NEW YORK STATE OF OPPORTUNITY. Department of Public Service

NYS Electric School Bus Technical Conference

Case 23-E-0070

May 31st, 2024

Agenda

1. **NYSDPS:** Opening remarks, overview of DPS, the ESB Mandate, & MHD Proceeding
    - Poll questions
2. **NYSERDA:** ESB Guidebook, Roadmap, overview of ESB environment & ongoing support
    - Q&A period
3. **NYSED:** Aid ability, permitting, & new Bond Act provisions
    - Q&A period
4. **JU:** Capacity mapping results and analysis, Case Study
    - Q&A period

Housekeeping Items

- All participants will remain muted
- Q&A between presentations
- Questions related to the technical conference content will be prioritized in the order in which they are submitted, as time allows
  - Relevant agency contact information will be provided for missed or follow-up questions
- **Today's presentation materials will be emailed to attendees and posted with the recording on the Department of Public Service's Document Matter Management System (DMM)**
  - Link to instructions on how to access DMM filings:

  https://dps.ny.gov/dmm-login-document-and-matter-management-system

Opening Remarks

Zeryai Hagos
Deputy Director
Office of Markets and Innovation

NYS Department of Public Service

- NYS Department of Public Service (DPS) is the Staff arm of the Public Service Commission (PSC)
- PSC regulates & oversees the performance of NY's investor-owned electric utilities
  - The PSC Chair advises the Long Island Power Authority board who contracts with PSEG-LI for utility operations on Long Island
- In the transportation electrification transition, including electric school buses, the PSC's primary role is the development and authorization of utility-administered incentive programs, as well as planning the development of grid infrastructure that will serve EV charging

New York State Electric School Bus Mandate

2022 Electric School Bus Mandate

- Announced in Governor Hochul's 2022 State of the State
- Formalized in 2022 – 23 New York State Budget
  - Part VI-C: Accelerate New York's Adoption of Electric, Zero-Emission Vehicles
    - School buses 100% electrified by 2035
    - All new school bus sales ZEV by 2027
    - Primary aim to advance Climate Act goals and improve air quality

PSC Case 23-E-0700: MHD EV Proceeding

Case 23-E-0700: MHD EV Proceeding

- In April of 2023, PSC initiated Case 23-E-0070: Proceeding to Address Barriers to Medium- and Heavy-Duty Electric Vehicle Charging Infrastructure to develop full-scale programs to support:
  - MHD EV charging infrastructure
  - Proactive planning for utility infrastructure supporting vehicle electrification
- DPS and NYSERDA to conduct ZEV market analysis and study focusing on barriers to MHD electrification
  - Currently onboarding contractors
  - Goal is to inform further MHD policies and proceedings, including those to be related to the electric school bus transition
  - JU's Existing Load Capacity Analysis

Poll Questions

NYSERDA Clean Transportation

NYS Electric School Bus Technical Conference

NYSERDA Clean Transportation

May 31, 2024

NEW YORK STATE | NYSERDA

Existing Conditions

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 approximately **100** ESBs on the road in NY State, with up to **800** projected to be on the road later within the next year
- The average route length in NY State is **80** miles
  - Most electric buses have a range of **150** miles or more.
- Currently, **200+** school districts are actively in the process of planning their fleet transition with NYSERDA

Current Progress:
Education and Outreach

Electric School Bus Roadmap

- The **ESB roadmap** was published by NYSERDA in 2023
- Guides the development of solutions to support districts, bus operators, and stakeholders through the EV transition, while also identifying funding areas and needs

ESB Guidebooks

- The Electric School Bus Guidebooks contain information, strategies, and resources for fleet electrification and are periodically updated on **NYSERDA's website**

Surveys

- NYSERDA sends surveys out to school districts to collect information valuable to their future fleet electrification, such as current fleet size, depot locations, and contractor information (when applicable)

Current Progress:
Fleet Planning

Starting the Transition

- Districts should develop a Fleet Electrification Plan (FEP) and establish contact with their utility as soon as possible.
- FEPs serve as a roadmap to electrifying a district or contractor's entire fleet by 2035
- NYSERDA can cover up to the full cost of the FEP for school districts, and up to 50% for bus contractors working with districts

Key Finding: Managed (Scheduled) Charging

- Effective charging management can allow school districts to save on electricity costs
- Initial findings from FEPs show an average projected decrease in demand (~60%) and cost-savings by managing charging

Current Progress:
Buses

New York School Bus Incentive Program (NYSBIP)

- NYSBIP launched in Fall 2023 with $100M in funding available
- NYSBIP provides funding for electric school buses, but can also help fill the gaps in funding to cover chargers and customer-side charging infrastructure

Other Funding Sources

- Funds from the EPA's Clean School Bus program can be stacked with NYSBIP funding to provide more cost coverage
  - More information on fund stacking can be found on the **NYSERDA website**

Buses Currently Deployed

- Around **100** electric school buses are currently on the road across NY State, and **800** are expected on the road within the next year or so

Current Progress: Charging Infrastructure

Funding

- NYSBIP can also be used to aid the cost of charging infrastructure and site upgrades
- NYSERDA has been working with utility-providers to ensure that school districts maximize the funding they can apply for – **ensuring that districts who are eligible for customer-side MHD Pilot Program funding can 'stack' this funding with NYSBIP**

Innovative Charging Solutions

- NYSERDA is working with districts, utilities, and private companies to explore ways to get more value out of every charging installation
- NYSERDA and NYSED are coordinating on concepts for shared charging solutions

Sample District Incentive Example

Sample District has a Transportation Aid Ratio of 50%, meaning that State Transportation Aid can reimburse the district for up to 50% of eligible expenses, beginning the year after the expense is incurred. The average Transportation Aid Ratio is about 70%.

