Sonoma Academy Janet Durgin Guild and Commons

Owner:Sonoma AcademyCategory:Educational / College PrepDistrict:Located within the boundaries of Bellevue UnionSize:19,500-sf, 34-acre campusLocation:Santa Rosa, Calif.

2023 James D. MacConnell Award





Executive Summary

Since its inception, Sonoma Academy understood that nature was an asset to learning and could spur curiosity about the interconnection between resources, sustainable practices, food, and social justice. For their campus expansion, they wanted a regionally-specific facility that would preserve and enhance the natural habitats and operate as a sustainable ecosystem. When the school embarked on the new Janet Durgin Guild and Commons — a two-story, 19,500-sf mixed-use facility — they had a clear vision to use materials and systems that adhered to their community-conscious, eco-philosophy. However, their energy-heavy program — commercial kitchen, fabrication shops, cooking lab, productive garden — didn't add up to net zero. To meet the school's strict energy goals, we embraced a nature-first approach, rooted in community health, resulting in a net-positive solution!

Connection to Nature: Sited at the base of Taylor Mountain, with panoramic views of Sonoma Valley, we leveraged the mild climate and rural setting. Designed around a series of outdoor experiences, two sweeping floors, sheathed with an operable, transparent skin and a lattice of wooden slats, blur the lines between indoors and out. Windows, automated shades, and rolling glass doors open to gardens with 80% of the building naturally lit. A living roof works in concert with the tiered bioswales that capture and filter stormwater for reuse. Gardens, in view from every angle, double as learning area, allowing students to experience the seasons' changing colors, smells and sounds.

Building Electrification: We eliminated fossil fuels from the project. The project is 100% electric, including the mechanical heating and cooling systems, and the commercial and teaching kitchens.

Renewable Energy: We embedded a rooftop PV system which powers the entire project.

Rooted in Community Health: Low impact, healthy, natural materials were prioritized. Locally made earth block and regionally reclaimed wood were used extensively for the building enclosure and dining space, significantly reducing its footprint. Artisanal ceramic tiles and FSC-wood tables showcase the school's commitment to support local talent while reducing transportation emissions.

Sustainability Outcomes: The Guild and Commons is LEED Platinum and the first project to be awarded both Zero Carbon and Petal Certifications by ILFI (it was the first Zero Carbon Certification in California, and the fourth Petal Certification in the state). It was recognized with numerous sustainability awards including an AIA COTE.



of nature with the comforts of shelter.

Sonoma Academy's guiding principles of community, exploration and innovation, coupled with a humanistic approach to education, were the inspiration for the Janet Durgin Guild and Commons.

Scope of Work and **Budget**

From the onset, Sonoma Academy wanted to erect a healthy building that would make their rural campus more resilient. The school already had 205-kW of PV installed, but they knew they could do better as they expanded operations. For the Guild and Commons, better translated to committing to a Net Zero Energy and Zero Carbon facility focused on improved IEQ. This meant targeting three sustainable benchmarks concurrently — LEED, Living Building Challenge, and the WELL Building Standard Education Pilot. It was the first project in Sonoma County, and one of the few projects to do so! It also meant tightening the building operational strategies and construction program to meet energy goals.

Scope of Work: To achieve embodied and operational carbon goals, we relied on passive design strategies, connection to the outdoors, building electrification, and sourcing regional, healthy materials.

Program: Student center, community gathering and food service center, teaching kitchen and garden, indoor / outdoor maker spaces, digital media lab, rooftop garden

Budget: \$26 million. Based on a life cycle cost analysis, the building is expected to reduce overall ownership costs in the long term, including operational and maintenance costs.



At a Glance

Site/Building 19,500-sf building located on a 34-acre campus surrounded by 1,000-acres of protected open space at the base of Taylor Mountain.

Student Body The school boasts a diverse student body -35 students from 30+ towns/cities with 30% identifying as students of color: 17 languages, other than English, spoken at their homes.

Tuition Assistance 50% of families receive approx. \$4.4M in tuition assistance annually.

Sustainability Actual EUI before renewables is 38 kBtu/sf/yr, 80% of the building is naturally lit, 87% of the site area supports vegetation with 100% of the flora native or climate appropriate.

