



Transportation



Birdville At A Glance

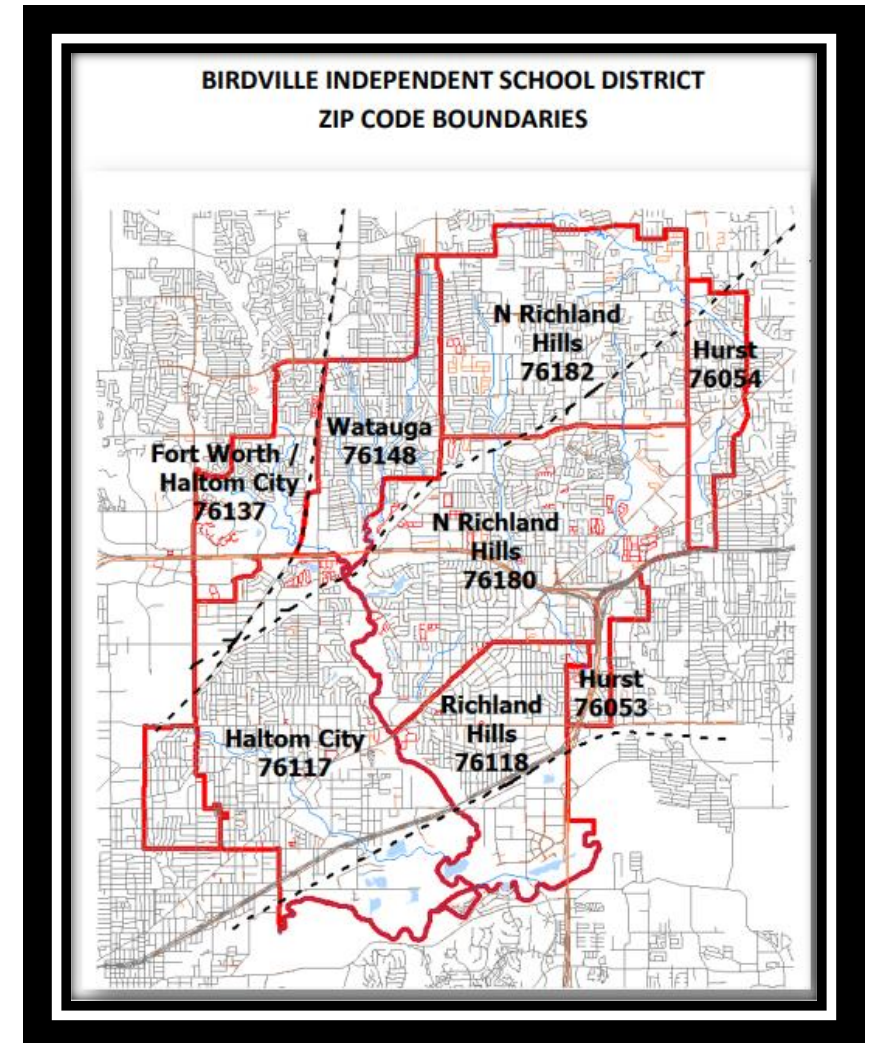
Square Miles: **44**

Students Transported: **3,000-3,500** students per year

Field Trip Traveled per year: **3,500**

Bus Routes:

- **42** Regular Routes
- **32** Special Education Routes
- **4** Dedicated McKinney Vento Routes
- **8** Buses combined McKinney Vento Routes
- Other route services include Gate, Collegiate Academy, BCTAL, PALS, Ready-Set-Teach, Post student work program, Aspire and Tutorials
- Number of School Bus Drivers (including subs and Non-CDL): **85**
- Number of Bus Monitors: **22**
- Number of Staff: **15**



Transportation Mileage

Total Miles Traveled	861,335 per year
• Regular Education	395,344
• Special Education	313,838
• Career and Technology	54,054
• Field Trips	98,099



Transportation Replacement Cycle

- Current Bus Inventory - 12 year Replacement Cycle

April 1, 2022

Age of Buses	Regular Buses	Special Needs Bus	Micro Buses	Total Buses
New to 5 years	33	15	2	50
6 to 10 years	5	6	0	11
11 to 15 years	15	22	0	37
16 to 20 years	6	0	0	6
21 years or older	4	1	0	5
Totals	63	44	2	109

Replacement Recommendation:

- Minimum of 6 buses per year
- Approximately \$680,000 annually

Birdville Transportation was awarded two grants:

TxVEMP 2019: 6 Regular Education Buses and 4 Special Needs Buses
\$832,330

TERP 2020: 5 Regular Education Buses:
\$473,995

TERP: 2022: **pending** :4 Reg Buses:
\$237,000

Growth in Developments

Haltom City:

- Heritage Village (200+ Townhomes, Single dwelling) Ridership Impact, high.

