marylandclimatepartners

New Schools in Maryland Must Be Net-Zero

What is a "net-zero" school? A net-zero school is a school that generates as much as — and sometimes more than — the energy it uses.

Net-zero schools have cost benefits. Net-zero energy (NZE) schools and net-zero ready (NZR) schools (which are ready to receive but not yet equipped with solar panels) are much cheaper to operate and often are less expensive to build. In many school districts, energy costs are second only to salaries. Batesville, Arkansas used its energy cost savings from the installation of solar panels to raise teachers' salaries. Looking only at costs, net-zero schools are by far the superior option.

Construction Costs of Net-Zero Energy Schools in Baltimore and Howard County

Included below are construction costs for three new NZE schools and the energy use of Wilde Lake Middle School, which is actually net negative — it produces more energy than it uses. Due to COVID-19, one-year performance data for Holabird Academy and Graceland Park/O'Donnell is not yet available. Wilde Lake has an energy use intensity (EUI) of **13.7 kBTU** per square foot per year and produces twice as much energy as it consumes. For comparison, Montgomery County Public Schools have an average EUI of **54 kBTU** per sf/yr.

According to the Interagency Commission on School Construction, Maryland average school construction costs with site preparation from 2015 to 2021 have ranged from $261 to $405 per square foot.[5]

Bid Year	Without Site Preparation (per square foot)	With Site Preparation (per square foot)
2021	$341	$405
2020	$329	$392
2019	$318	$378
2018	$302	$360
2017	$293	$349
2016	$282	$336
2015	$233	$261

Wilde Lake Middle School, Columbia ($320 per square foot with site preparation & solar panels)

- Net-Zero LEED Platinum
- Completion date: August 2017
- Bid year: 2015
- Construction cost, including site preparation and solar panels: $34,000,000
- Energy produced during performance period: 821,618 kWh
- Energy use during performance period: 428,301 kWh

- Net Energy Use: -393,317 kWh (net-negative)
- Energy Use Intensity: 13.7 kBTU/sf/yr

Graceland Park / O'Donnell Heights Elementary/Middle School, Baltimore ($358 per square foot, with site preparation & solar panels)

- Net-Zero LEED Platinum
- Completion date: September 2020
- Bid year: 2018
- Construction cost, including site and solar panels: $33,752,000
- Energy performance not yet determined due to COVID-19

Holabird Academy, Baltimore ($364 per square foot with site preparation & solar panels)

- Net-Zero LEED Platinum
- Completion date: September 2020
- Bid year: 2018
- Construction cost, including site and solar panels: $34,330,500
- Energy performance not yet determined due to COVID-19

The MCCC Has Projected A Dramatic Increase in Gas Delivery Rates. The Maryland Commission on Climate Change has projected that gas delivery rates are likely to increase by 2 to 5 times the current rate for consumers left on the gas system,[4] making it all the more important that all Maryland schools transition from fossil fuels and reduce overall energy use. (And these projections did not account for the War in the Ukraine.) See also a chart prepared by the Office of Peoples' counsel for increased gas costs associated with a separate program, the STRIDE program.

There's never been a better time to invest in net-zero schools. Pursuant to the Built to Learn Act, Maryland is investing significantly in new school construction. In 2021, the Interagency Commission on School Construction approved $545 million of state funds for the construction of 23 new schools (unfortunately, none NZE) and there are additional funds in the pipeline. We should seize this opportunity to make these new schools net-zero.

We owe it to our children and grandchildren to transition our schools to net-zero. The United Nations' Intergovernmental Panel on Climate Change warns that we are on a catastrophic global warming trajectory of 2.7 degrees Celsius by the century's end. Even if we stopped emitting greenhouse gases today, the gases we have already emitted will linger in the atmosphere for decades and continue to cause global warming. If we are to limit global warming to 1.5 C — the goal set in the Paris Climate Accord — we need a 50% reduction in greenhouse gas emissions by 2030. ***The 2020s are the only decade we have left to stay within the critical 1.5 C limit.***[3] And, to be clear, meeting this target is only the best *bad* decision we have — it still promises sea level rise, more powerful storms, devastating wildfires, and sharp species decline. If we don't sufficiently reduce emissions this decade, we will set off a domino effect of escalating disasters.

Schools are "beacon" projects. They educate our children and our communities about both the benefits and imperatives of changing to clean renewable energy, reducing our energy use, and improving health for students and teachers.

References:

[1] https://www.nrel.gov/docs/fy02osti/31607.pdf

[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7795157/

[3] https://insideclimatenews.org/news/27082019/12-years-climate-change-explained-ipcc-science-solutions

[4] See MCCC Building Energy Transition Plan

[5] https://iac.mdschoolconstruction.org/?page_id=463