Renewable Energy The energy-efficient buildings are powered by onsite solar panels making the entire campus Net Zero Energy. The Guild and Commons powers itself!

Water Conservation A rainwater catchment system captures, stores and reuses rainwater, with the school recycling approx. 800-gallons of greywater per day.

School & Community Research and Engagement

Community: Sonoma Academy is the only private, independent, college preparatory high school in Sonoma County. The school is located at the base of Taylor Mountain in Southeastern Santa Rosa, a rural area located a few miles from downtown. While Santa Rosa is the largest city in California's Northern wine country, and only 60 miles from San Francisco, the county maintains a small-town, outdoorsy feel with its vast network of trails and parks. In addition to being home to a number of regional state and federal offices, high-tech, manufacturing, retailing, and tourism (one of the most important wine regions in the world) contribute to Santa Rosa's economy.

The school community is diverse with students hailing from over 30 cities and towns across Sonoma, Marin and Napa counties. About 30% of the student body identify as people of color. And there are 17 languages, other than English, spoken at their homes, including Spanish, Chinese, German, Russian, Hungarian, Swedish, Portuguese, Italian, Farsi, Urdu, Hindi, Tagalog, Malaysian, Balinese, Indonesian, and Japanese.

Name Challenges: Initially, the project was named the Grange and Studios. However, due to a trademark, the name was changed to the Guild and Commons and officially named the Janet Durgin Guild and Commons, after the founding head of school. The purpose of the name is to communicate the building's role in the school curriculum and in the community.

The Commons addresses the community's need to break bread together and to teach students about food systems and their relationship to the economy and environment; the *Guild* program allows students to address real-world, hands-on design

challenges in a suite of studios where they can put engineering and fabrication ideas into practice.

Available Assets: The 34-acre campus, set amongst grassy knolls and open spaces rich in flora and fauna, the panoramic views of the valley, and the 205-kW of PV arrays already installed on the grounds.

Stakeholders: The Board of Trustees, faculty/ educators, students, parents, policymakers, the business community, and residential neighbors.

Justice, Equity, Diversity and Inclusion: Hearing from many voices led to a more inclusive design as well as giving back to the community. Committing to an all-electric facility, including the cafeteria, opened conversations about food culture and devising a menu to appeal to a broad palette. Menu conversations paved way for discussion about the food supply chain and the importance of cultivating healthy foods, which was weaved into the curriculum. Students harvest the school gardens with edibles making their way onto the daily menu. Meanwhile, the teaching kitchen educates students through hands-on application about food, nutrition and healthy lifestyle.

To ensure the greater community thrives, the project sourced only regional resources and tapped local talent.

Equity is addressed one step further through the school's Connections program: 10th graders learn about sustainability and the connection between the environment, the economy, and the concept of equity; 11th graders lead weekly workshops at two under-served, neighboring local elementary schools.

Testimonials

- Rishi
- air. Gio
- solar. Annie
- noses. Arav

Source for student testimonials: Acterra BEA https://www.youtube.com/watch?v=VtP4gFib29I

They took time to understand our objectives and embraced our design concepts....They worked in tandem with our faculty and educational leaders and were able to translate our ideas into a design that not only represents our mission, but is also actively in dialogue with the school's surroundings. — Janet Durgin, Founding Head of School

I personally can't imagine life without the Guild and Commons. I go there basically every day to, you know, to study, to eat, to just hang out with my friends. - Vito

It is really interesting to see our impact on our climate and our environment. We reuse all the rainwater run-off. It moves through these planter boxes. And from there it is put through another filter. — Maya

We are learning a lot about how the Guild and Commons is, um eco-friendly. - Gavin

It was pretty interesting to learn how you can make buildings differently with different types of wood and how one is more eco-friendly --

It uses solar panels instead of fossil fuels which reduces the CO2 emissions into the

Not only does the living roof provide a home for many plants and animals, it also has

I think it is really good that kids are being educated on stuff that usually goes under our

School & Community Research and Engagement

Community Engagement: Community is at the heart of the program. We took an integrated approach every step of the process, educating the community, empowering stakeholders and policy makers, and challenging the AEC industry to target multiple benchmarks. Early on, we collaborated on how place-based relationships could inform the system selection, planning and details. Reflecting the school's act locally, think globally commitment, we facilitated conversations with teachers and students, followed by neighborhood coffee chats among community members. We met with regulatory agencies to explore policy changes on reclaimed water strategies, reduced carbon materials, and alternative energy sources. Even in environmentally-forward California, we worked overtime with the municipality to implement strategies ahead of code, such as geo-exchange systems and low carbon masonry units.

