Webinar: Learn from New York School Districts Operating Electric School Buses

May 20, 2025

NEW YORK STATE | NYSERDA

Agenda

- Introduction
- Lake Shore CSD
- NYCSBUS
- Audience Q&A

Current New York State Requirements for School Buses

To improve air quality for students and reduce emissions statewide, NY has established the following goals:

2027

All school buses purchased after July 1, 2027, must be zero-emission.

2035

All school buses in operation after July 1, 2035, must be zero-emission.

This is a state requirement that has not changed since the initial 2022 legislation

What funding does the New York School Bus Incentive Program (NYSBIP) provide?

$500 million dollars have been allocated for electric school buses in New York State.

This funding is delivered through NYSBIP in 3 main ways:

1. **Fleet Electrification Plans (FEPs)**
2. **Funding for bus purchases**
3. **Funding for charger purchases**

ESBs in New York State

Where We Started

- There are **~700** school districts in New York State, with more than **45,000** school buses on the road
- More than half of all buses are contractor-operated

Recent Progress

- There are currently more than **100** ESBs on the road in NY State, with more projected to be on the road within the next year
- Currently, over **350** school districts are actively in the process of planning their fleet transition with NYSERDA
- The average NY State school bus travels **80** miles per day
    - Most electric buses have a range of **150** miles or more

Learn More About NYSERDA Support

https://www.nyserda.ny.gov/All-Programs/Electric-School-Buses

schoolbus@nyserda.ny.gov

Lake Shore Central School District

Mr. Daniel Pacos, Superintendent

Mr. Perry Oddi, Transportation Supervisor

Operating Electric School Buses

- *Expectation vs. Reality*
  - Performance
  - Community
  - Staff Training
  - Insurance

Operating Electric School Buses

- Utility Coordination
  - Work Done to Date
    - 1 - double level 3 charger
    - 2 - level 2 chargers

Operating Electric School Buses

- Full Size Bus Lot Redesigned
- Funding
  - 21 level 2 chargers
  - 1 - three post Level 3 charger

Questions or Comments?

Lake Shore Central School District
959 Beach Road, Angola, NY 14006
(716) 549-2300

NYCSBUS

Electrifying School Transportation

NYCSBUS by the numbers

4 years in operation

9,000+ students with special needs

18,000 parents/guardians

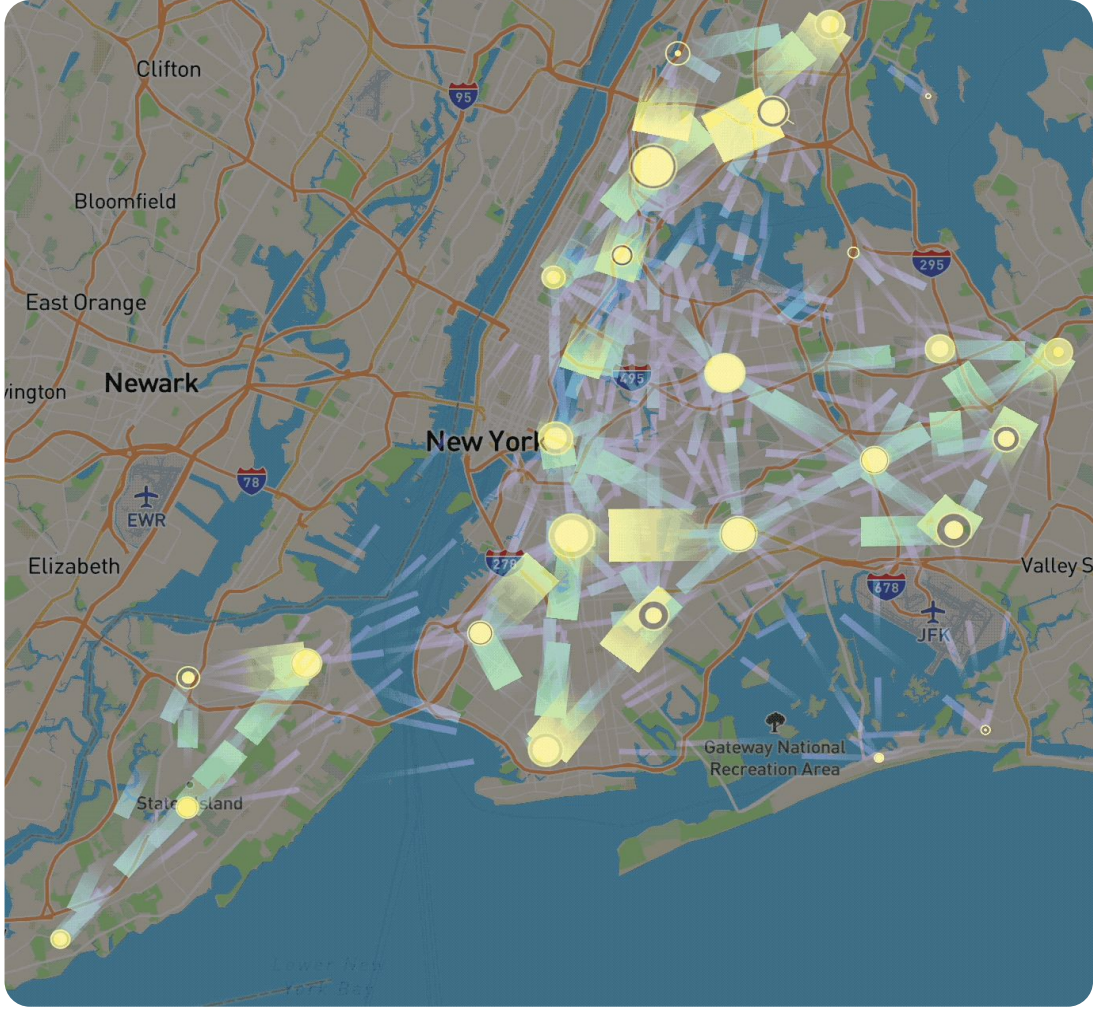
1,600+ school arrivals

40,000+ NYC miles/day

(~9 million miles/year)

