STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

I/M/O Petition of Public Service Electric & Gas Company for Approval of its Clean Energy Future-Electric Vehicle and Energy Storage Programs on a Regulated Basis	)	Docket No. EO18101111

TESTIMONY OF PAUL YOUSIF

ON BEHALF OF

INTERVENOR BLUE BIRD BODY COMPANY

September 4, 2020

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INTRODUCTION AND PURPOSE OF TESTIMONY

Q. Please state your name and business address.

A. My name is Paul Yousif. My business address is: Blue Bird Body Company, 3920 Arkwright Road, Suite 200, Macon, GA 31210

Q. By whom and in what capacity are you employed?

A. I am employed by Blue Bird Body Company ("Blue Bird"). My title is Vice President, General Counsel, and Treasurer.

Q. How long have you held this position?

A. I have held this position for approximately 3.5 years and have been with Blue Bird since 2007.

Q. Please summarize your education and relevant experience.

A. I hold a BA from the University of Detroit Mercy. I hold a JD from Wayne State University School of Law. I hold a Master of Taxation, Accounting from Wayne State University.

I have held numerous professional positions in the automotive transportation sector since 2000 and have performed various professional, managerial and executive positions related to the manufacture and deployment of vehicles. Since 2007, I have been in management or executive positions with Blue Bird, one of the nation's leading suppliers of school buses. My position has me involved in all aspects of Blue Bird's operations. This includes the development of Blue Bird's electric school bus product, including the awarding and implementation of a grant from the U.S. Department of Energy (DoE) and California's South Coast Air Quality Management

District (AQMD) to develop and deploy commercially viable Vehicle-to-Grid (V2G) school buses for the U.S. market.

Q. What are your current duties as Vice President, General Counsel, and Treasurer**?**

A. In this position, I am responsible for all legal related matters, banking relationships and shared services. Shared services include payroll, accounts payable and accounts receivable. I also serve as the Company's risk and compliance manager.

Q. What is the purpose of your Testimony?

A. To provide support for the Petition of Public Service Electric & Gas Company (PSE&G) for Approval of its Clean Energy Future-Electric Vehicle and Energy Storage Programs on a Regulated Basis, Docket No. EO18101111, in particular the portion related to the deployment of full battery electric school buses and the V2G demonstration program.

Q. Please summarize your position.

A. Blue Bird believes it is critical that utilities such as PSE&G take a meaningful role in the procurement and deployment of electric school buses (EV school buses) within their territories. It is through their direct participation that we will see EV school buses grow in use, and benefit communities and children across the country. It is also through the addition of V2G technology that EV school buses will become a grid asset to utilities such as PSE&G and a benefit to rate payers.

Q. Please provide the bases for this position.

A. Blue Bird is one the nation's leading manufacturers of school buses, providing them to customers throughout the U.S. and across the globe since 1927. We pride ourselves on building school buses that meet or exceed federal and state safety standards and work diligently to ensure

the safe transportation of our nation's school children. Blue Bird has been an industry leader in safety and technology since our founding and we continue to innovate every day to bring the safest and most efficient school buses to school bus operators.

Blue Bird is the industry leader in alternative fueled school buses. We sell more propane, CNG, and electric school buses than our competitors combined. We understand that providing safe, efficient and reduced emission vehicles is critical to our customers and the country.

On the EV school bus front, Blue Bird was the first school bus manufacturer to introduce battery electric school buses in 1996. This development was done in connection with the 1996 Summer Olympics in Atlanta, near our manufacturing home of Fort Valley, GA. We were also able to deploy several units to school districts in the U.S. We learned many lessons from this early program and realized further technology developments were necessary in order to have a reliable and viable product for our customers.

In 2015 we believed that technology had advanced to the point where we could again initiate the development of a commercially viable EV school bus for the U.S. market. In 2016 we were awarded a grant from the U.S. DoE and AQMD to develop and deploy a commercially viable EV school bus with V2G technology. This was a springboard to our now growing EV school bus program.

While we were confident we could manufacture a reliable commercial EV school bus, the cost of such buses we knew would be an impediment to nearly all school districts. Therefore, we worked diligently to advance technology that would work to make the total cost of ownership (TCO) of an EV school bus comparable to that of traditional fossil fueled school buses. One critical piece of technology to reach TCO parity was V2G. The potential revenue and/or cost

savings to a school bus operator from V2G (a.k.a. V2X) could provide the resources that would bring TCO parity.

In our work on V2G we have come to understand that V2G vehicles can serve as dual-use assets. In addition to their obvious use as transportation assets, they can play a valuable role as grid-support assets. As increasing amounts of renewable generation capacity (chiefly wind and solar) are brought on line, complementary assets must be deployed to compensate for the renewables' intermittency. One option is stationary batteries. A 2018 report from Lazard Asset Management projects that the "levelized cost of storage" for this option is in the range of $1,000-$2,000 per kW of power export capacity.[1] Recent research from the University of Delaware estimates that the V2G option, in which vehicle batteries are used to provide grid services, currently has a levelized cost of storage in the $200 per kW range.[2] V2G thus promises to be an approach that delivers hard economic benefits to utility rate payers and society as the grid moves toward full sustainability.

