LIVING FUTURE

Advancing the K–12 Sector Towards a Regenerative Future

2025 Living Future K–12 Public Schools Cohort in Pennsylvania

AUTHORS

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Waldorf School of Pittsburgh © Nic Lehoux Photography

Background

Each weekday, nearly one-sixth of the U.S. population spends their day in a public school building.[1] When these spaces are healthy, well-designed, and inspiring, they can dramatically improve academic learning and overall well-being. Public school buildings are one of the few building types that are still truly public assets. The quality of school facilities, along with the efficacy of building operations, has a huge impact on student behavior, memory, academic achievement, retention of information, and mental health.[2] Yet, a majority of schools throughout the nation have outdated facilities that can hinder student learning and growth. A reported 53% of schools need to update multiple building systems as they approach the end of useful life.[3] The advanced age of most school buildings (on average, nearly 50 years across the US[4] and 70 in Pennsylvania)[5] means that students face elevated risks from exposure to asbestos, formaldehyde, lead, radon, and even PCBs,[6] in addition to the general air quality and ventilation concerns particularly underscored during the COVID-19 pandemic.[7] As there is growing awareness of the risks of emerging chemicals of concern, such as PFAS, studies have also begun to confirm an elevated presence in school buildings.[8] This challenge also highlights an unprecedented opportunity to create future ready and healthier learning environments.

It is also essential that the next generation sees climate change, inequality, environmental degradation, and unhealthy buildings not as insurmountable crises, but as challenges we are capable of solving. Students deserve to learn in environments that model resilience, equity, and regeneration and we must demonstrate that solutions already exist and can be implemented in their own schools and communities. The scale of these issues present an opportunity for all of us to redefine our expectations for a school building and create radical change to build in a way that meets the moment we are in. This moment invites us to establish a new baseline—one in which the buildings that shape our children's daily experiences are held to a higher standard: not merely doing less harm, but actively supporting health, joy, and resilience.

This is exactly the shift embodied in the Living Building Challenge. Living Buildings:

- Demonstrate that healthy, regenerative buildings are possible today.
- Support physical and emotional well being by connecting occupants to abundant daylight, clean air, healthy food, nature both inside and outside the building, and to their own community.
- Demonstrate how renewable energy works through buildings that are regenerative and self-sufficient and operate pollution-free.
- Create a positive impact on the human and natural systems that interact with them by intentionally prioritizing beauty, uplifting the spirit, restoring health, and optimizing well-being.
- Connects students to water resiliency and teaches the importance of stormwater management and responsible water use.
- Models circular and responsible material cycles, supports the creation of products free from chemicals of concern, and reduces waste generation.
- Explicitly support a just and equitable world.

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1 https://education.wellcertified.com/hubfs/IWBI%20-%20State%20of%20Our%20Schools%202021.pdf
2 https://education.wellcertified.com/hubfs/IWBI%20-%20State%20of%20Our%20Schools%202021.pdf
3 https://education.wellcertified.com/hubfs/IWBI%20-%20State%20of%20Our%20Schools%202021.pdf
4 https://www.bdcnetwork.com/home/news/55166042/average-age-of-us-school-buildings-is-just-under-50-years
5 https://womenforahealthyenvironment.org/wp-content/uploads/2025/08/SOSreport2025.15.pdf
6 https://www.epa.gov/iaq-schools/indoor-environmental-contaminants-schools#:~:text=pressed%20wood%20products%20(hardwood%20plywood,other%20textiles%20and%20glues
7 https://www.gse.harvard.edu/ideas/news/25/06/healthy-schools-need-healthy-air#:~:text=Polluted%20air%20in%20schools%20is,sick%20buildings%20into%20healthy%20buildings.%E2%80%9D
8 https://womenforahealthyenvironment.org/wp-content/uploads/2025/08/SOSreport2025.15.pdf



Sonoma Academy, Santa Rosa, CA, USA
Photo courtesy of Sonoma Academy

The Living Building Challenge challenges us to ask: What if every single act of design and construction made the world a better place?

The Living Building Challenge reframes how we design the places where children learn. Its principles offer a practical, aspirational pathway for transforming schools into environments that nourish minds and bodies, model climate action, and inspire stewardship. We can create healthy and resilient education buildings that invite students to explore the world and that create a generation of 'sustainable natives'[9]—a generation that has developed fluency in their environment and climate action at a young age so that sustainable actions are instinctual.