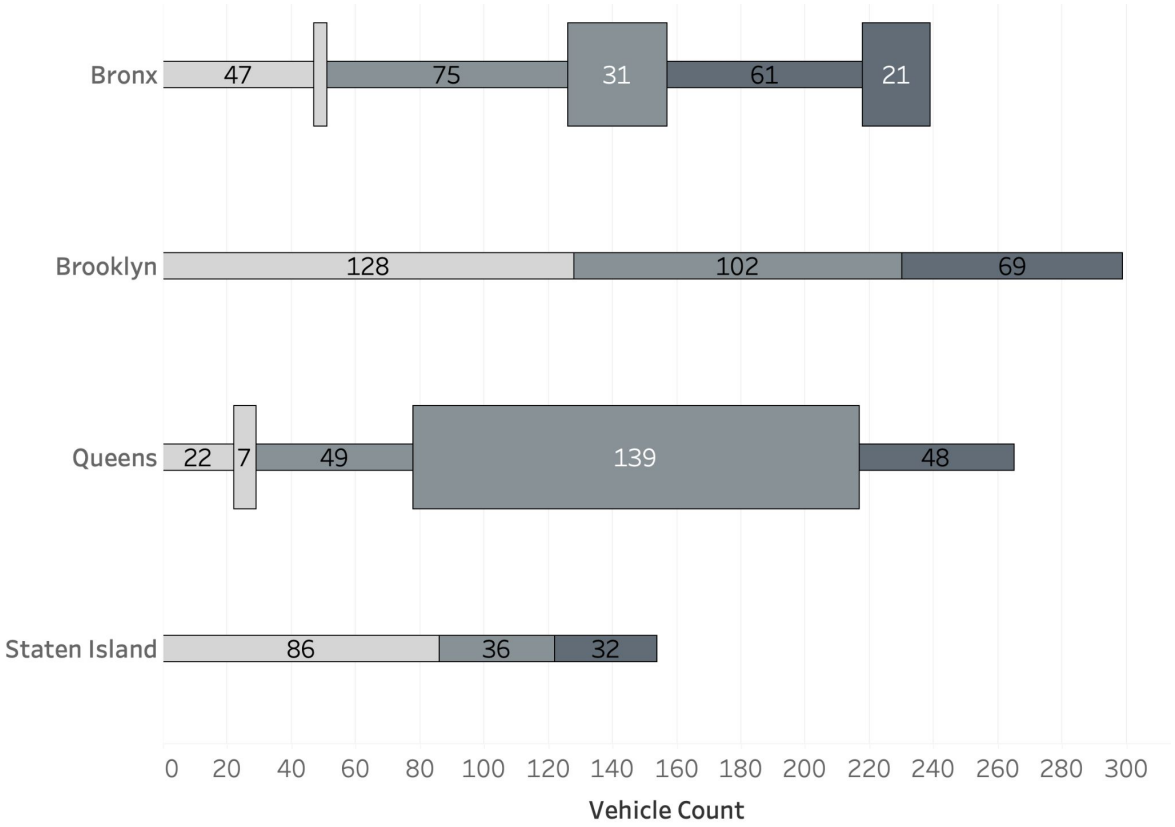
1,700 staff (Drivers + Attendants)

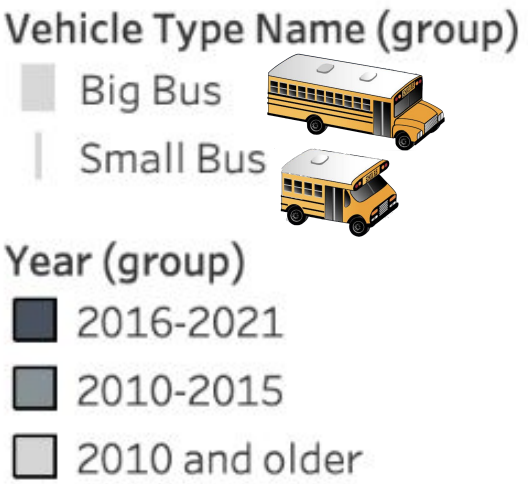
904 Buses / **27** Electric



flowmap

NYCSBUS Fleet snapshot





Painting NYC **YELLOW** every morning!

Our electrification partners

GIRARDIN BLUE BIRD

NEW YORK STATE OF OPPORTUNITY. NYSERDA

WORLD RESOURCES INSTITUTE

conEdison

Empire Clean Cities

CALSTART

THE MOBILITY HOUSE

NYC DCAS Citywide Administrative Services

NYC Department of Education

POLARA

GEOTAB

NYLCV NEW YORK LEAGUE OF CONSERVATION VOTERS

MOTIV

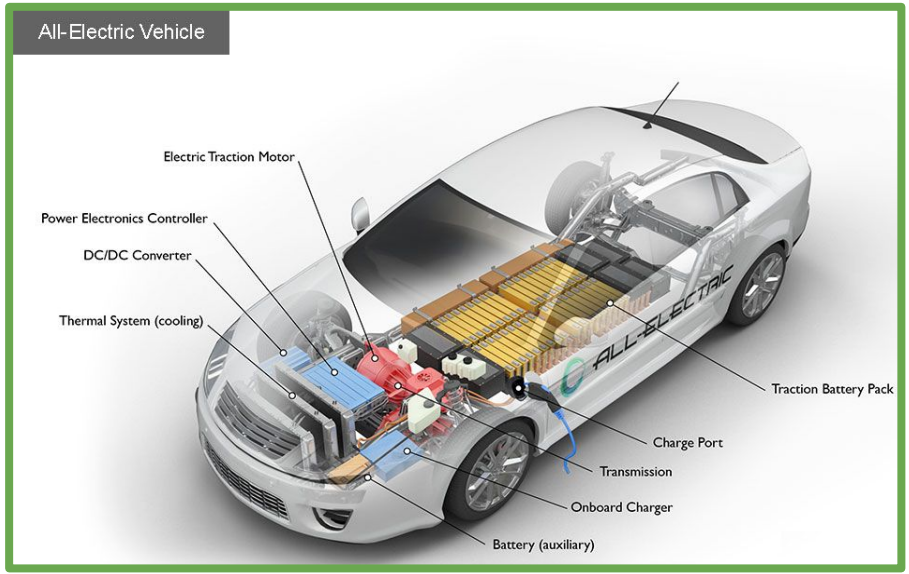
COLLINS REV GROUP

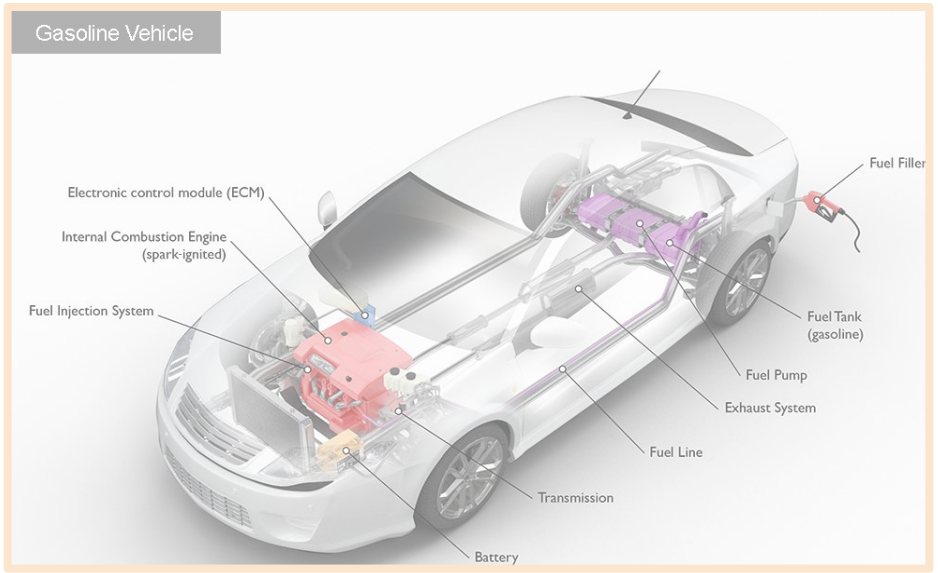
Fleetio

BRONX COMMUNITY COLLEGE

CUNY THE GREATEST URBAN UNIVERSITY IN THE WORLD

EV vs ICE (Gas/Diesel)



