The County Connection



Inter Office Memo

To: O&S Committee **Date:** December 27, 2011

From: Bill Churchill Reviewed By:

Director of Transportation

SUBJECT: LINK Vehicle Size Evaluation and Future Vehicle Procurements

SUMMARY OF ISSUES: There are two scheduled vehicle procurements for the

LINK division, one in 2012 and one in 2013. In order to ensure the procurement of the correct vehicle types, a comprehensive system wide vehicle utilization study was conducted. This analysis examines the operational viability of changing the current mix of vehicle types in an

effort to reduce capital expenditures over the next two

procurements.

RECOMMENDATIONS: Staff recommends the O&S Committee forward this item

to the full board for discussion and review since several Board members on other committees are interested in this

analysis.

FINANCIAL IMPLICATIONS: None

OPTIONS: 1) Forward analysis to the full board

2) Provide direction to staff for modification of this

analysis

ACTION REQUESTED: For information only.

ATTACHMENTS: Attachment A: Fleet Statistics Chart

Attachment B: Seat Capacity Utilization Charts

CHANGES FROM COMMITTEE: N/A

BACKGROUND

With the anticipation of replacing paratransit vehicles in 2012 and 2013, staff conducted a comprehensive system-wide vehicle utilization evaluation of the existing LINK fleet. The

purpose of the analysis was to determine the best composition of vehicle sizes and capacities to maximize the efficiency of service implementation. Having conducted a similar study of the fixed route fleet this seemed a simple task as first glance. It quickly became apparent that this is not a simple task in the world of ADA paratransit. Unlike fixed route service there are no clearly defined routes, rather vehicle routing is dynamic from day to day changing with the varied and diverse needs of the ADA population. In fact a paratransit vehicle may significantly modify their route on the fly in order to accommodate the needs of the rider. One example of why this occurs is driven by dialyses patients. Dialysis patients generally have specific times to start an appointment but the ending time is not known until after they arrive. As a result a LINK vehicle may drop a group of patients off at a dialyses center all at one time but the pick-up times are scattered throughout the day based on the individual needs of the patient. Changing ending times requires LINK to be flexible in when a dialysis patient may need to be picked up.

Adding to the complexity of providing transportation is the varied equipment many passengers require to be mobile. The LINK operator contends with oversized wheel chairs, un-foldable sit on walkers, scooters and other assorted and needed medical equipment. Frequently wheel chair passengers will bring a walker as well since they are partially mobile and wish to walk for short distances at their destination. It is important to note the new FTA ruling for ADA compliance now requires operators to allow the large oversized wheel chairs on vehicles that can accommodate them. This varied array of equipment has a profound impact on the use of "seat real estate" required per vehicle. For this reason the analysis is based on vehicle seat capacity utilization rather than actual passenger count. If just passengers were counted it would appear many less seats were used then are actually required. The following chart demonstrates the volume of space some of this equipment uses.

Vehicle Capacity per Rider/Equipment Type

Type	Seat Usage	Mini Van	Regular Van	22' Cutaway
Ambulatory Rider	1	5	6	14
Wheel chair	4	1	2	5
Large Wheel chair	4+	0	2	4
Scooter	4	0	0	3
Large Walker	2	2	2	7

Customer safety has also played a role in what vehicles types are deployed but to a lesser extent. An example of this is a group of blind individuals that have a regularly scheduled trip for a group meeting. This group could technically be transported in a minivan but they tend to hit their heads when entering and exiting the minivans so LINK dispatches the larger regular van to enhance their safety.

Methodology of Analysis

Since vehicle size is based upon the maximum seat utilization, staff looked at the peak ridership season and day of week. Tuesdays in the month of October tend to see the greatest overall volume of ridership. Staff pulled the actual vehicle manifests for all vehicle trips across four

days in the month of October 2011. The ridership and passenger equipment was then recorded into a spreadsheet for each vehicle. A bar chart was created (please see attached charts) for each vehicle that operated displaying the vehicles seat capacity utilization for the day. A red threshold line was then added to each chart demarking the seat utilization cutoff point that would allow a minivan to be used. In other words if a bar on the chart is higher than the red line a minivan could not have been used to provide that service.