School buses are uniquely suited to V2G operations. On average school buses are idle 85% of the hours of a year, including significant durations on weekends, summers, and late afternoon through the night. The national average for a school bus to travel is 80 miles a day, making today's range possibilities of EVs well within reach. Further, a significant number of school buses park each day in the same depot or parking lot, making dedicated infrastructure installation more straightforward and cost effective. EV school buses also will have significant energy storage and power capacity to provide a meaningful resource for energy use, both in front of and behind the utility meter. The first deployment of Blue Bird's high-power V2G buses will involve a fleet of eight buses with total energy on board of 1.2 MWh and power export

[1] Lazard Asset Management, *Lazard's Levelized Cost of Storage Analysis—Version 4.0*, November 2018.
[2] Kempton, W. and S. Parkison, "Enabling GIV Systems Overview of Technology and Policy Implications", in "Vehicle-to-Grid Right at Your Doorstep", August 26, 2020.

capacity of 1.0 MW. To provide context there are approximately seventeen thousand school bus operating in New Jersey at this time. Therefore, we believe EV V2G school bus can play a significant role not only transporting our nation's school children in an emission free environment, but can also work in conjunction with utilities and other energy markets to provide a useful and potentially valuable energy resource.

However, the addition of V2G to EV school buses does increase the initial capital outlay by school bus operators to purchase the units. Fortunately, in these early days of EV school buses, various grant programs have assisted school bus operators to procure units. Most notably the VW Mitigation Settlement fund has been used by school bus operators across the U.S., and the state of California has its own dedicated resources to assist in purchasing EV school buses. Additional utilities in North Dakota (Cass County Electric in conjunction with Minnkota Power Cooperative) and Iowa (Alliant Energy) have assisted in the purchase of EV school buses or have approval to do so. Also Dominion Energy in Virginia has entered into a contract to purchase 50 this year and is seeking authority from the Commonwealth of Virginia's legislature to procure an additional 300 units for operation in its territory. Dominion's program will pay the difference between what a school district would pay for a fossil fuel school bus and that of an EV with V2G technology. These are great resources, but are either limited in available amounts or to specific geographies.

As we launched our EV school bus product we reached out to partners. Just as we worked with propane and CNG providers in the launch and deployment of those products, we reached out to utilities as we developed our EV product. Utilities across the country have been receptive to our discussions and have provided invaluable insight and information related to how they can work with school bus operators: from charging station infrastructure, to specific EV

school bus tariffs, to working with us on interconnection agreements with our V2G technologies. We consider utilities to be our partners and do fully support PSE&G's motion under consideration. It is this type of partnership that will assist in advancing the deployment of emission free school buses to all children in all communities in the country.

We clearly live in changing times and those changes include student transportation. Blue Bird considers the evolution of school buses to electric propulsion as a great opportunity for our customers and the children who ride them, as well as the communities these buses operate in. One of the changes we realize that will occur is the way EV school buses will be procured and operated. No longer will a sitting school bus be an unused product. With V2G technology, that idle school bus can provide energy services that benefit the school bus owner/operator as well as utilities, other entities in the energy supply network and rate payers. Therefore, a significant portion of the approximately 600,000 school buses in the U.S. can perform multiple roles in the energy market, as well as be potential emergency energy providers in times of power outages or other impacts to the utility grid.

It is based on these changes to school buses that we realize that EV school buses will evolve from just student transportation vehicles to also become grid assets. Therefore, we believe that utility participation in the acquisition of EV school buses is in the interest of the utility and rate payers. A recent study[3] by Siemens Corporation of the deployment of light-duty EVs with V2G technology determined there would be a net benefit to rate payers of over $3,000 per vehicle in avoided utility capital and operating expense (assuming 90% of charging is conducted during non-peak hours) over the life of the vehicle. While EV V2G school buses

[3]Siemens Corporation, "Vehicle Grid Integration, Standards, and Interoperability", in "Vehicle-to-Grid Right at Your Doorstep", August 26, 2020.

were not considered in the Siemens study, it is clear that the larger battery capacity and more predicable use of school buses will result in even greater savings to rate payers.

Finally, the participation of utilities in the acquisition of EV school buses would benefit all citizens. While some fortunate school bus operators might be able to purchase EV school bus without assistance, our experience does not believe this will occur. If we want zero emission transportation of our nation's children, we will need the assistance of other parties. This includes assistance to inner cities where school districts have resource constraints for basic educational needs, let alone student transportation. The degraded air quality of some parts of the country greatly impacts the health of our citizens, particularly those of sensitive sub-populations such has children with developing lungs. The deployment of EV school buses in greater quantities will assist with improving even the lowest income neighborhood's air quality.

The yellow school bus is our country's most democratic vehicle. They operate in every community in the U.S. and provide transportation to all ranges of socioeconomic status. Making these vehicle emissions free will assist communities in reaching their climate goals, as well as introducing tomorrow's future drivers to the benefits of EVs.

Therefore, we strongly support PSE&G's program to assist school bus operators in the procurement of EV school buses. As we have pointed out in this testimony, EV school buses are no longer limited to being solely student transportation units, but are true grid assets that can benefit rate payers. But also, the participation of PSE&G in the procurement will allow for the greater adoption of emission free transportation for New Jersey's children and communities.

CONCLUSION

Q. Does this conclude your Testimony?

A. Yes. I would, however, specifically reserve the right to offer additional testimony or supplement my testimony to address other matters or proposals which might arise.