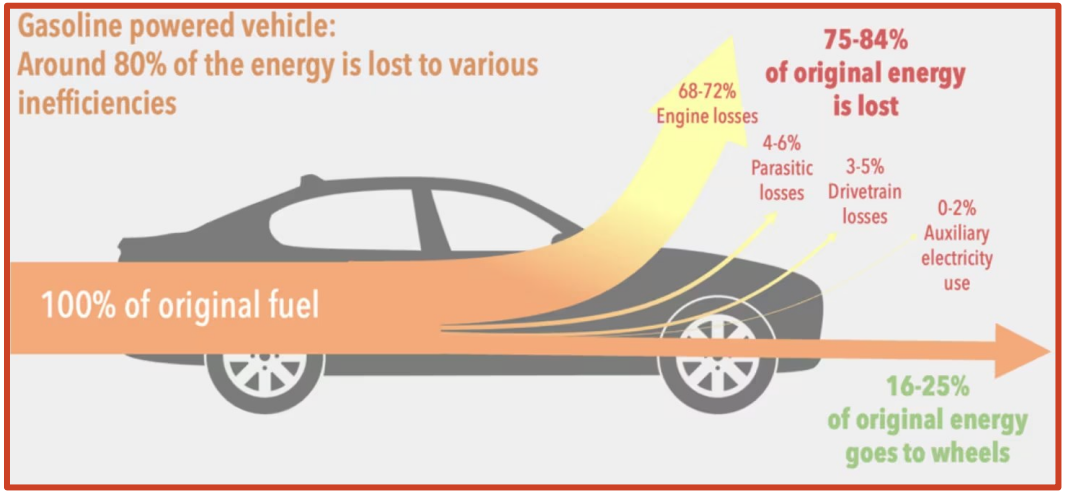


Battery → Electricity → Computer → Motor

Gas Tank → Gasoline → Computer → Motor

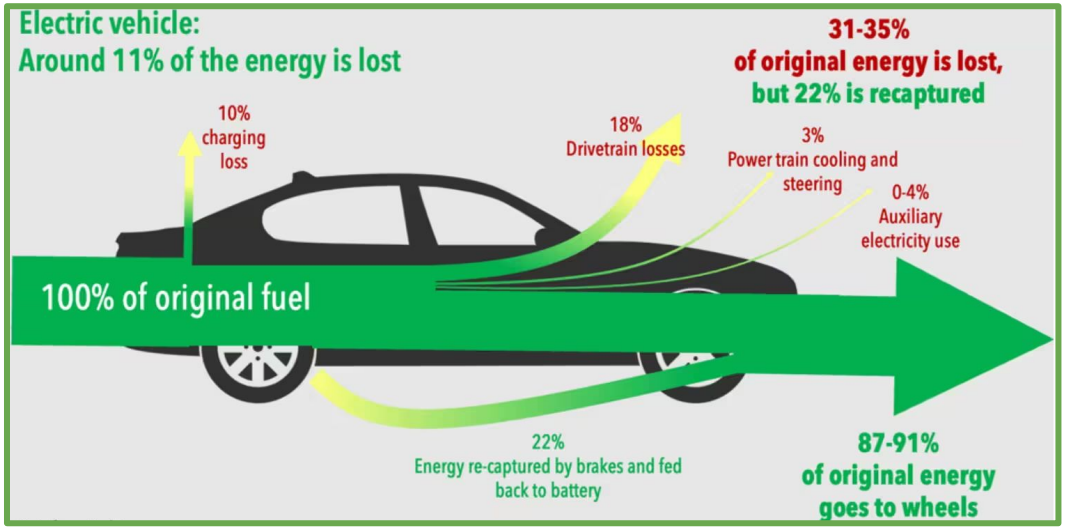
ICE engine

Energy Waste High



EV motor

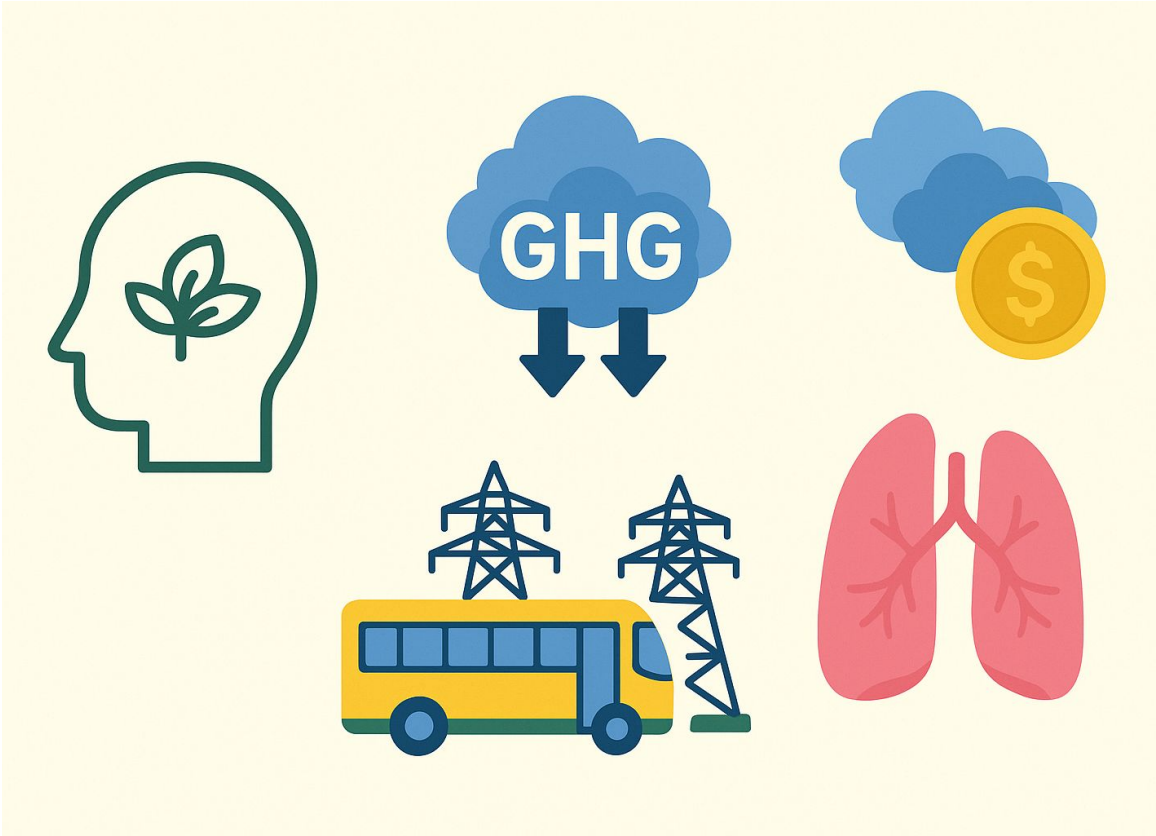
Energy Waste Low



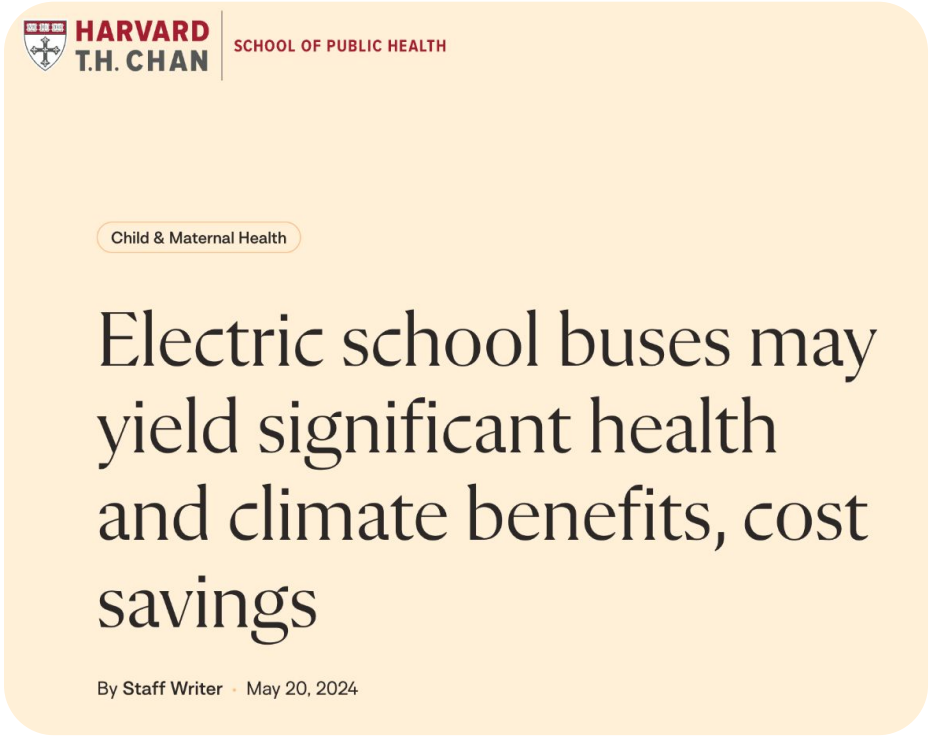
What's gained from going Electric?

Improved
Lung Health
Mental Health
Grid Resilience

Reduced
Maintenance
Noise pollution
CO2 emissions
NOx Toxins



$200k in Climate + Health savings per bus replaced



HARVARD T.H. CHAN | SCHOOL OF PUBLIC HEALTH

Child & Maternal Health

