CITY COUNCIL
CITY OF NEW YORK

---------- X

TRANSCRIPT OF THE MINUTES

Of the

COMMITTEE ON ENVIRONMENTAL PROTECTION

---------- X

December 17, 2018
Start: 11:40 a.m.
Recess: 1:15 p.m.

HELD AT: 250 Broadway – Committee Rm.
16th Fl.

B E F O R E: COSTA G. CONSTANTINIDES
Chairperson

COUNCIL MEMBERS: Rafael L. Espinal, Jr.
Stephen T. Levin
Carlos Menchaca
Donovan J. Richards
Eric A. Ulrich
Kalman Yeger

A P P E A R A N C E S (CONTINUED)

Alexander Robinson, Executive Director for Pupil Transportation, New York City Department of Education, DOE

Keith Kerman, the Chief Lead Officer, New York City Department of Education

Adrianna Espinosa, Director, New York City Program, New York League of Conservation Voters

Tevin Grant, Evolve Electric, Electric School Bus Campaign

Danielle Spiegel-Feld, Executive Director of the Guarini Center, NYU Law

Mo-Yain Tham, Jobs to Move America

Marc Riccio, Alterative Fuels Manager, Blue Bird Corporation for New England, Canada and Alaska

Robert Redenbach, School Bus Distributor, Bird Bus Sales

Irvina Granny, Motiv Power Systems

Eric McCarthy, Protera

Peter Reid, Chief Commercial Officer, Align Electric Co. USA

Isabel Silverman, Environmental Defense Fund

Samantha Wilts, Natural Resources Defense Fund

Christine Oppah, Senior Staff Attorney
New York Lawyers for the Public Interest

Bret Thomason, Climate Organizer with ALIGN
Alliance for a Greater New York

Emily Ware, Green Lots

Dan Welch, Project Manager, CALSTART

Aditi Varshneya, Community Organizer, React for Environmental Justice

Catherine Scopic, Vice Chair of New York City Group
Sierra Club, Delegate, State Sierra Club

[sound check] [pause] [gavel]

CHAIRPERSON CONSTANTINIDES: Alright, good morning. I am Costa Constantinides, Chair of the Environmental Protection Committee, and today we are hearing Intro 455. It will end the use of diesel school buses in New York City, and replace them with clean all electric school buses. Diesel powered vehicles and equipment amount for nearly half of all nitrogen oxides, and more than two-thirds of all particulate matter emissions from transportation sources in the United States. Nitrous ox—nitrogen oxides and PM are the most prevalent chemicals resulting from diesel exhaust. More than 50% of diesel emission pollution come from nitrous oxides. Nitrogen oxides combined with vital—volatile organic compounds in the air to form ground level ozone or smog in the presence of heat and sunlight. Ozone can cause a variety of respiratory problems including aggravated asthma, decreases in lung capacity and increased accessibility to respiratory illnesses. More school buses in the United States still operate using diesel engines including those operating in the city of New York. Currently, DOE's Office of Pupil Transportation, who I think is here today, contracted

approximately 65 companies to provide bus service to about 150,000 students. When totaled. This school bus fleet includes about 9,000 vehicles operating 8,500 routes. Spending for pupil transportation comprise 5% of DOE's overall budget with approximately $1.3 billion allocated in Fiscal 2019. New York State reimburses the city for approximate 50% of the cost of student transportation. These 9,000 diesel fueled school busses place an unnecessary health risk to New York City's school children. The potential health impacts from this exposure including increased asthma triggers, and impaired lung function are caused in part from the inhalation of ground level ozone among other pollutants, which is a byproduct of nitrogen oxide emissions. Children exposed even low levels of ozone are at significant risk for respiratory symptoms and for rescue medication use. Air pollution increase airway oxidative—oxidative stress, and decreases small airway function in asthmatic children. Several studies of pollutant exposures to high levels of school exposures inside of school buses from fugitive diesel exhaust that travels through cracks in the chassis and finds its way into school bus cabins.

School bus commutes allow for higher exposure because children spend much more time commuting than stopped. While the highest concentrations occurring when windows are closed. Children riding in a school bus inhale 7 to 70 times more exhaust than non-riding residents inhale from all school bus emissions in the area. In New York City some transit sectors have begun to explore or commit to transitioning away from diesel powered vehicles. According to New York City's roadmap to 80x50 Plan, the transportation produces about 28% of the city greenhouse gas emissions. 2015, the city—the Mayor or New York Bill de Blasio announced New York City Green Fleet, an initiative to create the largest electric vehicle fleet of any New York City with targets to reduce municipal vehicle emissions by 50% by 2025, and 80% by 2035. Intro 455 would require that commencing September 1st of 2020, all school buses subject to New York City's school bus contract that do not use a Closed Crankcase Ventilation System shall be electric vehicles. It also would require that all the school buses after 10 years of use be replaced by compressed natural gas, hybrid school buses or electric. I am happy that Council Member Danny Dromm is here to

speak more on this bill. For far too long students have been exposed to air pollution while riding inside of school buses on their way to school. With this legislation, that exposure will hopefully come to an end allowing children to breath easier, and I'll say that, you know, the end game here is to make sure that all buses are electric by the year 2040, I believe which at that point my son will be 31, and I'm hoping I'll have a grandchild to take to school and at time all buses will be electric, and I think that's not unreasonable to ask by this legislation. No pressure on my son on the grandkid. He's only 9 right now, but—and he can see this video down the line when he gets a little bit older and I'm sure I'll have a good laugh, but with that, but this is a very serious issue, and one that we do have to deal with a, and all of our students. There are 80,000 students, 80,000 children in the city of New York with asthma. Four thousand are hospitalized every single year and, you know, there are too many students who have to go through a very similar regiment as my son where they have to take a pill, a vitamin, an allergy medication, something to settle their stomach because they just took all that stuff,

and then before they leave for school in the morning put a mask over their face and take something-- Desonide (sic) and that's when they're well. When they're not well, he had Oral Prednisone, Albuterol, Ipratropium, anti-biotics. These are—and this is not just my son's regime. These are 80,000 and some of them are worse. My son doesn't have an emergency inhaler. So, there are other students who have far works asthma in the city of New York, many of which have to make choices between affording their medication and paying rent because too often asthma rates are higher in Environmental Justice communities. So this bill will go a long way in helping to reduce asthma in the city of New York and I'm proud to work with my colleagues Danny Dromm and Rafael Espinal to get this done. So, with that I'll turn it over to the—the sponsor of this legislation Intro 455 Danny Dromm.

COUNCIL MEMBER DROMM: Thank you very much, Mr.—is this on? Okay. Thank you very much, Mr. Chair. We need to leave this planet in better shape than we found it, and the work to do that begins right here in New York City. The planet is warming. Sea levels are rising, pollution of all

types vexes our communities. Environmental health issues are only becoming more severe. There is no time to waste. Whenever we can reduce our carbon footprint we need to do so post haste. New York City already recognizes that it has to phase out antiquated petroleum based vehicles in favor of other technologies that we have no emissions and better sustainability—that have no emissions and better sustainability when all factors are considered. As part of the New York City Green Fleet Program the city has begun converting the municipal vehicles to electric. School buses must be next, and Intro 455 can provide the blueprint of how we move forward. This is not a far fetched idea, but rather very much in mainstream conversation about the urgent actions we need to take to save the earth. The overall environment impact of converting New York City school buses to cleaner fuels is obvious as a massive fleet of 9,000 vehicles will no longer be spewing noxious exhaust. It is bad enough on the outside of the bus, but as a former teacher who has been in the share of school buses the inside is almost unbearable at times, often times making you sick. We should not overlook the other benefits of switching to electric.

In addition to air pollution, noise will b reduced, which is an especially big win for residents who live near schools and bus routes. Childhood asthma rates are at—are at an unacceptably high level throughout the city and students who have or are prone to respiratory ailments will surely benefit. One key health risk factor for those who spend time in and around buses mainly drivers and depot personnel will be greatly reduced. Finally, having green school bus fleet will encourage all drivers on the road to consider how well electric works and encourage them to convert their own vehicles. Thank you, Chair Constantinides for having this hearing, and I hearing the testimony of the Administration, the industry and the—and the advocates and also want to thank Council Member Rafael Espinal for the work that he's done on this issue and for being a prime co-sponsor on the legislation as well. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you Council Member Dromm. At this time Council Member Espinal also has an opening statement.

COUNCIL MEMBER ESPINAL: I also want to thank Councilman Dromm for his leadership on this issue in protecting our children, but also protecting

our environment, and making sure we are—we are doing everything we can to address climate change. Earlier this year I was working with the DOE to secure $1.25 million in the budget to purchase four electric buses to start piloting (sic) them next year, and I believe this pilot will help jumpstart Council Member Dromm's legislation, and staring that process and making sure that every bus goes electric by 2040. New York City's air quality is infamous. Throughout our city 1 in 10 adults and 1 in 8 children have asthma because of how much pollution is constantly being pumped into our air. It is the clearest example of environmental injustice with low-income communities having even higher rates than their wealthier neighbors. Kids that grew up in the South Bronx and East New York have three times—are three times more likely to be hospitalize for asthma related issues than if they grew up anywhere else. We have an obligation to address this crisis. In order to see a healthy generation of children, we have to start with reducing the emissions they come into contact with most frequently whether it's waiting in line to board the bus or riding with the window open in the summer, there's no doubt that pollution streaming out of the

school buses are traveling right into the lungs of our children every single day. By committing to an all electric powered bus fleet by 2040, we are reducing not just the carbon footprint of our city but the health of generations of New Yorkers to come, and thank you as well Chairman for all of the work you do on behalf of our planet.

CHAIRPERSON CONSTANTINIDES: With that we'll hear our first panel. We have the Administration here and our attorney Samara Swanston will swear you in.

ATTORNEY SWANSTON: Can you please raise your right hand? Do you swear or affirm to tell the truth, the whole truth and nothing but the truth today?

ALEXANDRA ROBINSON: I do.

CHAIRPERSON CONSTANTINIDES: Alright, please begin.

ALEXANDRA ROBINSON: Good morning Chair Constantinides and members of the Committee on Environmental Protection. My name is Alexander Robinson, and I'm the Executive Director for Pupil Transportation for the New York City Department of Education, DOE and the Office of Pupil

Transportation. Thank you for the opportunity to be here today, and to discuss Intro No. 455. The DOE's Office of Pupil Transportation, OPT is responsible for overseeing school transportation for New York City students. Our mission at OPT is always to provide safe and reliable service. OPT service is provided on privately contracted school buses, and through a Student Metro Card Program in partnership with the MTA. Transportation services for all students, all of our students spans pre-K through Grade 12 throughout the five boroughs of New York City and for our students with disabilities whose IEP, Individual Education Plan is prescribed so we travel up to 50 miles outside of the city borders into Upstate New York, Long Island, and New Jersey and Connecticut. Every school year in partnership with privately contracted school bus companies, we serve about 150,000 students and 2,700 district schools charter schools, private schools using— utilizing a fleet of more than 9,000 vehicles staffed by about 14,000 bus drivers and attendants. Each semester for eligible students, OPT issues also approximately 660,000 Metro Cards. All of DOE's contracted school bus service carriers have and must

continue to comply with all Federal Motor Vehicle Safety Standards, FMVSS, federal and local Environmental Protection agencies, EPA Mandates and any other departmental specifications. While the DOE specifies the type of vehicle vendors must use to provide transportation services, the DOE does not specify the type of fuel that vehicles must use. Removing particulate matter, NOx in the environment has been a school transportation industry priority both locally and on the national level for many years. It's important to note that DOE's vendors do not currently operate any school buses that are commonly known as dirty diesel, a terminology that refers to a year—a bus was manufactured, and the technology it's equipped with, with each update of Federal Emission Standards. First in '96, 2000, 2007 and 2010. OPT has been proactive in their approach. DOE's contracted diesel fueled fleet meets all environmental standards because they either were built after the Year 2007 or if built before then, are equipped with the latest technology. In order to improve and modernize the fleet and its emissions output, the DOE in its 2013 and 2014 contracts with bus vendors reduced the vin—reduced the vintage age

requirement for all alternative vehicles those smaller than traditional school buses to five years, but most rele—relevant to this hearing thanks to the partnership with the City Council, the DOE is in the process of developing a zero emissions school bus pilot with the pending purchase of up to four electric school buses that will be owned and operated by the department itself. Zero emission vehicles or EVs are still fairly new to the market and the school bus world. Vehicles purchased in New York City must be purchased through Department of Citywide Administrative Services, DCAS, which does its purchasing for vehicles through the state contracting system. To date, there are only a couple of types, two types of electric school buses available and approved through State Contracting System, through the State's Office of Contracting Services. Thanks to the designating funding from Council Member Espinal, the DOE is in the process of purchasing of up to four electric buses Type A to be driven through a partnership with an existing vendor. This Proof of Concept or POC will allow the DOE to validate the functionality of electronic school buses--electric school buses, identify any distance and/or

maintenance issues, obtain driver and operator feedback on performance and ultimately make a recommendation for the specifications on an RFP should the DOE consider a larger scale investment in the future. OPT is working closely with DCAS to coordinate the purchase of these buses, and our target for the initial order, as was mentioned, is the end of February. Once ordered, the buses will be built, and once completed, we hope to have them on the road in the fall of 2019. As previously mentioned. EVs are relatively new to School Bus Operations and thus, there are many barriers to any school district—any school system that would face—that would face in taking these vehicles to scale. The first, these vehicles currently are costly. The current equipment and batteries that they are outfitted with to make an EV, is approximately [coughs] four times as expensive as a comparable clean burning diesel bus. Additionally, the technology has not yet been thoroughly tested. Having said that, any new technology requires testing and our pilot will do just that. I'd like to now turn to the proposed legislation. Intro No. 455 proposed by Council Member Dromm requires all school

buses subject to a contract with the city to eventually be EVs. While DOE supports the goal to ensure that school buses meet or exceed current air quality standards, the current marketing—market availability of EVs would not allow DOE to meet a mandate for side use of electric buses. In addition, require OPT's existing vendors to use EVs even as a portion of their fleets would require a significant investment in infrastructure at each operating facility especially to support large scale electric bus operations. We are also concerned that the legislation as written would impose an unfunded mandate. While there are currently many state and federal incentives for EVs through grants and salvage buy-backs, these opportunities are unfortunately reserved for government entities. Our contracted bus vendors, therefore, would not qualify for these grant opportunities. As a result, the majority of the associated expenses required to meet an EV mandate will be born by the DOE through increases in contractors' daily bussing-daily bussing rates, which they will use to offset their additional capital costs. Thank you again for the opportunity to testify again, and today. I share the Council's

commitment to improving our environment and look forward to working with the Council to advance our shared goals starting with the implementation of the Electric Bus Pilot Program, and with that, I'd be happy to answer any questions that you may have.

