



**Sierra Grande PK-12 Campus**  
Blanca, Colorado





## EXECUTIVE SUMMARY

Located in the heart of a remote, southern Colorado community and near the beautiful Mount Blanca, the new Sierra Grande PK-12 School is a transformational element for Sierra Grande School District — bringing new educational opportunities and healthy, flexible learning environments.

As the only school in its district, the new facility provides both next century educational opportunities for all students, as well as a place for community to gather. The design process involved several workshops and was done in close collaboration with students, parents, teachers, and community members; a place for the people, designed by the people.

The new school supports social and academic activities through a variety of large and small group gathering areas. Featuring a variety of flexible furnishings and functions, these spaces make each learning community unique. High school students who attended the old school remark that they appreciate these new, varied learning environments for quiet, focused study, while they've observed younger students becoming more self-directed.

Celebrating play and movement is also an integral element of the school's design. Beyond a gymnasium, fitness center, and outdoor recreations areas, the building also features a climbing wall near the central dining commons, and another smaller one for the elementary students in an area with a balance beam and sensory wall within their learning community.

As the first known school in the state to be designed according to Passive House principles, Sierra Grande PK-12 features a super-insulated building envelope and simplified mechanical systems. This unique approach lowers both maintenance costs and needs—a crucial benefit given the school's remote location.

Sierra Grande PK-12 School's commitment to incorporating sustainable and resilient features, promoting wellness and physical activity, and fostering equity and inclusivity, makes it a model for modern educational facilities.

## SCOPE OF WORK AND BUDGET

Architecture, Interior Design, Regenerative Design

Total Project Budget: \$48,993,091





## SCHOOL & COMMUNITY ENGAGEMENT

Sierra Grande School District is located adjacent to the Blanca / Ft. Garland Community Center and benefits from hosting events and sharing facilities. This was paramount in 2018 when the location became a home base for the response to the enormous Spring Creek Fire that ravaged both sides of La Veta Pass. While hosting fire crews on campus, some school community members lost their homes. Coming through that terrible challenge and facing a long process of environmental regeneration, the school community still saw the importance of making this project possible, from the initial bond election victory later that year, and winning a BEST Grant in 2019. In a place shaped by extreme climate conditions, the members of the school community strongly influenced the design of the new school through the design workshops and beyond.

Among these, was a workshop focused on regenerative design, with the objective to better understand the values and goals of the community. The well-attended session resulted in clear prioritization that focused on energy and water efficiency, daylighting and views, and a healthy indoor environment. All of these were non-negotiable criteria for the design from that day forward.

State-of-the-art athletic facilities, the CTE and Innovation Labs, and assembly spaces are all large enough to accommodate community events, and the school can be securely partitioned off for after-hours events. The Gym Lobby acts as a pre-function space and features an interactive display wall where anyone can access information about the district's history, view past yearbooks and trophies, and explore the high-performance design features of the new school. Incorporated into the site design is a standalone concrete Senior Wall, decorated for the first time by the Class of 2022. Adjacent the historic school bell is mounted, and nearby a new panther sculpture now greets all visitors to the campus.







## EDUCATIONAL ENVIRONMENT DESIGN

Sierra Grande PK-12 School's learning environment is a combination of formal and informal learning areas, both indoors and outdoors. Social and academic activities are supported via a variety of large and small group gathering areas.

Designers specifically avoided traditional, long double-loaded corridors, instead introducing open, informal learning or small gathering places for students. These spaces incorporate a variety of furnishings and colors to make each learning community unique. High school students who attended the old school have commented that they appreciate these new, varied learning environments for quiet, focused study like college entrance exams, while they've observed younger students learning to be more self-directed.

Play is also celebrated in the design of the building; in addition to the school's gymnasium, fitness center, and outdoor recreations areas, the school features two climbing walls—one near the central dining commons, and another smaller one for the elementary students in an area with a balance beam and sensory wall.

At the heart of the school is a central dining commons flooded with natural light and looking out to the Rocky Mountains. A large wood stair provides additional seating for the cafeteria and supports informal gatherings while framing a stunning views north to Mount Blanca. Atop the stair, a mural selected by students leads into an informal gathering space shared with the library.

After visiting several other schools during early design phases, Sierra Grande's stakeholders were interested in adding a flexible, multi-use lab space where learning could be on display for students and visitors of all ages. The result is the innovation lab, which is located adjacent to the main entry doors and has a direct connection from the outside patio to the dining commons, making it a great space for student and community use alike. In addition, the new school has dedicated art and music rooms, a science suite, a performance stage in the multi-purpose auxiliary gym, a main gym, and a fitness space available to the community.