Electric school buses may yield significant health and climate benefits, cost savings

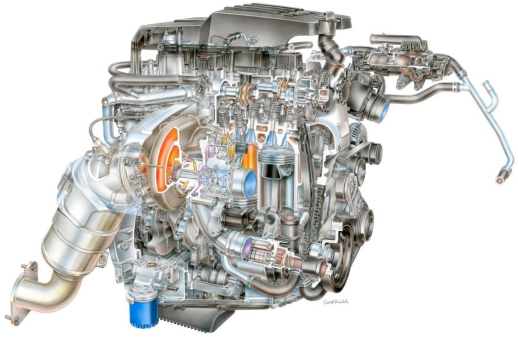
By Staff Writer · May 20, 2024

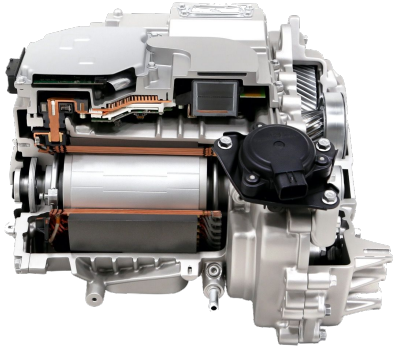
The researchers calculated that, in a large city, **replacing a 2005 diesel school bus with an electric bus would achieve $207,200 in health benefits per bus**.

- Fewer greenhouse gas emissions
- Reduced rates of adult mortality
- Reduced rates of childhood Asthma

Study published in The Proceedings of the National Academy of Sciences on May 20, 2024.

What's lost when going Electric?

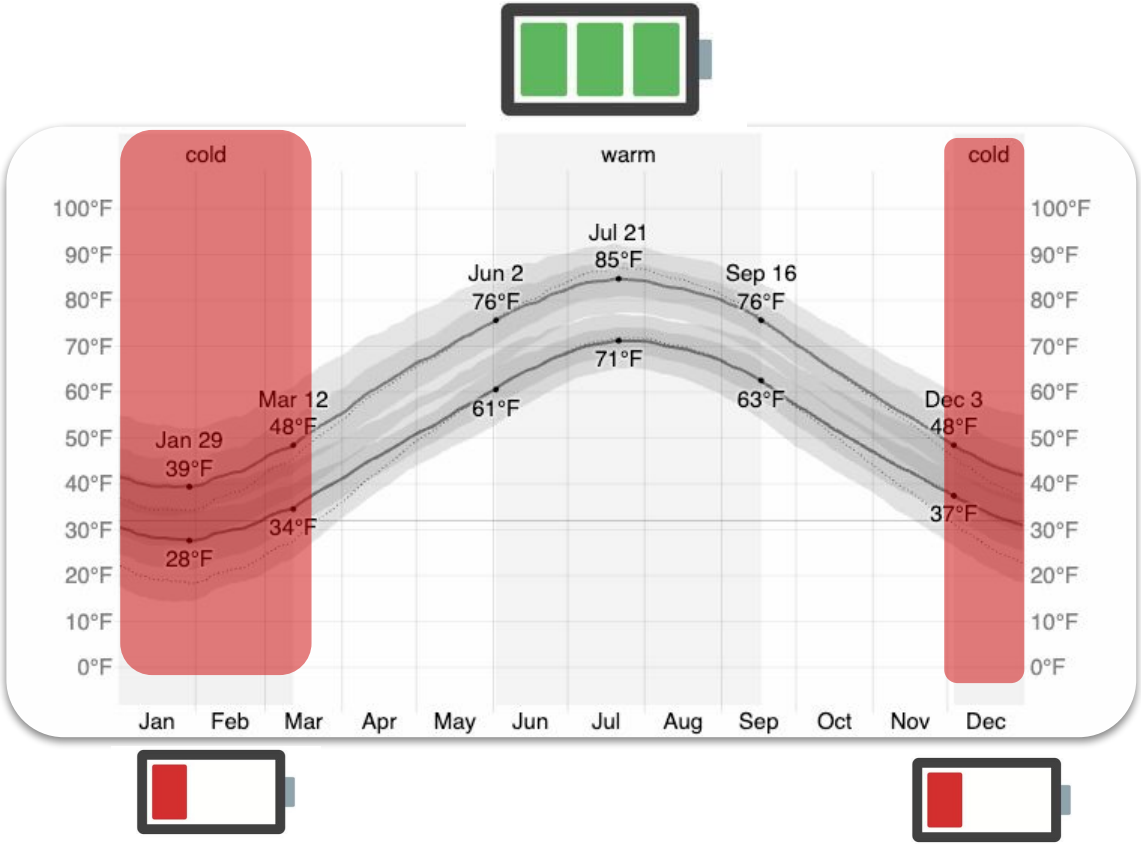




Maintenance!