Educational Specifications: Sonoma Academy developed a "Guiding Principles, Actions, Standards, Measures and Resources" document, outlining essential educational concepts and facility needs, including considerations for community values. This document guided the design and construction of the *Guild and Commons* as well as the curriculum.

Sonoma Academy Sonoma Academy Guiding Principles, Actions, Standards Measures and Resource GUIDING PRINCIPLE **ACTIONS / BEHAVIORS** STANDARDS, MEASURES, RESOURCES ECOLITERACY Recognize staffulty and student We consciously look for opportunities to extend the principles of social and emotional intelligence contributions to further ecoliteracy -AS WE RECOGNIZE THAT to include knowledge of and empathy for all living IT IS NATURE THAT Resources systems and embed these principles in our SUSTAINS ALL LIFE, IT Center for Ecoliteracy: curriculum. FOLLOWS THAT SA www.ecoliteracy.org CREATES A CULTURE OF Staff, faculty, and students explore the natural Core Ecological Concepts SUSTAINABILITY world with which we are interconnected. We A Systems Approach construct feedback loops to observe and analyze how the choices we make impact the natural world. We further implement these principles through our operating policies and daily acts. Monitor food purchases GOOD, HEALTHY, JUST Food-preparing and eating it-is one of SA's Real food: Increase the percentage of FOOD great pleasures and is incorporated into nearly real and minimally processed food every academic course. -FOR US, THE GROWERS, Local food: Increase the percentage THE PLANET We will prepare to build and fund our Grange, of food from local farms and which will serve as a center for the school and the producers community where we relish food. Resources



Of note: The push for resilient design was carried through construction. The general contractor set-up bidding and construction strategies, incentivizing sub-trades to achieve targets and maximize success in a saturated bidding climate. Construction processes leveraged material transparency for high-performance with the GC educating themselves on sustainability goals, sharing knowledge and process with the larger sub-community, (also members of the local community) who ensured Red List imperatives were met. Additionally, rain-filled construction schedules were met with lean construction techniques, positive attitudes, and a drive that spoke to the significance of the project for the community.

Educational Environment Design

School Mission and Vision: Founded in 2001 by members of the local community, Sonoma Academy offers a rigorous, independent, college preparatory environment and curriculum. It calls its students to be creative, ethical, and committed to learning. The school nurtures inspiring teachers, engages with the surrounding community, and helps students communicate across cultures as they prepare to become leaders in a dynamic world.

"Sustainability at Sonoma Academy really starts in our mission. We are committed to developing young leaders. And sustainability and saving the planet is one of the issues they are most passionate about." — Janet Durgin, Founding Head of School

Multidisciplinary and cutting-edge, the goal of the *Guild and Commons* is to create a culture of design-minded thinking to inspire students to believe in the power of their solutions. Rooted in a belief that learning occurs best in the context of connected community, and that exploration makes explorers, the project provides the spaces to learn about the issues they'll face in the world. It gives students the ability to ask the hard questions, and the tools to answer them.



Sonoma Academy's Board of Trustees adopted a series of "Guiding Principles of Sustainability" that have been used to guide and shape our new construction projects and adaptations to our curriculum."

THE COMMONS: Serves as a multiuse dining and learning center. Home to the cafeteria and teaching kitchen, students are exposed to food systems and their relationship to the economy, and are taught about environmental stewardship (induction ovens, biophilia, building electrification, sustainable gardening).

THE GUILD: Promotes hands-on learning and exploration of maker spaces (wood and metal shops), digital media (graphics, film), and recording studios where students put engineering ideas into practice. Large, glazed doors open to a central courtyard that doubles as classroom, park and gallery.

STEM-Focused Learning, Flexible Indoor-Outdoor Spaces

The green movement and demand for sustainable schools complement much of America's core educational mission of STEM-focused learning.