CHAIRPERSON CONSTANTINIDES: Do you have any testimony?

MALE SPEAKER: No, just the questions.

CHAIRPERSON CONSTANTINIDES: Just the questions. Okay. Alright, so how many children under 5 are on New York City school buses?

ALEXANDRA ROBINSON: Currently, we transport students from Early Intervention and Special Education Pre-K Program only, and it's about 16,000.

CHAIRPERSON CONSTANTINIDES: 16,000 and how many under 12?

ALEXANDRA ROBINSON: I would have to get that number.

CHAIRPERSON CONSTANTINIDES: [laughs] Okay, that's fair, that's fair and I'm just kind of looking at your testimony. How many buses currently have that Closed Crankcase Ventilation System?

ALEXANDRA ROBINSON: So, all of—well, so we have buses that are newer than 2007, and 2007. In 2010 emission standards were about the same. So, they meet all of those standards. So, any of our fleet that's below that year, all of our fleet lower than that have the GPS and/or the Closed Crankcase Ventilation System.

CHAIRPERSON CONSTANTINIDES: So, how many of those buses are not—would not have that Closed Crankcase Ventilation System?

ALEXANDRA ROBINSON: Only those buses that are newer than 2007/2010.

CHAIRPERSON CONSTANTINIDES: So—so the buses that are newer than 2007/2010 would have it and the ones that--

ALEXANDRA ROBINSON: [interposing] Would not have it.

CHAIRPERSON CONSTANTINIDES: -it would not have it.

ALEXANDRA ROBINSON: Because their—because their engines already meet—if they're diesel buses--

CHAIRPERSON CONSTANTINIDES: Right.

ALEXANDRA ROBINSON: --it would already meet the standards without the additional system.

CHAIRPERSON CONSTANTINIDES: So, how many buses are you envisioning would have to be replaced through this legislation by 2020?

ALEXANDRA ROBINSON: Well, according to the way it is currently written, if it was 10 years or older, then it—it—I—I suppose it would have to be looking at the way the testimony—the—the legislation is written because as I read it, it says buses that are 10 years or older. So, right now 10 years or older would mean buses that are--

CHAIRPERSON CONSTANTINIDES: [interposing] By 2020. So, it would be by—so, it would be before 2010. So, how many of those are out there?

ALEXANDRA ROBINSON: I'll have to—I'll definitely have to get that number.

CHAIRPERSON CONSTANTINIDES: That's a pretty important number to know, right? I mean I think that we're trying to reduce emissions—not only reduce emissions, but reduce a lot of pollution that's coming from these buses. How many--?

ALEXANDRA ROBINSON: So, we currently have--

CHAIRPERSON CONSTANTINIDES: [interposing] And I know that—please don't quote me the EPA standards because the EPA right now doesn't exist. So, I mean-- [laughs]

ALEXANDRA ROBINSON: [interposing] I wasn't going to quote the EPA Standards, but—but I was going to tell that we have—that we do have about 8,500 routes, as you mentioned, a little bit more than 9,000 buses and all of those buses do meet the vintage years, and also have the latest technology unless they are new buses, in which case they have the 3 gram diesel engines that already reduce the NOx in the air without the DPF or the Crankcase Ventilation.

CHAIRPERSON CONSTANTINIDES: Alright. So, I'm—I'm going to turn this over. I know we have both sponsors of the legislation here. I—I have more questions, but I'm going to yield my time Council Member Dromm and Council Member Espinal, and then if they don't ask the questions I'm going to ask, I'm going to come back.

ALEXANDRA ROBINSON: I just wanted to clarify. The number that you wanted were the number of pre-19—pre-2007 school buses.

CHAIRPERSON CONSTANTINIDES: But I'm must trying to get a sense of how many comply with this, you know, Closed Crankcase Ventilation System requirement, right?

ALEXANDRA ROBINSON: So, again, I just want to make sure I'm understanding correctly. All of our buses comply with all of the standards. The only buses that would need the Crankcase Ventilation are—are buses that are earlier than the ones we already have, and we already—those have already been done. All of our buses have either DPS or the Closed Crankcase.

CHAIRPERSON CONSTANTINIDES: So—so, what you're telling me—so you're telling me if all these buses—excuse me. So, if you're telling me all these buses comply with the legislation already that the early—the—the really date we're talking about is the next ten years, which is 2030, which is 12 years from now. So, you're telling me by 12 years from now we can't get to compressed natural gas, and to electric is what your—is what your testimony is today?

ALEXANDRA ROBINSON: Mainly because there's not the infrastructure or the availability of those vehicles now?

CHAIRPERSON CONSTANTINIDES: In 12 years. Well, yeah, I'm not talking about tomorrow. We're talking about in 12 years.

ALEXANDRA ROBINSON: Absolutely. It would also require--

CHAIRPERSON CONSTANTINIDES: [interposing] I mean in—in 12 years I think they'll be—probably we'll go through at least one more mayoralty completely if they serve eight years, and the test of this—this term. So, I think that 12 years is a pretty big window.

ALEXANDRA ROBINSON: Yes.

CHAIRPERSON CONSTANTINIDES: I'm—I'm not seeing, you know, I understand today we don't have the infrastructure, but I don't see how we can testify because we don't have the infrastructure in 2018 that by 2030 we can't get there. I'm—I'm mystified by that.

ALEXANDRA ROBINSON: I think we definitely want to make sure that we have looked and tested at anything we specify in a contract, but as we move forward these are changes that actually have to go into a contract.

CHAIRPERSON CONSTANTINIDES: Right.

ALEXANDRA ROBINSON: We would have to make changes to those contracts.

CHAIRPERSON CONSTANTINIDES: Alright, so with that I'm going to—I'm going to turn it over to Council Member Dromm and then Council Member Espinal, and oh, before that, we're—-we're rec—we're joined by Council Members Levin from Brooklyn and Council Member Richards from Queens. Council Member Dromm.

COUNCIL MEMBER DROMM: Sure—so—

CHAIRPERSON CONSTANTINIDES: [interposing] Oh, and Council Member Yeger as well from Brooklyn. Sorry about that.

COUNCIL MEMBER DROMM: Just to follow up on what you were saying before, so where do you want to go with this pilot then? Where-where do you think this ends up, and how are you going to react to or respond to the information that you gather from the pilot?

ALEXANDRA ROBINSON: Well, I—there'—there's a lot to—there's a lot to learn. There's a lot to learn about how electric buses operate on our routes, on the routes that we operate in New York City, the stop and go, the distance in many cases, the-the pilot buses thanks to Council Member Espinal

that we're going to be getting will be Type A buses. Those are Special Education smaller buses that are going to be put on the road. We're going to have driver feedback, supervisor feedback, company feedback. We're going to look at—going to look at distance reliability, technical reliability, anything we have with any sort of technical issues at all. We're going to take a look at comfort, how it works with added devices that are on those buses. So, obviously the—the number of batteries you have on an electric bus increases the weight, and how that weight increases the amount of distance you can go. We're going to need added batteries for heaters, added batteries for air conditioning, added batteries for wheelchair lifts. So, we're going to look at all of that, and then hope to—hope to with the purchase of up to—up to four of these buses, use that information as I said to help write specifications either for something that we do or that we put into a contract going forward with the—with the vendors because as we—as we move forward with new contracts if we were to bid, we currently do specify the type of bus they have meaning it has to be of a certain size. We've never specified the type of fuel.

Obviously, certain fuels are not allowed, but if we were to actually specify something we would want to make sure that those specification are-are on point and—and give all the information to the company that's going to be purchasing that.

COUNCIL MEMBER DROMM: And how long is the pilot?

ALEXANDRA ROBINSON: We hope it to be at least 9 months, but 6 to 9 months.

COUNCIL MEMBER DROMM: In your testimony say that the current market availability of EVs would not allow the DOE to get a mandate for our wide uses of electric buses. Where does that information come from?

ALEXANDRA ROBINSON: First—first and foremost from my knowledge of the industry, I work directly with the National Association of Pupil Transportation, the National Association of State Directors of Pupil Transportation and our National School Transportation Association. There are several manufacturers out there, several who are here today who do build these buses. Several of these buses are in tests, but they are not currently available meaning you can't just go to a lot and—and buy an

electric bus. It's not something that's available like that. It's built to order. The build time is lengthy and the cost is higher than a regular bus, and probably also because the DOE, the Department of Education has never owned and operated school buses before. We've never owned any school bus before. So, I think just to—just to start that out, but right now that availability is not there. There's only a couple currently available on the State Contract.

COUNCIL MEMBER DROMM: Well, I look forward to hearing what the—the bus companies are going to say about that as well. So, let me just go through some of the health concerns that we have. How likely is it that the adverse health impacts anticipated from the use of diesel vehicles will impact children?

ALEXANDRA ROBINSON: I'm not a medical expert so I wouldn't be able to answer that question.

COUNCIL MEMBER DROMM: But obviously there are some?

ALEXANDRA ROBINSON: As I said earlier, we don't operate dirty diesel. If we see we—we have inspectors out on the road. We have inspectors that are inspecting all of our bus companies both once

announced and unannounced every year. We have—our inspectors did over 13,000 inspections on all vehicles last year. If we ever see a bus that's emitting any sort of pollutants, smoke has a noxious smell, anything, we take that bus out of service.

COUNCIL MEMBER DROMM: [interposing] Well, almost—you know, I was a New York City public school teacher for 25 years--

ALEXANDRA ROBINSON: Uh-hm.

COUNCIL MEMBER DROMM: --and almost every school bus I've ever been on you have to leave the windows open when you're in them, even in the middle of winter because of the—the smell of the fumes that come into the bus.

ALEXANDRA ROBINSON: [interposing] And so--

COUNCIL MEMBER DROMM: So, have you been on a school bus lately?

ALEXANDRA ROBINSON: I'm—I'm on a school bus almost every week.

COUNCIL MEMBER DROMM: Okay.

ALEXANDRA ROBINSON: But the-

COUNCIL MEMBER DROMM: [interposing] So, you smell that?

ALEXANDRA ROBINSON: I haven't smelled that actually. Our buses—I realize there's a lot of them, and I realize that there's some buses older than others, but I have not smelled fumes any time recently even with—even with the heat on. If we do smell something, even if it's for a minute when that bus is turning on, we take the bus out of service.

COUNCIL MEMBER DROMM: Well, that's not been my experience. Certainly my eyes bother me, my stomach bothers me. Any time I've ever been in a school bus or take kids into the city on trips or whatever that's always been my experience. So, we have some very different experiences I guess. I mean it's been nine years since I left the DOE, but still I don't know how much it could have improved, but anyway, any chances of kids getting cancer or because of the fumes that do come into the buses?

ALEXANDRA ROBINSON: I certainly wouldn't be the expert to answer that question.

COUNCIL MEMBER DROMM: So, you've never looked at that aspect of it?

ALEXANDRA ROBINSON: I have not studied the impacts of student cancer. I certainly haven't been able to take a look at it. I haven't been the

person who would be looking at that. I think that would be something somebody who works directly with the Department of School Health.

COUNCIL MEMBER DROMM: Would you say that there's more diesel exposure to children who walk to school than children who ride buses?

ALEXANDRA ROBINSON: Again, I'm not a pedestrian expert. I'm—I hope to—that I'm a little bit of a school bus expert. So, I-I wouldn't be able to answer that question either. I think these are questions that are—are certainly interesting questions, and important questions, and I thank you for asking them, but I wouldn't want to give you an answer that I made up so--

COUNCIL MEMBER DROMM: Well, they're issues of major concern in terms of how being in a school bus would affect the children that we are serving.

ALEXANDRA ROBINSON: And—and being in a school bus actually is about 172 times safer than any other form of ground transportation.

COUNCIL MEMBER DROMM: Well, maybe in terms of—of crashes, but I wonder about emissions, and you don't have any information on that. So, you

know, I—I—and I don't. I have, you know, anecdotal evidence from having been on school buses so many—so often, but anyway, we—we disagree on that I guess. What is the cost of an electric bus versus a natural bus—a natural gas bus versus an all electric—all electric bus.

ALEXANDRA ROBINSON: That would depend on the—on the size of the bus. Certainly, if we were going to go to bid for buses, I think the prices would be proprietary, but at this point electric buses are over almost $300,000 depending on the size, and buses that are—buses that are smaller, diesel or unleaded are under $200—under $200,000.