Sample District wants to buy a new Type D bus, the largest and most expensive bus type.

A diesel Type D bus costs around $165,000. An electric version costs around $425,000.

Sample District is applying for the NY School Bus Incentive Program (NYSBIP) and the Commercial Clean Vehicle Tax Credit.

Sample District's aid ratio is applied to eligible costs, which for an ESB, includes the NYSBIP incentive amount.

Sample District Incentive Example

		ESB	Diesel/Gas
1	District wants to purchase a Type D bus	$425,000	$165,000
2	District applies for NYSBIP Voucher (-$156,000)	$269,000	$165,000
3	District scraps old bus (-$65,000)	$204,000	$165,000
4	District selects V2G-capable bus (-$13,000)	$191,000	$165,000
5	District applies 45W credit to remaining cost (-$40,000)	$151,000	$165,000
6	District pays upfront cost	$151,000	$165,000
!	**Final Cost After Aid Reimbursement***	**$0**	**$82,500**

* Not factoring interest on aid payments. Recent changes to the State Aid calculation for NYSBIP vouchers mean that this district would be fully reimbursed for their out-of-pocket costs over the 12-year amortization period.

Ongoing Efforts

NYS & Utilities are currently working on:

- Increasing uptake of fleet planning support
- Improved coordination of fleet planning support
- Reducing timelines for review and project completion
- Increasing support as districts progress from ‘pilot’ to ‘scaling’ phases
- Socializing capacity requirements with utilities to build out infrastructure (if necessary)

Thank You!

NYSERDA: schoolbus@nyserda.ny.gov

Contact your utility

Stay connected via our email list

NYSERDA Q&A

New York State
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NYSED Support for Zero Emission School Bussing

Pupil Transportation Unit
New York State Education Department

New York State
EDUCATION DEPARTMENT

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Will expenses generate State Aid?

- **YES.** In general, district expenses for zero-emission buses, related equipment, and charging infrastructure are eligible for Transportation Aid. Transportation Aid for such zero-emission related expenses will be amortized over a 12-year period.

- NYSED has created a Zero-Emission charging infrastructure Q&A document that contains a link to a Zero-Emission Transportation Aid Estimator for use in district planning and budgeting.

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Will State Aid repay all out-of-pocket costs to districts for capital expenses?

- **In many cases, YES.** Recent changes to the Education Law permit districts to claim up to the full “sticker price” of zero-emission busses and related infrastructure and capital equipment. School districts are no longer required to deduct NYSBIP funds from Aidable capital expenses. This means that up to 100% of out-of-pocket costs may be reimbursed to school districts over the full amortization period.

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If there is no building on site and there are related costs to support charging infrastructure, are expenses eligible for Transportation Aid?

- **YES.** There may be a need for charging to be located at a site without a building due to power source /grid restrictions or centralized site location. The bus garage is not the only location charging may occur.

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Will NYSED provide Building Aid to support the construction of a small building to house said infrastructure?

- **YES.** NYSED will provide Building Aid for reasonable and appropriate expenditures for the construction of a small building needed to house charging infrastructure.

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Will a charging infrastructure project need to be submitted and approved by NYSED's Office of Facilities Planning?

- **YES.** Any work that would otherwise require an **OFP permit must still be submitted for review, approval, and permit prior to the work being bid.** The Transportation Aid eligible components of the project must be submitted as a separate project number for accounting purposes. The drawings and specifications may be combined with other non-transportation aid eligible scopes of work, **but a separate project number and paperwork submission is required.**

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Do electric bus charger installations require a permit from OFP?

- **YES.** All ZEB charging infrastructure projects are required to be submitted to NYSED's Office of Facilities Planning (OFP) for review, approval, and permitting. However, **electric bus charger installations may be exempt from review and permitting by OFP under certain and specific conditions…**

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Do electric bus charger installations require a permit from OFP?

EXCEPTIONS TO OFP PERMITTING for ZEB CHARGERS - ALL of the following conditions must be met –

- The existing electrical service, switchgear, and distribution panels have adequate capacity and do not require any upgrades to install the charger(s).
- The electrical bus charging equipment is hard-wired to an electric service distribution panel per manufacturer's installation instructions.
- New alternative energy systems (e.g. solar panels), energy storage systems (e.g. batteries), and/or generators are not being added.
- The electrical bus charging equipment shall be listed and labeled by a Nationally Recognized Testing Laboratory (NRTL) for the intended use, and shall bear it's label.
- The electric bus charging equipment is installed by a licensed electrician authorized by the district to perform such work.
- Proper markings are provided for the equipment per 2017 NEC 625.15.

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Are expenses for solar canopies used only for bus battery charging eligible for Transportation Aid?

- **Partially. Transportation Aid is only available on the solar panels and/or storage batteries to serve the buses when installed on existing roofs or new/existing ground mounts.** If roof-mounted or ground-mounted solar is unavailable based on existing conditions and a District chooses to install canopies to support solar panels for bus charging, Transportation Aid is available up to an equivalent cost of ground mounting the system. Neither Transportation Aid nor Building Aid is available for new canopies to support solar panels.