ICE Engine	Electric Motor
Oil & Filter	0
Spark Plugs	0
Timing & Drive Belts	0
Emission Inspection	0

EVs & Cold Weather

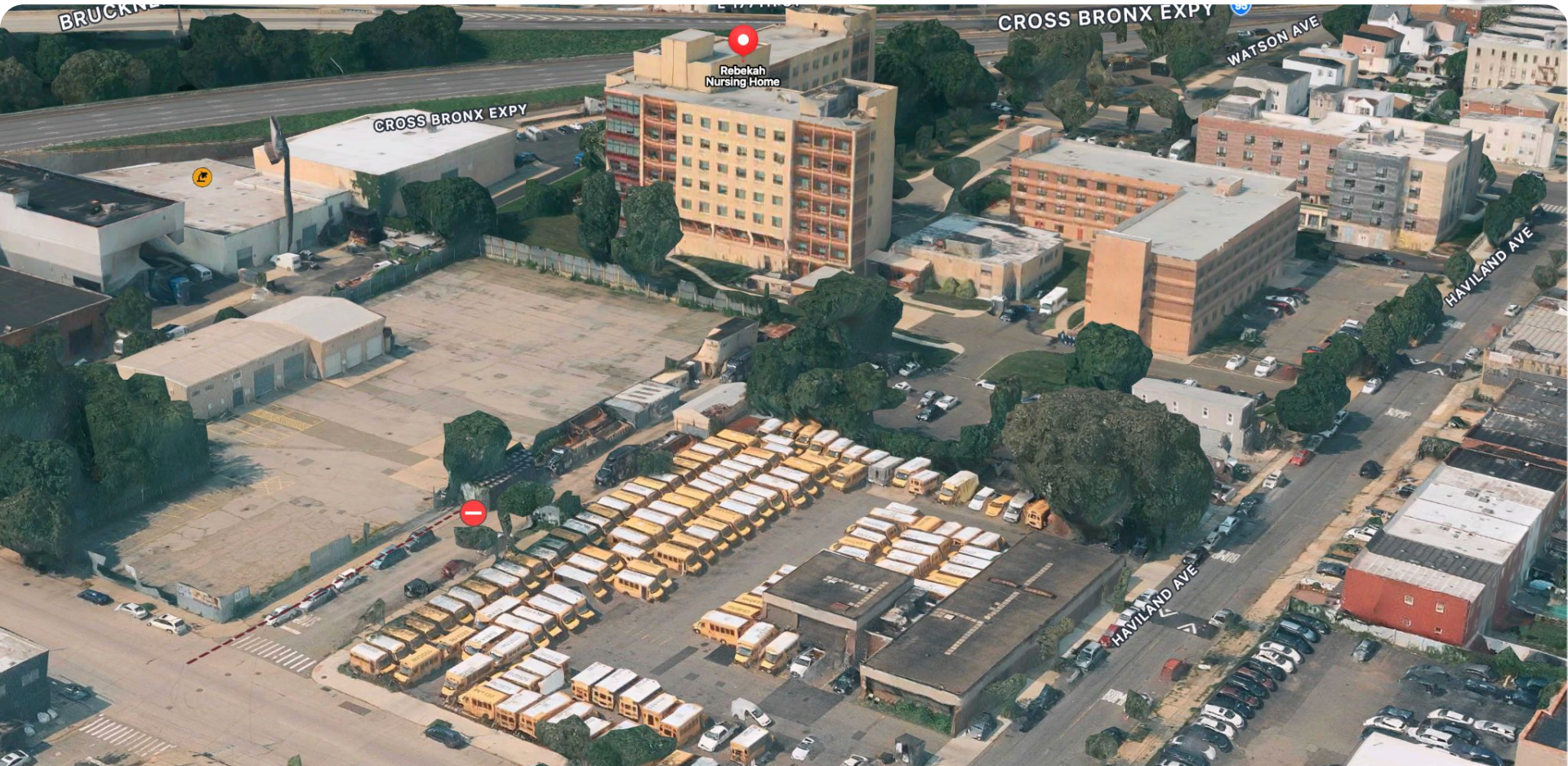


Our Electrification path

Existing EV fleet (27)	2025 additions	2026 additions

By 2035
Full electric fleet
(NY Climate Law)

Electrifying School Buses in the Bronx



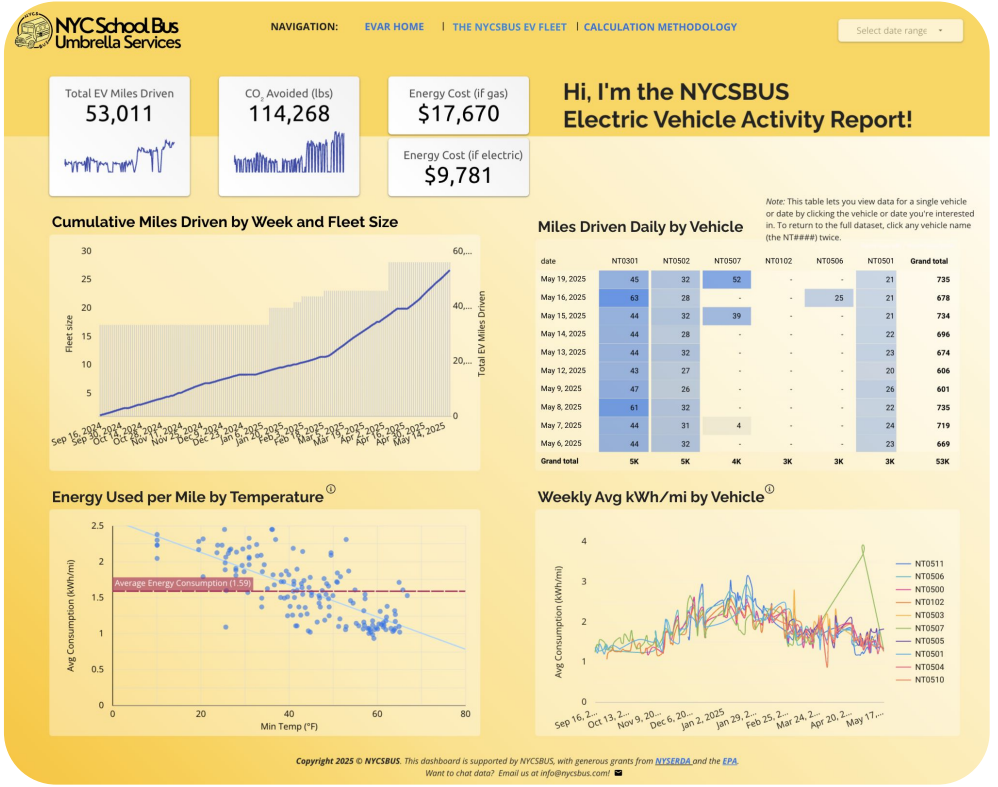
Electrifying School Buses across NYC

EVAR = Electric Vehicle Activity Report

nycsbus.com/evar

Each EV mile driven

- Fewer Asthma causing toxins
  (ozone, nitrogen dioxide, sulfur dioxide, and carbon monoxide)
  inside bus +
  in our communities.
- Fewer global warming emissions
- Fewer $$ spent on Fuel
- Lower decibels