N. Richland Hills:

- City Point Addition: Sectors 1-3 (337 town homes/single family) Ridership Impact BHS low.
- Hometown area off Parker, David Weekly and Beazer Homes (Single Family & townhomes) 56 town homes, 73 single family home (129 homes/town)
- The Cavalli @ Iron Horse (Apartments) off Browning Dr.)
- The Fountain @ Iron Horse (Apartments)



Bond Replacement: District-Wide New Buses

Bond amount requested over a 4 year period is \$5,000,000 at \$1,250,000 per year

2022-2023 costs are \$145,395 per 72p and \$115,160 48p



1 ST Year	10 Buses	2 - 72 Passenger Buses 8– Special Needs Buses 1 – Micro Bus	\$1,286,600
2 nd Year	10 Buses	2 - 72 Passenger Buses 8 - Special Needs Buses	\$1,247,150
3 rd Year	9 Buses	4 - 72 Passenger Buses 5 - Special Needs Buses	\$1,226,350
4 th Year	9 Buses	4 - 72 Passenger Buses 5 - Special Needs Buses 1 Micro Bus	\$1,212,408

Diesel vs. Propane

Propane PROS

- ❖ Environmentally friendly - clean burning
- ❖ Oil changes only require 10 quarts of oil vs. diesels 16 quarts
- ❖ Reduces maintenance costs, with less maintenance, filters, antifreeze, no regen
- ❖ Quick Start
- ❖ More power, better acceleration
- ❖ Government Incentives awards (grants)
- ❖ LPG (liquefied petroleum gas) is 50% less expensive than diesel as long as the district own their own tanks.
- ❖ Over 20,000 propane busses in North America – more than 1,000 districts operating propane

Propane CONS

- ❖ 3 ½ - 4 miles per gallon depending on route
- ❖ Long distance travel – fueling stations minimal
- ❖ Yearly facility site visits by RRC (Rail Road Commission)
- ❖ Lower tank capacity
- ❖ Installation of facility propane tanks could be costly as well as space limitations (need at least a 12,000 gallon tank)
- ❖ LPG more volatile than diesel
- ❖ LPG buses are \$10,000.00 to \$15,000.00 more expensive than diesel
- ❖ Training, diagnostics or guidance on repair for propane buses are limited.



Diesel vs. Propane

Diesel PROS

- ❖ Newer models have clean burning green diesel.
- ❖ Averages 8-9 mpg.
- ❖ Better for longer distance travel because of availability of fueling stations.
- ❖ 100 gallon tank capacity.
- ❖ Not as combustible as LPG (propane).

Diesel CONS

- ❖ BISS has a 44 square mile radius, resulting in Regen system engaging causing bus to derate.
- ❖ Fuel is more costly than LPG.
- ❖ More maintenance requirements (i.e., fluids, filters, oils).
- ❖ Fuel injectors require frequent replacement in older engines.
- ❖ Today's diesels are so choked down with anti-emissions gadgets which actually shorten the performance and durability of the engine.



Environmental Benefits

Why Environmentally-Friendly School Buses Matter:

Most people don't realize how clean-diesel now is or even why running an environmentally-friendly school bus fleet matters.

When you think of diesel fuel, you may think of a black sooty cloud coming out of the tailpipe of your school buses.*

Reality: Clean-diesel school bus emissions are now 90% percent cleaner at the tailpipe than they were in 2006.

- Based on EPA-regulated emissions, clean-diesel is comparable to or even cleaner than other fuel types like propane, CNG and gasoline.

Ultra-low-sulfur diesel, SCR and EGR technologies have cleaned up clean-diesel considerably.

		NITROGEN OXIDES <small>(grams per brake hp per hour)</small>	PARTICULATE MATTER <small>(grams per brake hp per hour)</small>	CARBON MONOXIDE <small>(grams per brake hp per hour)</small>	NON-METHANE HYDROCARBON <small>(grams per brake hp per hour)</small>
2017 FEDERAL EMISSIONS STANDARDS		0.20	0.01	15.5	0.14
ELECTRIC	2021 PROTERRA PRODRIVE	0.000	0.000	0.000	0.000
DIESEL	2021 CUMMINS B6.7	0.11	0.004	0.03	0.03
	2021 DETROIT® DD5™	0.08	0.001	0.5	0.03
CNG	2021 CUMMINS B6.7N	0.01	0.002	1.5	0.01
PROPANE	2021 ROUSH 6.8L	0.01	0.002	5.0	0.04
	2021 DRIVEFORCE 8.8L	0.13	0.000	1.9	0.10
	2021 PSI 8.8L	0.02	0.000	2.7	0.05
GAS	2020 FORD V10	0.08	0.002	12.9	0.08
	2021 PSI 8.8L	0.04	0.001	3.7	0.08

*RESULTS ARE BASED ON FEDERAL TEST PROCEDURE (FTP) CYCLE.