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How might BOCES play a role with longer trips requiring charging either en-route or at a destination prior to a return trip?

- NYSED supports the concept of BOCES developing capital charging/infrastructure projects that will benefit multiple school districts.
- A district's local share of BOCES capital expenses for the project is permitted as an exemption from the Tax Cap.
- Districts are eligible to receive Transportation Aid on their local share of the BOCES project expense.
- BOCES can develop a CO-SER for districts to access the charging sites, as needed, to support the cost of operation and maintenance of the site(s).
- Expenses on a CO-SER for bus charging are eligible to be claimed for Transportation Aid by districts.

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Thank you!

https://www.p12.nysed.gov/schoolbus/

(518)474-6541

transportation@nysed.gov

Pupil Transportation Unit
New York State Education Department

NYSED Q&A

Joint Utilities School Bus Depot Capacity Assessment

ESB Technical Conference

May 31, 2024

Contents For Discussion Purposes Only – Subject to Change

Image Source: NYSERDA

JOINT UTILITIES OF NEW YORK

nationalgrid | Orange & Rockland | NYSEG RG&E Part of the AVANGRID Family | Central Hudson A FORTIS COMPANY | conEdison

Contents

- Key takeaways
- DPS order and evaluation process
- Identified school bus sites
- Available capacity results
- Resources and next steps
- Fleet Electrification Plan case study

Key takeaways

- In response to a 2023 Commission order,[1] **the Joint Utilities identified available power capacity at all public school bus facilities** in the state.
- The one-time effort will **inform the ongoing medium and heavy-duty make-ready proceeding** and facilitate school district ESB[2] planning work.
- Results show that while capacity upgrades will be required for full electrification at many locations, **~85% of sites have sufficient available capacity to support a pilot project today.**
- **Site-specific information is available from your utility**. Reach out anytime to get details, start a fleet assessment, understand electric rates, and learn about incentive programs.
- Don't wait. **Start today!** There are people and resources available to you from your utility, NYSERDA[3], NYSED[4], and others.

1. Case no. 18-E-0138
2. Electric school bus
3. New York State Energy Research and Development Authority
4. New York State Education Department

Commission directed utilities to provide load-serving capacity for all public school bus facilities in NY

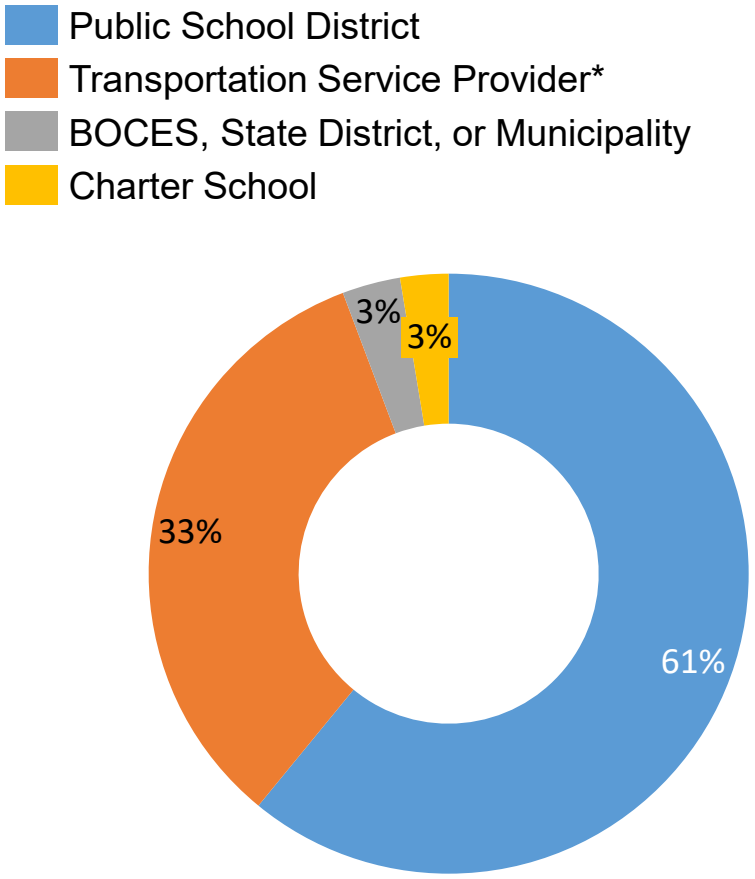
Commission Order November 16th[1]
"the Commission directs the Joint Utilities to work with Staff to identify existing load-serving capacity at school transportation facilities within 180 days [i.e. May 14, 2024] of this Order"

- **Includes *public* school bus depots: sites operated or contracted by a NY public school**
  - Does not include private and parochial schools or mass transit
  - Sites identified from a combination of DPS, NYSERDA, and utility sources
- **Provides an estimate of available electric service capacity at each school bus depot**
  - The amount of power available today without the need for grid upgrades
  - The lesser of summer and winter available capacity
- **Shows a snapshot in time as of May 14, 2024**
  - Does not account for potential changes in school transportation needs or provision
  - Does not reflect other planned or potential loads added to the grid
  - Does not enable a school district to start a project immediately. Always contact your utility before starting a project