Hands-on learning opportunities continue to be popular with students, yet the district faces a challenge common for rural schools – recruiting and retaining specialized educators. As a result, the Career and Technical Education (CTE) building was purposefully built as a stand-alone structure with a flexible lab space to support a variety of career pathways, such as automotive and welding. The CTE building also anchors the outdoor community spaces and hosts the concessions space for the athletic fields.

“Our community has always felt like it’s been ten years behind. And it doesn’t feel that way here anymore.  
**And that’s really awesome.”**

ANIKAH ROYBAL, SIERRA GRANDE PK-12 STUDENT COUNCIL PRESIDENT





## RESULTS OF THE PROCESS & PROJECT

The planning process for the Sierra Grande School District New PK-12 Campus was highly collaborative and designed to gather and act upon valuable input from stakeholders from the beginning. The Sierra Grande School District was facing numerous costs and challenges with trying to maintain their 1950's-era school building. After much discussion, the school board determined pursuit of a BEST (Building Excellent Schools Today) Grant to fund a replacement school was their most prudent option. Although the town supported the bond issue for the matching funding on their first bond election attempt in 2018, it took a second effort to earn a successful BEST Grant in summer 2019. With strong community support from the start, it was imperative for the planning and design process to be inclusive and transparent with the community, to prove the wisdom of their investment decision.

In the very first discussion together in the project interview, Sierra Grande stakeholders shared their latest thinking and enthusiasm for re-imagining the original master plan concept to take advantage of their stunning views of Mount Blanca and the San Luis Valley. Next, at back-to-school night, students and families explored design ideas and expressed excitement about imagining the future.

The School Board designated an Executive Design Advisory Group (EDAG) comprised of staff and Board members who were deeply engaged and guided project decisions from early programming and planning through final completion.

The design team worked closely with the EDAG to establish a broader Design Advisory Group (DAG), comprised of staff, Board representatives, parents, students, and community members who could provide input from diverse perspectives. The demographic makeup of the DAG was intentionally constructed to bring together voices that may not otherwise see themselves as contributing to the design process. A critical first task for the DAG was to create a Shared Vision for the new campus (below). The Vision was a unifying element for the DAG, which was reflected upon at design workshops, where DAG members engaged in myriad hands-on activities: they learned the constraints of the existing school and site, helped refine the space program and identify shared uses, created regenerative (sustainability) design goals, and provided input interior and exterior finishes palettes.

### Shared Vision for the new Sierra Grande PK-12 School

*"To create and build a new school that reflects the values and cultural diversity of our small, rural community. It is a beautiful, modern facility that is safe, reliable and fully integrated with technology advanced learning environments. The school has learning spaces that are flexible and adaptable to the ever-changing needs of our students and teachers. It is a place of natural beauty with lots of natural light from windows and skylights to bring the outdoors into our classrooms. Landscaped areas that provide fun, outdoor learning spaces. It is a new school that is welcoming to everyone and brings pride to our community."*

Involvement continued through construction with numerous student, staff and community construction site tours and active engagement of EDAG members in the pursuit of certification by the Collaborative for High Performance Schools (CHPS).

Since the school opened over a year ago, students, staff, and community members have successfully transition to the new facility and continue to find new ways to use their new spaces. Building systems performance is continuing to be monitored and improved upon. Once the sitework was completed following demolition of the old school, the excitement to use the new football field was palpable in the community. The school was recently featured in a program by Rocky Mountain PBS where students, administrators and board members were interviewed about their experience and talk about how the project has met and exceed their goals.







## PHYSICAL ENVIRONMENT DESIGN

The physical environment created at the new Sierra Grande School is in sharp contrast to the old building it replaced. Where the old environment had almost no daylight and turned its back on the spectacular views in all directions, the new building includes generous amounts of daylight in all educational spaces and celebrates those views. Indoor air quality and thermal comfort were problems in the old school and have been replaced with an environment which balances excellent indoor air quality and thermal comfort with high energy efficiency.

An important opportunity driver for the location of the replacement school on the existing campus was the opportunity to site the building farther away from the very busy Highway 160. Students at the school have shared that they feel safer with the new site design, with the school and playgrounds set back from the road, and the new football and baseball fields as a buffer. Once located in a modular building attached to the back of the old school, the Pre-K now has its own secure entry point. The main school entry is prominent, yet protected from the persistent winds in the valley, while providing an inviting and secure entry lobby.