Sonoma Academy modeled a new kind of educational experience with every aspect of the project an opportunity to advance understanding of the region and educate students about becoming environmental stewards. The school is teaching conservation holistically with sustainable building design shaping curriculum and a way of life.

The elemental building materials are exposed and double as the interior palette. Lines systematically and stylistically guide students and staff through spaces.

Flexible indoor-outdoor spaces optimize floor space by making sure everything does at least double duty. Major spaces have movable walls that adapt to new programs. Coiling doors expand learning areas as classroom needs change. The cafeteria's open floor plan serves as a collaboration hub with moveable tables, and distributed data and power, that allow for endless configurations and uses.











Curriculum

Sonoma Academy is educating citizens of the world, and as such, has embedded conservation into the curriculum where students better appreciate nature, value natural resources, and understand the importance of protecting the environment.

The Built Environment

All spaces are learning environments. When students are exposed to natural light, have access to good ventilation, and are surrounded with healthy, sustainably-produced materials, they learn better. Teachers also have a greater sense of satisfaction and wellbeing.

Eco-Literacy

Sonoma Academy extends the principles of social and emotional intelligence to include empathy for all living systems. Students develop concern for the natural world through: the Humanities program that revolves around how geography shapes culture, Exploratory courses that focus on food and the garden, and the Student Sustainability Leadership group that teaches environmental stewardship. Students also learn how to evaluate issues and design solutions either through scientific and design principles or activism and advocacy.

Food and Food Systems

There is nothing more central to a community than its food. Providing healthy food that is produced as sustainably as possible is central to the Commons food program where the salad bar often features produce grown on campus. The food service provider works with the Academy, and the students, to plan menus, including vegetarian, vegan, gluten-free, and international fare.

Robust recycling and composting programs ensure the school is meeting the Sustainability Guidelines set forth by the Board of Trustees.

The teaching kitchen is used as a spring broad to educate students about food culture and traditions, food prep, and nutrition.







Exploratory Courses

Empowers discovery, supports various learning and teaching styles

Every semester, students take two different Exploratory courses allowing them to try new things, discover interests and talents, and have fun in a stress-free environment. These classes are also opportunity for teachers to highlight their personal interests and passions, as well as to learn or try something new themselves.



The Guild and Commons houses state-of-the-art maker spaces fitted with tools for creating, from table saws and sanders, to 3D printers and green screens, as well as a teaching kitchen. A variety of academic courses, along with the Intersession and Exploratory courses, give students the chance to utilize the studios to design, build and refine. These spaces provide room for students to practice the art of design thinking as they imagine, model and prototype their creations, whether they are robots, pottery, or original podcast productions. A deep knowledge of this process serves students in the studios, classrooms, and the world as they learn to experiment and stay nimble in the face of setbacks.

Physical Environment Design

CLASSROOMS

GALLER

GYMNASIUM /

LIBRARY

GUILD &

The Y-shaped building draws inspiration from the natural and campus context, and is oriented to frame views, create outdoor learning spaces, and engage with its surroundings.

FITZSIMMONS



ATHLETIC FIELD



LOWER





Connection to Habitat

Focused on making students more mindful of natural processes and biodiversity, the *Guild and Commons* is designed to connect various habitats while creating healthy spaces that trigger curiosity.

Place + Habitat: Champion the beauty of the site

The design took cues from the rural setting. Recognizing the power of the views west and east, the strength of the hills and landscape stretch through the campus. The sweeping upper floor captures panoramas of the grassy knolls and the valley beyond. The lower level tucks into the hill and opens up to a planted quad. Visible from both levels, this courtyard is connected by meandering pathways, smaller gardens, and terraced landscaped learning environments.

People + Habitat: Encourage movement

The campus offers students ample opportunity to interact with their surroundings. Whether they are strolling along the exterior stairs that carry them past garden beds, walking a few steps from the classroom to an adjacent courtyard, or sliding the moveable sun screens, be it to play with light or open the spaces to the vistas, students are encouraged to enjoy and be immersed in nature.





Water + Habit: Celebrate water

Productive gardens support natural ecological processes, attract pollinators, and encourage students to move about. They double as water passageway, guiding the flow of storm runoff throughout the site.

