

TO: Senate Banking Committee

FROM: James C. Keel, Director of Public Transportation

DATE: March 15, 2023

SUBJECT: Local Views on Public Transportation, Transit Infrastructure and Operations, and Federal Transit Programs

First, thank you Senator Sherrod Brown and Senator Tim Scott for allowing me to be part of this panel today. Senator Scott, I greatly appreciate the support you have provided to Greenlink over the past seven years.

On behalf of the Greenville Transit Authority (GTA), I am eager to share my thoughts, ideas, and concerns as it relates to the Bipartisan Infrastructure Law and its impact on small transit systems.

If you have not had the opportunity to visit Greenville, South Carolina, let me give you some highlights:

- We're located about halfway between Atlanta, Georgia and Charlotte, North Carolina;
- We have a 23+ mile long rails-to-trails multiuse path—affectionately known as the Swamp Rabbit Trail—that connects several cities; and
- If you love waterfalls, you should come see ours, which are conveniently located in the heart of a lively downtown alongside a recently opened 60-acre Unity public park.

And though Greenville County is home to GSP, which was recently awarded the 2022 Best Airport of 2-5 Million Passengers, and the City of Greenville was voted one of the [10 Best Cities to Buy a Home in 2023](#), as a resident, I am obligated to tell you we would love for you to visit, but please do not stay. We're full!

All jokes aside, Greenville's local economy is booming, and we have the population growth to prove it. With over 500,000 individuals currently in residence, our population is expected to explode by an additional 220,000 by 2040.

While Greenville is growing, so is our great state; South Carolina was the [third fastest growing state in 2022](#). This is due, in large part, to presence of several manufacturers located throughout the state. You may recognize a few: BMW, Boeing, GE Power, ZF Transmission, Bosch, Proterra, and Michelin.

How does GTA support such positive socioeconomic growth? Currently, GTA operates [12 fixed routes](#), 11 with 60-minute frequency, and one with 30-minute frequency. The 30-minute frequency route is funded, in part, via a public-private partnership and directly serves the Clemson University International Center for Automotive Research (CU-ICAR), Bon Secours Mercy Health, and PRISMA Health Hospital. In total, GTA's service area is approximately 94 square miles. Service is provided 18 hours per weekday and 10 hours on Saturdays. GTA has short term plans to increase Saturday hours to match weekday hours.

During the peak of the pandemic, GTA suffered a ridership decline of 44%. What may surprise you is that the GTA Board made the decision to *increase* weekday hours of service during the pandemic, adding *four additional hours* of service to each route. Doing so not only supported essential *shift* workers but encouraged riders to spread out their trips over the course of the day, resulting in less ridership per hour,

but greater ridership per day. By early 2022, monthly ridership consistently exceeded pre-pandemic levels. Last year, GTA's fixed route ridership increased 17%<sup>1</sup> over the previous year and paratransit increased 54%<sup>2</sup>. We attribute this quick recovery and expansion of ridership to the fact that GTA serves essential workers, individuals who do not have the luxury of working from home, even during a pandemic.

A recent [South Carolina Department of Employment and Workforce Report](#) highlights the fact that a *lack of transportation* is one of the top five barriers preventing individuals from getting jobs. Workforce transportation is the issue and public transit is a solution.

In 2018, GTA adopted a plan to expand transit, known as a Transit Development Plan or TDP. Later updated in 2021, the TDP outlines later hours on weekdays, later hours on Saturdays, Sunday service, increased frequencies of up to 30-minutes on all routes, 15 additional routes, and a County Wide Demand Response System. Later hours on weekdays have been implemented. Later hours on Saturdays is underway. The remaining items cannot occur until after GTA moves into its new Operations and Maintenance Facility, currently scheduled to be open in February 2024 (though funding for ongoing operations must also be identified). Of note, once expanded, the fixed route system will be located within a ½ mile of 73% of all jobs in the county, translating into less than a 10-minute walk to more job opportunities for riders.