1. Case no. 18-E-0138

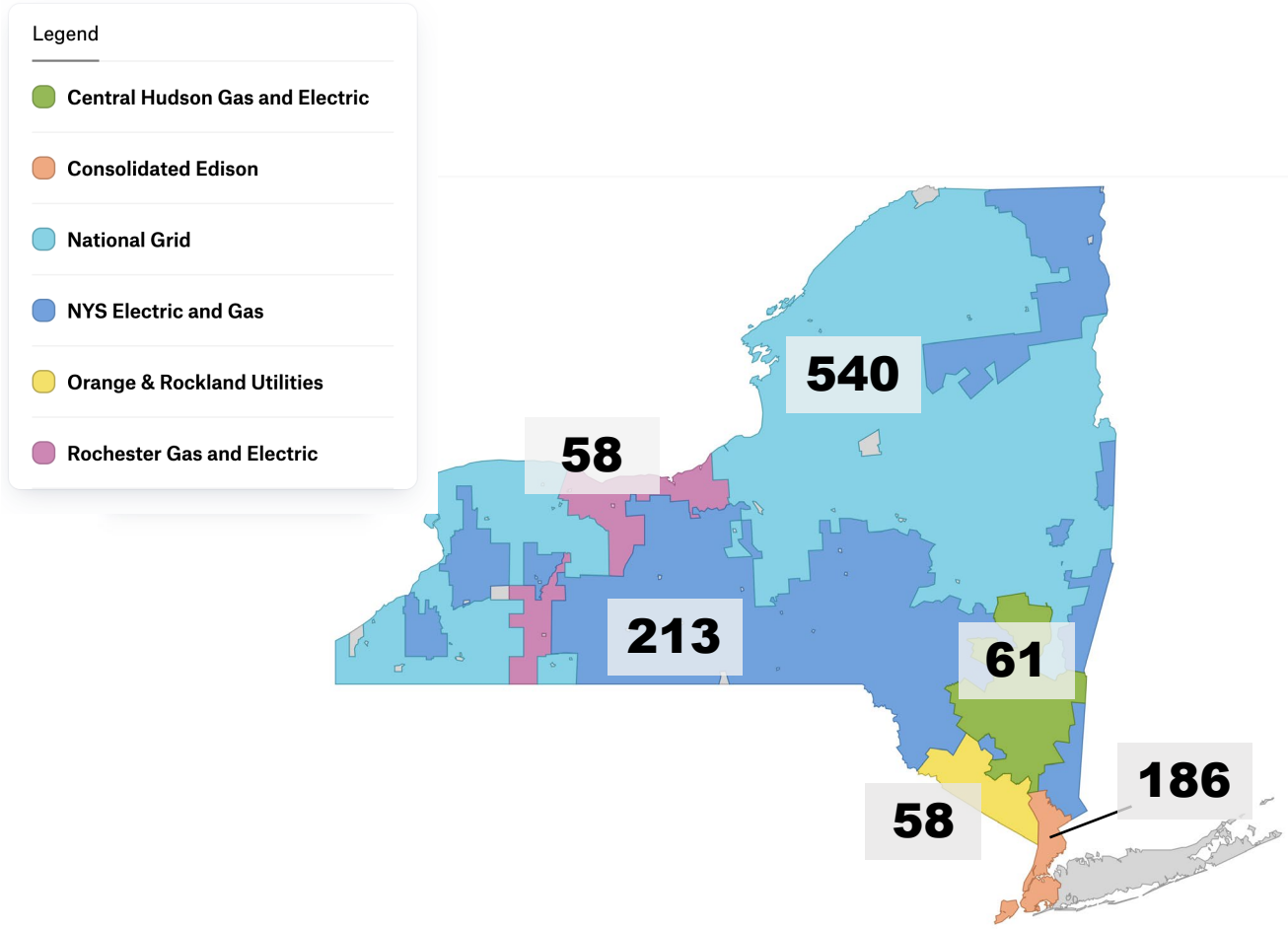
Over 1,100 public school bus sites evaluated in New York State

School bus sites evaluated by organization type



*Some Transportation Service Providers may serve private schools

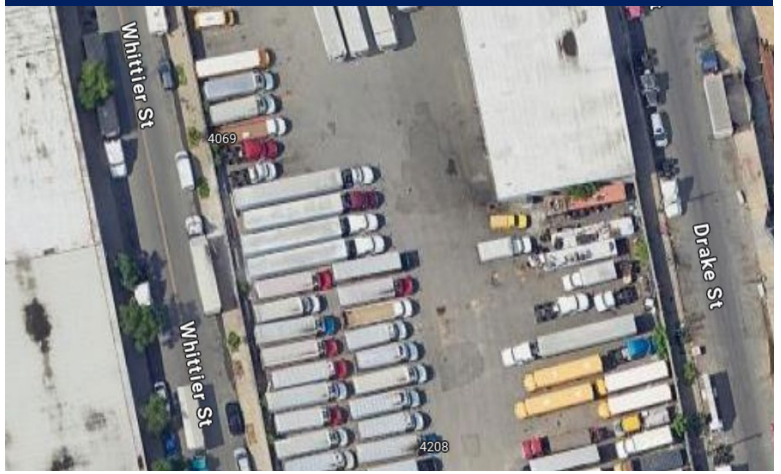
School bus sites evaluated by utility service territory