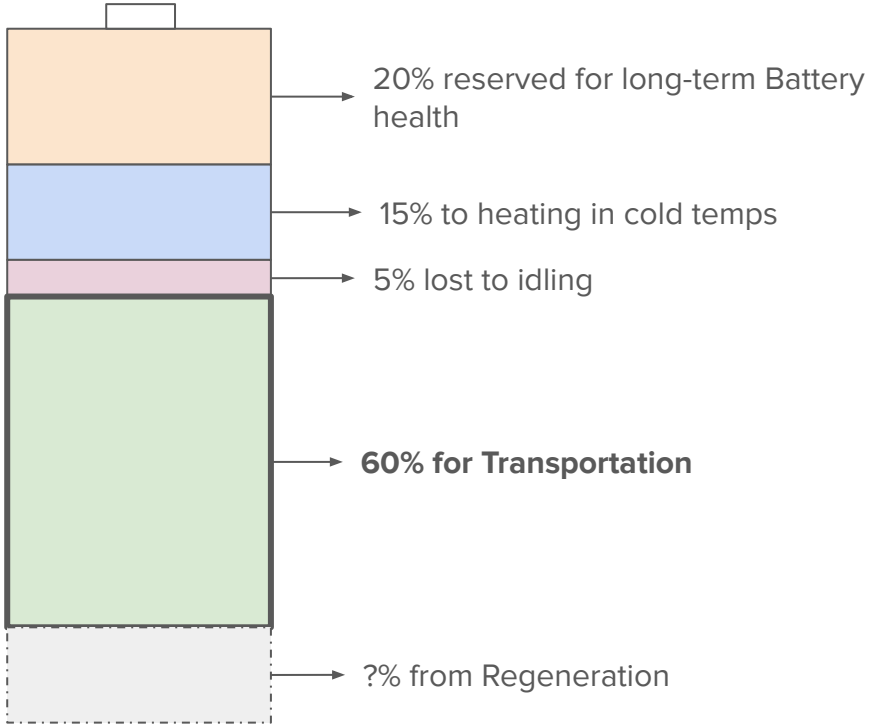
Battery 101

kWh (kiloWatt hour)
Measures Battery size

kWh/mile (kiloWatt hour per mile)
Measures efficiency
Electricity consumed per mile traveled.
Higher in winter (less efficient)

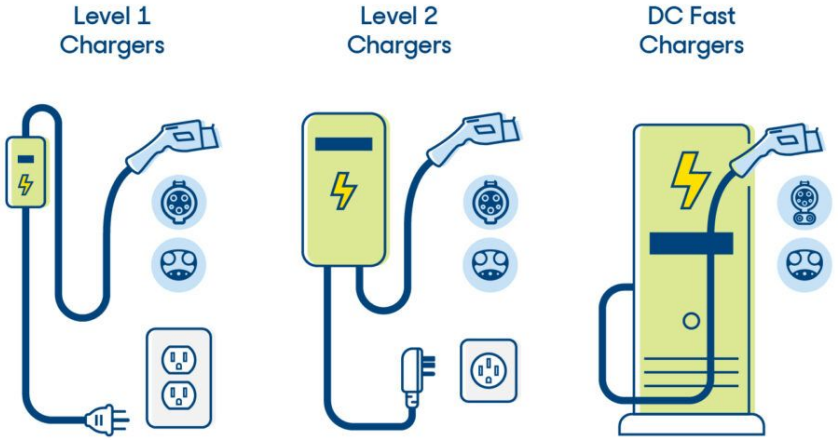
Why not say miles / kWh like miles per gallon?
More suitable for smaller vehicles as it's >1
For school buses, its < 1 and hard