3/21

Environmental Benefits

Why It Matters How Much Cleaner Clean-diesel School Bus Engines Are:

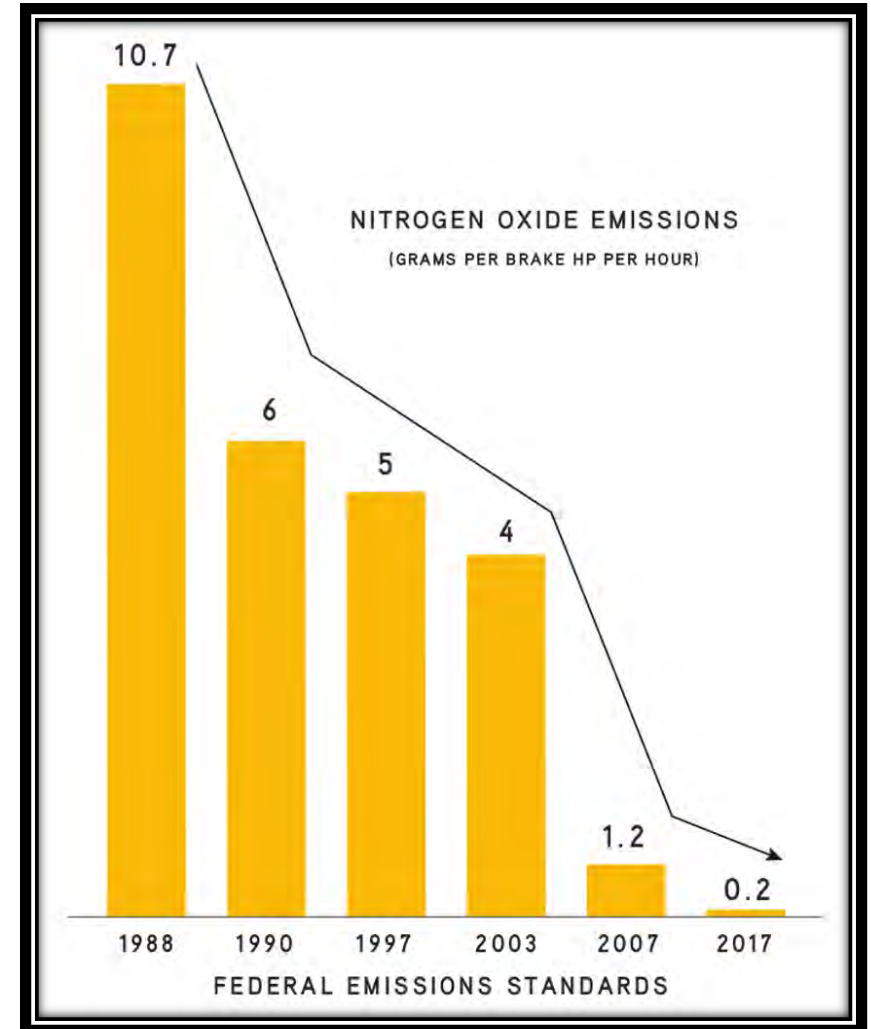
❖ Nitrogen oxides (NOx) transportation emissions are regulated by our government.

- ❖ NOx are highly reactive gases composed of nitrogen and oxygen. They form when fuel is burned at high temperatures.
- ❖ The primary source of NOx is motor vehicles: diesel-fueled medium- and heavy-duty vehicles are the number one source of NOx emissions in almost every single metropolitan region in the U.S.
- ❖ NOx are regulated under federal air quality standards because they are known to be harmful to human health and to the environment.
- ❖ Exposure to NOx exhaust can trigger health problems, such as asthma, bronchitis and other respiratory issues.
- ❖ In the developing lungs of children, exposure to NOx causes negative health effects, like asthma, which is the leading cause of school absenteeism.

❖ Emissions from NOx contribute to acid rain, smog and other air-quality issues.

- ❖ Diesel vehicles emit increased exhaust emissions filled with tiny soot particles and toxic gases.
 - ❖ Particulate Matter (PM)
 - ❖ Nitrogen Oxide (NOx)
 - ❖ Carbon Monoxide (CO)
 - ❖ Nonmethane Hydrocarbons (NMHC)

Birdville ISD's transportation team is dedicated to investing in technologies and innovations that make school buses safer, more reliable, durable, more efficient and easier to maintain.