Site conditions vary across New York State

School Campus

Mixed Use

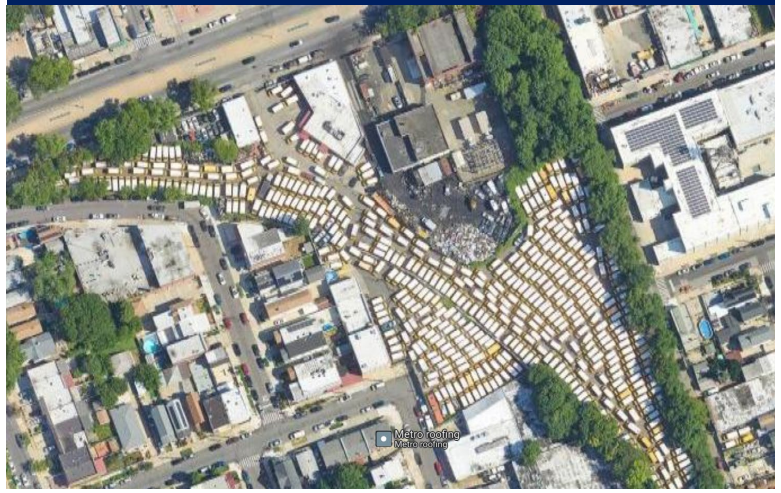


On Street

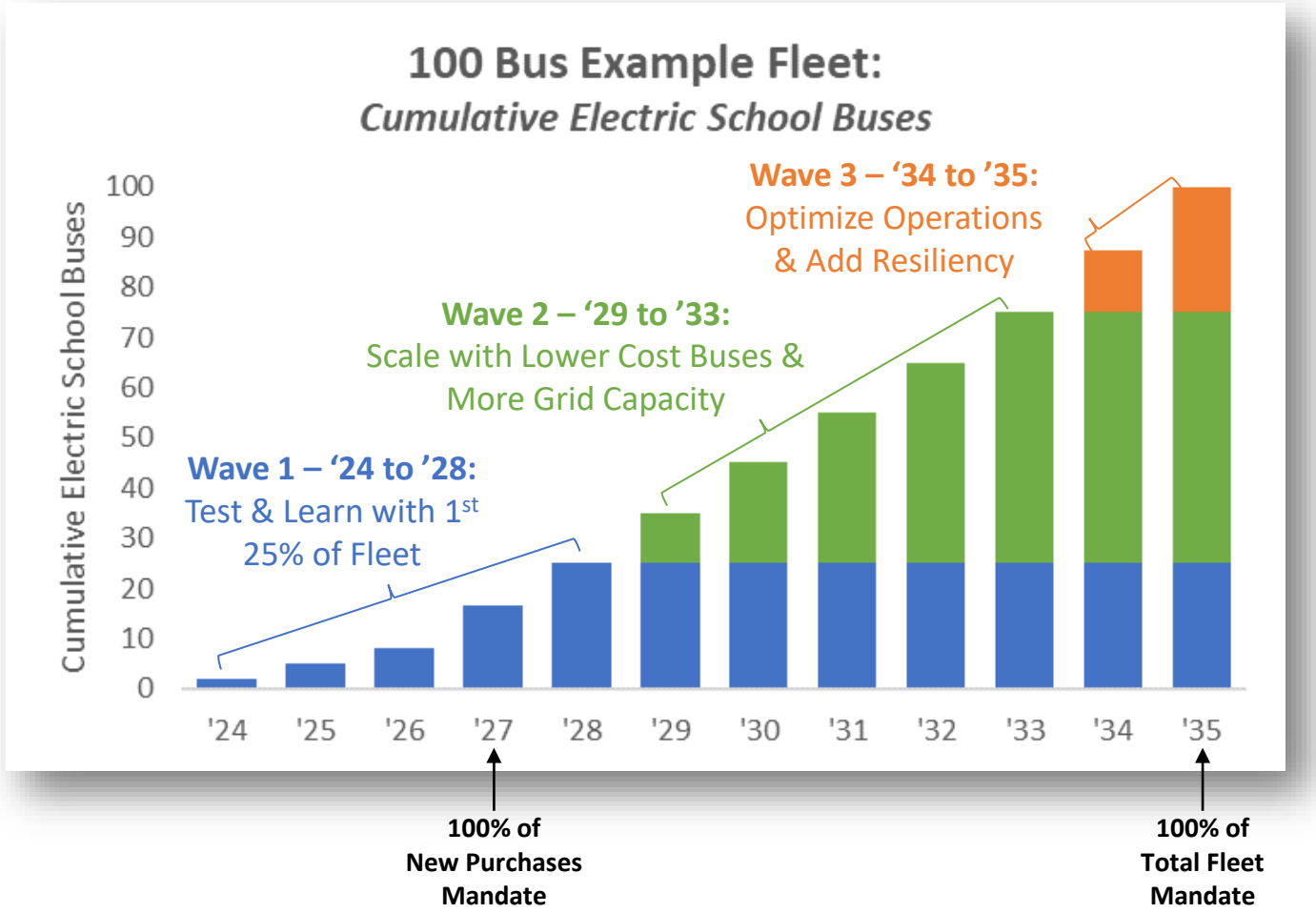
Satellite Sites

Lightly Developed

Tightly Packed



Start small, plan for scale



Key Actions for Each Wave:

Wave 1 (Now):

- Collaborate with your utility: see what capacity is available today and plan for future needs
- Order first buses for easiest routes
- Request Utility Fleet Advisory Services
- Complete a NYSERDA Fleet Electrification Plan (FEP)

Wave 2 (Scaling Up):