Last week, a partnership of local business and nonprofits known as [Greenville Connects](#) in collaboration with the Greenville Chamber released an [Economic Impact Study](#) showing that when fully implemented, the TDP will add between **\$670 million to \$2 billion in new annual economic activity** in Greenville County.

GTA's challenges can be separated into three main buckets: economic, policy, and passenger-related:

- Economic:** GTA does not benefit from a dedicated funding source – there is no penny or property tax devoted to GTA, all local funding is secured via general fund appropriations from the City of Greenville and Greenville County. This process means that GTA must compete against other local government services, such as police and fire, for much-needed operating and capital funding. Moreover, the economy—mainly inflation of fuel, wages, and parts—has placed a heavy toll on our FY24 budget. As it currently stands, GTA's operating budget will increase 14% for FY-24, 12% of which is due to an increase in Bus Operator salaries. This salary increase is a vital component of GTA's ongoing efforts to combat its Operator shortage, which has been an issue since 2019. This budget does not include any expansion of service. At this point, GTA does not forecast passing these costs along to our riders—80% of which live below the poverty line—which means our taxpayers will have to cover the balance.
- Policy:** The increases<sup>3</sup> in 5307 formula funds in the Bipartisan Infrastructure Law are greatly appreciated and provided small transit agencies such as GTA with much-needed relief. However, as outlined above, although these increases are monumental, GTA will not be able to utilize these funds to expand services or capital improvements due to rising operational costs. Additionally, there are new costs associated with the BIL, particularly that of the Benefit Cost Analysis requirement for RAISE and the Zero Emission Fleet Transition Plan for 5339c Buses and Bus

<sup>1</sup> FY-21 Ridership: 558,133, FY-22 Ridership: 651,440

<sup>2</sup> FY-21 Ridership: 7,467, FY-22 Ridership: 11,229

<sup>3</sup> GTA's 5307 funding impacting FY-23 increased by 27.4% (FY-22 \$2,293,760 to FY-23 \$2,921,435). GTA is in the Greenville Urbanized Area and splits funding with CATbus. The total funding to the urban area increased 28.4%.

Facilities Low and No Emission Funding. Current estimates for a Zero Emission Plan suggest that contracting out this work would cost GTA between \$50,000 and \$125,000. GTA has successfully deployed 4 Proterra Battery Electric (BE) buses with plans to expand its charging infrastructure at its new facility along with 5 additional BE buses. We already have guidance from our Board to invest in alternative fuels and have been awarded federal funds to do so but are now required to write up a plan to support future funding requests. Formula funds can be used to pay a third-party to produce this plan, but that mean dollars are shifted away from operating or capital expenses to cover these new compliance costs. **Further we have to spend money on this plan before we can even compete for funding, which is not guaranteed.** It would be worth considering a waiver for those agencies who have already *successfully* deployed BE buses. Though I certainly cannot speak for them, I am unsure as to how rural communities are addressing this barrier to entry within the competitive grants process.

- **Passenger-related:** COVID wreaked havoc on our County. Anecdotally, GTA has seen a significant increase in the number of individuals experiencing mental illness and or homelessness since the pandemic. This is outside of our wheelhouse as we are transportation professionals and are not equipped to provide potential riders with the mental health care they may need.

## Major Successes

- 2017 Completed [Comprehensive Operations Analysis](#)
- 2017 First Low No Award (1.35M)
- 2018 Launched Intelligent Transit System
- 2018 Launched Mobile and Account Based Ticketing
- 2018 Buses and Bus Facilities Award (\$11M)
- 2018 Transit Development Plan Completed
- 2019 Launched (4) Proterra Battery-Electric Buses
- 2019 Systemwide Route Overhaul as a result of Comprehensive Operations Analysis
- 2019 Buses and Bus Facilities Award (\$2.04M)
- 2020 Human Trafficking Awareness and Public Safety Initiative Grant
- 2020 Launched Later Service Hours
- 2020 Second Low No Award (\$5.27M)
- 2020 GTA was the first agency in South Carolina to submit the Public Transportation Agency Safety Plan (PTASP)
- 2021 Started Design on New Operations and Maintenance Facility
- 2022 Broke Ground on New Operations and Maintenance Facility
- 2023 RAISE Award for Bus Stop Improvements (\$5.8M)
- 2024 Grand Opening of New Operations & Maintenance Facility
- 2024 Launch of (5) Proterra Battery Electric Buses