Shelter + Habit: Build with nature

The building design not only exposes students and faculty to fresh, outside air, but the expanses of operable windows also allow the building to breathe on its own. The structure itself is constructed from nature — cross-lamented timber, Western Red Cedar, earth block — healthy materials intended to be discovered and experienced.

Gardens + Habitat: Inspire students

Diversity is abundant where two distinct plant communities collide — the garden landscape and the grassland / oak woodland mix. We created a rooftop garden to respect and enhance this local ecology. For the ground-level gardens, groupings of perennials flower at different times of year, providing food and shelter for pollinators and wildlife. The intent is to create visually dynamic gardens throughout the seasons to inspire and motivate students. In addition to visual impressions, smells (fragrant blooms) and sounds (birds chirping) further the multi-sensory experience.









Celebrating Natural Resources

Every inch of the building and landscaping is designed to take advantage of natural resources while considering ecological values that extend beyond first-cost thinking.

The project is an interplay of indoor and outdoor experiences, inviting movement and interaction, asking visitors to understand how the day feels or how the water sounds as it moves down rain chains. It's 80% naturally lit, wrapped with operable windows and coiling doors for natural ventilation, and has low-e glazing, dimmable fixtures, and light sensors. Deep overhangs provide shelter from the elements. Adjustable exterior blinds and moveable wooden screens play with shadow and light while mitigating heat gain.

Nearly 87% of the site area is designed to support vegetation with 100% of landscaped areas covered by native and climate-appropriate plants that support indigenous and migratory animals.

Water is part of the everyday experience. Runoff is captured from the hardscape and green roof, and routed through terraced rain gardens. A gravity-based filtration unit directs the water into a 5,000-gallon cistern located near the campus entrance a reminder of water's scarcity and value. Stored water is pumped to the building where it's further treated for toilet flushing, offsetting approximately 180,000-gallons of municipal water use per year.











Water Efficiency, Part of the Everyday Experience





Captured stormwater irrigates landscaping, lessening the demand on the city's infrastructure. The wastewater system accounts for 88% of the building's total non-potable demand, offsetting 1.8 MGPY.



Justice, Equity, Diversity and Inclusion

The *Guild and Commons* brings teachers and students together under one roof in a social and communal atmosphere. Whether students are eating together, taking an elective course, or just hanging out between classes, the building services a broad range of interests and cultures, all while teaching about food and social justice.

Cooking, wood shop, ceramics — these are just a few classes offered, erasing the lines of traditional gender roles and elevating trades/ vocations to promote financial equity among professions.

Adaptable Spaces Encourage Movement

The butterflied roofline welcomes students, inviting them to wander. Exterior stairwells, prominently placed, promote daily exercise. Sliding screens open classrooms to the outdoors. Retracting glazed walls and doors encourage movement throughout the gardens and landscape.

Movable walls in the Guild serve as writing surface, can be used for noise pollution, and allows for adapting to new programs. Every space is multifunctional, intended to connect students to the larger campus, and to each other.



Sustainability and Wellness

Instead of solely targeting zero net energy (total operational carbon), we also targeted embodied carbon (carbon linked to manufacturing, transport and construction of building materials) into decisions about system selection and materials. As a result, the project relied on connection to the outdoors, passive design strategies, building electrification, and sourcing regional, natural materials, including reducing the interior material palette by 60% to achieve embodied and operational carbon goals.*

*The project was projected to achieve an EUI of 43 kBtu/sf/yr before renewables; the actual EUI before renewables is 38 kBtu/sf/yr.









Carbon Neutrality Begins with Design

Site Specific: Given the site's steep grade, the lower quadrant has a large elevation that is holding back the slope, maintaining a cool ground temperature, perfect for maker labs and wood shops.

Earth Block: Reduced cement block, made from regional soils, highlight reduced carbon sourcing and specifics of place. These long-lasting, low-maintenance compressed blocks produce low carbon emissions and are energy efficient.

Regional Resources: Materials were sourced within a 500-mile radius to help lower transport related carbon emissions and to support the local economy.

Responsible Wood: Reclaimed wood is integrated throughout and all wood is FSC-certified.