COUNCIL MEMBER DROMM: So, are there any upfront costs versus long-term costs?

ALEXANDRA ROBINSON: Upfront for the owner or upfront for the DOE or--?

COUNCIL MEMBER DROMM: Both.

ALEXANDRA ROBINSON: Well, the upfront cost I believe would be the purchase of the bus.

COUNCIL MEMBER DROMM: Uh-hm.

ALEXANDRA ROBINSON: So, as well the--

COUNCIL MEMBER DROMM: [interposing] Is—is there a comparison in terms of what the long-term cost is compared to those that use diesel?

ALEXANDRA ROBINSON: We don't current—we do not currently have a long-term cost for school buses. Keith might be able to answer in terms of some of the city fleet.

KEITH KERMAN: Sure. Hi. Keith Kerman, the Chief Lead Officer. So, in light duty where electric vehicles are much more established and, you know, we have 1,700 light duty electric vehicles. The light duty industry is really growing from the bottom up in terms of smaller to larger. You're seeing a cost savings. Over 20 years of High Bridge we get a cost savings. In the early electric vehicles it's promising. No one knows right on electric trucking. Electric trucking is a much newer industry. I'm glad there's so much interest in, you know, we need suppliers to really develop this industry, but in terms of what it would take, you have over $200,000 increment in buying the vehicle. You have to establish the charge in infrastructure, which is an additional cost, and then, you know, we know we'll save on fuel, but maintenance, and this is

as much directed to the—the suppliers so if you want to sell electric school buses, we need reliable maintenance, and, you know, we've done some electric trucks in the city fleet, and there's been, you know, a mixed record. I'm being gentle about the maintenance and reliability. One of the reasons a pilot initial--

COUNCIL MEMBER DROMM: [interposing] DOT—DOT is moving forward with their—with their plan.

KEITH KERMAN: [interposing] But we're—we're moving forward on every plan in the world to an electric. On the trucking side we have to kind of prove the—prove the case, and so the upfront is the—the cost, the charging, but then we really need to see if the range works for the school routes and what kind of maintenance and reliability we're getting. SO, it's—it's an extraordinary start. It's the way to start, but there—there is a burden to make sure that these—these will work and that the technology is there.

COUNCIL MEMBER DROMM: How long is an alternative energy bus able to remain charged?

ALEXANDRA ROBINSON: Anec—anecdotally we've seen it by distance rather than—rather than

hours. So, and obviously sometimes we go a short distance, but it takes many hours in the city, but we're looking—buy we're looking from what we've heard 72—75 to 100 miles.

COUNCIL MEMBER DROMM: How do they perform in adverse weather scenarios?

ALEXANDRA ROBINSON: The only again anecdotal information that we have are from a couple of pilots that have been taking place in Massachusetts and Vermont. Those were in one case more of a hybrid electric because they had to add additional after market work to add the heater, but it wasn't—it wasn't necessarily the—the weather. It was the additional batteries needed for a heater or for—or for something else on the bus that needed—needed to be charged. There is a bus currently being used in Suffolk County that has been in and out of the shop so to speak, in and our of repair and I don't think the weather itself has had any adverse effect on it.

COUNCIL MEMBER DROMM: I'm going to wrap with this: Does the city expect any of the Volkswagen settlement monies to flow in for this need?

ALEXANDRA ROBINSON: I—I don't—I don't know. I know that the city as—as government fleets we would have more-more likely chance of getting some sort of Volkswagen or nicer—or any kind of sort of settlement money than any of our private contractors would because we are avail—we are able to get that.

COUNCIL MEMBER DROMM: Okay thank you and look forward to continuing to work on this with you.

ALEXANDRA ROBINSON: Uh-hm.

CHAIRPERSON CONSTANTINIDES: So, have we been in contact with Twin Rivers, California on their pilot and how did that—how did that go?

ALEXANDRA ROBINSON: So, I have. I actually used to live in California and—and familiar with—with several of the people who are using buses out there.

CHAIRPERSON CONSTANTINIDES: Okay.

ALEXANDRA ROBINSON: Again, a lot of the driving that's done is non-stop freeway driving. So, far so good.

CHAIRPERSON CONSTANTINIDES: Oh, four years. I would say that's pretty good.

ALEXANDRA ROBINSON: Well, so far so good. It does not—they are not—they are not full

fleets. They are being operated on general education routes meaning stop to school routes. So, more— similar more to transit routes than I would say special education routes that are done in the city with stop and go and door-to-door pickup, but from what we hear, they've had some maintenance issues, nothing that can't be repairs, but we're also talking about school districts who own their own fleet who currently have their own technicians, have their own infrastructure, have their own garages. I don't know--

CHAIRPERSON CONSTANTINIDES: And how about Amherst, Massachusetts? Have we been in contact with them about their pilot in 2016?

ALEXANDRA ROBINSON: We have. They actually came down here--

CHAIRPERSON CONSTANTINIDES: [interposing] Okay.

ALEXANDRA ROBINSON: --and we actually went up there to—to see that. Their biggest issue, as I mentioned, had to do with what they had to do to the bus to ensure that the heater was constantly was constantly working, and that bus is now not a full EV

because they've actually added infrastructure to—for the heater itself.

CHAIRPERSON CONSTANTINIDES: Now, how long is the lifecycle of a bus in general?

ALEXANDRA ROBINSON: It depends how it's—it's run. The industry standard or at least my old industry standard from my last life we kept buses that were larger buses, Type C and D, ten years I think would be optimal and/or a couple hundred thousand miles, smaller buses a little bit less. As it was mentioned earlier, though, in our last contract we did lower the vintage year to—to a five-year turnaround because we're hoping that when people are purchasing their buses they're actually defending a warranting center and they're getting a five-year bumper-to-bumper warranty, and after that is when things go. We've—I've seen that when we kept buses longer than that 10, 12-year mark especially if they were going over 250,000 miles, we were starting to replace things like transmissions and--

CHAIRPERSON CONSTANTINIDES: So, by 2020 all of these buses would be purchased. They should be not down the road any—any time before 2010, correct?

ALEXANDRA ROBINSON: I—I don't understand the question.

CHAIRPERSON CONSTANTINIDES: By 2020 there should be—the earliest buses on the road should be about 2010 models, correct?

ALEXANDRA ROBINSON: I will--

CHAIRPERSON CONSTANTINIDES: [interposing] But you said they last about 10 years so if they--

ALEXANDRA ROBINSON: [interposing] That's a—that's an industry guideline. We haven't been able to—we haven't been able to get that year. We have a 12 and 16-year vintage currently. So, in order for us, as I mentioned earlier, in order for us to changes anything in our current contract, we would need to rewrite the specifications and redo those contracts.

CHAIRPERSON CONSTANTINIDES: So the oldest buses we have on the road are 16 years old?

ALEXANDRA ROBINSON: Correct.

CHAIRPERSON CONSTANTINIDES: And do we test the emission standards on those buses when we're doing these inspections? Do we check for emissions and for nitrous—nitrogen oxide?

ALEXANDRA ROBINSON: Those would not be the DOE's inspections. Our inspections are fit and finish inspections, site inspections and inspections if there's rust if there's tire flat. DOT inspections and other inspections that the companies have as contract carriers within the State of New York, they have to—in order to maintain their operator license, the Department of Transportation comes in and does anything they would need, the under-the-hood. Our inspectors do not do under-the-hood.

CHAIRPERSON CONSTANTINIDES: So, DOT—Does DOT is it State DOT or City DOT that does those inspections?

ALEXANDRA ROBINSON: We—for their $5,000 checks, they are state, but they are city based state DOT workers.

CHAIRPERSON CONSTANTINIDES: Are they talking to DOT about what their finding is when it comes to emissions and nitrogen oxides? Are you having that running dialogue between one another? Who's--

ALEXANDRA ROBINSON: [interposing] Not--

CHAIRPERSON CONSTANTINIDES: --who's running point in DOE on these types of issues?

ALEXANDRA ROBINSON: So, the DOT inspections information that we get is their overall grade of the company. If the company does not have a passing grade from the DOT, then they wouldn't be able to operate with our contracts, but we do not specify—we do not get into the specifications of each part of a DOT inspection. So, we don't—because we are not the—also currently at the DOE the maintenance experts and these are not fleets that we own, we expect them to maintain a high grade with the DOT, and if they do not, then they can't be contractors with us, but we don't go from place to place to see you---

CHAIRPERSON CONSTANTINIDES: [interposing] I don't think I'm asking you to go place to place. I'm just asking you to look at the reports and maybe have like a dialogue with them.

ALEXANDRA ROBINSON: [interposing] I mean I--

CHAIRPERSON CONSTANTINIDES: Right like you—you can have, you know--

ALEXANDRA ROBINSON: [interposing] Right.

CHAIRPERSON CONSTANTINIDES: --someone for DOT can give you a report and you don't have to go anywhere.

ALEXANDRA ROBINSON: Actually, we don't—we don't receive the DOT reports directly from the DOT. They receive the reports directly from the—the contractors--

CHAIRPERSON CONSTANTINIDES: Right.

ALEXANDRA ROBINSON: -and when I meant with place to place, I meant place to place on the report.

CHAIRPERSON CONSTANTINIDES: Right, right.

ALEXANDRA ROBINSON: There one year to the next.

CHAIRPERSON CONSTANTINIDES: Alright, I know Councilman—Councilman—yeah. I'm a little tongue tied this morning. I didn't finish my breakfast. So, I will allow Council Member Richards to—yeah, I think you have some questions.

ALEXANDRA ROBINSON: I want to recognize Council Member Menchaca from Brooklyn who is also here today.

COUNCIL MEMBER RICHARDS: Thank you, Chair for having this important hearing, and just want to confirm that, you know, smog does contain a pollutant called ozone, and ozone is bad for your lungs. So, when you talk about kids who live perhaps in some of the highest numbered areas of asthma, you know, this is a real issue, and I think that's why they are obviously holding a hearing on this. So, there is a direct correlation between smog and certainly asthma and other things. So, I think it would be only fair for you to recognize that. We may not know cancer, but I'm pretty sure that there could be something there, too. Just a quick question, so just getting back on some of the—the questions around the reporting so DOT goes out and does an inspection. Do you know the number of companies who—so how many buses are inspected a year again?

ALEXANDRA ROBINSON: So, all of the company's buses have to be inspected both by us--

COUNCIL MEMBER RICHARDS: [interposing] How many buses?

ALEXANDRA ROBINSON: A little over 9,000.

COUNCIL MEMBER RICHARDS: Okay, so over 9,000.

ALEXANDRA ROBINSON: So, we-we, the DOE, inspects all of the buses for a fit and finish inspection not an under-the-hood inspection. Once announced and once unannounced meaning a random inspection every year, and last year we did a little bit over 13,000 inspections for the bus companies, 60 plus companies, 72 plus affiliates.

COUNCIL MEMBER RICHARDS: And how many of those companies failed inspection or buses failed inspection?

ALEXANDRA ROBINSON: I'll get you that— I'll get you that number.

COUNCIL MEMBER RICHARDS: Do you know the number?

ALEXANDRA ROBINSON: I just—I know the— the number—the number that you're asking for--

COUNCIL MEMBER RICHARDS: [interposing] Is it thousands? Is it hundreds or--?

ALEXANDRA ROBINSON: What? The inspection that we do--

COUNCIL MEMBER RICHARDS: Okay.

ALEXANDRA ROBINSON: --can take a bus out of service if a driver is not in uniform, if a pre-trip inspection hasn't been done, if there's rust on

the stairs, if the registration is not appropriate. But that's what I mean with--

COUNCIL MEMBER RICHARDS: [interposing] But that's not what I'm asking.

ALEXANDRA ROBINSON: [interposing] Right, but that's—but that's the type of number that—those are the numbers that I would have if a bus is at a school without air conditioning that should have air conditioning. We take that bus—that bus out of service in my world. For OPT DOE that's considered a failed inspection. If you're talking about fail—we don't have any companies that have failed DOT ratings. All of our companies currently have passing DOT ratings.

COUNCIL MEMBER RICHARDS: Okay.

ALEXANDRA ROBINSON: I don't have any companies that are failing any—any DOT inspections.

COUNCIL MEMBER RICHARDS: And you wouldn't know so if they inspected I don't know 200 buses, you wouldn't get the number of buses that failed inspection? You wouldn't get a report of that from within that company outside of a letter grade? So--

ALEXANDRA ROBINSON: We would get a—we would get a—we would receive—we would receive information that there were three or four buses taken out of service, but one of the things that it's within our contract currently is for all of our companies to have spare busses. So, our requirement is that they have buses on the road that meet inspections. So, even if they call and say I had two buses today that were taken out of service by the DOT, they're telling me then also at the same time here are the buses that will be operating in their place. All of our companies have to have a 10% spare ratio.

COUNCIL MEMBER RICHARDS: [interposing] Okay and then lastly just on the charging station infrastructure--

ALEXANDRA ROBINSON: Uh-hm.

COUNCIL MEMBER RICHARDS: --and I guess this is a larger conversation for the Administration because I know our chair has been working very hard, and it's been something I've been interested in is seeing all electric vehicles, and I know that we have challenges with capacity around our changing stations.

ALEXANDRA ROBINSON: Uh-hm.

COUNCIL MEMBER RICHARDS: So, have you started? Where would these—so the buses would be charged at the particular vendor's yards I'm assuming or--?

ALEXANDRA ROBINSON: There's a couple of different options.

COUNCIL MEMBER RICHARDS: Okay.