9 https://www.earthday.org/sustainable-natives-building-community-for-the-next-generation/

The 2025 Living Future K–12 Schools Program

Thanks to the generous support of The Heinz Endowments, Living Future worked with a cohort of public school administrators in Pennsylvania throughout 2025 to train them on the Living Building Challenge principles and research how they could be implemented in their schools. We also formed an advisory group of deeply experienced K-12 and regenerative design professionals who helped guide our work.

K–12 Public Schools Cohort

Living Future offered training, guidance, and resources for implementing regenerative solutions rooted in the principles of the Living Building Challenge to four school districts. The program aimed to build knowledge of Living Building principles among district leaders and facilities managers and demonstrate how they can realize meaningful actions in their own districts.

Participating school districts:

1. Pittsburgh Public Schools
2. Woodland Hills School District
3. Green Woods Charter School
4. William Penn School District

These districts represent a growing network of educational leaders committed to creating learning environments that foster short and long-term well-being for students, staff, and the broader community; promote ecological health; and strengthen community resilience The cohort participated in a four-part training series that covered principles of regenerative design and Living Buildings, Getting to Zero Energy and Zero Carbon, and the Red List and strategies for vetting healthy materials. Through these sessions, participants gained foundational knowledge and practical tools to begin applying regenerative design thinking within their schools and capital projects. The members were also given access to a K-12 Living Future Community Space with curated videos and written resources that can be shared and passed along with team members. After completion of the 2025 K-12 cohort, this Community Space will be made available to all K-12 teams and we will invite them to use it as a space to connect and learn from each other.

Living Future provided targeted feasibility assessments for two participating school districts with ongoing capital projects. Opportunities were identified to strengthen performance in focus areas, such as the selection of healthy materials and energy performance. A more complete summary of the findings from these assessments and recommendations given to the school districts can be found in Appendix B.

Key Opportunities

Living Future identified short- and long-term priorities from each member of the cohort. The schools we worked with had begun to implement action in all of the areas below, allowing for growth that can be built upon to strengthen each of their commitment to a truly sustainable and regenerative learning environment. While the Living Building is intentionally a holistic approach to building, the below actions are stepping stones that can be implemented broadly and open up a dialogue for broader changes.

Red List Free Materials for Schools

Health and health equity were identified as important priorities for schools, as the understanding of how the physical environment impacts the health and mental wellness of students is deepening among school administrators. It is also understood that these factors can detract from or improve academic performance and learning. Even when a district is not constructing new school buildings, they are conducting routine maintenance and replacing specific building materials as they wear out and, increasingly, for energy efficiency upgrades. One school district sustainability manager noted that schools take a lot of pride in their flooring and ceiling materials, as these are the first things that people notice when they walk in the building, so Living Future provided recommendations for healthier replacements for both of these product types. Resilient flooring in particular was discussed due to an ongoing mitigation project in Pittsburgh Public Schools to eliminate asbestos in flooring tiles. Vinyl flooring products, which still contain chemicals of concern, are still pervasive in school buildings. We discussed the many alternative flooring options available in this area, as well as other high-impact materials noted below that have an abundance of reliable, cost-effective Red List Free options. At least one school administrator noted surprise at how easy many of these were to integrate with just a little bit of knowledge. The list on the following page highlights the top six products that Living Future has identified as relatively easy wins in most cases that will meaningfully improve the health and air quality within classrooms by avoiding chemicals that present hazards to occupants, particularly children.

Living Future's approach to materials—specifically the Red List—identifies substances prevalent in the building industry that pose serious risks to human health and the environment. A core goal of this work is increased transparency and disclosure of all product ingredients by manufacturers.

Declare is a program managed by Living Future for manufacturers to voluntarily disclose product information on easy-to-read labels that can be used by designers, real estate owners, and conscientious facilities managers to specify products they know they can trust and that meet the requirements of leading green building standards, including the Core Green Building, Living Building Challenge, LEED, and WELL Certifications.