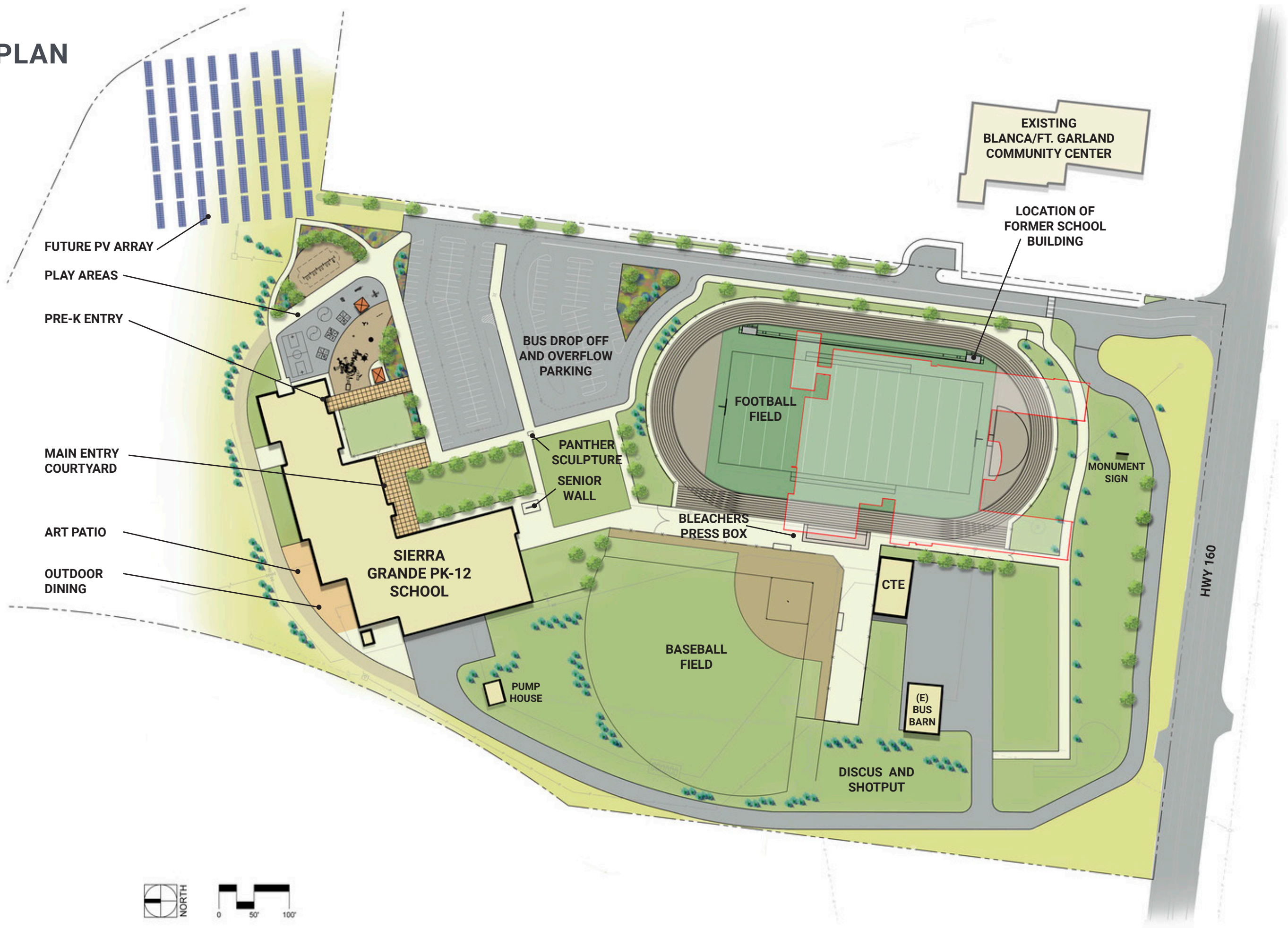
The design team took a fresh look at how to best integrate a high-performance learning environment with energy efficiency, and decided to implement an entirely new approach, following Passive House principles. This required a substantial increase in the insulating qualities of the envelope accompanied by a simplification of the heating, ventilation, and air conditioning (HVAC) systems. This increase in insulation necessitated employing different construction materials, including prefabricated metal sandwich panels for walls, stretched film triple pane glass, extra thick precast concrete insulated panels, and underslab bubble insulation. The simplified HVAC system is all electric, and extends to both the kitchen and science labs. Going all-electric for the new school was important in two ways. First, it allowed the district to move away from the unpredictable cost and supply of propane; and Second, sets them up to take advantage of their land area and the optimal conditions in the San Luis Valley for solar power production. A ground-mounted photovoltaic (PV) panel array could add to the targeted 46% reduction in energy use and enable the school to meet or exceed Net Zero Energy. Water is an extremely scarce resource in the area, and the new school required a new water system to be installed. The site was designed with water conservation in mind. The project is seeking certification from the Collaborative for High Performance Schools (CHPS).

