CAT System Improvement Plan

STS 3020

Project Objectives

Image Source: https://www.charlottesville.gov/ImageRepository/Document?documentID=11984

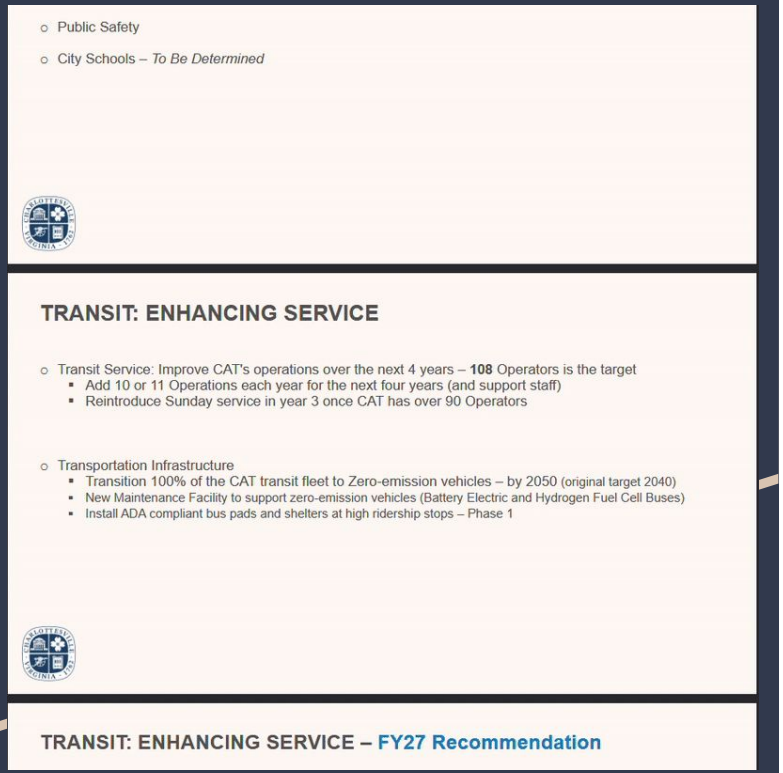
Split into a 3 part plan - no particular order

A. Analyze other bus systems
   - Both in the United States and globally
   - Focus on fare-free bus systems
   - Goal: find strengths and weaknesses

B. Analyze proposed CAT changes
   - Examine proposed timetables
   - Analyze route equity (5,7, & trolley)
   - Examine at historical CAT ridership data

C. Compare strengths of UTS and CAT
   - Find ways to collaborate and combine the strengths of both systems

Our Progress



- Public Safety
- City Schools – *To Be Determined*

TRANSIT: ENHANCING SERVICE

- Transit Service: Improve CAT's operations over the next 4 years – **108** Operators is the target
  - Add 10 or 11 Operations each year for the next four years (and support staff)
  - Reintroduce Sunday service in year 3 once CAT has over 90 Operators
- Transportation Infrastructure
  - Transition 100% of the CAT transit fleet to Zero-emission vehicles – by 2050 (original target 2040)
  - New Maintenance Facility to support zero-emission vehicles (Battery Electric and Hydrogen Fuel Cell Buses)
  - Install ADA compliant bus pads and shelters at high ridership stops – Phase 1

TRANSIT: ENHANCING SERVICE – FY27 Recommendation

Image Source: https://charlottesvilleva.portal.civicclerk.com/event/2526/files/attachment/6849

A. Analyzed other bus systems
   - Richmond (GRTC)
   - Blacksburg (Blacksburg Transit)
   - Fairfax City (CUE Bus)
   - All are fare free, similar-ish size of cities

B. Analyzed proposed CAT changes
   - Analyzed strategic decisions stated in the FY27 Budget Brief including the adjustments to service times, intervals, and trends in these changes

C. Began analysis on UTS and CAT interactions
   - Found some current practices of drivers that have operated for both UTS and CAT (part time work, transfer between organizations)

Bus System Analysis

Image sources:
Richmond's Bus Rapid Transit - Next City
Virginia Tech Transportation
CUE Bus - Wikipedia
Charlottesville Government Jobs - CAT Driver

.	Charlottesville (CAT)	Richmond (GRTC)	Blacksburg (BT)	Fairfax City (CUE)
Annual Ridership	1.55 Million	12.1 Million	4.78 Million	1.0 Million
Fare Structure	Fare-Free	Fare-Free	Fare-Free	Fare-Free
Typical Frequency	30–60 mins	10–15 mins (Core)	15–30 mins	30–60 mins
Sunday Service	None	Yes (Full)	Yes (Limited)	Yes (Limited)
Fleet Size	42 buses	250+ buses	49 buses	12 buses
Focus Area	City/Albemarle	Regional/BRT	University-Heavy	Suburban/Metro
Population	45,000	230,000	45,000	26,000
Drivers	67	280	148	Unknown
Driver to bus ratio	1.6:1	1:1	3:1	Unknown