Priority Products for Mitigating Hazards in School Building Materials

INSULATION

There are dozens of Red List Free insulation products available for use in various building applications available from established manufacturers, most of which should not add a significant amount of cost, if any, to a project. Conversely, standard insulation products commonly contain several Red List chemicals such as halogenated flame retardants (HFR), formaldehyde, and phthalates,[10] so this is an impactful switch.

DRYWALL

Gypsum board is a relatively easy product type to specify Red List Free, as there are many cost-neutral gypsum board products without Red List ingredients with proven performance and durability records. General wallboard products may contain traces of heavy metals, particularly synthetic gypsum, as byproducts of coal production.[11] Additionally, some gypsum products, especially those marked 'mold-resistant,' may contain antimicrobials which are on the Red List due to their potential effects on hormones, learning, and muscle function.[12]

CARPET

There are many Red List Free affordable carpet options available. Standard carpet products will commonly include Red List ingredients, such as PVC, PFAS, antimicrobials, and HFRs,[13] but these are avoidable.

ACOUSTIC CEILING TILE

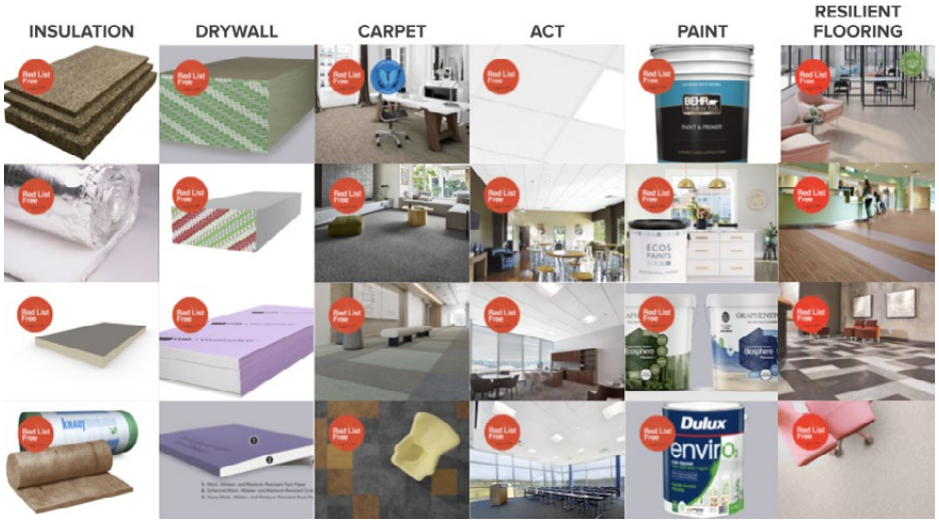
There are dozens of Red List Free acoustic ceiling tile products and suspension systems available from established manufacturers. Acoustic ceiling tiles without product disclosure information may contain formaldehyde as binders or antimicrobials as coatings.

PAINT

Interior wet-applied products, such as paint, are a critical product from a health impact standpoint. Paints and other coatings often contain high levels of volatile organic compounds (VOC), which will affect indoor air quality, and/or alkylphenol ethoxylates (APEs), which are endocrine disruptors. There are many Red List Free exterior and interior paint and coating products available on the market that should have minimal or no cost implications.

RESILIENT FLOORING

In lieu of vinyl flooring, project teams should consider linoleum, rubber, or other bio-based flooring in applications where vinyl is typically specified. Linoleum can usually meet the performance requirements of a project and often proves more durable than vinyl flooring with simple cleaning protocols. Vinyl flooring contains PVC, phthalates, and other Red List ingredients, and the location of manufacturing plants of petroleum-derived products, such as PVC, cause detrimental impacts on neighboring communities, which are most often low-income and/or BIPOC communities.[14] Some K-12 project teams reported that polished concrete flooring was an affordable and low maintenance option for flooring in some areas (but remember to choose Red List Free sealers to avoid PFAS).



10 https://assets.ctfassets.net/ntcn17ss1ow9/6lpUnRB2ABFvoBHtIhA7aY/fe4ccd5a4634c703495e33b811a411a1/NRDC-3094_Specifying_Healhier_Materials_report_05.pdf
11 https://informed.habitablefuture.org/product-guidance
12 https://informed.habitablefuture.org/product-guidance/1-flooring
13 https://informed.habitablefuture.org/product-guidance/1-flooring
14 https://informed.habitablefuture.org/product-guidance

Example: Green Woods Charter School. The below list demonstrates how a school may effectively integrate healthier building materials without impacting the budget of the project. These materials were chosen and installed for their recent addition project.