ALEXANDRA ROBINSON: There are a couple of different options. As we said we want to—with the pilot money we want to be able to purchase up to four buses.

COUNCIL MEMBER RICHARDS: Okay.

ALEXANDRA ROBINSON: We hope that we can--

COUNCIL MEMBER RICHARDS: [interposing] Four buses citywide?

ALEXANDRA ROBINSON: Yes.

COUNCIL MEMBER RICHARDS: Okay.

ALEXANDRA ROBINSON: And up to four buses citywide because the money we received will also help us purchase any other kind of infrastructure including an additional charging station if we were to need it. We also if there's space would use that—use an existing charging station. DCAS has also said

that we can use charging stations that exist. We would also expect if it were required that this bus were to stay in a certain area that it—that then a charging station would also be put in a vendor's yard, but we're trying to avoid that at this point. We haven't even picked which vendors would be operating this.

COUNCIL MEMBER RICHARDS: And how are you prioritizing the areas?

ALEXANDRA ROBINSON: We have—we haven't yet.

COUNCIL MEMBER RICHARDS: Okay.

ALEXANDRA ROBINSON: We have certainly, however, looked at which—which type of route not which routes, but what type of route would be best suited for this. Would this be—these are—these are smaller buses.

COUNCIL MEMBER RICHARDS: Uh-hm.

ALEXANDRA ROBINSON: These are buses more than likely that will not have a wheelchair lift to start, but they will be operating routes that transport students with disabilities.

COUNCIL MEMBER RICHARDS: Okay.

ALEXANDRA ROBINSON: So, I think we'll be looking at length and distance. We'll be looking at the number of students on the bus. If there are students certainly that need more of a—a comfort or quiet ride because I know noise—I know noise was mentioned, then perhaps that will be one of our things that we look at when we look at the type—the population of the students we transport. Once we figure that out, and once we figure out the distance and the range we want to test keeping in mind that we don't always want to test how far it's going to go with students on the bus in case it doesn't go that far. So, we have to keep all that in mind. Once that's determined then we'll determine which of our vendors are operating those routes, and then we'll do an MOU with that vendor.

COUNCIL MEMBER RICHARDS: Well, it is my hope. I'll just put my two cents that the areas you prioritized are the areas with the highest rates of asthma—or asthma, which primarily would be communities of color, price, you know, most likely low-income communities. So, I would hope that that that's at the forefront of your policy goal here. As you move forward, but looking at the areas,

communities with some of the highest rates of asthma should probably be a policy goal attached to this pilot and sent—I think it sent a strong message we're serious about fixing some of the air quality issues especially in communities that are disproportionately impacted. So thank you so much. Thank you, Chair.

CHAIRPERSON CONSTANTINIDES: So, I guess I'll ask Council Member Menchaca do you have any questions? Okay, just one more question. On the pilot are we going to have—are they going to wheelchair, are any of them going to be wheelchair accessible?

ALEXANDRA ROBINSON: We're going to look to see what's available on OGS to see if that's an option we can certainly have. I personally would like to have at least one of the pilot buses be wheelchair accessible, but we have to see what's available.

CHAIRPERSON CONSTANTINIDES: Okay, so—so we just don't know that the manufacturer has available. Is that—is that the challenge?

ALEXANDRA ROBINSON: We know that's a possibility with the manufacturers that currently have buses available. We just have to take a look a

a—if we—if we—base on how far the money will go if there's two of them, one would be wheelchair accessible. If there's three of them, hopefully also just one. We have to take a look at—we have to take a look.

CHAIRPERSON CONSTANTINIDES: And-and four is—is what we, you know, four is the goal for buses, correct?

ALEXANDRA ROBINSON: We would like to do up to four. Again, the money is-which is very generous and we-and we thank Espinal, Council Member Espinal and again, but we also know that this money is for—is for everything. So, the money has to be for both the purchase of—I'm looking at Keith because DCAS has to help us with this, purchase of the bus as well as any other infrastructure that would be part of this pilot.

CHAIRPERSON CONSTANTINIDES: Is this—is this something like a budget item that we have to talk about in this coming year's budget to add additional funds to help the pilot go more smoothly? Is—is $1.25 not enough? Do we need more? I mean I—I don't want to—you know is there something we have to sort of supplement to help this really get off the

ground in the way that Council Member Espinal is envisioning?

ALEXANDRA ROBINSON: I—I think that—that with the money we have we certainly will be able to do a very solid proof of concept with more than two buses. Hopefully three, hopefully four as we get closer to actual the actual procurement of those buses, then—then we could certainly find out, but as of now, I think we're going to do whatever we can with that money, if there's a chance we can only use existing charging stations—charging stations, then that would be less money on the infrastructure side and more money we can put on the bus side.

CHAIRPERSON CONSTANTINIDES: Alright, I'm—I'm looking forward to, you know, continuing to monitor this, and any questions today that were brought up that you didn't have the answers to, I would like to get answers from. So, please get those answers to the committee so I can get them to the various Council members who asked questions today.

ALEXANDRA ROBINSON: Absolutely.

CHAIRPERSON CONSTANTINIDES: Council Member Dromm, do you have any more questions? Okay, any more questions from any of my colleagues?

Alright, so thank you for your testimony. I look forward to work with you.

ALEXANDRA ROBINSON: Thank you very much, Mr. Chair. [pause]

CHAIRPERSON CONSTANTINIDES: So, Tevin C.S. Grant; Adrianna Espinosa, NYLCV; Danielle Spiegel-Feld from NYU; and Mo-Yain Tham from Jobs to Move America. [background comments/pause] Alright, Adrianna, how are you. I guess you're—you're on the there on the end so can get started.

ADRIANNA ESPINOSA: Chair, thank you. Good morning my name is Adrianna Espinosa. I am the Director of the New York City Program at the New York League of Conservation Voters. I would like to thank Chair Constantinides, Council Member Dromm for holding this hearing today. I'm going to actually skip most of my testimony here and kind of I wanted to respond first to the DOE and some of the questions that were raised that weren't answered. First to say that our all diesel is dirty diesel, and although the technology has gotten significantly better over the past several years, it is still fossil fuel and it is still dirty and detrimental to our environment and our health. I also wanted to say that to answer your

question that diesel exhaust is labeled as a likely carcinogen by the PA, and I noticed because NYLCV Education Fund we did we did a white paper earlier this year called New School Year, Same Dirty Buses where I looked into the climate impacts of diesel exhaust the public health impact, the current market of school bus technology and—and recommended opportunities for pathways forward in New York State and recommended a pilot program specifically in New York City. So, thank you to Council Member Espinal for helping to make that happen. I would like to just from the expertise that I did and all of it is based off writing this paper would love to help DOE with actualizing their pilot especially the kind of metrics—metrics and data to collect from it. Proof of concept of it is incredibly important, but we should make sure we're tracking air quality inside the buses, incidences of—of asthma attacks, absences, that sort of thing as well, and just to sort of follow up to what Council Member Richards said that these immediately—this pilot should run through Environmental Justice Communities, and we should look at communities that already have or overburdened with poor air quality. We have higher asthma rates,

especially because as my colleagues at the New York Lawyers for the Public Interest have brought up, at a DOE oversight hearing earlier this year, most of these school bus depots are sited in Environmental Justice communities so these buses are going in and out of those communities every day. So, they should get first pick of these or to school buses. I also wanted to say that there isn't a lot of—the DOE had said there's not a lot of data out there on elected schools mostly because there are pilots that are happening around the country, but none of them have been around long enough for a bus—an electric school bus to even live out its full use for life, and we don't have, you know, full 10 or 12 years worth of data on this, but so right now the single most—the greatest thing that we can do—two great things we can do to support electric school buses. One is to have pilot programs to be on the cutting edge of the new technology and do exactly what we're doing here. But also supporting electric transit buses around the country including here in New York City including the MJ (sic) because the more we can support electric transit buses whose has—does have proof of concept and has a lower price we can bring down the price of

an electric school bus and the process by just rapidly adopting those electric bus batteries. So, I also wanted to just mention that electric school buses although they do have a far greater upfront cost, they have lower maintenance and operations costs. You don't have to worry about transmissions or oil changes and sort of things like that that you would in normal buses, and that—but so far the—the lower maintenance and operations cost has not been enough to make back the significant upfront costs. So, again a transit bus will pay for itself over a few years just with the lower maintenance and operations costs. Because school buses run a lot less miles per day, that group—that return investment isn't quite there yet, but all the more reason why we should be piloting and testing this technology. And then just to get back to I guess what I actually came here to say, Intro 455 NYLCV is strongly in support of that legislation. It's likely to be on our environmental score card this year, and we have a couple of recommendations in my testimony to have—for how to make it stronger. One thing I wanted to mention is that currently the language in the bill says it requires the use of all electric zero

emission school buses, and I would urge the committee and the bill's sponsors to consider changing that language to zero emissions school buses as we don't want to limit ourselves to one technology in a rapidly changing market. Although all electric models are the only viable solution to day, we don't know where we're going to be in 2040. So, just wanted to caution us, and not have to go back and change it, you know, sometime again in the future, and I'll leave it at that, and happy to answer any questions. Oh, wait, I did want to mention one other thing. Sorry. So, I did some estimates on the climate impacts of converting all of our—our school buses. It was based off of 2017 numbers, which is a little bit over 10,000 buses. I'm told now there are 9,000. So, it's going to be a little bit higher than it actually is, but I estimate that there would be a reduction of roughly 18 million pounds of NOx, 74,000 pounds or particulate matter and 2.9 million short tons of greenhouse gases over 15 years, which is the- an average life cycle of a school bus, and that if we converted all of our—our school buses—again, this is a 10,000 number, to electric buses, it would be the equivalent of removing just short of 60—621,000

passenger vehicle from the road. So, this is a significant number, but thank you again.

CHAIRPERSON CONSTANTINIDES: Thank you. Thank you for the work that you're doing. Next up.

TEVIN GRANT: Hello, my name is Tevin Grant, and although I do work for a city agency, I'm here today on behalf of the Evolve Electric. We've started the Electric School Bus Campaign, and we worked with Adrianna and New York Lawyers in the Public Interest and many other groups to bring this issue to the forefront. I talked to Danny Dromm last year when I saw that the bill had not gone anywhere and I said we're going to make this happen, and I'm glad that this year we actually did get the bill up and we're talking about and for school buses to be the largest form of public transportation and for it to be so ignored is—is unbelievable. It's disgraceful that we're putting our kids on these buses, and to hear that they're running clean diesel buses I mean that's—that's absurd. It's like clean coal. I mean the reason why you need the Closed Crankcase Ventilation Systems is not for air pollution reduction. It is to stop the pollution from getting inside the buses. It is totally

different from the DPF system, which is actually a pollution reduction device, and those devices have been shown to be defective. The Cummings just had a 500,000 bus recall and they are the largest diesel manufacturer in the world. These devices need maintenance. If you go online and look up DPFs, the first thing you will find is how to get rid of them, how to put holes in them, how to defeat them. This is an ongoing issue to keep the pollution down. I mean going to biodiesel, going to CNG, these are reductions, but why are we reducing a pollutant when we can get rid of it. The technology is here. It is not fictional. We're not talking about something that we have to make up. Ten years ago Tesla did not exist. They did not sell a Model S. Now, they're the number one selling luxury car, the number one selling luxury SUV. The Model 3 didn't exist two years ago. Now, they're the top 10 selling passenger car, and it's a $45,000 car and it's—it's making Camrys scared. Everybody is looking at them. Like we missed the boat. New York should not miss the bot on this. We are the number one state for school buses. We have twice as many school buses in New York State as any other state in the nation even

Texas is lagging behind in the number of school buses on our road. New York City alone would be a top 10 state just New York City. If you put those school buses together that's about 50 per square for the city. We are choking on the fumes from these buses. We need bold action. Everyone up there has taken bold action because you would not be in your office-sitting where you are if you didn't decide what you were going to do and become a City Council Member. That's not easy. This is not going to be an easy transition, but we need a faster transition. The reports from the IPC and the White House say we have about 10 years before we fall—we may fall off the cliff. I don't know if it's 10 years. I don't know if it's 10, 5, 15 years, 20 years, but we can't wait. We can't play with this. We have to make a faster transition. I think we can do it by 2030, and I'm not just making this up. Shenzhen, China transmit—trans—transformed their transit suite in about seven years, and we're talking 16,000 buses. The Blue Bird is reporting that China puts 9,500 buses on the road every couple of weeks. This is—this is America. I mean we're supposed to be leaders. China is eating our lunch on electrification. They're—they're

telling manufacturers from GM, from BMW that they need to produce electric cars in the next few years or they're not going to be open to the market. Why are we lagging behind? We need bold action. We need forward thinking on this. California is eating our lunch on—on school buses. They're almost—they will have 100 buses on the road in—by the end of next year I'm sure. Other states have had pilot programs. Why is New York not a leader? We used to be the leader in environmental issues. Storm King was the environmental legislation that came out of—that let people advocate for the environment. New York had the first Superfund legislation. What have we bee doing in the last few years? We've been following behind other states. We need to take the reigns again and be a leader especially when it comes to our kids. I mean I've looked at it and it probably costs about $3 billion at about $300,000 per bus right now today because the Type A buses and Type B buses are cheaper and the Type C are over $300,000, but that's the cost today. That's not going to be the cost in 10 years, but it will be if we do nothing. If we don't push the technology there's no way it's going to advance. We talk about America's about

competition and market trends, but if we don't make the market, there is no reason for these manufacturers to build the buses. They're not going to build electric buses to sit on the lot. They build the buses already. All they need to do is change the power train. It is not a wholly new technology. We have batteries. We've had electric motors for over 100 years. There were electric— electric cars were the leaders in the early days until the electric starter was made. So, that propane or internal combustion engines could compete.. Electric has—has transformed the world. We've been using it. We know how to build the motors. The batteries are the number one cost right now, and the battery costs are coming down exponentially. I've heard that Blue Bird in the—just in the testing time without even selling their buses, the battery tech-the cost of the batteries have gone down about 50%. Imagine when there's an actual demand. When New—when New York says we want 10,000 electric buses, I don't think any one of them is going to sit down and say we're not building those buses and lose that market share. There are only like six of seven manufacturers. It's not a lot of

people to compete with. They want that market share. They will eat each other alive to sell us the buses. [laughs] I mean it's—that's how the market works, but if we say oh, we would like electric buses maybe but, we'll also take your propane. We'll take your diesel. We'll take everything else. It's not going to happen, and if we hit that wall at 2030 and we still have a few buses doing pilots on the road, what are going to do? There's no way we can react at that point. We need to have the infrastructure in place before we hit the wall not when we hit the wall because carbon has a 100 plus year lifespan. So, we will still have to deal with the—we're dealing with emissions from 1920. What are we going to do when we have to deal with all the emissions for the next 100 years, and we still haven't built the technology to get carbon out of the air, and these are affecting kids more than anyone else? If we can't get up off our butts and protect these kids, what are we doing? You said that it's not—that you were saying that, you know, you don't want to put the pressure on your kids. The pressure is not on your kids. It's on us. We need to make a stand. I think we can do it by 2030.

