

Subject: DES- ART Buses

**FY 2020 Proposed Budget
Budget Work Session Follow-up**

4/12/2019

The following information is provided in response to a request made by Matt de Ferranti at the work session on 3/8/2019, regarding the following question:

For purchasing Arlington Transit (ART) buses, what are the economic considerations that play into the decisions of purchasing either large or small buses.

A number of factors play into the economic considerations when ART buses are purchased. For fixed route transit properties (ex: ART, DASH, Metrobus), most of the cost of operations (80%+) are associated with the labor of operating and maintaining buses. In addition, the level of fleet diversification increases the cost of maintenance as there is a need to procure a wide array of parts to accommodate a fleet of varied bus types. Decisions about bus size are also influenced by the nature of existing fixed route characteristics/service and anticipated changes over time.

ART started in the early 1990's as a peak period neighborhood feeder service to Metrorail with relatively low ridership and where smaller buses were appropriate. ART service has shifted over time to be primarily an all-day trunk line service connecting major activity centers in Arlington using arterial streets. On these trunk lines, passenger loads can vary widely by time of day and between weekdays and weekends. The nature of these trunk line services calls for heavy duty transit buses.

The table on the following page compares useful life, capacity, and pricing for small and large buses. A description of the types of buses are as follows:

- The "Body-on-chassis" minibus is a specially-made body placed on a Ford or Chevy "cutaway" truck (not van) chassis. The chassis is made by Ford or Chevy, but the bodies are manufactured by other companies. These vehicles are wider and taller than standard vans with interiors tall enough to allow a person to stand and four-across seating. The useful life of minibuses are typically 4 to 7 years since they are built on a large pickup truck chassis and carry a significant amount of weight as the frame must accommodate the covered seating area instead of a flatbed.
- A heavy-duty transit bus is a bus with front and center doors, normally with a rear-mounted engine, built on a heavy-duty bus chassis. This is what is typically used for most fixed route bus systems. Heavy-duty transit buses can accommodate a higher seating and standing capacity as compared to a "Body-on-chassis" minibus. A heavy-duty bus has longer useful life-span of 12-15 years since the bus is built on a heavy-duty chassis which can accommodate the

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weight of a bus and have engines which can support the movement of this weight overtime.

	“Body-on-chassis” minibus (23’)	“Body-on-chassis” minibus (26’)	Heavy-Duty Transit Bus (30’)	Heavy-Duty Transit Bus (35’)	Heavy-Duty Transit Bus (40’)
Useful Life	4-7 years	4-7 years	12-15 years	12-15 years	12-15 years
Seating Capacity	12	18	28	32	42
Standing Capacity	up to 3	up to 6	up to 29	up to 33	up to 43
# of Passenger Doors	1	1	2	2	2
Unit Price (before add on items)	\$210,000	\$230,000	\$377,000	\$437,000	\$454,000
Cost to Operate	\$83.00 per hour***	\$83.00 per hour***	\$83.00 per hour***	\$83.00 per hour***	\$83.00 per hour***

***\$83.00 per hour is the existing contract cost including operations, maintenance and management (by contract) but excludes capital amortization of vehicles which are owned by Arlington.

Arlington’s ART Bus Fleet

ART currently has a fleet composed of 14 “Body-on-chassis” minibuses with only eight (8) in service and 64 heavy-duty transit buses which are all in service. Currently six small minibuses are not in service due to structural damage due to the age and the wear and tear on those minibuses.

Considerations When Selecting Bus Sizes

- **Cost of Labor:** The main cost driver for bus operations is the cost of labor and maintenance.
- **Vehicle Reliability & Durability:** Assessing vehicle performance in operation over time.
- **Vehicle availability and the flexibility to serve routes if there are mechanical breakdowns and/or emergencies.**
- **Mixed Fleet of Buses**
 - Having a mixed fleet of buses among “Body-on-chassis” minibus and heavy-duty transit buses requires an expanded on-site inventory of parts required to maintain the buses.

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- Existing ridership and predicted ridership based on growth in population, employment and development (Arlington is projecting considerable growth in jobs, population and households through 2040).
- Smaller “Body-on-chassis” buses can only be used on certain routes due to the limited seating and standing capacity; however, the shorter (30 ft.) heavy-duty transit buses can be utilized on all routes.
- A smaller “Body-on-chassis” vehicle limits ability to increase service.

As described on the previous page, there are areas in ART’s neighborhood peak-period service that connect to Metro where smaller vehicles may continue to have applicability due to street geometry and low ridership demand. These routes represent less than 10% of the total service and only 4% of the ridership.

As the environment for fixed route transit continues to evolve in Arlington and the region, Transit staff will continue to assess maintenance and operations costs, the applicability of new bus technologies, fleet offerings (including vehicle size), and new models of service delivery.