PRODUCT TYPE	MANUFAC-TURER	PRODUCT	RED LIST FREE/ APPROVED?	NOTES
EXTERIOR				
Wood Cladding	reSAWN Timber Co.	Abodo, Pearl finish	Confirmed	Declare label available
Brick Cladding	Glen-Gery	Roman Maximus	Likely	Ingredients listed in product Safety Data Sheet are naturally occurring and likely do not contain Red List chemicals[15]
Curtain Wall: Clear anodized aluminum	No product specified		RLF Options Available	The Declare database contains several Red List Free/Approved curtain wall and storefront options, including: • Kawneer: 1600, 1600UT, 1620/1620 SSG, 1620UT/1620UT SSG, 2500 UT & Clearwall Curtain Wall Systems, Trifab Storefront Framing Systems • Arcadia: T500 Curtain Walls, UW3800 Series, Storefronts • Allegion Fireframes Curtainwall Series, Fireframes Aluminum Series • Safti First GPX Architectural Series
INTERIOR				
Ceramic Wall Tile	Daltile	Color Wheel Linear	Confirmed	Declare label available
Porcelain Floor Tile	Daltile	Outlander	Confirmed	Declare label available
Carpet Tile	Milliken	Lyceum-Plato, Quartz	Confirmed	Product sustainability sheet contains link to Declare label
Countertop, Solid Surface	Corian	Canyon	Confirmed	Declare label available
Countertop, Laminate	Wilsonart	Pepperdust	Confirmed	Declare labels available for Basic and Compact finish patterns. Wilsonart has a number of other options on Declare.
Cabinetry, Laminate[16]	Wilsonart	Castle Oak	Confirmed	
Acoustic Ceiling/ Wall Panels	Armstrong	Tectum	Confirmed	Declare label available
Acoustic Ceiling Panels	Armstrong	Soundscapes	Likely[17]	No Red List chemicals listed in the Safety Data Sheet[18]
Wood Ceiling Panels	Armstrong	Woodworks Linear Veneered Panels	Likely	Linear veneer panels are Red List Approved provided if installed with a NAF FRMDF core. Alternatively, the Woodworks Solid Wood option is also compliant.
Rubber Wall Base	Tarkett	Johnsonite Base-works Thermoset Rubber (Type TS)	Likely	This product is Cradle to Cradle Certified® Silver v3.1.[19]
Concrete Floor, Polished	No product specified		RLF Options Available	Concrete without coatings or admixtures is generally Red List Free.[20] There are several options for concrete coatings and additives in Declare, including: • Prosoco Consolideck products • Sinak sealers, hardeners, and curing agents • Duracryl: Duracem & Durastone finish flooring
Storefront Frame: Clear anodized aluminum	No product specified		RLF Options Available	See curtain wall notes above

15 Brick and other masonry products generally do not contain Red List chemicals, but the use of epoxy grouts should be avoided as they will often contain bisphenol A (BPA), an endocrine disruptor that can affect neurological function and development. Red List Free mortar and grout can be found in Declare.
16 For cabinetry substrate, specify Red List Free/Approved composite wood products such as Columbia Forest Products and Roseburg Forest Products.
17 Several Armstrong acoustic finishes are available in Declare.
18 To fully confirm the product's Red List status, the Safety Data Sheet would need to disclose 100% of its ingredients at or above 100ppm (0.01%).
19 While the product does not meet these Cradle to Cradle certification levels, it is likely Red List compliant.
20 Concrete generally does not contain Red List ingredients. However, sealers, densifiers, and coatings may contain per- and polyfluoroalkyl substances (PFAS), a chemical class on the Red List that has been linked to weakened immune systems, cancer, liver damage, and other health impacts.



Zero Energy Schools

As of 2025, Living Future has certified more than a dozen Zero Energy schools throughout the world, including 5 public schools (links to case studies of each of Living Future's Zero Energy Certified schools projects are included in Appendix A). A zero energy building offers obvious benefits to school districts and communities in terms of lower operations cost and community-wide resilience to natural disasters. It is increasingly viable in a variety of contexts and climates, as evidenced by the wide variety of schools that have celebrated this achievement in recent years. All decision-makers for new school buildings, additions, and major renovations should assess the feasibility of zero energy for future-proofing and cost reasons, at least, and may be surprised at how feasible zero energy is at this point in time.