CHAIRPERSON CONSTANTINIDES: I--I was talking about pressure that to make sure that I have a grandchild by then. [laughter] A different kind of pressure, but--

TEVIN GRANT: Well, I know you want that grandchild. So, let's make a cleaner climate for that grandchild. Let's do this. We can do it by 2030 if we put our minds to it. New York is a leader, and we should take the lead on this issue.

CHAIRPERSON CONSTANTINIDES: Thank you very much.

TEVIN GRANT: Thank you.

DANIELLE SPIEGEL-FELD: Hi. My name is Danielle Spiegel-Feld. I'm the Executive Director of the Guarini Center, and environmental land use and energy lot, at NYU Law where I also co-teach a course on urban environmental law with Professor Katrina Wyman who is here today as well. Before beginning my remarks, I just would like to acknowledge the excellent work of one of our students Stephanie Thomas who unfortunately couldn't be here today because our faculty is giving her an exam, but her research and insights informs much of what I have to say on this subject. So, I think our starting point

here is that Intro 455 sets an extremely important goal as everyone has noted diesel buses in any form are bad for the environment, bad for kids. They're bad for local air quality, climate change, and electric buses can help with all these problems. They may even be more cost-effective in the long run as battery—battery costs decline and, of course, they will eliminate fuel expense, and for all these reasons we really applaud Council Member Dromm as well as Chairman Constantinides and everyone else who's cosigned this bill, but I think it's really just a first start as—as Tevin was mentioning. I think it can be a lot more ambitious. As the bill is currently written right now by our reading not—no buses are required to be replaced with electric buses until 2040, which means diesel buses can be on the roads up and after that point so long as they're not 10 years old. I think this is way too long, right. My six-month old son to put it in perspective will hopefully be done by college by the time that buses have to start to be replaced by electric and, you know, we all know as-as others have said the IPCC has emphasized how dire the threats of climate change will be by that point or the effects I should say

will be by that point. You were asking before about the connection between cancer and inhalation of diesel exhaust, and I just wanted to note that per NRDC's findings as many as 46 children who ride school buses will contract cancer eventually during their lifetime as a result of those emissions, which means that between now and 2040, so when the buses begin to have to be replaced by electric, we can expect dozens and dozens of children in New York City to have already contracted the seeds of cancer in their lungs. It shouldn't take this long. It' much too long, and, you know, we just hear that Shenzhen in China has already electrified its entire public bus fleets. Just wanted to note as others have said, we're really lagging behind in this issue even if we look to domestic precedent. So, LA has committed to transitioning all of its buses, municipal buses to electricity by 2030. It's 11 years from now. San Francisco has pledged not to purchase any non-electric buses after 2025, and gain, notwithstanding all the infrastructure challenges, it's not clear to me why we can't accelerate on that time table. Just to give a listing of a few other cities that have made commitments along these lines: Barcelona and

Milan, Seattle, Seoul, Tokyo, Vancouver and 15 other cities have signed ono a pledge organized by the C40 Organization promising not to buy any non-electric buses for their public bus fleet after 2025, six years from now. You know, New York City shouldn't go—allow—shouldn't go on allowing our bus companies to provide school buses to our children that are diesel and harming their health for so much longer than all of these other cities are allowing public buses to run on diesel. Kids are the most vulnerable to diesel exposure because of their developing lungs. They certainly demand—deserve our attention. I think there are also some compelling reasons from an industrial organization perspective or electricity factor perspective to start with school buses. Because they are not typically run during the middle of the day, they can be used to help balance out demands as a vehicle to great assets and so they-and they have this, you know, dead period where they're lying idle where they can be charged. So there are certain reasons to think that it should actually be easier from a grid perspective for New York to start electrifying its school buses than it has been for California and all these other cities to start

electrifying their public buses. And while it's true that there are still questions to be worked out, questions about maintenance, questions about where the optimal location would be to locate all of the charging stations, how to capture the benefits of vehicle to grid technology working with Con Ed would certainly be helpful towards that—towards that end. These challenges militate in favor of a pilot program the type that's been announced today, which we think is wonderful. They don't necessarily require 21 years to work out. Again, that's a very, very long time. And the last thing I would just like to say is that while Intro 455 does allow or it envisions buses transitioning to C&G or Hybrid technology, although it doesn't require it between now and 2040, which would be an improvement over diesel, I think that there's a real risk to taking this approach. Today, there are not a lot of C&G fuel stations in the city, which means that if bus operators were to decide to go this route, they may need to build the fueling stations themselves, and once they've invested in this fueling tech—or these—this new infrastructure let's say in 2025, 2030, 2035, it's hard for me to imagine them being enthusiastic about shifting to

electricity soon thereafter. And so, I think that the risk is that you get an industry, which has just paid a lot of money for one technology, and then fights tooth and nail to avoid having to go to the next one. And I think all of us here have something and already politics know that love can be a bit sensitive to those kind of—those kind of forces. So, my recommendation, the recommendation of, you know, again not being from NYU but of our center would be that the Council would move as expeditiously as possible to set clear market signals that electric is going to be or zero emission is going to be the technology of choice in New York City, and avoid any intermediary steps. Thank you very much for the time.

CHAIRPERSON CONSTANTINIDES: Thank you. Next up.

MO-YAN THAM: Hello. I'm Mo-Yain Tham from Jobs to Move America, and as been mentioned earlier, we do need to find models in order to modernize bus fleets, and JMA has had experience working with cities transitioning to electric fleet—fleets, and we've discovered additional benefits during this process. Children living in

transportation deserts will now have access to a new bus fleet when they don't have access to city transportation like buses and subways. As been mentioned, lowering the emissions that they're exposed to while waiting our, you know, walking outside, but also sourcing these electric buses in the U.S. can create new manufacturing jobs. The three major manufacturers that build electric buses I IC Bus, Thomas Built Bus and Blue Bird all have facilities in the U.S. Also, the city contract can also ensure that these jobs target Dysania Dict communities such as women of colors or color, veterans and also transitioning existing workers through training into these new energy jobs. And JMA actually did help Los Angeles Metro implement a U.S. employment plan and through their procurement process further electric buses. And this USCP approach is a best value approach, and they evaluate the bids based on considering the benefits instead of just going with the lowest cost. And so, there are an additional—there is an additional benefit to focusing on modernizing a fleet going towards their emission, and that's making sure there's a clear pipeline for disadvantaged communities as well as enduring job

training for incumbent workers, and addressing the issue of climate change and transportation access. And as I mentioned there's only 70,000 public transit buses nationwide, but there are 480,000 school bus fleets or 480,000 buses in the school bus fleets and so when you have more electric buses that will help lower the cost of the batteries, and it would also help lower the upfront cost of future electric— electric bus fleets for schools and public transit systems, and so the way we see the benefit of transitioning and modernizing bus fleet, there's an opportunity a USCP kind of language this process of modernizing these bus fleets.

CHAIRPERSON CONSTANTINIDES: Thank you. I definitely appreciate all of your testimonies. I definitely would want to hear more about how we can make this pilot more—more—have more information from that pilot to make sure that we have the information that we need to move forward. So, I would want to hear more about that and look forward to working with all of you and all of your advocacy work. So, I appreciate your time, and please tell Stephanie your student that we appreciate all of her great work, and we definitely appreciate everything that she's

working on, and that we're sorry that she is missing for a test. [laughs] Alright, alright so Robert Riffenbach from Bird Bus Sales; Veri Nagaranni (sp?) from Motif Power Systems; Mark Oricio from Blue Bird; Eric McCarthy from Protera, Inc. and Peter Riccio from Lion Electric. [background comments/ pause] Alright, go ahead then.

MARK RICCIO: [off mic] Does it matter in which order?

CHAIRPERSON CONSTANTINIDES: I—it—Because then let's—let's get started.

MARK RICCIO: [off mic] Alright. My name is Mark Ricci and I'd like to thank the--

CHAIRPERSON CONSTANTINIDES: [interposing] Make sure, make sure you're on.

MARK RICCIO: Okay, first I'd like to thank the Committee for having this hearing, having the hearing this morning. My name is Marc Riccio. I'm the Alterative Fuels Manager for the Blue Bird Corporation for New England, all of Canada and Alaska, and I'm going to be showing you a presentation that will kind of outline who we are, what we do, and talk a little bit about emissions, just to give you an understanding. We're here to

support electric school bus as it stands, and wholeheartedly support what your efforts are in terms of what you're trying to pass I terms of amendments to the legislation. [pause] So, as stated, my organization Blue Bird is the oldest school bus manufacturer in the United States. We were founded in 1927. We're 100% dedicated to building school buses for children. We are the number one provider of alternative school bus fleet vehicles for all of North America, and we engineer and test with high safety standards. We test them with EMVSS Assessed Standard, which is the Canadian Standard, which is even higher than the U.S. standard. We're also the only OEM manufacturer to offer a complete product line with the Colorado Rack and Kentucky Poll Test as the standard. That's integral for rollover crash safety, and also impact safety from crushing, the safety cage to box as well. We do that standard for all of our vehicles. As stated, you know, we are the alternative fuel experts. We've been in this for quite some time since 1992. We have over 16,500 alternative school bus vehicles deployed on the road in over 2,000 districts. Last year we built north of 11,600 school buses. Forty percent of that output

capacity was dedicated to alternative fuel school buses. We have enough school buses on the road to account for eight times more than our alternative buses than all of our competitors combined. In terms of our technology partnerships, we have very strong partnership with Ford Roush for our propane, CNG and gasoline portfolio product, and also have a partnership with Cummins Medi or Efficient Drivetrains, Incorporated for our new emergent electric school bus vehicle product. We have one of the most extensive dealer networks throughout North America to support all of our technology in all of our units and joining me today I have Bird Bus as well as a regional dealer partner that services the Greater New York City area, and Eastern New York. In terms of what we have to offer, we have a Type C and a Type D electric school bus. We received $4.4 million from the U.S. Department of Energy at the tail end of 2016 to develop these products with vehicle to grid capabilities and we currently have deployments in California and in Canada that were instituted at the tail end of September. Obviously, the key benefits with EV school bus are zero emissions. You're going to have faster mitigation

and recovery of pollutants in terms of ton per year based on your fleet composition or you fleet size for New York City. Obviously, future emission are going to benefit over—be beneficial and accumulate—be cumulative over the life cycle of your vehicles, which is approximately 10 years for the city. Obviously, the vehicle life is going to be extended. Its fewer parts are going to be on board for fatigue and failure. Those are just last moving parts and components on an electric vehicle than there is with an ICE or a typical internal combustion engine vehicle. We're going to eliminate fossil fuel dependence while increasing demand for renewable energy. In terms of what's going on in the world today, I think that's actually a very good thing. So, we're all in favor of that. In terms of a positive environmental impact, this—this slide illustrates typical oil change with a gas or a propane bus versus a diesel bus. With and EV bus or electric bus, you're completely eliminating all of that from an environmental impact standpoint. In terms of maintenance components eliminated, this is just some of the components that are on a typical ICE engine or diesel engine that are no longer needed or

required for an EV engine. We just have far less components for far less issues, for far less failure modes or failure points. This is going to improve obviously maintenance savings costs as well in the long run. We're 100% emissions free. Our number one factor is safety for school children. You know, we have a civic responsibility. That's why I'm here today. That's why my dealer is here today. That's why everybody is here including the individuals on the distinguished panel because we're here to protect one of the most vulnerable segments of our population, which is young children who ride a school bus. With our entire product portfolio, everything that we have to offer we are striving for further and further reduction of pollutants and EV is the best opportunity currently that we have in our portfolio to completely eliminate the pollutants from North America and New York City. So, basically the average emission rates for 2008 if we were going to have a 10-year moratorium, and you were to enact the bill today, we were going to completely eliminate all of these—these pollutants or toxins from the environment if we were to implement EV. Additionally, if you look at the idle emission rates, which are

