SCHOOL BUS PROJECT 2018

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BACKGROUND

- CCSD STARTED LOOKING AT NON-DIESEL SCHOOL BUSES IN 2018
- IN 2020 TRANSPORTATION STARTED PURCHASING PROPANE BUSES USING GRANT FUNDS, BOND FUNDS, SPLOST, GENERAL FUNDS, AND ALTERNATIVE FUEL FUNDS
- TRANSPORTATION HAS A TOTAL OF 153 BUSES - 33 OF THOSE ARE PROPANE BUSES
- WE HAVE PLANS TO PURCHASE A SMALL NUMBER OF GAS BUSES FOR LONG RANGE TRAVEL. WITH THE DIESEL BUSES BEING PHASED OUT THIS WILL BE A NEED. THIS WILL COVER FIELD TRIPS GOING OUT OF TOWN TO PLACES LIKE ALBANY, MACON, AND SAVANNAH

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BACKGROUND

- THE FLEET TRAVELED 1.9 MILLION MILES DURING 23-24 SCHOOL YEAR
- THE FLEET AVERAGED 70 MILES A DAY LAST YEAR
- 20 BUSES AVERAGED OVER 100 MILES
- WE HAVE MANY TRIPS THAT REQUIRE ROUND TRIPS OF 130 MILES OR MORE. IN THE 23-24 SCHOOL YEAR WE HAD 281 TRIPS.
- TRANSPORTATION DOES NOT LIKE BUSES TO FALL UNDER 25% FUEL LEVEL.
- WORKING WITH IRS FOR PROPANE TAX CREDITS.

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EPA CLEAN SCHOOL BUS AND CLEAN HEAVY-DUTY GRANT PROGRAMS

- ROUND 1 - INCLUDED 10 PROPANE BUSES WITH TOTAL AWARD OF $300,000.00.
- ROUND 2 - WE WERE NOT AWARDED FUNDS. THIS WAS A COMPETITIVE GRANT WITH THE EPA. ASKED FOR 2 ELECTRIC BUSES.
- ROUND 3 - DID NOT APPLY PENDING RECOMMENDATION OF THE SUSTAINABILITY COMMITTEE.
- ROUND 4 - EPA WANTED APPLICATIONS TURNED IN REQUESTING A PURCHASE OF 10 ELECTRIC BUSES FOR THIS ROUND. DID NOT APPLY PENDING RECOMMENDATION OF THE SUSTAINABILITY COMMITTEE**.**
- ROUND 5 - AWAITING EPA DIRECTIVE

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ELECTRIC BUS: ADVANTAGES

- REMOVE OLD FUEL TANKS IN THE GROUND
- NO FOSSIL FUELS
- NO EMISSIONS
- CLEANER BUSES WITHOUT LIQUID FUEL
- HEALTHIER FOR STUDENTS AND DRIVERS
- ELECTRIC MOTORS REDUCED COST
- MOTORS ARE RELIABLE
- GRID MODERNIZATION IN YOUR AREA
- DRIVERS LIKE QUIET BUSES
- LOCAL AIR QUALITY IMPROVEMENT

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ELECTRIC BUS: DISADVANTAGES

COSTS

- UPFRONT COST $320,000 TO $500,000 PER BUS
- FUNDING FOR THE FIRST 10, BUT WHAT ABOUT THE OTHER 140?
- BATTERY REPLACEMENT COST OVER $50,000 TO $100,000 WITHIN A 12 YEAR LIFE CYCLE
- CHARGING INFRASTRUCTURE COST OVER $212,000 FOR ONE CHARGER BASED ON GEORGIA POWER SINGLE FAST CHARGER
- HIGH VOLTAGE SYSTEMS ON BUSES CAUSE IT TO REQUIRE CONTRACTOR TO CONDUCT REPAIRS
- IN WINTER IT IS RECOMMENDED TO HAVE AUXILIARY HEAT - THE SOLUTION IS A DIESEL HEATER

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ELECTRIC BUS: DISADVANTAGES

RANGE AND ROUTING

- ELECTRIC BUSES HAVE A ESTIMATED 80 - 120 MILE RANGE:
  - PROPANE BUS HAS A RANGE OF 300 TO 340 MILES
  - GAS BUS HAS A RANGE OF 600 TO 650 MILES
- TRANSPORTATION MAY HAVE TO ADD ROUTES AND DRIVERS BECAUSE OF THE SHORT RANGE OF ELECTRIC BUSES
- DISPATCH WILL HAVE TO MONITOR ROUTES MUCH MORE CLOSELY DUE TO THE SHORT RANGE OF ELECTRIC BUSES

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ELECTRIC BUS: DISADVANTAGES

BATTERY CONCERNS

- NEW BATTERY TECHNOLOGY IS AN UNKNOWN
  - TAKES ON AVERAGE 4 HOURS FOR BATTERIES TO CHARGE WITH FAST CHARGER AND 8 - 9 HOURS FOR REGULAR CHARGE
  - INTERNAL BATTERY TEMPERATURE ISSUES WITH BUSES
  - SHORTAGE OF COPPER MINES (UNIVERSITY OF MICHIGAN)
- BATTERY DISPOSAL ENVIRONMENTAL IMPACT IS UNKNOWN