Living Future worked with our cohort of schools to identify several straightforward strategies that can also help move existing school buildings towards zero energy and encourage other school districts to consider implementation of these strategies, as well as prioritize zero energy for new additions and buildings. These include electrification and replacement of existing mechanical systems that are approaching the end of their useful life, strategic energy efficiency upgrades to lighting and plug loads, along with more significant capital project improvements to the building envelope. Improvements to energy efficiency are typically a more cost-effective first step than investments in renewable energy (which are more effective when designed, engineered, and installed to support a lower-EUI building).

Example: John Lewis Elementary School in Washington, DC, certified Zero Energy in August 2025. Features like a PV-panel canopy, peaks into the geothermal room, and an interactive dashboard help the building wear sustainability on "its sleeves" and be leveraged as a teaching tool.

Nature integration and simple biophilic design strategies

The Living Building Challenge seeks to promote the innate human-nature connection in the built environment through measures such as urban agriculture, promoting habitat, and biophilic design. A plethora of research supports the benefits of nature and biophilic design on mental health, including:[21]

- 10–15% increased mental function and memory recall with access to views
- 7–26% higher test scores in children with access to natural daylight
- 69% reduction in asthma when schools upgrade ventilation to increase fresh air
- 14.4% improved standardized math scores when ventilation rate is greater than 4.5 l/s per person
- 6–7% faster problem solving when seated with views to vegetation
- 19–20% increase in testing proficiency when there was a 250 meter green area surrounding the school
- 32% improvement in standardized test scores for children whose curriculum included gardening
- Even natural scents experienced by growing rosemary and lavender in surroundings have been shown to increase the working memory in children and reduce stress

Biophilic design benefits all students and other building occupants, but can be an especially effective measure for schools seeking to serve a variety of neurodiverse learning needs, which was noted as a priority among several school districts. Pittsburgh Public Schools noted that greening their schoolyards (transforming asphalt play spaces into park-like settings with elements like increased tree canopy for shade, outdoor classrooms, gardens, trails, and nature play areas) was an entry point to allow them to create expanded programs to teach about the outdoors. Biophilic design can be implemented in a number of big and small ways, and is accessible even to schools with little to no budget - very simple interventions such adding pictures of nature or adjusting the lighting tones can still have measurable benefits. Living Future offers a freely accessible Biophilic Design Toolkit (including a Biophilic Design Elements Card Deck) to help school districts or school designers learn more about implementing biophilic design.

Example: Inspired by a student's suggestion to put a river through their classroom, the project team at the Bertschi School in Seattle, WA, created a transparent stormwater drain running through the science building, allowing students a visual and auditory connection with their environment every time it rains.



21 https://storage.googleapis.com/education-living-future-org/ILFI%20Biophilic%20Design%20Toolkit%20Version1%20May%202022/index.html#/lessons/ojTsWzAcmXI_Wpwh325qHDbG0uejGS57



Heartwood Annex, Pittsburgh, PA.
Photo courtesy of Nic Lehoux Photography.

Moving Forward

Students learn lessons, for better or worse, from everything in the school environment—including the school building, operations, and culture around sustainability. Living Buildings represent a paradigm shift—a way to do things differently and focus on "what good looks like" rather than just "less bad." Schools have the opportunity to demonstrate that we can transform our institutions to address the challenges we face. The hands-on learning provided by witnessing rain run through a stormwater drain in your classroom (as in the Bertschi School in Seattle, WA), feeling the changing daylight over the seasons through a fully daylit classroom (as at the Heartwood Annex at the Waldorf School of Pittsburgh), or walking to school through a PV canopy that helped make your school the first Net Zero Energy school in the city (as at John Lewis Elementary School in Washington, D.C.) changes the school experience and changes each student that interacts with it. These changes provide practical examples for people to follow, and build hope that we can make a difference. We invite everyone invested in schools and communities—school administrators and teachers, architects and designers, and community members, to step into the role of co-creator of a Living Future with us and build living schools in more cities and communities.