significantly worse, which were attributable to both gasoline and diesel based on the EPA standard, that's going to be completely eliminated as well. It's no—it's no question that New York City has one of the largest fleets in the United States for a municipality. Having stated all of that, 60% of your fleet constitutes Type A or short bus. 40% constitutes your Type D or traditional bus, and you are 100% contracted, which drives everything. So, basically this is an extrapolation based on the fact if you were to implement this legislation today and we were going to poll and replace about 50% of your Type C unit fleet, which constitutes roughly 40% as a whole of your total fleet, you would reduce over 242 tons of nitrous oxide, over two tons of particulate matter and over—almost 3,000 tons of carbon monoxide. Yes. That's 3,000 tons. Significant numbers. In terms of the charging options for these vehicles there's a myriad of options available. Right now—right now we utilize what's called a Leve 2 charger. We're advancing into a Level 3 charger, which is a DC Fast Charger, and we have capabilities in the very near term to be—to go—what's called bio-directional charging or true vehicle to grid where we're able to

harness the battery power from these batteries to feed it back into the grid during peak hours for electricity. Part of our initiative and agreement with the DOE with the $4.4 million grant funds to bring to bear EV school bus to market results so implementing V to D technology, which is going to be coming down the pipe fairly soon. As was discussed prior, there are a lot of considerations that have to be made for this. I think it's going to be a question of time and money to get this really going and off—off the ground. You're dealing with a very complex equation with contractors, obviously political influencers and users, all kinds of special interest, but at the end of the day, you know, these buses require 100 amps of service per unit. So, you can imagine if you have multiple units you're going to have probably significant infrastructure costs to implement them. So, it's going to be interesting to see how this kind of matriculates and all that develops coming down the line. It was brought to my attention that you may be investigating solar as a closed loop. At this point, for a solution that's really not a viable solution at this point. I mean your average solar panel, which is 5 x 3 feet

generates about 230 watts. If you wanted to charge my bus, which is at 160 kilowatt hours, you know, if you wanted to do that in roughly an hour in terms of the math, you would have to have about 125 of those panels base on the fact that, you know, New York City is a premium for real estate. I don't see deploying the rays of solar technology any time soon unless Donald Trump is going to allow you to do that on Trump Tower on the façade. So, I don't see that coming down the pike at all. So, essentially, you know, the total cost of ownership and pollution reduction is the name of the game with this technology. We're offering a product that is 100% emissions free. Our product uses an electric heater. It doesn't use fuel oil for the heater itself. So, it truly is a—a true electric vehicle in the sense it's 100% emissions free. You're going to also have zero—well, I would say reduced maintenance costs in terms of the amounts of parts that are not—not implemented on this unit versus a traditional diesel or internal combustion engine unit. And in terms of service and support, we provide some of the best service support and education in the market. Our

dealer channel is Bar 9 and that's essentially it. I'm-I'm open for any questions that you—you may have.

CHAIRPERSON CONSTANTINIDES: Well, we're going to do the whole panel anyway.

MARK RICCIO: Oh, sorry. Okay.

CHAIRPERSON CONSTANTINIDES: Yep, uh-hm.

ROBERT REDENBACH: My name is Robert Redenbach. I'm from Bird Bus Sales. I am the provide—I'm the provider of the school buses. I'm a dealer-distributor. I work closely with Mark and Blue Bird, and we are the largest school bus only distributor of—on Long Island, New York City and Westchester. We distribute all the school buses to New York City's contractors that operate today along with IC and Thomas, and I just want to let it be known that we are here, we are in support of the initiatives by the Council for electric school buses, and we also are—take the best interest of the New York City contractors as well.

CHAIRPERSON CONSTANTINIDES: Thank you. Next.

IRVINA: GRANNY: Hello. Is this on? Okay. My name is Irvina Granny and I'm here representing Motiv Power Systems. I'm going to

diverge a little bit from the testimony in front of you in large part because it is very clear from your comments earlier today that you are quite familiar with many of our projects. Motiv Power Systems builds and electric power train and chassis that is the platform for all electric vehicles. The first ever all-electric school bus that was able to pass a California Highway Patrol Safety inspection was powered by us for Kings Canyon Unified School District. We currently also are working with other manufacturer such as Cohens and in other verticals ranging from delivery trucks all the way to an electric mobile lung clinic. So, if you're in the market for anything from healthcare to delivery, we provide electrification solutions. Our motto as a company is we are here to free fleet from fossil fuels. That is our entire goal. When looking at the electrification of school buses, I think this is a very appropriate target because it includes time for a transition. And the reason this is very important is when you are buying a single electric bus almost every building has enough power on hand to power that one bus. As soon as you are looking at an entire fleet, you're now looking at the need for

infrastructure upgrades, and while Con-Edison already has programs in place to help with the installation of electricity for green programs, it does take time. There are permits involved and there is a transition period, and so making an end target of we want to go 100% electric is essential to making sure that when you are doing infrastructure planning you can very easily tell the utility this is the total fleet need and the total infrastructure need so that you can do one construction project instead of every time you buy a bus doing a separate project. As a result, I think that the overall measures' end target is incredibly appropriate to include. However, the need for near term emissions reduction is much more dramatic, and we've heard many testimonies today that cited the IPC Report and the fact that we have 12 years to fundamentally cut our emissions in half. So, you could add incremental steps along the way to ensure that as buses are being procured on a rolling basis you are not further investing in polluting technology, but rather investing in the cleanest available that will align with your infrastructure deployment. In addition, I think that a good example of where to find targets for how to do such a rolling

deployment can be found in California's innovative Clean Transit Rule that was passed last Friday with a unanimous vote by the California Air Resources Board. As has been mentioned today, the EPA has taken a back seat on leadership and presently the strictest emissions standards in the country are coming from the California Air Resources Board when looking at the technology side of the vehicle. Now, your vote today on this measure will have the ability to push the end target for deployment as opposed to vehicle technology, and I think that both a market signal for the end use as well as the capability of the vehicles themselves must go hand-in-hand for successful deployment. I think you today for taking this step in moving towards a cleaner New York.

CHAIRPERSON CONSTANTINIDES: Thank you.

ERIC MCCARTHY: Good afternoon. My name is Eric McCarthy, and I'm with a company called Protera and I just first want to thank you for the opportunity to be here. We enthusiastically support this amendment, which if passed will enable school— school children to ride a bus that is cleaner, quieter and safer that what is currently on the road. Protera is a leading provider of commercial electric

vehicle technology. We're probably most known for manufacturing zero emission electric transit buses. In fact, MTA is testing five of our buses here in Brooklyn on two routes. The timing of this meeting is not lost on me, and let me just mention that the California's passing of the Innovative Clean Transit Initiative on Friday is monumental in this space given that it will be a mandate for California transit agencies to use zero emission transit buses by no later than 2040 making 100% purchases by 2029. Obviously, this is—this will do something similar. In the broader context, the vehicle power train technology industry is really undergoing a transformational shift away from the legacy internal combustion engine for battery technology and we are all caught up in it, right? And there are so many reasons why, and we've alluded to some of those benefits already here today. We have—the buses are cleaner, they're quieter. Their performance is superior, and there are total cost of ownership benefits. There are a number of reasons and trends that are accelerating that early adoption and we're seeing a lot of it on the public transit side. Declining battery costs again total cost of ownership

benefits. The range is increasing environmental stewardship, the costs associated with harmful exposure to fossil fuel emissions and then there are a number of government programs and funding that is really helping. In New York we can just look to NYSERDA's truck voucher program. Obviously, we are going to see some of the VW settlement funding, and—and all of this is contributing. Our mission at Protera is to provide clean, quiet transportation for all including disadvantaged communities where a Council Member earlier today talked about that disproportionate impact that these buses have in those communities and school buses are no exception. So, I am here today not only for these reasons, but recently we have started distributing our power train technology in this space in the school bus space. And has many have discussed already, and the Council Members have as well, this—this space lends itself perfectly to adopting electric power trains, and why is that? Well, we've already talked about the emissions and the savings and the elimination of emissions, the harmful emissions where kids are exposed while sitting on those school buses. Council member, you've mentioned several times being on those

buses when you were a teacher and breathing in that air, and having to roll down the windows. We are looking at predictable, circular routes which enables easier charging, and lower infrastructure costs. We are looking at low annual mileage, which means—which means batteries can be smaller, bringing down the cost of a total bus, and we're also looking at using batteries as grid access particularly in those summer months where school buses are not traditionally used. So, in September, Protera announced a collaboration with Dymer and with that collaboration with Daimler (sic) and with that collaboration we are looing at opportunities to deploy Protera's electric drive train—drive train technology with Daimler's Commercial Vehicle Platforms. The first vehicle to adopt that—that power train technology is the school bus. We have co-developed an electric high performance school bus with Thomas Built Buses called a Safety Liner EC2 powered by Protera and we unveiled that at a conference in Kansas City in October. So, I—I hope to take away for this panel and these Council members is that electric vehicles—vehicle technology today provides superior performance and a low cost alternative to the internal combustion

engine. Protera enthusiastically supports this emerging market. We enthusiastically support this amendment, and we very much look forward to providing sustainable mobility options to New York City thank you.

CHAIRPERSON CONSTANTINIDES: Thank you. Go ahead.

PETER REID: Okay. Good morning. Hello, my name is Peter Reid. I'm the Chief Commercial Officer for Align Electric Co. USA. Thank you for having me today. I want to start off with Councilman Dromm who asked how the Twin Rivers Pilot was going, and to let you know it' going well on Alliance side because they just bought six more Type C electric school buses two weeks ago. So, it's going very, very well, and they're scheduled to purchase more in 2019 as well. Also, the Align Electric Co. USA is headquartered out of the Greater Philadelphia area, and we have facilities throughout the US, and we also employ people in the U.S. I just want to put that out there. We're a fully integrated OEM. We make our own batteries, our own chassis and our own bodies, and we manufacture fully electric trucks and buses and currently the leading original equipment

manufacturer of electric school buses in North America with over two million miles proven and driven and currently have the largest deployment in electric school buses in the United States. We believe that school buses are a vital part of the New York City Transportation infrastructure reducing traffic at peak travel times and offering the parents of children of New York City the safest form of transportation found anywhere in the world. There are currently 480,000 Yellow school busses in operation in the Untied States. 44,500 operate in the state of New York over 9,000 of which transport students in the five boroughs in New York City. School buses are certainly a great benefit to all New York families who rely on them to bring children into the great learning environments that are provided by the Department of Education. Unfortunately, with that great benefit also comes a negative impact to our health and environment. This fact cannot continue to be overlooked and demands action. Diesel emissions have been proven time and time again by peer reviewed scientific studies to have vast negative health impacts possibly increasing cancer rates, and contributing immensely to climate change.

The wide range of toxins produced by diesel engines are not being emitted a truck stop or along a major interstate, but they are produced by thousands of school buses in neighborhoods throughout New York City in direct proximity with our most fragile members of society, our children. Studies have shown that diesel exhaust levels inside school buses are four times higher than passenger cars, and eight times higher than the average outside air. Asthma is the leading chronic illness and the number one cause of school absences among children and adolescents in the US. In New York City alone, over 84,000 children under the age of 12 suffer from asthma. In some Environmental Justice neighborhoods the percentage of children living with asthma is significantly higher than both the New York average and the U.S. average. Zero emission fully electric school buses are not experimental. The technology is proven, reliable, and these vehicles are transporting students everyday in many parts of the U.S. as locally as White Plains School District in White Plains, New York. They align closely with Mayor de Blasio's New York City Fleet Electrification goals as Mark Chambers, Director of the Mayor's Office of Sustainability is

quoted as saying: Electric vehicle are not technologies for tomorrow. They are here now. They are increasingly affordable, and they are crucial—a crucial part of New York's NYC goal to creating the most sustainable big city in the world. While the initial cost may be higher, the year over year maintenance costs are a fraction of a traditional school bus powered by an internal combustion engine making the total cost of ownership less for the electric school bus when compared to a diesel powered bus over the life of the vehicle. As we speak, funding is being secured by cities and states across the nation for fully electric zero emission buses from sources like $2.7 billion available as part of the Volkswagen Air Act Civil Settlement; $127 million of which will be spent towards cleaner projects right here in New York. This is in addition to over $200 million that will be available in the state of California for the purchase of electric buses in 2019 alone. Furthermore, the batteries within electric school buses may be able to serve local utility companies as energy storage assets to off peak demand. Further improvement in the reliability of our energy grid, Align is currently engaged in a

pilot program with Con Edison to help make this a reality. New York City will become a leader in zero emission public transportation options and work diligently to not only protect its citizens from the harmful effects of diesel emissions, but also be a leading force to combat climate change. Intro 455 sets a clear path to accomplish both goals and ensure that we're protecting our most process assets, our children, our communities and our planet. Thank you.

CHAIRPERSON CONSTANTINIDES: Thank you. Hold on one second. Alright, so there's a lot of talk about maintenance that the DOE talked about. There were some reports in other states that there were some challenges with maintenance especially when it came to the heaters. Can you talk a little bit about the maintenance and what's—you know, how much more complicated would it be than the traditional?

PETER REID: Sure. The initial pilot was three years ago. So, like I said, we've deployed over 200 vehicles since then. There's a lot less things to break in an electric vehicle, and 80% of repairs are done remotely through Telematics. SO, it's—it's much simpler to keep those vehicles on the road.

CHAIRPERSON CONSTANTINIDES: And what is the overall payback on the vehicles that you—that you currently have?

PETER REID: Sure. So, it depends on the mileage and—and the—we could work with the school districts to pick the routes that make most sense for electric, and our current Type C bus has 155 miles. Our current Type A bus has 150 miles. It also has swappable batteries, which is really great and help with any range anxiety out there.

