

# Greenville Transit Authority Work Session

Virtual WebEx  
January 12, 2021

## Minutes

1 **Attendees:**

2 **Board**

3 Stephen Astemborski  
4 Scott Craig  
5 Addy Matney, *Treasurer*  
6 David Mitchell  
7 Dick O'Neill, *Chair*  
8 Amanda Warren, *Vice Chair*

9 **Absent Board Member**

10 Kathy Black

**City Staff:**

Jasmin Curtis, *Operations & Safety Mgr.*  
Dorothy Dowe, *City Council*  
Michael Frixen, *City of Greenville*  
Kristina Junker, *Budget Administrator*  
James Keel, *Director*  
Matthew Loomis Rehnborg, *Transit Planner*  
Nicole McAden, *Market & Public Affairs Mgr.*  
Jason Sanders, *Fleet Mgr.* Joshua Helm, *Proterra*  
Micah Snead, *Financial Analyst*  
Kayleigh Sullivan, *Transit Planning Mgr.*

**Others**

Keith Brockington, *County Planning*  
Amy Curran, *Bureau of Air Quality*  
Chris Dabbs, *New Flyer*  
Weston Dripps, *Shi Institute-Furman*  
Benjamin Kessler  
Chip Gifford, *Piedmont Natural Gas*  
Asangwua Ikein, *County Planning*  
Ben Kessler, *SC Dept. of Health and Environmental Control*  
Lauren Scoville, *Proterra*  
Mary Peyton Wall, *Air Regulation, Data analysis and State Implementation Plan Management with the SC Department of Health and Environmental Control*

18 **Mr. Dick O'Neill called meeting to order at 8:30 a.m.**

20 **Introduction to Sustainability (Weston Dripps, Executive Director of the Shi Institute for Sustainable Communities at Furman University):**

22 Sustainability was originally associated with the environment. It is much broader now and associated with going green. It evolved as a discipline. Sustainability is where the environment, society, economy interconnect. An embedded model is now used, with **economy** nested with **society** and **environment**.

25 The question becomes why Greenlink should set sustainability goals. It adds value to organization. Sustainability goals could lead to cost savings. It is important with branding. Most major companies in the U.S. have sustainability goals. Millennials and Gen X look at social and environmental commitments when deciding where to work. Transportation is number one cause of emissions at 29%. Transit is important relative to sustainability goals. It is expensive to own vehicle. The national move is for renewable and electrification. Gradual shift from fossil fuels. Transportation mobility is a top priority in Greenville's new comprehensive plan. Affordable housing and open space is tied to transit. Greenville is growing and having a robust transit system is essential. Having a long term vision with sustainability will help with grants and budgeting. Need to think proactively regarding electricity.

34 **Air Quality Overview (Amy Curran, Outreach Coordinator for the Bureau of Air Quality and Mary Peyton Wall, Section Manager for Air Regulation, Data Analysis, and State Implementation Plan Management with the SC Department of Health and Environmental Control):**

37 Mary Wall stated standard ozone design value is 4.0 part per million. There has been a decrease for the National Ambient Air Quality Standards (NAAQS) for the last 3 years. A part per of 2.5 million (ppm) is good. The annual number has been below the standard for last 10 years. Sulfur Dioxide (SO<sub>2</sub>) is going down with closure of coal fired boilers and utilities. Carbon Monoxide (CO) for 8 hour PEL is 35 parts per million. No active CO monitors. EPA set standard Nitrogen Dioxide (NO<sub>2</sub>) standard level of 100 parts per billion (ppb). It retained annual average NO<sub>2</sub> standard of 53ppb 1 hour standards. Garrison Arena and Big Creek are two upstate monitoring networks in the upstate.

43 Amy Curran covered outreach efforts. Funding at DHEC is voluntary for programs. The BAQ monitors air quality outreach programs and promotes sustainability and behavioral changes. Breathe Better Network reduces impact of air pollution on public health and environment. Green ribbon schools have awards which promote reducing impact on the environment on school campuses. Diesel Emission Reduction Act (DERA) is competitive grant focused on diesel engines. It works with businesses

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47 to put up signs such as signs asking visitors to discourage idling. DERA is an EPA grant program. This is competitive program  
48 so must go through application process. It awards up to 2 million dollars. SC received grants in 2012, 2016 and 2019.  
49

50 **Fleet and Emissions (Ben Kessler, Coalition Coordinator of Palmetto Clean Fuels with the SC Office of Regulatory Staff):**

51 Clean Cities coalitions foster the economic, environmental, and energy security of the United States by working locally to  
52 advance affordable, domestic transportation fuels, energy efficient mobility systems, and other fuel-saving technologies and  
53 practices. They promote alternative fuels such as hydrogen and electric buses. In 2018 transportation exceeded all sections  
54 of emissions. There are sustainable opportunities for GTA buses by going electric and use of telematics. Greening of  
55 garages is helpful.