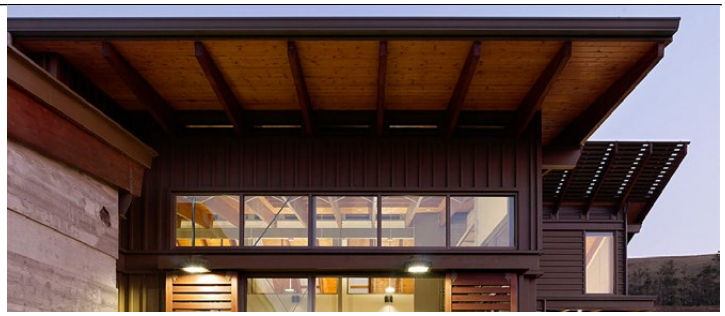
Appendices

APPENDIX A: What Living Schools Can Look Like

Creating schools that stand as beacons of regeneration start with a compelling vision of what good looks like. The following case studies highlight school projects that embody this vision:

HAWAI'I PREP ACADEMY ENERGY LAB (LIVING CERTIFIED)

The Energy Lab at Hawaii Preparatory Academy serves a goal of educating the next generation of students in the understanding of environmentally conscious, sustainable living systems and encourages student discovery, exploration and experimentation.



THE MONARCH SCHOOL STUDIO (PETAL CERTIFIED)

The Monarch School Studio serves as an environmental stewardship and educational tool that engages students and the Houston community through climate responsive design features that allow for both active and passive technologies which can be controlled by the students through daily choices and interactivity.



PERKINS SEED CLASSROOM (LIVING CERTIFIED)

Using the guidelines of the Living Building Challenge, the SEED (Sustainable Energy Every Day) Classroom reinvents the modular classroom concept, daring to imagine a learning space that is net-positive energy, net-zero water, is built with non-toxic materials, includes ample daylighting, and creates a space that fosters inspiration, education, and beauty.



THE BERTSCHI SCHOOL (LIVING CERTIFIED)

The Bertschi School Science Wing was designed for—and in part by—elementary school children and demonstrates how biophilic design can be used to not only connect children with natural processes, but engage them in learning.



WALDORF SCHOOL OF PITTSBURGH: HEARTWOOD ANNEX (CORE CERTIFIED)

The Heartwood Annex used the Living Building Challenge to reflect equity and connection to nature by weaving biophilic design into the project, giving students a chance to help shape their own learning environment, and create a healthy, inspiring classroom that fosters well-being, curiosity, and a deep connection to the natural world.



THE HEALTH, WELLNESS AND NUTRITION CENTER AT THE WILLOW SCHOOL (LIVING CERTIFIED)

The Willow School's core pillar is the ethical relationship between humans and the ethical relationship with our natural world. This building is used as a teaching tool to support the curriculum and mission of the school.



SONOMA ACADEMY AND GUILD COMMONS (PETAL AND ZERO CARBON CERTIFIED)

An ode to nature, the Maker and Grange Studios is carefully located to frame natural views, create outdoor learning spaces, and actively engage with its surroundings, strengthening the strong sense of place and telling the story of the region's geographical connection to architecture, landscape, people, sustainability, and everyday life



HENRICO COUNTY PUBLIC SCHOOLS: CENTER FOR ENVIRONMENTAL SCIENCE AND SUSTAINABILITY (CESS) LIVING BUILDING (PURSUING LIVING CERTIFICATION)

The Center for Environmental Science and Sustainability (CESS) in Henrico County, Virginia, hopes to be the first public school with full Living Building Certification. At its core, the project strives to be "educationally expressive"– with the building itself envisioned as a tool for immersive, hands-on learning that cultivates an intimate connection with the natural world.



Zero Energy Certified Schools

To read about each of these Zero Energy Certified Schools, visit https://living-future.org/case-studies.

- Adlai Stevenson High School East Addition
- Creekside Community High School
- Hadera Alfa Kindergartens
- Hood River Middle School Music: Science Building
- Sacred Heart Lower and Middle School Library
- The Putney School Field House
- Locust Trace AgriScience Campus (High School)
- Richardsville Elementary School
- Sandy Grove Middle School
- Discovery Elementary School
- Wilde Lake Middle School
- Overbrook School for the Blind Greenhouse
- West-MEC SW Campus Building X
- Success High School
- John Lewis Elementary School

Check the Living Future map[22] for an up-to-date list of projects, including projects registered and currently pursuing certification.