CHAIRPERSON CONSTANTINIDES: Alright, I'll—Danny, do you have--?

COUNCIL MEMBER DROMM: Thank you, Chair. This is not really a question, but kind of an observation. First of all, I never thought I'd be so pro business as I am at this hearing here today. [laughter] Finally. Here we go. As the Republican there. [laughter] But I would assume that everybody on the panel would disagree with the Director's point when she said a current market availability of EVs would not allow the DOE to meet a mandate for wider uses of electric buses.

PETER REID: Yeah, absolutely. When the orders come in we can take them. We're taking pre-

orders for 2019 all the way out to 2020. People are earmarking their VW funds. Our phones are ringing. We're getting 10 calls a day from people saying hey I want electric buses. What do I need to do to get them? And I'm sure it's the same across—

COUNCIL MEMBER DROMM: Right.

PETER REID: --across al the competitors out there.

ERIC MCCARTHY: It's the same for us. We have—it's a fully integrated indoor product lineup and we can build to demand to incorporate into our current line.

ROBERT REDENBACH: And I—I can just share the public transit perspective, and I appreciate the comments of an earlier speaker that rattled off city after city that is it mandating and pledging all electric by a date certain. Nearly 10% of all North American transit sales last year, 10% was zero emission, all electric, and we're seeing that trend continue. Obviously we talked about the ICT. So, this—this trend is continuing. There was—there was mention about the VW settlement funds. There's $54 million apportioned towards city and transit—city transit and school buses in New York State, and those

funds are set to be released within the next couple of months as long-along with NYSERDA and Cal Star providing trucing vouchers—truck voucher incentive programs, which would lower the cost of the vehicles as well.

IRVINA GRANNY: And I would say from Motiv's perspective it I also—we've grown every single year we've been in business, and we intend to keep doing so.

PETER REID: The pilot program that you—that you've mentioned, I'm fairly involved in it, you know, and there are currently two vehicles listed on the OGS contract. The other two are pending approval, and should be completed within the next two or three months. Hopefully before that. Hopefully by the end of the year. It's waiting for the state to get through the actual sign-off on it, and that I would assume all the vehicles should—should be ready within the next four months to start the pilot program.

IRVINA GRANNY: Just to kind of make one more comment. When Motiv released our first all-electric school bus, we were literally the first ever to get certified. Everybody at that point was still

saying can it be done? And a mere four years later the question is which out of the manufactures offering solutions would you like to choose, and so, the ability to go from a single offering to a full portfolio of solutions in this market is rapidly changing, and so when we think about what happens in 12 years, I assume that pretty much anything you want will be on the table.

COUNCIL MEMBER DROMM: And so I'll ask the place of manufacture, are any in New York State?

PETER REID: We'll have a facility in Albany, New York or we can do and manufacturing by the end of the month.

IRVINA GRANNY: One of our body builder partners is in New York about an hour and a half away from here, and that's Trans Tech Bus.

MARC RICCIO: Blue Bird Manufacturing is located in Georgia, but as I said, I'm located in Plainview and White Plains, 20 minutes 30 minutes, relatively close—very close to New York City and we provide all the school buses to New York City. We do do our service warranty repair work the vehicles. So, we have a direct access to New York City

COUNCIL MEMBER DROMM: Okay, thank you.

CHAIRPERSON CONSTANTINIDES: Thank you, Chairman Dromm. Thank you for your time. [pause] Alright, so we have Christine Oppah from the New York Lawyers for the Public Interest; Samantha Wilts, NRDC; Isabel Silverman, EDF; Beth—Bret Tomlinson, ALIGN. [background comments/pause] Alright, go ahead Isabel.

ISABEL SILVERMAN: Alright. Good. Hello. Good morning Council Member Constantinides and members of the Environmental Committee. First, I wanted to address some of the issues that came up. So, the Crankcase Ventilation Systems have nothing to do with what is coming out of the exhaust pipe at—at the end of the bus. It has to do with emissions leaking from the engine into cabin. So, somebody testified at the very beginning that the buses that were built before 2006 that they're actually pretty dirty because they don't have a filter already built in, but these either have DPS—these are particular filters or Closed Crankcase Ventilation system. So, that's—that's disturbing because that's not enough. If they only have a Closed Crankcase Ventilation System on these pre—2007 buses there is still a lot coming out of the tailpipe. Especially like we heard

before even if they have a diesel particular filter if they don't maintain it, and it actually gets clogged up with the soot particles, then it's not working. Then it's almost like the—what happened with Volkswagen where it bypassed the filter and that's why all these emissions came out. So, very important: Get rid of these buses that are were built before 2007. [coughing] So if they don't meet the 2007 Emissions Standards, we should not have them on the road any more, you know, starting as soon as possible. Then also, let's think about the idling. A lot of these school buses they cue up in front of those school half an hour before school is out, and they just sit there and idle. So, that's going to be another problem that we are solving by going to electric buses because that's a lot of pollution that is being built up for the people living in that neighborhood, and then, of—of course also gets into the cabin. Okay, so, of course, we all know about the health benefits of fleet changes—

CHAIRPERSON CONSTANTINIDES: [interposing] Uh-hm.

ISABEL SILVERMAN: -so I don't have to repeat that, switching to electric buses, and, of

course, we all heard about the in-cabin problems. So, let's say if we now currently have the—we currently have the 16-year retirement age for buses, but then we heard one of the manufacturers say that actually after 5 to 10 years there's already such major problems with these buses that they have to change transmissions and all these major things. So, ten years it seems like a good retirement age for these diesel buses because we just heard it from—from them that after that we have problems. So, 16 years is a very excessive retirement age. I agree with the League of Conservation Voters that with the change, you know, to maybe go to 12 years for the non-diesel buses. So those buses that are already cleaner, the alternative fuel buses at CNG, right now you have 10 years in the bill. Maybe that's a little too strict given that they are so much cleaner than diesel. Maybe give them 12 years especially for small businesses. I agree with changing it to zero emissions school buses instead of just tacking the technology, and then I'm adding something. Just listening today to everybody testifying, 2040 maybe that is a little bit too far away. We have—are in 2018. So when we go to a 10-year retirement age

maybe we could switch a little sooner actually to electric buses given how well it's working in other cities, and that we have the technology now. I looked into electric school buses 10 years ago, and together with the Clinton Foundation who actually worked on this, and it was not viable. The technology was not viable, the batteries were too heavy. They had to be replaced after six years. It was too expensive, but now a few years later it has become viable, and we heard that today in the testimony. So, let's think about the 2040 deadline Maybe that could be moved up a little bit, and then yeah, the— maybe we could put a n extension in there narrowly tailored for financial hardship for school bus companies, and in return move the date up a little it. So, thank you very much.

CHAIRPERSON CONSTANTINIDES: Thank you.

SAMANTHA WILTS: Thank you, Chairman, and thank you Council Member Dromm. [laughs] and thank you all for being here, and we're really excited you're taking this on with everything else you're taking on. I'm already seeing my amazing colleagues have been doing air quality stuff forever. Literally almost [laughs] and climate and I know your heard

from everyone that this is a really important thing, and as you know too well, or kids' health and everyone's health and the climate. And we've heard also about the IPCC and the National Climate Assessment, and it's only getting worse, and it only needs to be sooner. And, you know, for me it, you know, asthma is like a fully preventable chronic disease, and the stress on the kids and the stress on the families and the missed school is just a terrible disservice to do to our future and our families. So, it's great to do this. I agree with Isabel and Danielle and other folks that we could do it sooner. If we required it in 2040 and we have 10 years, we won't all be—we won't be all done 'til 2049, and that's right, too late and we heard about the White Plains Pilot and pilots all over. You know, we've got four buses 20 miles north, and they're doing vehicle to grid integration with Con Ed and they, you know, can feed back in the hot summer peaks with the grid is the dirtiest. It's a great thing. It's going to take some time and money. You know, there's a lot of infrastructure to build out, but we need to electrify heating and we need to electrify our buildings and we need to electrify a lot of stuff

[laughs] so, we could do it together in one swell swoop rather than piecemeal in a way that's going to cause, you know, utility planning problems and sort of a big mess. You've already heard about California's historic vote on Friday. You know, they have 2030 timeline. They have 12,000 transit buses in the whole state of California. We have, you know, 6,000 here in New York City and the MTA is committed. So, you know, there are amazing things going on. We have to do it for our kids. We should do it for everybody. We should do it soon, and that's it. Thanks so much again for all your work on all the issues, but this is particularly important.

CHAIRPERSON CONSTANTINIDES: Thank you.

ISABEL SILVERMAN: [interposing] By the way, I think I forgot to state my name for the record. I'm Isabel Silverman and I'm with Environmental Defense Fund. Did you say your name? Sorry to interrupt.

SAMANTHA WILTS: I'm Samantha Wilts with the Natural Resources Defense Fund so than you as well.

CHRISTINE OPPAH: Hi. Good afternoon Council Member Constantinides. Thank you to the

members of the panel. Thank you for being here, and for all the insightful testimony. My name is Christine Oppah and I'm a Senior Staff Attorney at New York Lawyers for the Public Interest. Our organization is a social justice organization, and we're dedicated to protecting and advancing the rights of New Yorkers in need through community empowerment NYLPI is particularly dedicated to protecting children's environmental health. Our goal here is to highlight the many ways in which Introduction 455 would support and enhance our work in health justice, disability justice and Environmental Justices. There are our three programmatic areas. The issue of healthier and more efficient busing cuts across all three of our programming areas, and I'm here to testify in support of this bill. As such, we have committed our resources and networks to pursuing a common goal of better buses for all of New York City's school children. NYLPI is actively working towards building a campaign to enhance the bussing experience for all children in New York City who rely on contractors from the Department of Education to help them to get to and from school. We have learned thus far that

the system is widely inefficient, and places considerable strain on the students and their families particularly students with disabilities. Our research has shown that many of these inefficient bus routes meander through Environmental Justice communities, which adds to already high levels of air pollution and exacerbate levels of respiratory health, ailments like asthma. School bus depots are heavily concentrated in the Environmental Justice communities. Using some data from Google Earth and where private school-private bus companies are located, we were able to create the map that you can see on page 3 of our testimony. That shows the placement of bus depots throughout the city of New York, and if you look we use a color coding system where green or that sort of green show anywhere from 1 to 100 buses, school blue, orange and red as it—at it sets the official increase in the concentration of buses. If you see the red dots on the map, those are where vehicles that have bus depots that house more than 500 vehicles, and if you look across Brooklyn and Queens there are six of those, and these are also located in areas of East New York, the South Bronx, Red Hook, and Coney Island, and Southeast Queens.

These Environmental Justice Communities would benefit greatly from a transition into electric buses. Overall, we stress the importance of shortening the time frame for implementation, and we know that this is possible. As the earlier panel mentioned from Protera, the MTA is currently transitioning into some of these cleaner buses and in preparation for that, they conducted a pilot study in that span for four years and went across Europe, Asia and South America. I believe the city can build on this already present institutional knowledge, and I—and to expedite the timeframe for implementation. As my colleague mentioned, we have to do this across all sectors and it would be wise if we—and more efficient if we looked at it from more of global perspective and instituted the infrastructure that we need to electrify our bus fleets to make our buildings cleaner and greener. [coughs] Overall, NYLPI is dedicated to and committed to enhancing the bus experience, which is everything from where the buses are parked, how the buses run, and—and how they serve the communities that are most in need. Yellow school buses are an iconic part of our school experience. So, let's make them a cleaner and greener one for the

children in our future generations. Thank you very much.

CHAIRPERSON CONSTANTINIDES: Thank you.

[background comments/pause]

BRETT THOMASON: Thank you. I'm Bret Thomason. I'm a climate organizer with the ALIGN, the Alliance for a Greater New York. I'm going to forego the written testimony that I sub—submitted. So much of it has already been said by folks that are more knowledgeable and articulate than myself, but I'll just say very briefly, you know, our organization works with—with unions, community groups, Environmental Justice partners, environmental advocates on issues in the intersection of the economy, social justice—and climate change, and so we really see this Intro 440—455 is important and that it's a win-win for all those constituencies that we work with so regularly. We're talking about the most vulnerable among us in terms of being exposed to particulates and pollution from these buses as well as workforce issues for the folks that drive them, and—and ride on them and in the Department of Education school system, and essentially an emerging industry in the manufacture and buying and selling of

these buses. And so, we really think it's important to send a strong signal of where the market is going and to convert this bus fleet as rapidly as possible. I think I would echo what my colleagues have said that I think we might find in the long run that 2040 is too slow of a timeline. Yeah, there's probably conservative estimates we could find that—that we won't even be buying any other kind of bus at that point. So, I just want to wrap up by saying that we're supportive this. We think it's time for New York to be a leader, and that there's, you know, no more important and significant industry that—that we could affect. Thank you.

CHAIRPERSON CONSTANTINIDES: I really thank you all for all of your testimonies and advocacy. It's so important work that you all do to help us craft good policy. So, I appreciate all of your time and efforts. Thank you.

FEMALE SPEAKER: Thank you.

FEMALE SPEAKER: Thank you.