Figure 1: GTA Proterra Battery Electric Bus

## Experience with FTA

We have a very strong relationship with FTA’s Region IV Office in Atlanta. Earlier this month, Dr. Yvette Taylor, Region IV Administrator, met with all South Carolina transit agencies at our annual statewide conference to communicate updates and respond to specific questions and concerns. She is easily accessible, and I cannot speak highly enough of her and her staff. In fact, my team communicates with Region IV staff regularly, particularly with key individuals such as Nicole Finley, Rob Sachnin, Margarita Sandberg, Maria Luchey, Carrie Walker, and Micah Miller. Region IV staff is consistently responsive and communicative, working closely with GTA to efficiently implement projects.

## Transition to Alternative Fuels

### Background

In 2021, GTA passed a resolution to transition from diesel-powered transit buses toward a mixed fleet of Battery Electric (BE) and Compressed Natural Gas (CNG) buses. GTA desires to have a diversified fleet to bolster its *emergency preparedness resiliency* as this would allow GTA to maintain flexibility to meet demand should disaster strike. GTA has a history of aiding in the evacuation of residents along the coast (major destinations include Myrtle Beach and Charleston) before hurricanes make landfall. Greenville is also located just two counties away from Oconee County, the home of one of the nation’s largest nuclear power facilities – in the event of an emergency, GTA must be able to respond quickly. Diversification of GTA’s fleet will result in quicker and more reliable movement of people at times when it is most needed.

Initial iterations of BE bus technology were only available in fast charge – meaning buses had to be charged every 30-to-60 minutes to last another 30-to-60 minutes. This is done via an overhead blade charger. Given GTA’s service delivery system design, this type of charging system would not work for us. However,

in 2019, GTA found itself on the bleeding edge of alternative fuels technology when it launched four Proterra BE buses. At the time, the buses were considered the latest and greatest in BE technology, offering 440kW of onboard energy and forecasted to operate for up to 10 hours per day, a major improvement over the previous fast-charge model.

I can confidently say that GTA has successfully operated these vehicles for almost four years. However, doing so has not been without its challenges. In 2019, BE vehicle uptime<sup>4</sup> was 73% whereas diesel vehicle uptime was 86%. By 2022, BE vehicle uptime increased to 87% as compared to 89% diesel vehicle uptime, a significant increase! What have we learned? Field performance matters. I will briefly speak to three main factors:

1. **Operator** – On the surface, BE buses may appear to look the same as diesel buses, but they are unique. For example, regenerative braking systems capture energy as a BE bus is in forward motion. These systems simply feel different for those used to operating a traditional diesel bus. Understanding how the vehicle performs and how to operate it *efficiently* is a critical skill that even the most tenured operator must be taught.
2. **Geography** – Battery performance is also heavily dependent on roadway grade—flatter routes are ideal while “hill-y” routes will result in less efficient use of the battery. I will point out that we must be cognizant of which routes we deploy BE buses on as battery performance is a lower priority than equity in services.
3. **Climate** –BE buses consume a significant amount of energy to maintain a heated passenger compartment, particularly when it drops below 40 degrees. To combat this issue, GTA charges its buses twice as much in the winter.

I have been asked, on several occasions, whether its “cheaper” to operate a BE bus as compared to a diesel bus. It is difficult to definitively give an answer at this stage of technology especially as electricity rates for charging depend on the time of day. I will give you some insight based on our numbers:

### Capital

In 2019, GTA purchased 4 Proterra BE buses at approximately \$880,000 per bus. In 2022, GTA was awarded funding to purchase an additional 6 Proterra BE buses. Due to rising costs, GTA utilized these funds to purchase 5 buses at a cost of \$1.1M per bus. These numbers do not include the cost of associated charging infrastructure. For comparison’s sake, GTA purchased 3 diesel buses in 2021 at approximately \$475,000 per bus.