56 Three alternatives that can be used to ease emission:

- 57 1. Electric vehicles have no tailpipe emissions. Outside temperatures can affect battery range. Need battery size that is  
58 sufficient for flexibility on routes.
- 59 2. Hydrogen benefit is that hot air and pure water are only tail pipe emissions. Fuels in minutes rather than charging for  
60 hours. Fuel generated on-site at lower costs. Came with large upfront costs. Parts are hard to source.
- 61 3. Natural Gas has lower cost than diesel. There is presence in upstate on I-85 corridor. There are sufficient fueling  
62 stations. There are fast fuel vs slow fill options to consider.  
63

64 Cost comparison tool allows plug-in metrics to evaluate the impact of fleet compared to diesel bus. Should explore EV  
65 electric utility costs incurred for charges. Should explore how hydrogen will be delivered. For Natural gas, should explore  
66 how it be delivered.  
67

68 **Electric Bus Technology (Joshua Helm, Proterra and Lauren Scoville, Proterra):**

69 Proterra is lead in design & manufacturing of zero emission electric transit vehicles. Proterra sold 1,000 buses and serve 130  
70 customers. By 2025, predict 50% of all buses sold will be electric. Benefits: Zero emissions, improve air quality and avoids  
71 220,000 pounds of greenhouse gas emissions. Proterra introduced ZX5 (5<sup>th</sup> generation). New bus has refined body  
72 streamlined roof and accommodates additional battery packs, smoother ride. New buses have new battery manufacture line  
73 with increased density. Enabled increased range and faster charge time and heavy duty applications. Partnered with  
74 Michelin for low resistance tire design. Proterra provides turnkey solution. Ability to get chargers and work with utility  
75 companies. The new generation of charging systems are more reliable. Have 1.5 MW charging up to 20 buses. Added 75  
76 KW. Large fleet solutions for 10 or more vehicles. The 1.5 MW charger can be configured to charge up to 20 vehicles  
77 simultaneously. Have solar canopy covers for charging stations. All bus purchases come with operator and maintenance  
78 training. They offer field service representative for the region. Beyond that offer robust maintenance plan. Currently GTA  
79 owns four (4) 60 KW chargers. Looking at one stop shop chargers.  
80

81 **Natural Gas Technology (Chip Gifford, Compressed Natural Gas – subsidiary of Duke Energy):**

82 Natural Gas is distributed to more than 1 million residential commercial and industrial customers in NC and SC. There are  
83 eleven (11) Public NG filling stations. North America has plentiful resource of odorless natural gas which comes from  
84 decaying organic materials that have accumulated over millions of years. There are 72 NG customers. NG can sufficiently  
85 supply gas for 100 years. CNG Gas station is gas gallon equivalent. There are 175,000 NG vehicles on road and 1,640  
86 NGV fueling stations in US. NGV offset use of nearly 500 million gallons of gasoline. NGVs are a good fit for many fleet  
87 applications. There is a CNG station in Greenville, SC which takes natural gas at roadside going through compressors.  
88 There are time fill CNG filling stations and fast fill filling stations. Fast fill is comparable to standard diesel experience. The  
89 top 25 transit agencies buy CNG fuel. It has been proven safe technology and has excellent track record. Cost per unit is  
90 less than gas gallon equivalent. It reduces CO2 and greenhouse gas emissions. It is a renewable natural gas. CNG pricing is  
91 consistent unlike diesel. The City of Anderson has 3 CNG buses which offer comparable range to diesel and can interchange  
92 vehicles.