CHAIRPERSON CONSTANTINIDES: Aditi Varshneya (sp?) We Act, Dan Welsh from Cal Start, Inc., Emily Ware from Greencots, and Catherine Scopic. There you are. This is our last panel. So,

if you ever thought you wanted to testify in front of the New York City Committee on Environmental Protection, now is your moment because there will not be another opportunity in the year 2018 after this panel. [laughter] [background comments/pause]

EMILY WARE: Hello. Is this on? Hi, my name is Emily Ware. I'm with Green Lots. We're an electric vehicle charging company. I didn't submit written testimony, but just had a few quick remarks to share. So thank you very much for this opportunity. I'll keep it pretty short and pretty brief. We would like to echo a lot of sentiments that have been said about kind of timeline for this— for this proposal and that, you know, we feel like it could be a lot more or it could be more ambitious based on where we see technology heading as well as the overall cost savings that can be realized through implementation of an all electric school bus fleet, and part of those cost savings really come into play through the type of services that we provide as well as the other OEMs in the room to help schedule charging buses to be at off peak times, to help manage the batteries of electric vehicles to be dispatched onto the grid, and serve as back-up power.

These are all really important ways in which we're adding into our grid resilience, which is going to be something very important going forward thinking about how we are resilient to—to climate change impacts and having dispatchable power at our disposal, and so these cost savings can be realized by—by school district—by the school district. Furthermore, I'd—I'd also like to talk about how this can be a really transformative aspect for—for the—for electric—electrification in general. Electric school buses are relatively simple vehicles, simple to electrify. There are, you know, as we've talked they're on fixed routes, go back to depots at night, and can serve really to bring down much costs and then bring the real benefits from long-haul trucking and other sources of—of pollution and—and bring those to electric. So, thank you very much for the time today, and really appreciate you guys taking this—the Council taking this step forward. Thanks.

CHAIRPERSON CONSTANTINIDES: Thank you.

Good afternoon Chair Council Member Constantinides and the Committee of Environmental Protection. My name is Dan Welch. I'm here with CALSTART a national non-profit Transportation

Organization. I will stick to my prepared remarks. Rather than utterly waste your time. So, CALSTART very quickly has offices in California, Colorado, Michigan and Brooklyn where I'm based. We're dedicated to the growth of clean transportation technologies that will clean the air, secure the nation's transportation energy future, create high quality economic opportunities with various greenhouse gas emissions. We—we have nearly 200 member companies including large auto makers such as Ford, General Motors, Audi and Daimler. Some of the- the transportation companies you've heard from today as well as prominent fleets such as UPS and Fed Ex and major electric utilities. Our Northeast Regional Office in Brooklyn also counts New York City's Departments of Transportation, Citywide Administrative Service, Sanitation and the Economic Development Corporation among our closest partner and allies. One unique thing we do here as has been mentioned earlier is that we work closely with state agencies such as the New York State Energy Research and Development Authority or NYSERDA, to develop and administer medium and heavy duty clean vehicle incentives for all electric, hybrid and compressed

natural gas trucks and vehicles—buses. To the New York Truck Voucher Incentive Program, NYSERDA has worked with CALSTART to fund nearly 600 clean trucks and buses since 2013 including 65 all electric vehicles. These all electric—all electric vehicle projects including medium delivery vans, heavy duty yard tractors reports and especially of late transit and school buses. This summer the program facilitated the Port Authority's introduction of six all electric Protera buses for use between terminals at JFK and more directly related to today's conversation, earlier this year we partnered with National Express in White Plains, which allowed the White Plains School District to deploy five all electric Lion buses this summer through its Dealer First Priority Global. So, electric vehicles are in the medium to heavy duty space can be versatile. The latest example illustrates the—that the electric school buses are rapidly occurring technology. Today there are hundreds. Today there are hundreds of electric school buses serving communities in North America. These numbers continue to rise as the industry advances and school districts determine the business case and the environmental and public health

benefit associated with deploying zero emission buses. As recent deployments from White Plains and elsewhere including in Minnesota will showcase electric buses can operate comfortably in cold weather climates. Here in New York City, the MTA is currently operating ten all-electric transit buses year-round. So several bus manufacturers, and you've heard of them so I won't go over it, do have currently existing technology. Some of them are purpose built and some of them are retrofit. So, there's a range of available options. The electric power driving engines of these vehicles typically start to 70 miles and you can see the hundred miles. So, that comfortably means that a typical New York City school bus duty cycle. In some cases bus models have also been redesigned to accommodate New York City's street code restrictions relative to school bus width, which remains a significant potential barrier to their being a viable technology for the city's schools and streets. Because of—it's hard— many of these companies have local and regional sales and manufacturing operations such as you heard from today, investing in electric school buses would help grow local operations and develop our regional clean

vehicle economy. Charging stations installations and the creation of new main facilities would also create economic opportunities within New York City. So, you've heard plenty about the—the impact of making of the -the—or reducing pollutants. One thing I'd like to clarify from the NRDC something that's been quoted is that—that children can be 46 times more likely to develop cancer based off of pollutants and exposures to daily (sic) pollutants. But the negative public health impacts of motor vehicles aren't just limited to the children. Residents in the communities that are situation near major roadways suffer disproportionate from asthma and other lung and heart diseases. The impact of reduced school bus tailpipe emissions will extend to public health and improved air quality in the communities that they serve. Electric school buses and positive health impacts also reduce burdens on the workforce reducing time and productivity lost due to sickness and contributing to a healthier population and economy. In a noisy city such as New York, adding silent electric drive technology to New York's streets creates a societal benefit. Seattle—Seattle's King County Transit estimated that reduced noise pollution

associated with electric buses, reduces the estimated social cost of noise by at least 30% and they used this factor in a cost benefit decision that led to them adopting only electric transit buses within the next decade. And then lastly, since we're talking about greenhouse gas emissions as well, electric vehicles are a centerpiece of the city's greenhouse gas emissions reduction goals. All electric bus technology improves on a major source of inefficient energy and conventional buses by replacing internal combustion engines. Electric bus adoptions completely eliminate petroleum use relative to diesel powered buses and accordingly have the capacity for deep greenhouse gas emissions reductions. According to Argon National Laboratories Fleet Emissions Calculator, the average electric bus emits fewer than 40% of the GHG's per mile as compared to a new diesel powered school bus. The electron emissions of these school buses can reasonably be expected to improve as time progresses as vehicles charging in the New York City region will be tied to watch our grid with the GHG portfolio that the city is committed to improving with a goal of 80% reduction from 2005 levels by 2050. Investing in electric school buses now brings

immediate climate dividends with the very likely outcome of improved performance in the near and long term future. So, to summarize, in electric school buses adoption, New York City has an opportunity to prioritize a market ready technology that improves living standards and the health of children in the communities. Transition to electric driver also creates a healthier and safer future for those children by reduction carbo and local air pollution. Thank you for your time.

CHAIRPERSON CONSTANTINIDES: Thank you.

ADITI VARSHNEYA: Good afternoon everybody. My name is Aditi Varshneya and I am a community organizer with React for Environmental Justice. React is a community based organization that's been making a difference in improving the health of residents of Northern Manhattan for 30 years and React strongly supports Intro 455. A while back our Dirty Diesel Campaign led to the implementation of stringent new bus pollution standards. The MTA switched from diesel fuel to hybrid electric that reduced tailpipe emissions by 95%. School bus emissions pose an even more serious threat because this toxic exhaust actually

accumulates inside the buses where kids are sitting. Diesel emissions, as we've discussed, are a known public health hazard linked to respiratory problems, cardiovascular illness and cancer, and they are especially detrimental to the developing lungs of the two million New York City children who are subject to the direct prolonged exposure to diesel exhaust as they ride to and from school each day. In some low income areas of the city like Harlem the childhood asthma rate is 1 in 4 compared to 1 in 11 nationwide. Asthma is a major cause of school absenteeism and this can compound social inequalities in education and even lower a child's likelihood of high school graduation. A child with severe asthma might miss up to 30 days of school in a year. We can't let the way kids are getting to school be one of the reasons why they can't go that makes no sense. I live in Washington Heights, and a lot of the kids in my building do have asthma, and I've seen the way this puts financial stress on families, my neighbors when a kid misses school because with asthma symptoms parents are often forced to stay home from work and lose out on a day's wages. Your family pays over $1,000 a year on asthma related medical costs per

child. In East Harlem where children are hospitalized for asthma at a rate three times the citywide average, median household—household income is just $35,000. So, it's significantly lower than the city average. The cost burden of asthma is especially onerous for low-income communities of color like ours uptown which suffer disproportionately from the impacts of air pollution. This is also a labor issue. School bus drivers spend more time on the buses than anyone else, and are directly exposed to harmful pollutants in the workplace, and everyone deserves a safe and healthy work environment. We cannot allow bus—bus diesel emissions to continue to impact the climate change, endanger public health, hinder our children's educations and place undue financial strain on New York families. We have the technology and the responsibility to address this. School bus electrification will have real benefits to New Yorkers uptown and beyond for generations to come. We thank the Council for its time, and urge the Council to vote in favor of healthy resilient neighborhoods and to pass this bill.

CHAIRPERSON CONSTANTINIDES: Thank you.

CATHERINE SCOPIC: Good afternoon and thank you. My name is Catherine Scopic and I'm speaking as a citizen, parent and I'm also the Vice Chair of New York City Group Sierra Club and a delegate through the state Sierra Club as well, and I support this bill for two main reasons: (1) it protects the health of our children as almost everyone up here has said today, and (2) it protects the health our atmosphere by reducing carbon and greenhouse gas emissions as everyone has also remarked. Children being smaller with smaller lungs need to breathe more frequently so are more greatly negatively impacted by pollutant—pollutants in the air than are adults. According to the Regional School Bus Study of 2012, a comparison of alternative fuels for school transportation fleet--that's scrcog.org—numerous pollutants can leak in passage, cabins of buses, amassing in concentrations that are much higher than outdoor air, and therefore, more dangerous to children and to bus drivers. Outdoor air around diesel buses is harmful as well. Children and youth need our protection for their viable future. (2) We have all witnessed the results of global warming. Every four years we've had the UN

Reports of the Intergovernmental Panel on Climate Change or IPCC, the most recent released in October, and we just had the release of the Fourth National Climate Assessment, both filled with the most dire signs you could find, and yet calling for a quick and urgent response if we are to prevent the worst of these predictions. World leaders have been meeting in Poland for the U.N. Global Climate Conference working to do just this: Specifically working out rules and procedures to measure each country's emissions so that we can be accountable and accurately, fairly measure the CO2 and greenhouse gas emissions in order to more easily and quickly reach our reduction goals. For example, that was supposed to end on Friday, but because there were so many rules and regulations that still had to be worked out, they continued to Sunday. So, if I can just take a moment to give you a quick example. Let's say Country A has a gas powered utility, Country B purchases their electricity from Country A. Now, Country A shuts down the coal fired plant and adopts renewable solar and wind so that they are now 100% renewable. Country B still purchases their electricity from County A. Who gets the reduction to

their credit? Does Country A get the credit for their emissions reductions or does Country B get the credit for the reductions in their emissions? So, this is a type of very difficult problem that has been worked out as being—has been worked out in Poland for the U.N. Climate Conference. So, this particular bill, as simple as it may seem of moving to electric vehicle buses for our school children does both. It protect our children and it also helps us reduce for our credit, to the United States' credit for reducing the global greenhouse gas emissions and carbon. So, as we know—I'll just go quickly here—there are three types of electric vehicles: (1) All electric, (2) Hybrid, (3) Plug-in Electric Hybrid, and the first type all electric is considered by the EPA to be zero emissions, and I also agree with the comment that was made earlier that we change the term to zero emissions rather than all electric. Okay. All three types can cost two times more than a diesel bus and more of the cost can be recouped by fuel savings, tax credits and other governmental funding programs as well as reduction and maintenance costs. The New York City Council is to be applauded for having introduced this bill as

are all those Council Members who have signed and those who sign. My only recommendations are that the dates of the transition to all electric school buses be moved up sooner as almost everyone has said today, and also and then after we accomplish this that we do the same for the public transit systems, and I think that's partly in the processes I've learned today, and also an interesting idea might be to have all private buses that operate in the city be electric vehicles as well. Thank you very much. Oh, and one—one other thing that I wanted to add with all the costs—increased costs of this transition we've all heard about, but how does one put a price on a child's health free from asthma or worse.

CHAIRPERSON CONSTANTINIDES: I agree with you on that Catherine so thank you

CATHERINE SCOPIC: Thank Costa, Samantha, and everyone—Samara and everyone who signed this bill. Thank you so much, and if there is anything I can do as a citizen, as a parent and as Vice Chair of Sierra Club New York City, please let us know because we are in full support of this effort.

CHAIRPERSON CONSTANTINIDES: Thank you so much. Thank you all for your advocacy and all the

great work that you do. So, I want to make sure I thank my Staff Attorney, Samara Swanston, who's been amazing for the entire 2018, always doing a great job so thank you as well as our Policy Analyst Nadia Johnson. Thank you both for doing a wonderful job, my colleagues on the committee, Kalman Yeger who stayed for the whole committee. Thank you very much, sir. [laughter] Well, no comment. [laughs] And of course, my counsel Nick Wazowski as well and to the sergeant-at-arms staff for helping to make this work so well all the time, and than you to all the advocates and everyone who testified today. Oh, John Seltzer as well. Sorry about that, John. [background comments/pause] See, Kalman was in the way so, of course, our Policy Analyst for the Finance Jonathan Seltzer thank you throughout the year. I appreciate all the testimony today and wit that, I wish you all a happy holidays to those who are celebrating and a happy 2019 ,and I'll gavel this committee hearing of the Environmental Protection staff—the Environmental Protection Committee closed. [gavel] [applause]

C E R T I F I C A T E

World Wide Dictation certifies that the foregoing transcript is a true and accurate record of the proceedings. We further certify that there is no relation to any of the parties to this action by blood or marriage, and that there is interest in the outcome of this matter.

Date January 10, 2019