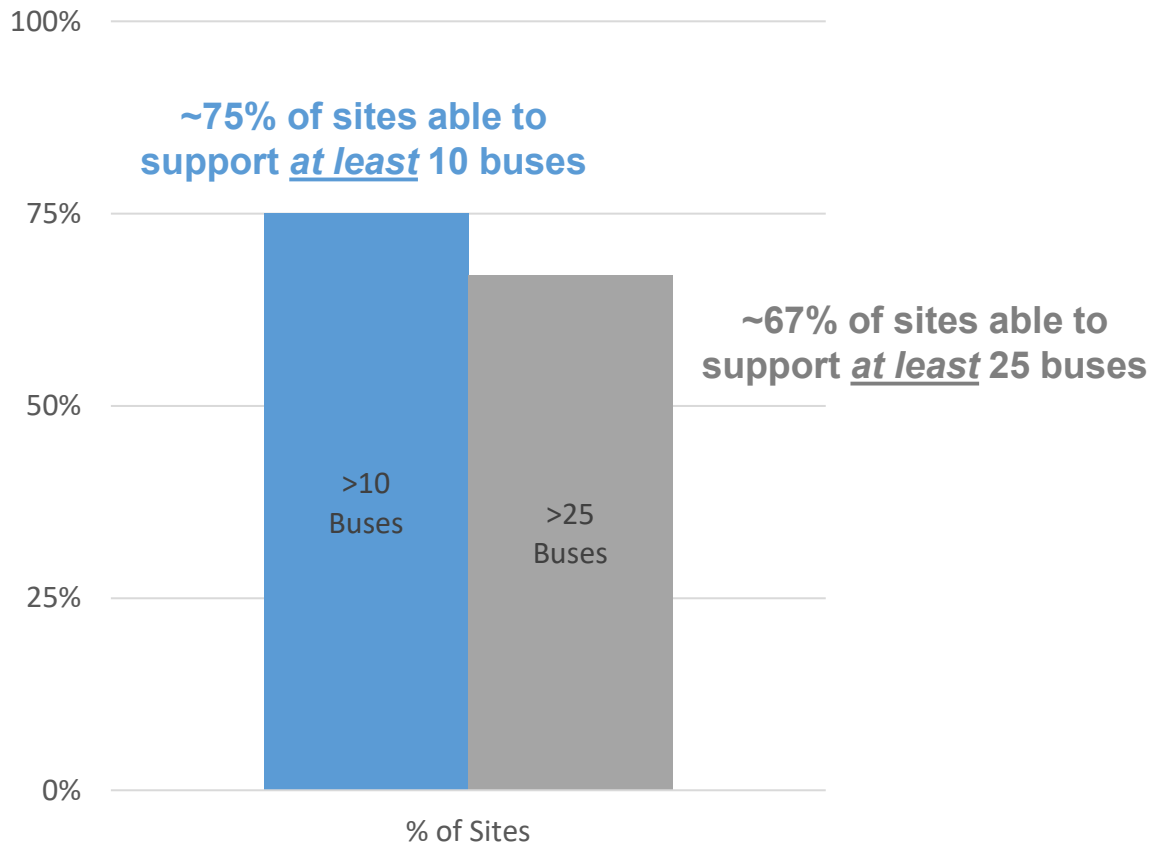
- Continue coordination with your utility on grid capacity needs and upgrades (if necessary)
- Follow FEP to scale up fleet, from easiest routes to above average mileage routes

Wave 3 (Complete 100% Transition):

- Electrify hardest routes (field trips & travel sports)
- Consider energy solutions for resiliency
- Finish FEP to reach 100% fleet mandate by 2035

Majority of school bus sites can support a pilot project today

Share of sites by ability to support electric school buses*



*Based on an estimated changing demand of 20 kW per bus

- Most school districts start with small pilots to gain experience with ESBs, ***often with no grid-side upgrades.***
- A small initial deployment is an excellent way to ***gain hands-on experience with the bus and charging equipment*** while additional utility upgrades are under construction to scale up (if needed).
- ***Site capacity optimization*** (managed charging/charger sharing) can enable existing capacity to serve more buses and potentially avoid the need for additional grid upgrades.
  - A NYSERDA or utility study can help assess that for a district.

Utility advisory services & incentives can support your project today

Medium- and Heavy-Duty Pilot Incentives
$67M available in NY State to cover a portion of customer and utility side infrastructure costs

Operating Cost Relief
Managed charging programs (Con Edison only) and 50% demand charge rebates available at each utility

Fleet Assessments
Apply for assistance from your utility to evaluate your site and prepare for electric vehicle charging