Sources:
Charlottesville Area Transit (CAT)
Fairfax City (CUE Bus)
Blacksburg Transit (BT)
Richmond (GRTC)

FY 27 Route Analysis

Change in Buses per Route, Weekday (+10 Operators)					
Route Type	6A - 9A	9A - 3P	3P - 6P	6P - 11P	Daily
Overall	7	16	17	1	55
Percent Change	12.5%	27.6%	29.3%	1.5%	18.6%
"Luxury" Routes (5, 7, Trolley)	2	14	14	-3	41
Percent Change	10.5%	73.7%	73.7%	-10.7%	39.4%
All other routes	5	2	3	4	14
Percent Increase	13.5%	5.1%	7.7%	10.0%	7.3%

Change in Buses per Route, Weekend (+10 Operators)					
Route Type	6A - 9A	9A - 3P	3P - 6P	6P - 11P	Daily
Overall	0	11	11	-4	29
Percent Change	0.0%	22.4%	22.4%	-6.3%	11.2%
"Luxury" Routes (5, 7, Trolley)	-4	5	5	-3	8
Percent Change	-21.1%	26.3%	26.3%	-10.7%	7.7%
All other routes	4	6	6	-1	21
Percent Increase	13.8%	20.0%	20.0%	-2.9%	13.6%

- Most new buses allotted for 5, 7, and Trolley between 9AM-6PM
  - New 15 minute intervals on 7 weighed heavily here
  - Will de-crowd route 7 buses during afternoon rush
- Remaining new buses are spread across other routes
  - In most cases one extra bus per route is used to extend latest pickup to 10PM while keeping 60 minute interval
- Overall daily increases gives rough idea of increases per driver and CAT's priorities
  - Each new driver adds about 8 stops per day

Change in Buses per Route, Overall (+10 Operators)					
Route Type	6A - 9A	9A - 3P	3P - 6P	6P - 11P	Daily
Overall	7	27	28	-3	84
Percent Change	6.7%	25.2%	26.2%	-2.3%	15.2%
"Luxury" Routes (5, 7, Trolley)	-2	19	19	-6	49
Percent Change	-5.3%	50.0%	50.0%	-10.7%	23.6%
All other routes	9	8	9	3	35
Percent Increase	13.6%	11.6%	13.0%	4.0%	10.1%

Future Direction

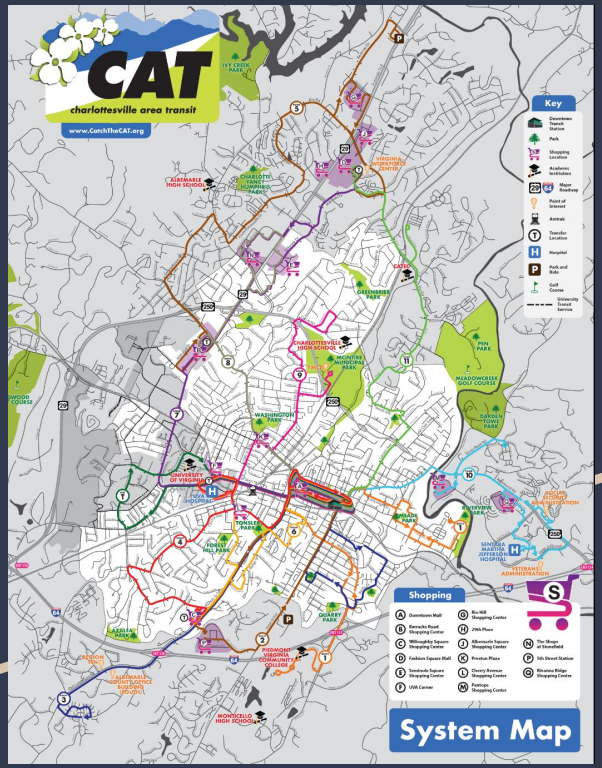


Image Source: https://www.charlottesville.gov/523/System-Map

- 15 Minutes Per Route
  - CAT's previous highmark goals included 30 minute stops for all routes (2024)
  - CAT will take action to adopt 15 minutes per stop for route 7 and the Trolley.
  - What can be done to capitalize on this shift?
- Driver Hiring and Training
  - Are there innovations available for hiring, training, and retaining drivers?
  - What can be done to ensure the morale and overall satisfaction for the drivers?
- Analyze UTS and CAT
  - Can CAT operate an asymmetrical schedule to bring more frequency to higher traffic routes?
  - To stop buses from arriving early or off schedule, does CAT utilize software such as the anti-bunching software that UTS uses?

Our Questions

We have some clarifying questions to aid our analysis:

- What is the turnover rate for CAT drivers?
- What is the barrier for hiring more people beyond funding, or is that the only barrier?
- Is CAT open to increasing starting wages?
- What technologies are used to manage routes efficiently? (GPS, anti-bunching)
- Could CAT hire drivers for evening shifts at higher wages but part time hours to increase post work scheduling?
- What has hiring been like for CAT since COVID?
- Are they able to hire enough drivers to meet their plan?