Re: Approval of Prince George's County Education and Community Partners to Build Six Public Schools

Dear Prince George's County Board of Education,

This is in regards to the vote to approve Prince George's County Education and Community Partners to construct six new schools under a public-private partnership (P3). This has the potential to lead to an innovative approach to funding construction of schools and managing the energy use of these buildings so as to lead to net zero emission schools. At this point we urge you though to ensure that Prince George's County Education and Community Partners is committing to building these six new schools so as to limit the emissions produced through regular operations at the schools in the least and preferably make these pilot 100% Clean Energy schools for Prince George's County.

We represent the Sierra Club's Climate Parents in Prince George's County. Sierra Club's Climate Parents is a diverse national movement of parents and families mobilizing for bold clean energy and climate solutions. The specific campaign involves getting school districts around the country to commit to 100% Clean Energy. We are leading that charge in Prince George's County. If achieved these goals will reduce greenhouse gas emissions, make school environments healthier, and in many cases save money in the long term.

The useful life of school buildings and the equipment within schools is quite long. We currently have schools that are nearing seventy years old in active use. The useful life of heating and cooking equipment in schools is not quite as long, but this equipment can still be in use thirty years or more after installation. This is important to consider, since the scientific evidence published by the International Panel on Climate Change (IPCC) shows that in order to stave off the worst of climate change world-wide we must be at net zero greenhouse gas emissions by 2050.[1] These schools will only be about 25 years old in 2050, so as you are well aware, within their useful life. Making sure they are constructed and maintained properly so as to produce low to zero greenhouse gas emissions is of great importance.

At this point it is challenging from the available documentation to determine the requirements being placed upon the initial design for these schools under the P3 framework. The documentation available on http://pgcps.org/blueprint is very detailed in many respects, but information on the energy and other environmental standards the six schools will be constructed to is minimal. So at this point, if Prince George's County Education and Community Partners will be constructing the schools the standards that we will describe in these comments we are supportive, but if not we urge the Board of Education to make sure that they revise their specifications prior to finalization.

On the other hand the maintenance information is very detailed. It is very important to maintain systems so as to achieve efficient buildings and the long term maintenance contracts appear to ensure that. In particular the retrofitting of various systems, including heating, air conditioning,

[1] IPCC (2018). Special Report: Global Warming of 1.5 ºC. https://www.ipcc.ch/sr15/

and the building envelope during the lifetime of the contract is an excellent decision and to be applauded.

Returning to the standards that these buildings are being constructed to, one incredibly important decision concerns the heating and cooking equipment, in particular, as to whether they rely on natural gas. A recent study found that better indoor air led to increased test scores in the Los Angeles Unified School District, to the same extent as reducing class size by one third.[2] Work at the Rocky Mountain Institute has found that using natural gas-fired equipment for heating and cooking increases indoor air pollution and can lead to health problems from the increased levels of oxides of Nitrogen (NO_X).[3] Additionally, elevated levels of NO_X are related to increased asthma exacerbations which both harm the students and staff and can increase the number of lost days from school.[4] It is imperative for the health and learning environment of the students that these schools be built without fossil-fuel burning equipment for heating and cooking.

Ventilation and air conditioning systems must also be both efficient and allow for increased levels of fresh air. Use of ventilation systems with Dedicated Outdoor Air Systems (DOAS) in these new schools will allow for an energy efficient solution that makes sure fresh air is circulating inside the buildings.[5] This is important because of time we buildings that do not have sufficient ventilation can develop sick building syndrome, which again impacts the health and learning environment of students.[6],[7] This will also be important in the case of future events like the one we are experiencing now with Covid-19, which may occur with more regularity.[8]

Additionally, schools often have roofs with square footage larger than typical buildings with the same internal size due to the need to build few stories. This also opens up the opportunity to install solar panels on the new buildings. This will allow the school to partially, if not fully, power itself with electricity produced on site. It will also allow for sale of the power back to the grid, in particular during summer months when demand is high and the schools are not in regular use. Solar parking canopies can augment the energy supplied as well. This can be used to reduce the cost to the school system during the payback period from the partnership.

Another important factor is the ease with which parking facilities can be electrified. There is a growing number of electric vehicles on the road, and if we are going to be net zero as the IPCC recommends by 2050 every car on the road will need to be electric by then. While electrifying every parking spot now would be a considerable overbuild, designing the parking lot so that

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[2] Gilraine, Michael (2020). Air Filters, Pollution, and Student Achievement. https://www.edworkingpapers.com/ai20-188

[3] Rocky Mountain Institute (2019). The Impact of Fossil Fuels in Buildings. http://rmi.org/insight/the-impact-of-fossil-fuels-in-buildings/

[4] American Lung Association. Nitrogen Dioxide. http://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/nitrogen-dioxide

[5] DOAS: A New Approach to HVAC - Environment + Energy. http://www.energymanagertoday.com/doas-a-new-approach-to-hvac-0124935/

[6] Mendell, Mark, Garvin Heath. Do Indoor Pollutants and Thermal Conditions in Schools Influence Student Performance? A Critical Review of the Literature. https://iaqscience.lbl.gov/sites/default/files/performance-2.pdf

[7] Haverinen-Shaughnessy U, Moschandreas DJ, Shaughnessy RJ. Association between substandard classroom ventilation rates and students' academic achievement. Indoor Air. https://pubmed.ncbi.nlm.nih.gov/21029182/

[8] Bernstein, Aaron. Coronavirus, Climate Change, and the Environment Conversation on COVID-19. https://www.hsph.harvard.edu/c-change/subtopics/coronavirus-and-climate-change/

electrified spots can easily be added over time is also a vital decision that can both reduce upgrade costs in the long term while ensuring these schools can truly be net zero emissions.

These solutions also can lead to cost savings through both reduced maintenance costs and the need to spend less on fuel, which can bring down the costs of projects, such as these six schools, to PGCPS. For example, Hillsborough County Schools in Florida, a district slightly larger than Prince George's County partnered with two companies to invest $200 million dollars in energy improvements that over time are expected to save the school district $850 million dollars.[9] Kern County Schools in California also recently partnered with a company to invest in onsite solar generation that will save the school system $80 million over 25 years with no upfront costs, and this was only on 27 buildings.[10] We should be seeing savings along these lines from reduced energy consumption and onsite energy generation at these six schools.

If these six schools rely on electric heat pumps for heating, have a highly efficient building envelope, rely on smart efficient lighting, have electric cooking equipment, use DOAS for ventilation, have installed solar panels, and can easily allow for increased electric car charging then we hope to see these commence. We do understand that we do need to speed up school construction given the state of some of our buildings and possibly use innovative techniques to get this done and are glad that the Board of Education is thinking strategically and thoughtfully about these issues. We urge the Board of Education to ensure that Prince George's County Education and Community Partners is committing to building these schools so as to severely limit emissions now in the least and preferably become the pilot 100% Clean Energy schools in Prince George's County.

Sincerely,

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9 https://www.prnewswire.com/news-releases/minimise-usa-and-generate-capital-deliver-1-7-million-to-hillsborough-county-public-schools-300761722.html

10 https://newsroom.sunpower.com/2015-05-28-Moving-to-the-Head-of-the-Class-Kern-High-School-District-Selects-SunPower-to-Deliver-22-Megawatts-of-Solar-Power-Systems-at-27-Sites