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#### 94 **Hydrogen Bus Technology (Chris Dabbs, New Flyer Regional Sales Manager):**

95 First electric buses built over 50 years ago. Buses are zero emission. Electric trolley buses were unveiled. Support 41,000  
96 electric transit buses in service. There are 7,300 buses powered by electric motors in battery population and 1,600 are zero  
97 emissions. Offer 4 types of electric and 3 types of zero emission propulsion systems such as Diesel and Electric Hybrid. The  
98 Battery dominant hybrid canister holds hydrogen directed through fuel cell. It goes to battery pack on bus and drives rear  
99 axle of bus. Fuel cell battery and CNG buses built on same production line. It can integrate new technology. Hydrogen fuel  
100 storage fuel cell is in Xcelsior charge H2. Fuel cell generates heat. The layout of buses is similar to layout of 40 and 60 foot  
101 buses. There is development program with Hydrogenics. There is improvement in density and battery pack. One charger  
102 can charge 2 to 4 buses. Range capability 300+. Fill station scalable for fleet size. No secondary charger required. Cost  
103 for fuel cells decreasing. Average production time is around 1 year from date of order. Cost \$200,000 over cost of electric  
104 bus.

105

#### 106 **Local Sustainability Goals (Michael Flaxen, City Of Greenville Assistant to the City Manager and Sustainability** 107 **Coordinator):**

108 Michael Frixen stated the City has done a lot on sustainability. City council established a green ribbon advisory committee in  
109 2011 relative to climate control and clean energy which looked at single use containers and plastic bags. Greater Greenville  
110 looked at goals and strategy. Sustainability is part of Top ten priorities for City Council. The work plan was built around top  
111 ten priorities. Rooftop at David Hellams Community Center will have solar installation. Green source management program  
112 is being worked on. The City is working to build a solar farm. Goal to provide city energy needs from renewable sources by  
113 2030. There is a project to keep Reedy River off impaired list and revise tree preservation ordinance to maintain no net loss  
114 of tree canopy.

115

116 Cleaner Energy priorities set for energy efficiency improvements for city facilities. The City subscribes to Duke Energy  
117 Community Solar Program. There are transportation opportunities for Electric vehicle deployment and grants discussed to  
118 offset cost for City. Garages have charging stations. City working with SC Energy office to get signage and looking at  
119 alternative and public modes of transportation. B-cycles are coming back downtown with electric bikes. City looking at  
120 energy efficiency opportunities related to affordable housing. City has to update GVL 2040 comprehensive plan. Open  
121 space, affordable housing and public transportation are at the top of list. Higher density affords higher ridership for  
122 Greenlink. Next steps is new zoning. Considerations for Greenlink for not just vehicles for sustainability but also facilities and  
123 transit stops. City interested in how alternative fuels can be implemented. Access to public transportation is an indicator in  
124 any communities for livability and sustainability along neighborhoods. Everything ties together. Numerous factors in place.  
125 City is researching technology for signal preemption to adjust signal time so vehicles can go through to improve route times  
126 and reduced idling.

127

#### 128 **Review and Discuss:**

129 Sustainability GTA Survey completed by 5 board members.

130

- 131 • **Importance:** The scale is 1 most important and 4 least important. Service frequency 1.4, service hours is 2.0. New  
132 routes 2.6 and Green fleet 4.0. The survey results aligns with the TDP.
- 133 • **Fuel source:** electric ranked 1.25, Natural gas ranked 2.0, Diesel ranked 3.25 and hydrogen ranked 3.5.
- 134 • **Specific fleet sustainability goals or general guidelines:** 80% of board preferred general guidelines and 20%  
135 preferred specific goals.
- 136 • **Goal to set percentage of the fleet be sustainable:** Yes 80% and no 20%. Comment recommend verbiage  
137 specifying new vehicles.
- 138 • **Establish date to accompany any sustainability goals:** Yes 60%, No 40%. Suggested setting date to no longer  
purchase diesel vehicles. Ms. Warren felt a goal needed to have a date attached to it.

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139 **Discussion:**

140 Discussed prioritizing sustainability goals towards new purchases / expansions. Mr. Keel stated that a statement could be put  
141 forward which states that after 30-minute headways have been implemented, GTA would not purchase diesel vehicles at an  
142 agreed-upon date. Ms. Matney suggested adding if vehicles are equal in cost, we should defer to more energy efficient  
143 vehicles. Staff would like to present sustainability goals to the Board at Friday COW meeting. Other items will be discussed  
144 at COW meeting in February. Government relations would be discussed in March.  
145

146 **Meeting adjourned at 12:30 p.m.**