Remember, EVs can regenerate energy!
Like a starfish

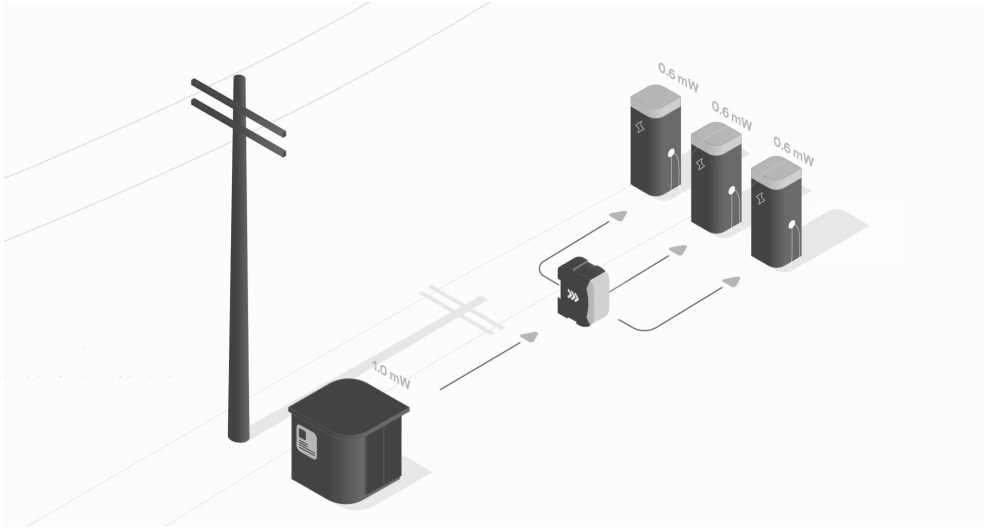


Charging 101

Charger Levels

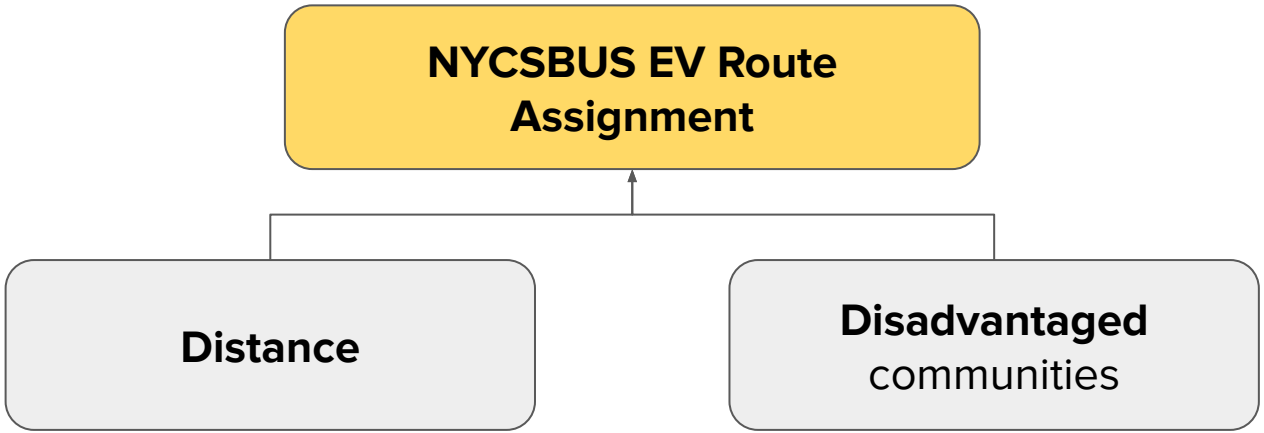


Automated Load Management

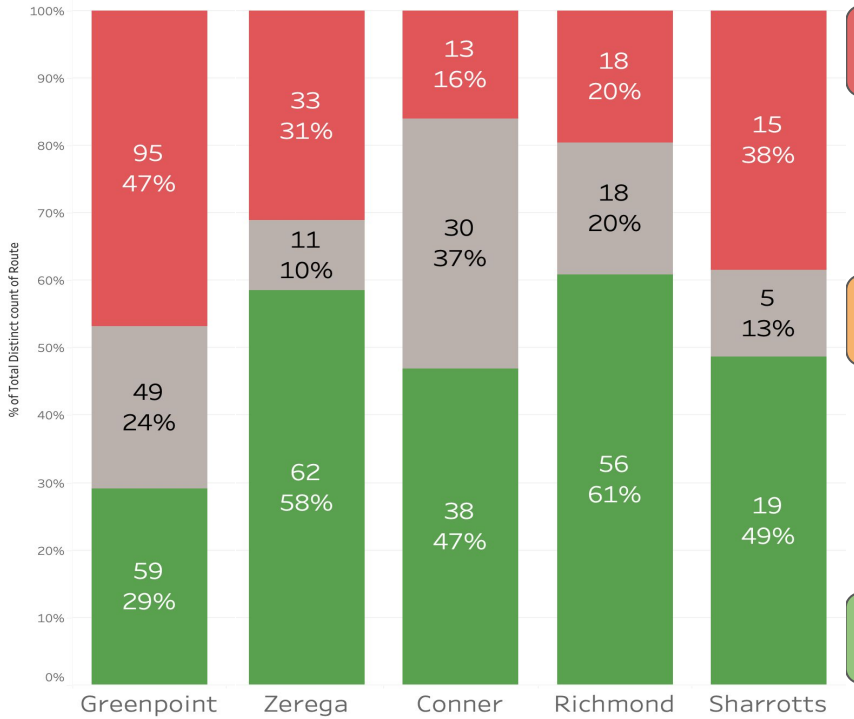


How we assign EVs to Routes

Minimize range anxiety
Maximize access to disadvantaged communities



EV Route Planning - Risk mitigation

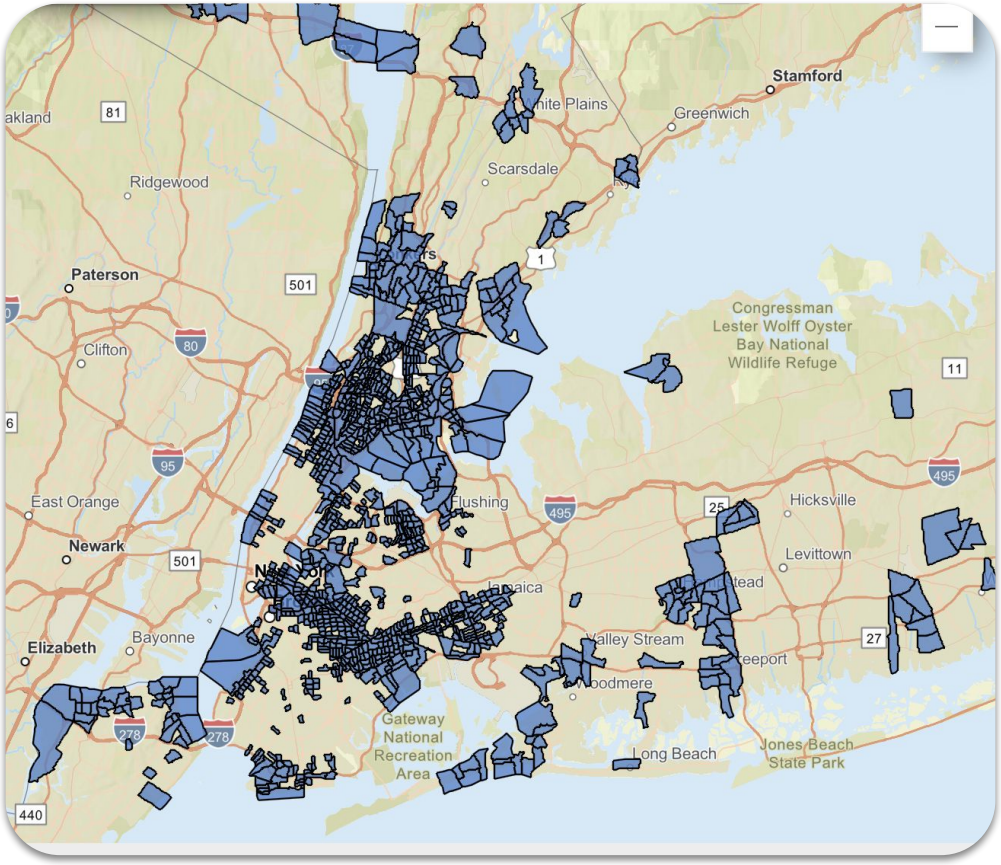


NEVER
Routes are >52 miles.

RISKY
Will need midday charging in cold Weather)
Routes are between 40 - 52 miles

OK for all weather
Routes are < 40 miles

EVs and Disadvantaged communities



How were disadvantaged communities identified?

The CJWG used 45 indicators to identify 35 percent of census tracts in New York as DACs. Table 1 shows the percentage of census tracts identified as DACs broken out in each region. The indicators (Table 2, Table 3) include climate-related risks, such as flooding or extreme heat, health vulnerabilities like asthma and COPD, and emergency department visits, as well as several socio-economic factors including race, ethnicity, and income.

Regions correspond with New York State's Regional Economic Development Council regions and are sorted from most to least populous. For a list of counties within each region, see regionalcouncils.ny.gov.