Carbon-Neutral Electricity and Renewable

Energy: A rooftop solar array powers the entire *Guild and Commons.* Coupled with the energy provided by the existing solar array on campus, and the remaining electricity purchased, the school is 100% carbon-neutral for electricity needs.

Cooling Strategies

Natural Lighting: About 80% of the building has access to daylight, reducing the need for artificial light. Careful planning ensured that the kitchen prep, workshop, and teaching spaces have views for everyone to enjoy.

Natural Ventilation: Glass doors and walls of operable windows, with high-performance glazing, reject solar gain while allowing visible light through.

Overhangs: Deep roof overhangs extend shading to block direct sunlight from hitting the building, including a canopied trellis that diffuses light for optimal comfort.

Screens and Shades: Exterior wooden sliding screens mitigate glare and provide a flexible environment for the upper floors; the panels can be easily and strategically placed to block sun. Automated exterior sun shades, on the south, tune for user comfort.

Landscape: Vegetative landscaping helps modify the air and ground temperatures while trees lend shade and natural cooling.

Pavers: High-performance concrete pavers help mitigate heat gain.

Green Roof: The living roof removes heat from the air through evapotranspiration while plants support pollinators, provide insulation, and keep the undersides of the photovoltaic array cool, enhancing their efficiency.







Innovative Passive Strategies, **Building Electrification**

Utility costs continue to be a huge operating expense for schools with HVAC systems consuming a significant portion of a building's total energy. We designed this project to limit the use of mechanical heating and cooling while still keeping the classrooms comfortable.

Taking advantage of the mild Bay Area climate, natural ventilation and ceiling fans provide cooling and a high degree of user adjustability. In extreme months, electric-powered radiant heat and cooling is used.

In order to minimize direct solar admission through the windows and doors, we paid close attention to the building's orientation and shape. We led with natural systems, which reduce energy loads, equating to long-term cost-savings and a smaller carbon footprint.

We also went all-electric in the kitchens! As we transition towards a decarbonized future, one of the last frontiers for abandoning natural gas is in food prep. With energy peaking at 400 kBtu/sf/year, commercial kitchen loads can be significant. We tackled the "kitchen problem" by integrating all-electric appliances, including induction cooktops, which eliminate energy consumption while idling. We worked with the food service provider, and the school, to tune choices and schedules, resulting in aggressive load reductions in the maker and food service equipment (commercial kitchen uses only 90 kBtu/sf) in order to get to ZNE.

Going electric also allowed us to address the health and safety issues associated with burning natural gas, including impacts on indoor air quality and increased potential for burns.

The Guild and Commons is completely fossil-free and uses no power from the grid.









Energy Efficiency — Reduces Operational Carbon, Promotes Wellness

Geo-exchange and radiant heating and cooling in the slabs and panels drive down energy use and reduce water demand compared to conventional forced-air heating systems. The electric system provides groundwater directly to the radiant manifolds when the groundwater is at an appropriate temperature, providing 10-15% of the annual cooling demand. The mechanical system captures waste heat from the ventilation air and refrigeration system in the commercial kitchen, and uses it for space heating and domestic hot water production. The radiant floors, coupled with the ceiling tiles, ensure efficient, quiet, comfortable learning spaces. Plus, they provide healthier indoor air quality as allergens are often kicked-up with traditional duct-systems.



Healthy Material Palette, Sourced Regionally

Timber, earth block, steel, and glass were the foundation. Low impact, healthy, natural materials were prioritized. LBC Materials Petal, ILFI's Red List filters, and WELL framed material selection *by* requiring their chemical disclosure. Selection focused on health and transparency; materials with low-VOC and in compliance with CDPH Standard Method v1.1-2010 were sourced. Materials were cross-referenced and none of the chemicals on ILFI's Red List went into the building. Reclaimed wood, and naturally heat-regulating and water-resistant earth block, were used extensively, significantly reducing the footprint.



Embodied Carbon

One particular challenge was the sloped site, which dictated the building be partially below-grade. While this configuration is excellent for the envelope's thermal performance, it wasn't for the embodied carbon footprint.

THE BAD: The building required a carbon-intensive retaining wall.

THE GOOD: This led to innovative materials (earth block) and innovative systems (geo-exchange, induction stoves), which was good for the total carbon footprint, budget and aesthetics.