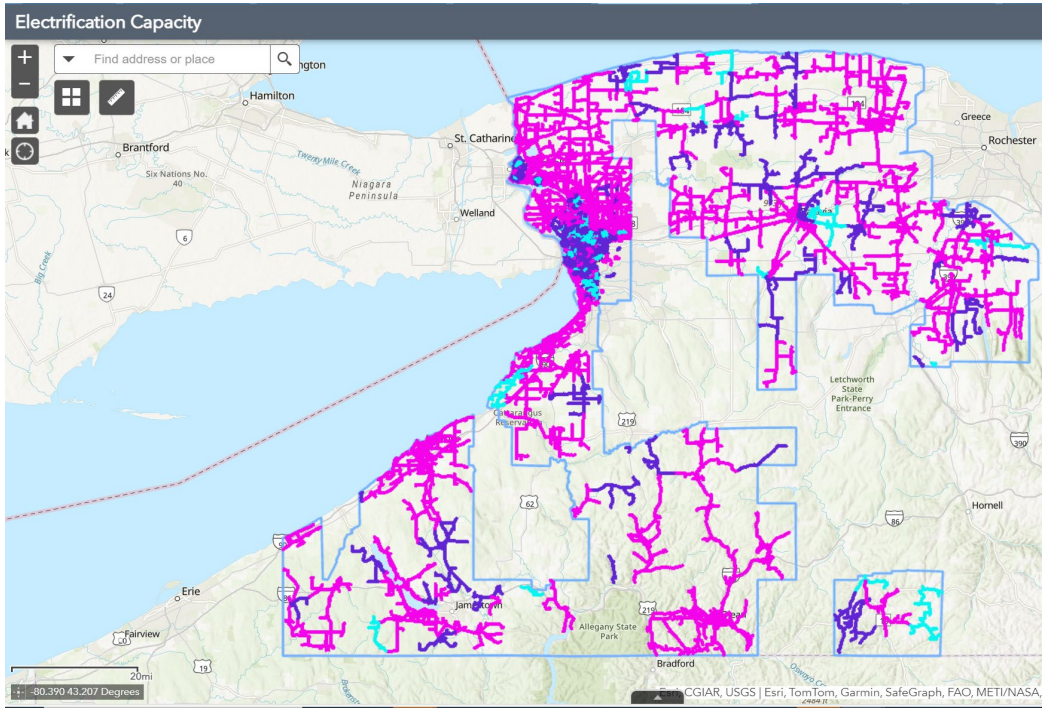
Hosting Capacity Maps
Provides a high-level view and snapshot in time of available load capacity for electric vehicle charging

Rates Tools
Tools such as the Con Edison Charging Cost Calculator can help estimate fuel cost savings and the most cost-effective charging rate

EPA Grant Application Support
$5 billion grant funding available over 5 years and technical assistance to support school buses' transition to zero-emission

To date, **248** school districts have completed utility fleet assessments

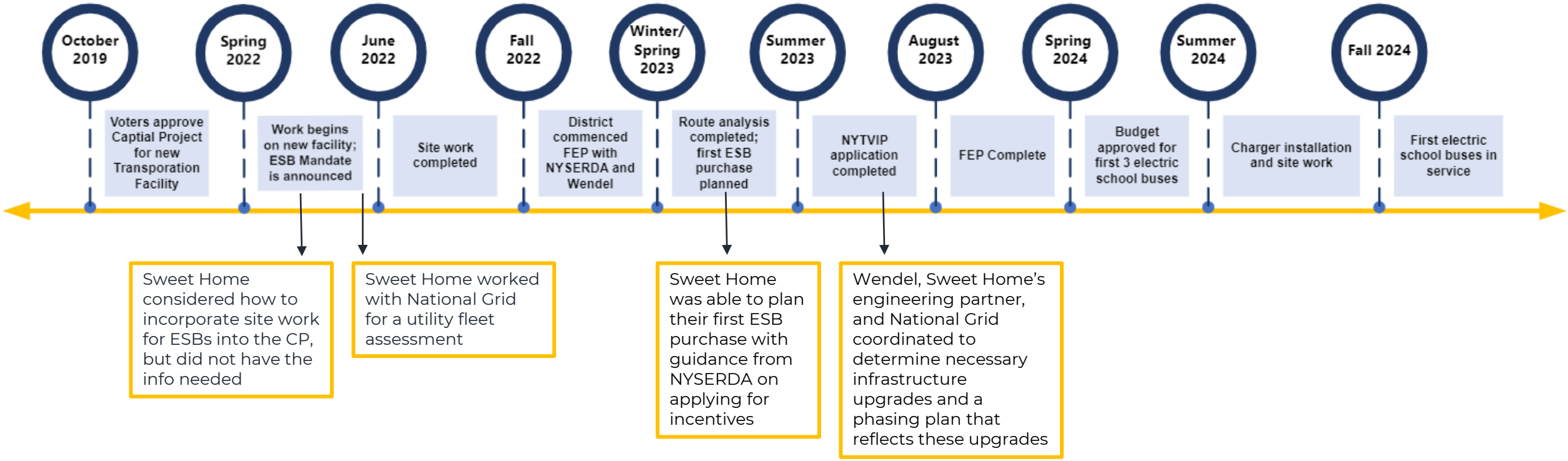
Reach out today to request a free assessment!