Top: Discovery Elementary School, Arlington, VA , Zero Energy Certified

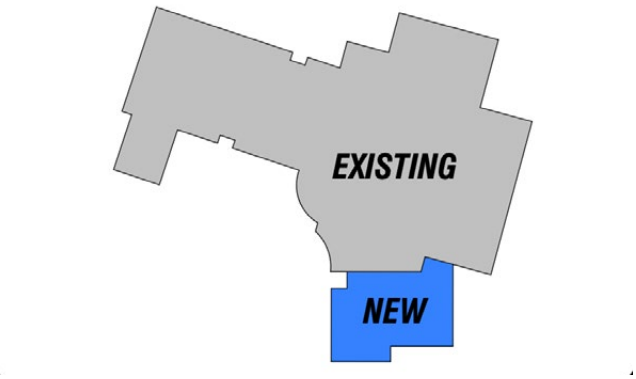
Bottom: Hood River Middle School Music and Science Building, Hood River, OR, Zero Energy Certified

22 https://living-future.org/our-living-future-map/

APPENDIX B: Feasability Assessments

Green Woods Charter School

Living Future collaborated with Green Woods Charter School (GWCS) to evaluate two areas critical to long-term sustainability: **healthy materials** and **energy performance.**

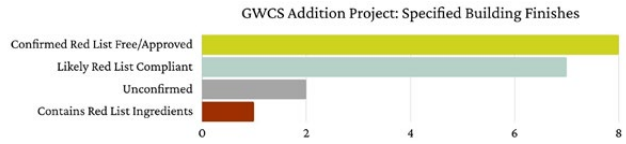


Key plan of existing and new buildings. Source: GWCS

Healthy Materials Assessment

The review of GWCS's recent Addition Project examined the material health of its building finishes, while the energy systems of the existing main building were assessed to identify opportunities for advancing toward Zero Energy performance.

Each product specified in the GWCS Addition Project's finish selection was evaluated through product documentation and cross-referenced with the Declare database and other vetting resources such as Health Product Declarations. Of the 18 products reviewed:



The 18 building products reviewed can be categorized into four levels of Red List compliance:

Confirmed Red List Free or Red List Approved (8 Products) through the existence of a current Declare label.

Likely Red List Free (7 Products) due to one or more of the following reasons:

1. Available documentation shows no Red List ingredients, but additional information is needed (e.g., the threshold level for ingredient disclosure is not 100 ppm)
2. The product is Red List Free or Approved, provided it meets certain conditions (e.g., it must be installed on a composite wood substrate with no added formaldehyde)
3. No specific product was identified in the finish selection but Red List Free products are available .

Unconfirmed (2 Products) The walk-off grille and paint products specified lack the supporting documentation to sufficiently confirm its Red List compliance, although both products claim to be Red List Free on their website or related product literature. Note that a number of paint products are available Red List Free on Declare.

Contains Red List Ingredients (1 Product):

Only one product, vinyl composition tile, was confirmed to contain the Red List chemicals tremolite and PVC, which are both on the Red List due to the range of health and environmental and health impacts[23] associated with production and use.

The GWCS Addition Project demonstrates a strong healthy materials selection, with the majority of its finishes confirmed or likely to be Red List Free. This suggests that Red List Free options are increasingly available and feasible for use in school buildings. The project team was pleasantly surprised at how easy it was to integrate many of these Red List materials and plans to build on these successes for future projects.

23 To learn more about material health considerations related to PVC, download Perkins+Will's white paper, *Healthy Environments: What's New (and What's Not) With PVC.*

Zero Energy Assessment

The existing GWCS main building currently operates with a mix of gas and electric systems.