While industry statistics indicate that the life-cycle cost of an BE bus is on par or even less than that of a diesel bus, we, as an industry, need more study on the comparison of BE to diesel at the fleet level. Depending on route characteristics, the range of a diesel bus can perform a route for the entire 18-hour service day. Our BE buses can operate for about 10 hours on a charge (in moderate weather), so at GTA, with the generation of BE bus we own, we must have 2 BE buses to do the job that one diesel bus can do. That “lack of range” is a significant factor in how we handle scheduling and well as the spare ratio in our fleet. While capital dollars are more readily available in our industry than operating dollars, integrating BE buses have a higher per unit capital cost and we must consider buying more of them to meet schedule demands.

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<sup>4</sup> Uptime for 2019 is only available for July – December.

## Fuel

The data suggests that operation of a BE bus may be lower than that of diesel. In FY-21, GTA paid, on average, \$1.79 per gallon for diesel fuel (equating to \$0.37 per mile). In FY-22, that average rose to \$3.37 per gallon (equating to \$0.69 per mile). Similarly, in FY-21 and FY-22, GTA paid, on average, \$0.44 per mile for BE bus charging. As outlined in the chart below, if the cost per gallon for diesel continues to hold steady or increase, operating an electric bus may increasingly become more affordable. *GTA recently submitted a 2023 RAISE grant application, which includes a funding request for a solar panel array, which would offset the cost of charging its buses at its new Operations and Maintenance facility. If awarded, BE charging costs over time are expected to decrease.*

Energy Cost Per Mile		
Year	Diesel Bus	EV Bus
FY-21	\$ 0.37	\$ 0.44
FY-22	\$ 0.69	\$ 0.44

Figure 2: Comparison of cost of diesel per mile versus cost of electricity per mile.

## Maintenance

Though both types of vehicles require ongoing preventative maintenance, there are several factors that affect maintenance cost per vehicle. GTA does not have a large enough fleet to generate a statistically valid cost. Current estimates suggest that the maintenance cost per mile for diesel average \$0.55 per mile as compared to \$0.73 per mile for BE. However, as the chart below indicates, maintenance cost for BE appears to fluctuate greatly from year to year as the bus progressed through its lifecycle. Until BE buses reach the end of their 12-year useful life, it will be difficult to truly understand full operational cost per vehicle.

Maintenance Cost Per Mile		
Year	Diesel Bus	EV Bus
FY-21	\$ 0.51	\$ 0.97
FY-22	\$ 0.59	\$ 0.49

Figure 3: Comparison of cost of preventative and reparative maintenance per mile by fuel type

## Changes in Technology

I would be remiss if I did not mention that the technology is rapidly changing. While our current BE buses are at a 2:1 ratio with diesel, newer generations include more onboard energy storage, and charging has advanced. Systems with on-route charging can now be deployed; given sufficient dwell time at hubs, a 1:1 ratio can be achieved. The cost of capital should be taken into consideration and the utility must have sufficient power to make this a reality. This is a perfect demonstration of how quickly this technology has evolved and will continue to evolve over the next few years, underscoring the value of a staggered adoption.

## New Operations & Maintenance Facility

In 2021, GTA began the design phase of its new Operations & Maintenance Facility. Projected to be operational by April 2024, this facility will be 60,000 square feet and sit on 26 acres – a major increase from the 11,000 square foot facility on 2.9 acres that GTA currently occupies. This new facility is critical to





Figure 5: Operations & Administration Facility Conceptual Drawing



Figure 6: Vehicle Maintenance Conceptual Drawing

## Workforce

Like many other transit agencies, GTA faces a major workforce shortage. Since 2019, the agency has operated with approximately 75%-80% of Bus Operators needed. In 2020, GTA launched a Bus-Operator-in-Training program to create a direct pipeline of potential Operators. In 2022, GTA became a certified third-party test administrator for the SCDMV. Throughout this process, GTA continues to increase wages, ensuring the agency is competitive on a regional level. Within the past 6 months, GTA increased wages by 12% to a \$19.00 per hour minimum to increase to \$19.60 per hour upon successful completion of the CDL program, resulting in a major increase in Bus-Operator-in-Training Applications.