Sample Utility Hosting Capacity Map

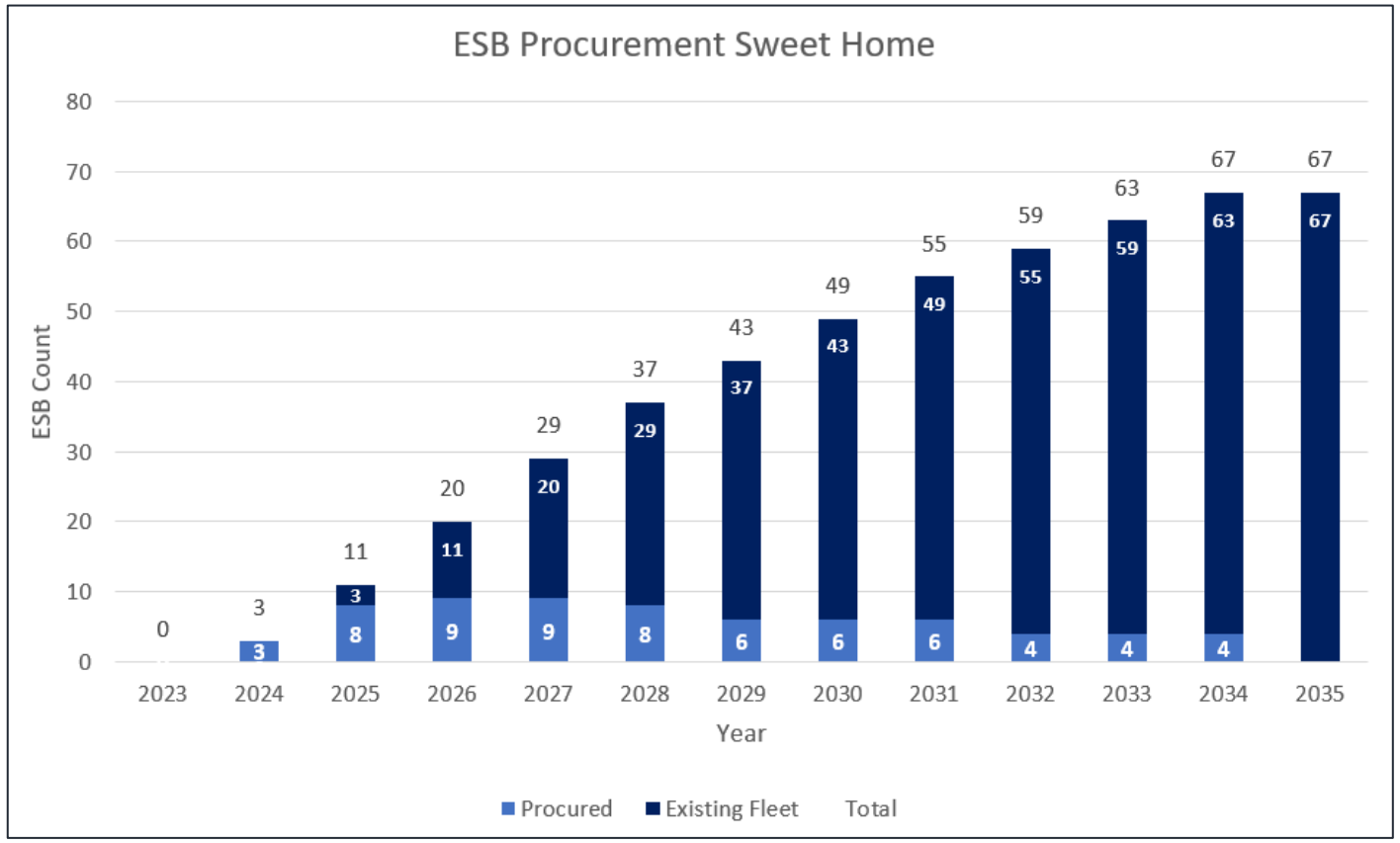
Case Study:
Sweet Home CSD

Sweet Home CSD worked with NYSERDA to develop their FEP. NYSERDA paid 75% of the cost for a qualified engineering firm (Wendel) to complete the study and NYSERDA provided technical review. Throughout the study NYSERDA, National Grid, and Sweet Home shared information to ensure a comprehensive evaluation and plan was developed.



Case Study:
Sweet Home CSD
ESB Procurement Schedule

Wendel recommended a phased approach for ESB procurement and infrastructure.



Case Study:
Sweet Home CSD

Utility Analysis

- The FEP team developed a charging strategy designed to use the smallest chargers that meets the district's route needs while enabling flexibility in operations.
- National Grid conducted a feasibility study, which determined that Sweet Home will need additional capacity.
- It was determined that Sweet Home can utilize existing service to charge their first 3 buses.
- By purchasing these first buses using NYSBIP, Sweet Home has access to National Grid’s MHD Pilot Program.
- Ahead of Sweet Home’s next bus purchase, grid upgrades will be needed. The Make-Ready program can be leveraged to cover most of the cost of these upgrades.
- After the grid upgrades, all 67 buses can be electrified and only site equipment will require upgrades.
- Sweet Home aims to have their route buses fully electrified by 2032, with spares being converted by 2035.

Case Study:
Sweet Home CSD

Progress as of May 2024

- Sweet Home CSD has finalized their FEP and is currently beginning to implement their plans
  - 3 electric school buses were recently approved in their budget
- Sweet Home expects to have 3 ESBs and chargers in operation for the 2024/2025 school year
- With their recent EPA award of an additional 8 buses, Sweet Home is positioned to enter the ‘scaling up’ wave of their transition.

Reach out to your utility for support with your electrification plans

Utility	Email
Central Hudson	EVMakeready@cenhud.com
Con Edison	EVMRP@coned.com
National Grid	NGFleetProgram@nationalgrid.com
NYSEG	nyseg.ev@clearesult.com
RG&E	rge.ev@clearesult.com
Orange and Rockland	ev@oru.com

Joint Utilities Q&A

Questions & Follow-up

Next Steps

- All DPS filings regarding the ESB transition are filed under Case 23-E-0070 on the DPS Document and Matter Management System (DMM)
  - Link to DMM instructions: https://dps.ny.gov/dmm-login-document-and-matter-management-system
- For other questions or concerns on the ESB transition or to reach out for assistance on fleet electrification, contact:
  - NYSERDA at schoolbus@nyserda.ny.gov
  - NYSED at transportation@nysed.gov
  - Joint Utilities at info@jointutilitiesofny.org
  - DPS Staff at EVSE@dps.ny.gov

Thank you for your time and feedback!