	K–12 SCHOOL	DATA CENTER
Occupancy Schedule	Monday–Friday, 4AM–9PM	24/7
Heating	Gas: Packaged rooftop units, 378 MBH	No heating
	Electric: Packaged VAV system, 5.5 kW	
Cooling	Electric: Packaged rooftop units, 170 tons	Ductless mini split units (3), 1.425 tons (cooling only)
Ventilation	Packaged VAV system, 11,125 CFM	
Lighting	Fluorescent T8 fixtures	
Other Systems	DHW pump	
	Existing photovoltaic panels (2) supplying 4% of total building energy	

As part of a Solar for Schools grant application, a solar feasibility analysis was conducted based on a proposed 160.1 kW rooftop photovoltaic system for the building. This proposed system was estimated to generate approximately 133,200 kWh of renewable energy annually, offsetting 17% of the building's annual energy demand and projecting a payback period of 5–7 years with grant funding. Living Future reviewed energy-related data provided by GWCS–including the previous solar feasibility study–and developed the following recommendations:

1. As existing mechanical equipment approaches the end of its useful life, consider transitioning away from fossil fuel combustion in favor of all-electric systems. Beyond reducing carbon emissions, electrification strengthens the school's climate resilience, protects against future carbon-related costs and regulations, and can create higher-quality indoor environments that enhance occupant health and productivity.
2. Take steps toward Zero Energy performance by calculating, monitoring, and reducing the building's energy use intensity (EUI) and improving overall energy efficiency over time. While substantial reductions in EUI may require capital improvements (e.g., upgrading the building envelope and mechanical systems), ongoing maintenance, commissioning, and careful management of building systems can help maintain energy use at its lowest feasible level and ensure that renewable energy can supply as much of the building's needs as possible.
3. Once EUI is reduced, maximize on-site renewable energy capacity–including rooftop systems and site-based installations such as solar canopies in parking areas. Consider additional off-site options, such as community solar, to close the gap toward meeting 100% of the school's annual energy needs.

These steps will help Green Woods Charter move towards their goal of Zero Energy in their existing building.

Pittsburgh Public Schools: Obama 6–12 Flooring Renovation Assessment

Pittsburgh Public Schools (PPS) is undergoing a multi-year asbestos abatement and finish floor replacement project at The Barack Obama Academy of International Studies (Obama 6–12). With the project currently in its first phase, Living Future reviewed the **material health** of the new finishes included in the project scope:

PRODUCT TYPE	RED LIST STATUS
Vinyl Composition Tile	Contains Red List ingredients
Luxury Vinyl Tile	Contains Red List ingredients
Rubber Wall Base	Confirmed Red List Free
Paint	Unconfirmed

Of the four product types included in the renovation scope, only the rubber wall base was confirmed to be Red List Free through its Health Product Declaration. The Red List status of the specified paints could not be verified due to insufficient ingredient transparency.

Similar to GWCS, PPS received information on the health, environmental, and equity impacts of vinyl flooring, along with a range of Red List Free resilient flooring options in the Declare database. Some examples include:

- Several products by American Biltrite, Capri Collections, and Forbo
- Hot & Heavy II PVC-Free Resilient Tile by Mohawk Group
- Rigidform LPT and En Plein Air LVT by Milliken
- Ecoworkx, Ecoworkx Click, and Biobased PU by Shaw Contract
- The Proxy Collection and Colorspec/Colorscape/Open Range by Mannington Mills
- Linofloor XF², Collective Pursuit, and Layered Duality by Tarkett

Should the school district be able to switch from vinyl to PVC-free resilient flooring–and prioritizing healthier material choices across maintenance and operations– it will ensure that asbestos abatement efforts not only address immediate hazards but also foster healthier, more resilient, and equitable learning environments for generations of students and staff.

References

Living Future

- Living Building Challenge 4.1 Program Manual
- Biophilic Design Toolkit
- Living Future Case Studies
- Living Future Project Map
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Acknowledgements

- The Heinz Endowments
- Living Future Staff
- Nicole Gofman, Green Woods Charter School
- Sanjeeb Manandhar, Pittsburgh Public Schools
- Pecola Abele, Director of Healthy Learning, Women for a Healthy Environment
- Pauline Souza, Director Sustainability and Co-Lead of the K-12 and Civic Studio, WRNS Studio
- Michèle Andrews, Executive Director, Door Number One.org
- Michelle Allworth, Facilities Project Manager, Phipps Conservatory & Botanical Gardens
- Christine Mondor, Strategic Principal, evolve environment + architecture
- Patricia Culley, Principal, Bohlin Cywinski Jackson