CAT provided service, the shuttle would cost between \$386,800 and \$451,900 per year between 2020 and 2025, respectively. These values include operating costs and annualized capital costs for buses.
- Operated by the university, the range of costs in 2020 are \$315,800 and \$402,400 and this cost range would increase to \$371,500 to \$473,300 in 2025. The average cost, or most likely based on historical data, ranges from \$361,800 in 2020 to \$425,500 in 2025.
- CAT operated service would cost less than university operated service for only situations where the upper vehicle rental rate assumptions are used. It needs to be noted that the upper limit from the historical rate analysis over the period (\$50.50 per hour) is lower than the rate (\$52.00) experienced in 2018. Thus, while the \$50.50 per hour rate that results in the \$425,500 cost represents the upper limit of a 95% confidence interval of the dataset, there is evidence that cost can be higher at least for some portion of a year.

Table 1. Future UND Cost Assignment (2020 through 2025)

Year	CAT Operated					UND Operated			
	Annual Increase	Estimated Allocation Model Operating Cost ¹	UND Allocated Operating Cost ²	GF Remaining Admin "Savings" ³	Annualized Vehicle Replacement Cost	Total Annual Operating + Capital Cost	Annual Increase ⁴	Operating Costs by Variable Rent Amount ⁵	
							Low	Middle	Upper
2020	0.0%	\$456,500	\$361,800	\$21,000	\$25,000	\$386,800	\$315,800	\$361,800	\$402,400
2021	2.7%	\$468,800	\$374,100	\$21,600	\$25,000	\$399,100	\$326,200	\$373,700	\$415,700
2022	2.7%	\$481,500	\$386,800	\$22,200	\$25,000	\$411,800	\$337,000	\$386,000	\$429,400
2023	2.7%	\$494,500	\$399,800	\$22,800	\$25,000	\$424,800	\$348,100	\$398,700	\$443,600
2024	2.7%	\$507,900	\$413,200	\$23,400	\$25,000	\$438,200	\$359,600	\$411,900	\$458,200
2025	2.7%	\$521,600	\$426,900	\$24,000	\$25,000	\$451,900	\$371,500	\$425,500	\$473,300

Notes

- 1 - 2020 Operating Cost reflects amount assigned to UND (\$94,700 of Administrative cost allocation accepted by Grand Forks)
- 2 - Assumes the agreed to \$94,700 is subtracted from the Estimated TOTAL Operating Cost going forward
- 3 - In 2020 - GF Admin Cost reduction remaining after accepting \$94,700 is \$21,000 - Can this be reassigned in future to UND?
- 4 - Annual percent change reflects average change from estimated trend line of 2013-2019 bus rent.
- 5 - 2019 costs based on recalculating total based on using trend average, one standard deviation lower and one standard deviation higher rates.
Annualized capital cost assumes local match for replacing 3 vehicle after 12 years at \$500,000 per vehicle.