In order to curb greenhouse gases over the project's entire lifespan, design decisions were based on global warming potential (GWP); a measure of how much heat a greenhouse gas traps in the atmosphere up to a specific time horizon, relative to carbon dioxide. We opted to build the retaining wall with a mix of earth blocks and standard concrete

was cut.

Additionally, low embodied carbon materials were used for other building parts, such as crosslaminated timber for the roofing system and reclaimed cedar for siding, which resulted in 25% cost savings from original fresh cut. All materials were sourced within 500-miles, reducing transportation emissions and supporting regional businesses.

masonry units. As a result, 32% of the wall's GWP



Embodied Carbon

Reclaimed Cedar, Sourced Regionally: Reclaimed wood – overall ~2% of embodied carbon on project. Reclaiming the wood (conservatively) represents 25% carbon savings, adds to the story, and reuses an existing material.

Timbers, milled from sunken logs removed from a bridge project in Oregon, were used for the trellis in

the Commons. Wood, reused from an old train tunnel in Oregon, was used for the rooftop rain screen. And wood from an old house in Mill Valley, Calif. was used for the paneling in the dining area.

Watershed Block: In lieu of concrete masonry units (CMU), we sourced tamped-earth construction blocks, which use 50% less carbon than concrete.

For the retaining wall, we used a mix of earth block and CMU. If all masonry walls were CMU, it would account for ~5% of building's embodied carbon – (includes steel and grout). Using even half watershed block reduces the carbon footprint of the wall by 15%.

Cross Laminated Timber (CLT): CLT, an innovative solid wood, offered design flexibility with low environmental impacts. It is lightweight and strong, and has superior acoustic, fire, seismic, and thermal performance. Plus, it generates almost no waste onsite since the panels were prefabricated off-site.

Results of the Process & Project

Weaving in the Client's Perspective

Creating forward-leaning, sustainable, community-driven educational spaces that reflect school values, takes more than program identification, square footage and budget targets. It takes engagement, heart, and deep commitment to a client's vision.

When Sonoma Academy embarked on their campus expansion project, they committed a year to understanding the technical and nuanced requirements. The resulting documents and tools guided the design team to create one of the most sustainable buildings in the country.

Using Sonoma Academy's guiding principles of creativity, inclusive community, exploration, and innovation, we used architecture as a platform to excite students to become involved in their community and schools, all while achieving the Academy's sustainability and energy commitments.

Client and Community Impact

In today's techno-centric world, students spend more time looking at their devices than the beauty beyond. Computers seem to be their only window to the world. The school wanted to change that and have their pupils look up and out, to be connected to nature, and to bring the school and community together through dining and making. Not just through their teaching programs, but also through the physical environment.

The building achieved this with culture-rich, naturally-ventilated and lit classrooms that feature artisanal regional furnishings, craftsman-made tables, and student-made lamps. Courtyards, easily accessible throughout, beckon kids to venture outside to experience the world.

The school's commitment to community and the region's future health opened avenues for nontraditional building and regenerative strategies that financially benefitted the local and agricultural communities, including a food program — a partnership with nearby farms and ranches to provide healthy meals and educate students about the food cycle.





students and teachers.



Place for Community

Schools are essential for the community. They're places where families and kids learn to be successful members of society. And they create a culture of collaboration and shared responsibility among the broader community. This is especially evident in Sonoma Academy who often opens its doors to essential workers and other neighbors:

- At one point, the project was four miles from the 2017 Northern California Firestorm; the campus was used by firefighters as a place to recharge.
- To promote longterm sustainability and student and community involvement, an onsite dashboard shows total energy performance in real time.
- Outdoor events, open to students and their families and friends, bring the community together in a welcoming environment.



See the Testimonials on page 4.

Impact on the Broader Community

The project has been the subject at several AEC and K-12 conferences, advancing the conversation around socially responsible, resilient design, and where schools and school districts can head in terms of local, healthy, sustainable building materials. Moreover, it has led the dialogue about a holistic approach to conservation in education.

The design strengthens the strong sense of place apparent in the school and tells the story of the region's architecture, landscape, people, sustainability, and everyday life.





