Zero-Emissions School Bus Mandate

School leaders understand the effects of a changing climate on their districts, and the long-term effects on the lives of the students to whom they dedicate themselves. They also understand the goals of the transition to all zero-emissions school buses (ZEBs), and how this aspirational plan would assist the state in meeting its overall climate policy goals and improve health outcomes. However, with more than 700 districts being treated with a broad brush of universality, in one of the most socio-economically and geographically diverse states in the nation, and barriers that are becoming increasingly insuperable, the transition as currently proposed is not achievable for a significant number of districts. If left unaddressed, these barriers will force districts to reduce educational opportunities for students, increase taxes and spend exorbitant sums, and cause voter unrest. Some of our memberships have even expressed support for a full repeal of the law or for significant changes to the current implementation timeline. While some notable progress has been made over the past year on several recommendations from several of the undersigned organizations, much more must be done to stave off the worst effects of this underfunded mandate.

Significant Issues Remain, and New Issues Have Become Apparent

Unlike consumer electric vehicles that have seen steep price declines, ZEBs cost anywhere from two to upwards of four times more than traditional internal combustion engine buses (ICEs), and costs have not been going down as advocates had said they would during the 2022 budget deliberations. In fact, under the statewide contract for ZEBs which was let by the Office of General Services in December 2022, ZEB prices have increased by 8.7% against roughly 6.5% inflation during the same period. Additionally, the estimates for when total cost of ownership parity (TCOP) between ZEBs and ICEs would be achieved, according to advocates during budget deliberations, was 2027, spurring the 2027 purchase date codification. Since then, advocates have pushed back the TCOP date to 2030 and beyond. Also, questions remain concerning future cost reduction in ZEB's, given the state mandate has eliminated incentives for manufacturers to lower costs due to lack of natural competitiveness in the sector. There is also the stark possibility that federal support will be scaled back or removed altogether in the coming months and years.

Additionally, electrical capacity is not only a challenge for most districts, but is and will be an insurmountable barrier for many. In response to an order from the Public Service Commission, the Joint Utilities of New York analyzed the current electrical capacity of every school bus depot in the state (public and private) in their respective service areas. The findings were bleak – 15% of districts currently do not have the electrical capacity to support a single ZEB. Additionally, districts across the state have been told that infrastructure upgrades necessary to increase electrical capacity will lead to costs sometimes in the range of millions of dollars. This is all against the backdrop of the state's overall grid: the Independent System Operators Reliability Needs Assessment this year found that the state's grid will not be able to handle demand without significant resource development.

Lastly, beyond costs and electric capacity, other complicating factors remain. The severe shortage of drivers, especially prevalent for the Big 5 and rural school districts, is likely to intensify due to a

presumed need to expand fleet sizes to meet the same demand. This need for fleet expansion is due to: range estimates from manufacturers being greater than real-world figures due to cold and terrain prevalent across New York; reduced payload capacity of ZEBs versus traditional buses (meaning fewer students can be transported on each bus); and significant "downtime" for ZEBs where they are not able to run at all. Increased fleet sizes mean more drivers will need to be hired, trained, and retained.

In the short term, we offer the following suggestions in response to challenges we continue to hear from our members, voters, and the education community at large.

Increasing and Unexpected Costs Means the State Should Cover the Cost of the Transition

The state has not estimated the cost of the transition on a statewide basis. One think tank analysis found that the cost would be between $8 and $15.25 billion (without infrastructure and facility upgrades), and the Rockefeller Institute's recent Foundation Aid analysis found the state should "fully underwrite the costs of this state initiative to transition each local school district to an all-electric school bus fleet." While education advocates across the state supported the inclusion of ZEB-specific funding in the Environmental Bond Act of 2022, roughly half of that money has been allocated, to a negligible effect: according to the NYS Education Department (NYSED), less than 100 are on the road statewide. Additionally, as noted previously, fleet sizes will likely need to be expanded, which will drive up demand and costs.

State-Funded District-Specific Fleet Implementation Plans Should Guide Each District

Currently, districts engage with third-parties to analyze their routes, energy capacity, and fleets. Districts are given a route-by-route analysis, showing how much of a ZEB's charge would be left at the end of each route in favorable and unfavorable conditions. These analyses, which take into account the specific circumstances of each district, offer a nuanced and more realistic way to measure a district's transition feasibility, more so than a uniform artificial deadline created before the technology to support it was available.

There should be a system wherein a route feasibility analysis (or Fleet Electrification Plan) guides each district and contractor's individual transition timeline, and these should be fully funded by the state. There should be a threshold end-of-route charge requirement, such as 20%, that a ZEB would finish its route/routes with before charging is necessary, even in the worst conditions. That route would then be considered achievable, and part of the district's transition. Timelines for transition would then be individualized for each district. If technology advances and costs are realistic, there could then be a review to determine if 100% ZEB is attainable for all routes in all districts.

Maintain Voter Control Over School District Operations

Local control over school district operations, both through the direct representative nature of school board elections, as well as the requirement to receive voter approval for several school district activities, is the cornerstone of the social contract between residents and their government when it comes to public education. With respect to the ZEB transition, this power of the populace can manifest in several ways: through the issuance of debt (in the form of bonds) to purchase ZEBs and related items such as chargers; for the upgrade of electrical infrastructure to support ZEBs; for the capital construction of new facilities to house ZEBs; for the creation or modification of reserve funds to support ZEB purchases, as well as expenditures from those funds; and lastly, the fact that candidates for school board on either side of the issue can run campaigns based on their attitude towards the ZEB transition.