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ELECTRIC BUS: DISADVANTAGES

- POWER TO CHARGE ELECTRIC BUSES IN ATHENS WILL COME FROM THE NATURAL GAS PLANTS AND HYDRO PLANTS ALL LOCATED IN NORTH GEORGIA BASED ON INFORMATION FROM GEORGIA POWER
- CONCERNS WITH SCHOOL DISTRICTS THAT STRUGGLED TO GET THEM FULLY OPERATIONAL
- FIRE DEPARTMENTS IN NEW YORK CITY AND SAN FRANCISCO REPORTED HANDLING MORE THAN 660 FIRES INVOLVING LITHIUM-ION BATTERIES SINCE 2019. (THERMAL RUNAWAY)RESPONSE IS TO LET BUS FIRE BURN ITSELF OUT? NO EV FIRES IN CLARKE COUNTY(ACC FIRE DEPARTMENT)
- ON AVERAGE A 72 PASSENGER DIESEL BUS WEIGHS 24,300 LBS ELECTRIC BUS WEIGHS 36,000 POUNDS (CCSD BUS IS OVER 19,000 POUNDS) CREATING A STRESS ON CURRENT ROADWAYS

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PROPANE BUS: ADVANTAGES

- PROPANE ENGINES ARE 90% CLEANER THAN MANDATED EPA STANDARDS WHICH IS WHY THE EPA STILL RECOMMENDS PROPANE AS A OPTION (https://propane.com/environment/)
- BOTH THE EPA AND U.S. DEPARTMENT OF ENERGY RECOMMEND PROPANE AS AN ALTERNATIVE FUEL
- PROPANE IS DOMESTICALLY PRODUCED AND WELL ESTABLISHED (U.S. DEPARTMENT OF ENERGY)
- PROPANE ENGINE TECHNOLOGY IS IMPROVING WHICH HAS HELPED CONTROL THE COST
- PROPANE IS LOCATED IN U.S. AND IS ABUNDANT (U.S. DEPARTMENT OF ENERGY)

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PROPANE BUS: DISADVANTAGES

- PROPANE BURNS LESS EFFICIENTLY PER GALLON THAN DIESEL
- PROPANE EMISSIONS RESULT IN VEHICLES THAT ARE NOT AS CLEAN AS ELECTRIC VEHICLES
- PROPANE CAN BE LESS EFFICIENT WHEN IDLING
- PROPANE HAS A SHORTER RANGE THAN BOTH DIESEL AND GASOLINE
- PROPANE FUELING STATIONS CAN BE DIFFICULT TO FIND

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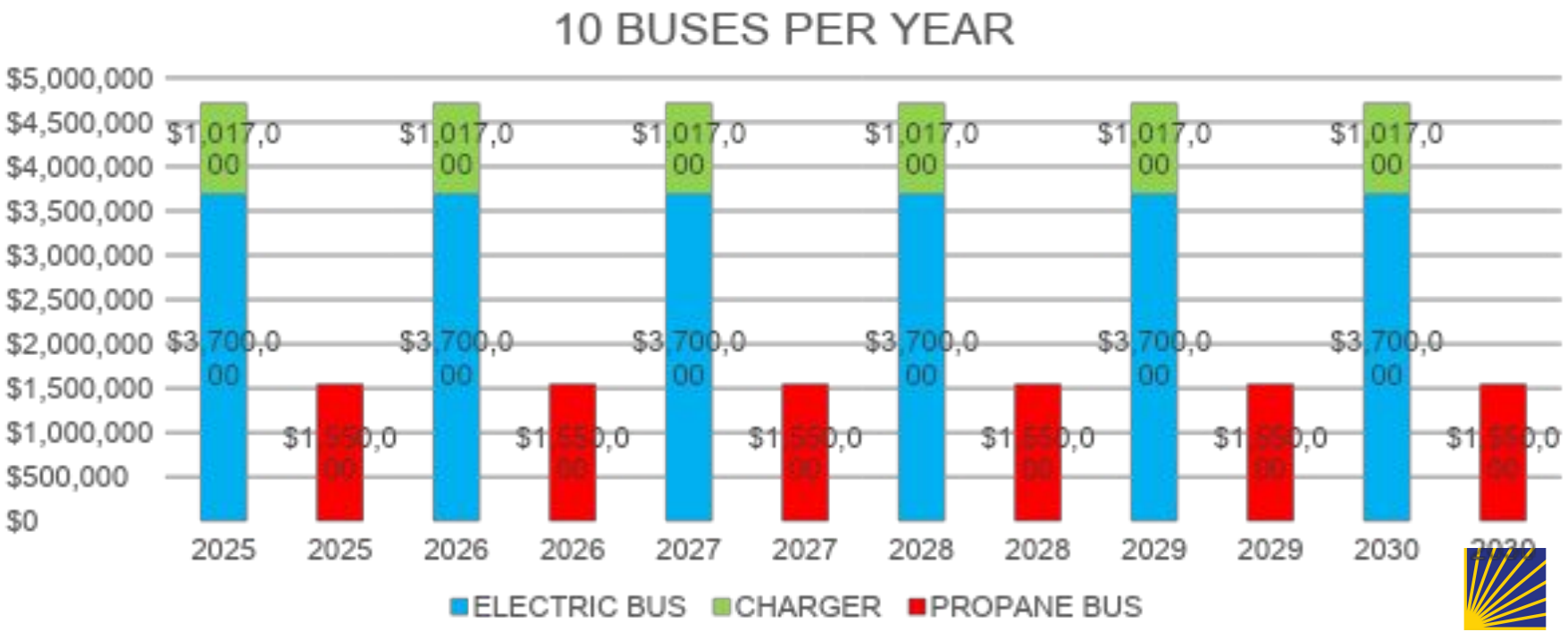
BUS PURCHASES NEXT 5 YEARS



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