## What You Should Know

The federal government does a tremendous job supporting both rural and large transit agencies, but please do not forget those of us “in the middle.” Much like rural agencies, smaller agencies such as GTA struggle to find local match for both formula and competitive funding opportunities. When that local match is secured, smaller agencies must then balance the need for operating funds against the need for capital funds. Smaller agencies depend heavily on competitive funding opportunities for capital improvements. Personally, I am concerned about the potential restructuring of 5307 funds. If large agencies are allowed to utilize 5307 funds for operations, I fear that this will not only increase competition for discretionary capital funding but push smaller transit agencies out. As currently written, some grant opportunities are favoring larger alternatively fueled fleet orders, agencies who actively promote union membership among its labor workforce, and agencies who can invest in robust analyses as outlined in Benefit/Cost Analyses and Zero Emission Transition Plans. While I’ve already spoken to the struggles of hiring a firm to perform and develop necessary plans, let me further point out that GTA will never need to order 100 new buses at one time. There are also potential concerns with union labor requirements and preferences as it relates to grant awards. For South Carolina, this could mean that labor would have to be procured from another State – which could lead to projects being delayed and/or over-budget.

My concerns regarding the fate of competitive discretionary funding and smaller agencies ability to access them are very real. GTA consistently applies for competitive grants. This past year, GTA applied for both RAISE and 5339b funding. I want to share some of what we heard on the debrief calls:

- For RAISE, 936 eligible projects, requesting \$13 billion in funding – only \$2.2 billion available. Of those 303 went to the Secretary of Transportation, 166 were selected.
- For) 5339b and 5339c (Buses and Bus Facilities/Low and No Emission, 530 eligible projects, requesting \$7.7 billion in funding – only \$1.7 billion available. Of the 530 projects, 460 were highly recommended. 150 projects were awarded.

This past competitive funding cycle, GTA did not receive 5339b despite receiving a “highly recommended” scoring. This is the second time GTA has received a “highly recommended” score in the last 4 years without an award. There are other transit agencies in the state of South Carolina who share a similar story.

Finally, while GTA did receive a RAISE award in August 2022, GTA still has not been awarded those funds due to the Paper Grant Agreement (PGA) process. I ask that you consider:

- 1) Providing an overview of the PGA requirement and outlining a reasonable timeline for execution in future NOFOs so that agencies can accommodate for this requirement in their proposed

schedule. Doing so will ensure agencies can implement projects *on time, on task, and on budget*; and

- 2) Transferring ownership of this process to the regional level. If FTA Region IV had been able to disburse these funds via TrAMS, GTA would have had its Phase 1 labor and materials secured by the end of the fiscal year. Current projections suggest a PGA will not be finalized until September 2023 upon which GTA will then be allowed to request the funds in TrAMS and *then* begin its procurement process. Our regional office already administers billions of dollars each year – and they do a wonderful job!

I thank you all for this opportunity to share a local view on public transportation as it relates to infrastructure, operations, and federal transit programs. As a fellow transit professional recently stated, the aim of public transit agencies in South Carolina can be summed up in one phrase: “Our quality of service, your quality of life.” As employer and workforce needs evolve over time, public transit providers must rise to meet those needs. Access to public transit is critical, as evidenced by the stories of those who rely on it. From Mr. Foster who rides Route 501 to get to his full-time job at Krispy Kreme to Ms. Black who rides Route 504 to get to her job at PRISMA Health, our essential workers are the backbone of our strong South Carolina economy and GTA is happy to be their hometown public transit agency.

The future success of public transportation will be forged on relationship building, advocacy, and education at all levels – both elected officials and taxpayers. I appreciate this committee’s willingness to have empowering conversations about public transit in our country and look forward to the benefits sure to come for all our nation’s rural, small, and large transit agencies.