Table 1. Percentage of census tracts in each region designated a draft DAC

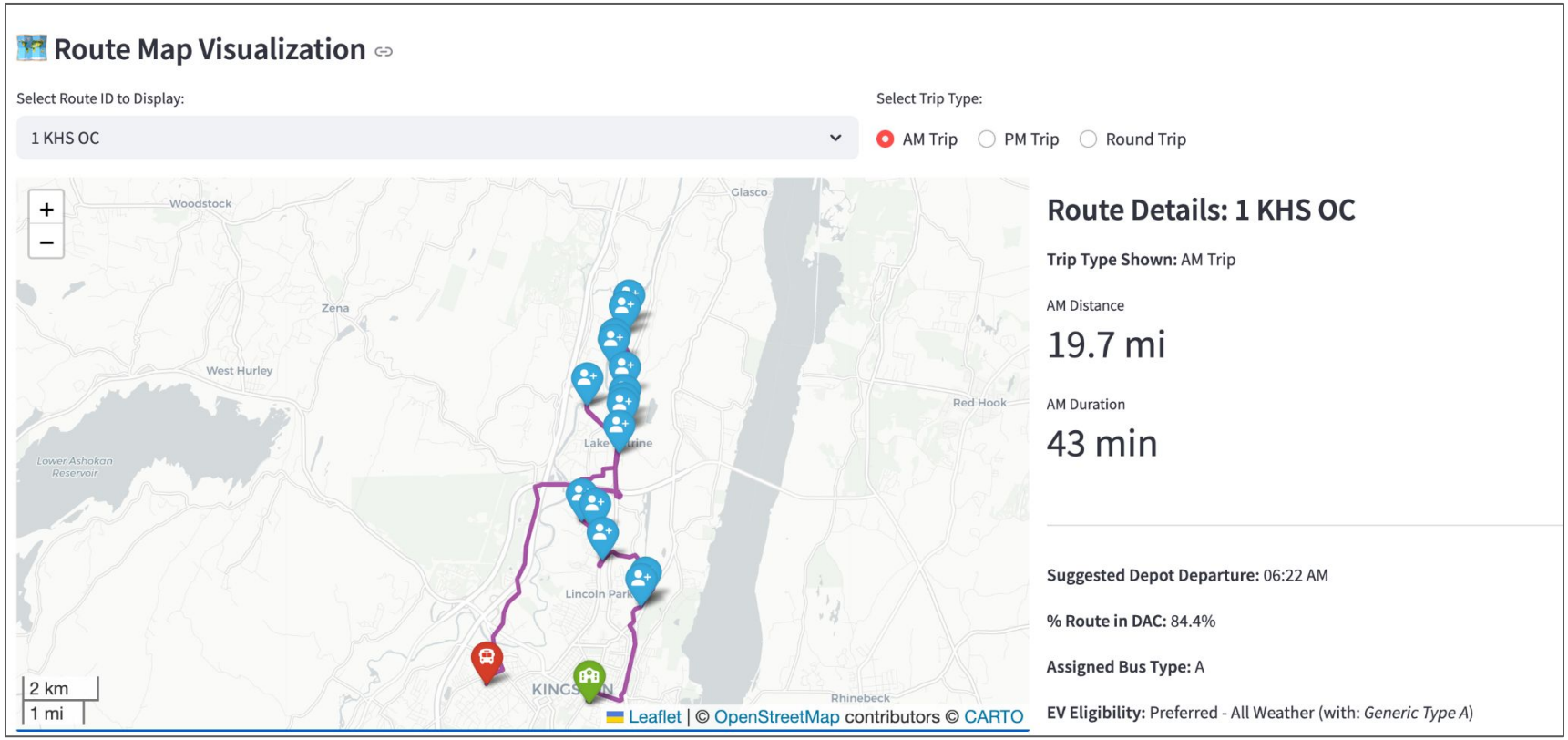
Region	% of tracts identified as draft DACs
New York City	45%
Long Island	12%
Mid-Hudson	45%
Western NY	32%
Finger Lakes	35%
Capital Region	22%
Central NY	36%
Southern Tier	18%
Mohawk Valley	19%
North Country	15%
Total	**35%**

Table 2. Environmental burdens and climate change risks: Draft indicators

Environmental Burdens and Climate Change Risk		
Land use and facilities associated with historical discrimination or disinvestment	**Potential climate change risks**	**Potential pollution exposures**
Proximity to remediation sites	Extreme heat projections	Vehicle traffic density diesel truck and bus traffic
Proximity to regulated management plan sites	Flooding in coastal and tidally influenced areas (projected)	Particulate matter (PM2.5)
Proximity to major oil storage facilities	Flooding in inland areas (projected)	Benzene concentration
Proximity to power generation facilities	Low vegetative cover	Wastewater discharge
Proximity to active landfills	Agricultural land	
Proximity to municipal waste combustors	Driving time to hospitals or urgent/critical care	
Proximity to scrap metal processors		
Industrial/manufacturing/mining land use		
Housing vacancy rate		

NEW YORK STATE | Department of Environmental Conservation | NYSERDA

NYCSBUS eReady for **Fleet electrification Planning**



NYCSBUS IT + leadership

Ed Driscoll
CFFO
Fleet & Facilities

Erika Lassi
CSDO
Service Delivery

Matt Berlin
CEO

Holly Orr
CIO

Varun Adibhatla
Head, Data Science/Analytics

Pyiephyo Ko
Solutions Engineer

Cristopher Soto
Sr. Data Engineer

Gabriel Wylie
IT Manager

Adela John
Special Projects

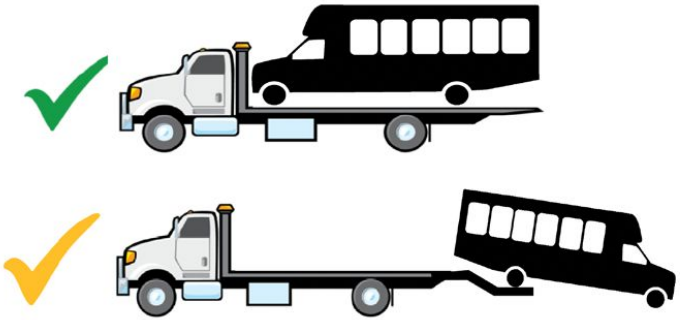
Hannah Stauss
Data Scientist

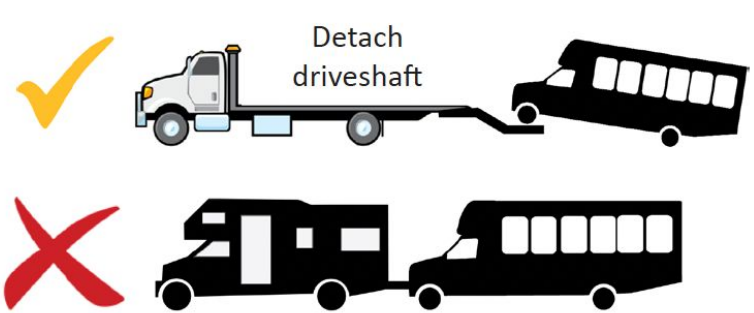
Karunya Sabapathy
Climate Justice Fellow

Driving an electric school bus

Blue Bird Micro Bird G5 - Type-A Electric School Bus

Towing procedures





CAN (Controller Area Network)