If this power is stripped away from voters by a uniform statewide policy, for the first time in the more-than 200-year history of New York public education, we have concerns it would negatively impact budget passage rates. This likelihood is bolstered by the recent backlash against proposals to phase out save harmless, as well as the public response to NYSED's regionalization plan initiative.

Allow for Hybrid and Low-Emission Buses for Districts Facing Additional Challenges

Another option to smooth the rigid edges of the transition, while addressing environmental and health concerns, are to expand the transition to allow for hybrid and low-emission buses. These buses are able to address the concerns of increased costs, lack of electrical capacity, charging infrastructure, "downtime" of ZEBs, and range capacities. Additionally, the exorbitantly long wait times between ordering a ZEB and it being on the road is significantly reduced for these types of vehicles. These options could either be a permanent part of the statewide fleet portfolio, or act as a bridge technology on the path towards 100% ZEBs.

Allow for Increased Transportation Storage Facility Costs to be Aidable

Finding or building locations to store ZEBs is crucial to extend their range in colder weather, as well as to keep charging times down to manageable lengths for school transportation operations. However, there are costs associated with these storage facilities that are not present for ICEs, such as: higher power lifts due to increased unladen vehicle weights, larger garages for the longer and taller ZEBs, need for increased electrical capacity, equipment and software for advanced fire suppression systems, and the installation and operation of charge management systems. Additionally, manufacturers recommend storing ZEBs farther apart from each other than ICEs – which in the context of current bus storage practices poses extreme challenges. However, storage facility costs are currently not aidable with transportation or building aid. If districts were able to access aid for these costs, this would ensure an equitable distribution of state support to districts who need it to construct these facilities.

Require Certified Range Estimates from Manufacturers

According to manufacturers, the average range for ZEBs is about 150 miles. However, real world findings have fallen short of those claims; estimates don't account for battery degradation (much like the batteries in our cell phones get less from the same charge over time, the batteries in ZEBs degrade over time), or the effects of cold weather or terrain on ZEB range. Findings of significant reductions in range, both with and without cold weather, have been found across the U.S. and Canada. A 2023 Vermont Department of Environmental Conservation report found that battery range in cold conditions decreased 30–40% for one ZEB model and up to 80% for another; even in normal conditions, range was about 20-25% less than promised by manufacturers. In Calgary, a decreased range of 33% was found. In West Virginia, with a pilot of the "Beast," the ZEB with the longest manufacturer range estimate (300 miles), districts found a real-world range of 200-250 miles; this diminished range was without any testing in cold conditions. These are not minor variations, and given the across-the-board deficiencies, action must be taken.

New York likely already possesses legal authority to force manufacturers to provide accurate range estimates. First, under Part 218 of the Department of Environmental Conservation's regulations, to investigate and enforce manufacturer's range estimates. Alternatively, the state could collaborate with California and other states with ZEB mandates under California's broad authority under the Clean Air Act. Additionally, the state could require contract provisions related to range estimates that in some way require real-world estimates as a condition for eligibility for bus dealer participation

in the New York State Bus Incentive Program. Lastly, the state has significant power to pressure manufacturers by requiring them to provide real-world estimates in order to qualify their ZEB models under the statewide master contract let by OGS.

Ensure Third-Party Transportation Providers Have Equitable Access to Funding

Largely due to the Big 5's relationships with third-party transportation providers, as well as many other districts across the state, a comparable number of students in New York get to school on buses managed by third-parties as those managed by districts. However, third-party vendors are not able to access funding at the same rate as school districts related to the ZEB transition, such as for fleet electrification planning. These arbitrary barriers make the transition more difficult, and if left unchanged will mean increased costs will be passed onto districts.

Require Utilities to Provide Specialized Rate Structures for School Districts and Contractors

School districts that are transitioning to ZEBs provide benefits to utilities in the electrification of our state's grid. The charging of ZEBs during off-peak times, as well as their ability to participate in Vehicle to Grid (V2G) technology, may provide significant stability to utility providers' operations. V2G bidirectional charging technology allows for ZEBs to essentially act as batteries that can distribute power back to the grid when overall demand is high, or when emergency backup power is needed. Additionally, during the summer when demand is most significant for most consumers, ZEBs will largely not be charging. Lastly, as compared to other customers, school district demand for electricity is stable and predictable.

Other states have had mixed results in terms of whether their cost-per-mile is cheaper from electricity versus traditional fuel, partially because of the rates being paid and how those rates are determined. To take advantage of the unique situation that electrification of school transportation poses, as well as to provide those benefits directly to school districts, utilities should be mandated to provide specialized rate structures for school districts that engage in electrification; this will also further incentive the ZEB transition for districts.

Regular Stakeholder Engagement

We appreciate the roundtable on the transition convened by the chairs of the Energy, Transportation, Education, and Science and Technology Assembly committees, and their invitation for several of our groups' participation in late 2023. We strongly encourage the regular convening of such stakeholder sessions to find ways to achieve progress and address the transition's barriers in real-time. Such sessions should include stakeholders from schools, transportation providers, bus distributors, bus manufacturers, administrative agencies, the Governor's office, and the legislature.