Findings

Clearly the seat capacity utilization is significantly higher than anticipated. Over 81% of the vehicles deployed realized a seat capacity utilization greater than a minivan total seat capacity. Even more startling was every vehicle deployed with the exception of any minivans, exceeded a minivans seat capacity for at least one day in the period analyzed. There were five vehicles that exceeded the minivan seat capacity threshold for 50% of the days deployed and five vehicles exceeded the seat capacity threshold for only one day out of the collected data.

Overall the mix of vehicle types is about correct. However, in conducting this analysis it became quite clear the existing Braun Van fleet and minivan fleet are under used. The minivan fleet is only used for getting into neighborhoods that would pose a serious challenge to the larger cutaway buses. Since there are at least five vehicles that only exceeded the minivans seat capacity for one day of their deployments, there is clearly an opportunity through more thoughtful scheduling to increase the utilization of the minivans and the regular Braun vans. On those days where the larger cutaway is not needed the smaller vans could be deployed. Staff has already begun the task of working with the contractor to implement these scheduling changes.

Due to the surprisingly high overall seat utilization staff would not recommend reducing the number of cutaway buses in the existing fleet. The data demonstrates the LINK division needs to have the larger cutaways to prevent having to deploy more than one vehicle to cover current passenger demands. The most expensive component of providing transportation whether it is fixed route or paratransit is the labor component. If the existing fleet of cutaways were to be reduced the contractor would be forced to deploy more than one vehicle to cover service needs that are currently completed on some days doubling the current labor cost in those areas. Over the life cycle of the vehicles the increased labor cost would far outstrip any capitol savings gained in smaller vehicles.

Vehicle Lifecycle Cost Analysis

It is important to understand vehicle lifecycle costs when making long term capital investment decisions. There are several important factors to consider, replacement cycles, fuel consumption and cost to maintain the vehicles over the life of the vehicle.

A Cutaway bus is rated to have a seven year life cycle while the smaller vans and minivans are rated to last five years. The life cycle rating is only important when considering capital replacement cycles over long periods of time. For example CCCTA often develops twenty year budget projections, in that amount of time a Cutaway bus would be replaced about three times while the smaller vehicles will be replaced four times. However, capital replacement expenses may not be as important to the bottom line as ongoing operational expenses since vehicle replacements are fully covered through federal grants and local matches.

Operationally there are differences in the cost to operate each vehicle type which are driven by fuel economy and maintenance cost per mile. The following chart illustrates the differences between vehicle types from actual data compiled.

Vehicle Type	Maintenance Cost/Mile	MPG
22' Cutaway Bus	\$0.16	7.25
Braun Full Size Van	\$0.20	10.43
Minivan	\$0.15	16.20

Clearly the fuel economy of a minivan is far superior to a Cutaway and even a full sized van. The potential savings in fuel economy is one factor in staff's motivation to find ways to implement this vehicle type. On the downside however, the cost to maintain these vehicles is relatively high almost matching the cutaway buses. Staff spent time working with the LINK contractor's maintenance department to understand how this can be. According to maintenance personnel, minivans are manufactured for non-commercial use and tend not to be as robust as the larger vehicles which are designed for a heavier duty cycle. As the minivan fleet utilization goes up the maintenance cost per mile is expected to go up as well. Staff will monitor maintenance costs for this fleet for future decision making. The full size van maintenance costs are the highest primarily due to issues with the wheel chair lifts. Maintenance staff is confident the base vehicle is solid and future procurements will examine other wheel chair options.

Attachment A

Existing Fleet

Number of

Vehicles	Type	Vehicle Life	Cost
52	22' Cutaway Bus	7 years	\$86,000
5	Braun Transporter (Full size Van)	5 years	\$54,000
3	Eldorado Amerivan (Minivan)	5 years	\$46,000

Scheduled Replacement Plan

Replacement Year	Number of Vehicles	Type	Projected Cost
2012	4	22' Cutaway Bus	\$360,000
	4	Braun Transporters	\$224,000
2013	6	22' Cutaway Bus	\$552,000
	1	Braun Transporters	\$56,000
	3	Eldorado Amerivan (Minivan)	\$142,000





















































































































































































































































































































































































