1. U.S. ENERGY DEPARTMENT, ALTERNATIVE FUELS DATA CENTER, [HTTPS://WWW.AFDC.ENERGY.GOV/VEHICLES/EMISSIONS_POLLUTANTS.HTML](https://www.afdc.energy.gov/vehicles/emissions_pollutants.html)

2. ENVIRONMENTAL PROTECTION AGENCY'S NATIONAL SERVICE CENTER FOR ENVIRONMENTAL PUBLICATIONS: NOX: HOW NITROGEN OXIDES AFFECT THE WAY WE LIVE AND BREATHE.

Benefits

❖ Student Safety: Reliable Transportation

- ❖ New buses are compartmentalized; equipped with seatbelts, shatter-proof glass, reinforced sides, high-back padded seats, and a raised one-piece floor.
- ❖ Oldest Bus from 1998 (24 years old)
 - ❖ Average age of a bus 6-10 years old
- ❖ Field Trip Buses / Sub Buses
 - ❖ Oldest buses in the fleet

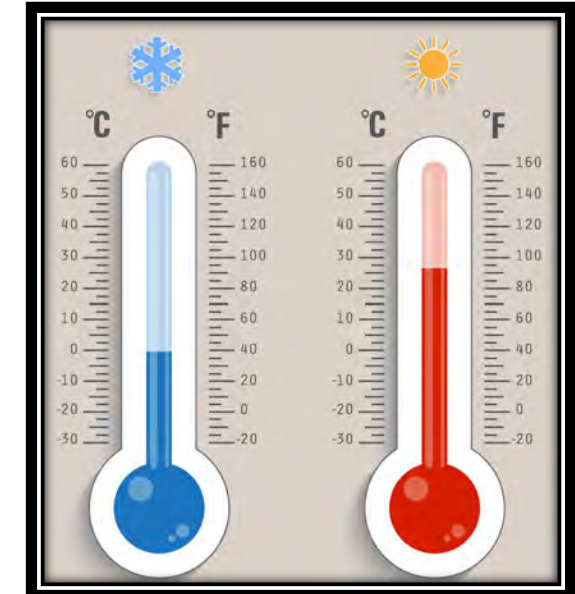
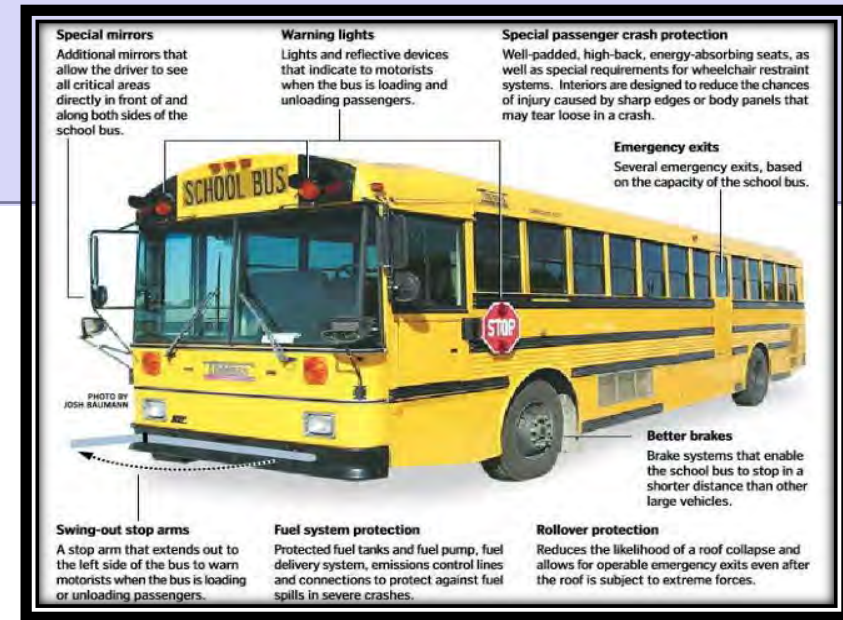
❖ Maintenance Costs

- ❖ Avg. Annual Upkeep per bus (Oil Changes, Tires, Brakes, etc.): \$5,500
- ❖ Avg. Annual Labor Cost per bus: \$1,600
- ❖ Additional Maintenance: Older buses will have more costly issues/maintenance needs such as: drive train, radiator, electrical, etc.
 - ❖ Additional \$8k - \$23k annually

❖ Heat/Air Conditioning

- ❖ Extreme Weather Conditions
 - ❖ Highs in the 100s (degrees) plus humidity
 - ❖ Lows in 20s
- ❖ Internal Bus Temperatures
 - ❖ Can reach 114 degrees
 - ❖ Potential effects: Heat injuries ranging from sunburns to heatstrokes

❖ GPS & Student Tracking



This is our WHY...



Questions