The new school building relates to its natural surroundings in surprising ways. Although it's the only two-story commercial structure for miles, its height and form blend beautifully with the subtle foothills that are the only features separating the school from the dramatic Mount Blanca. The school's colors are black and white, which inspired the simple exterior palette of the dark metal wall panels and light concrete walls, which are already taking on the hues and fine-grained particulates from the nearby Great Sand Dunes. Steel rods in alternating blues, grays, and whites extend toward and create a distinctive visual connection to the brilliance of the blue sky in the valley, while also creating a unique sunscreen for select portions of the façade. With stunning views inside and out, the new school provides inspiration for learners, teachers, and visitors alike.





SITE PLAN

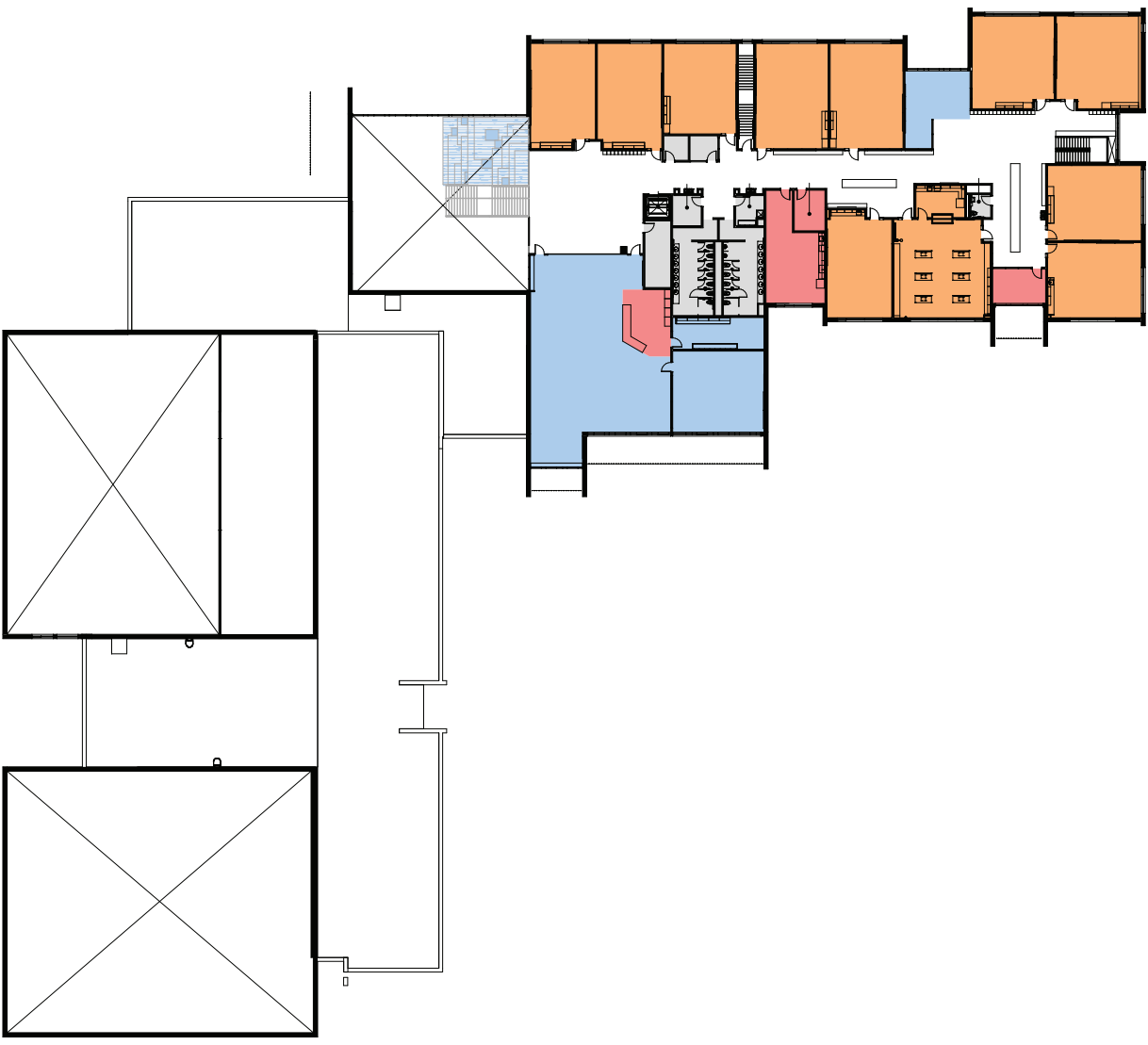




# FLOOR PLAN



LEVEL 1



LEVEL 2

- |  |   |  |   |
|--|---|--|---|
|  Administration |  Commons   |  Elementary |  Arts            |
|  Support        |  Athletics |  Secondary  |  Performing Arts |







## SUSTAINABILITY & WELLNESS

Through the design workshops with the community, there was clear direction and desire for a healthy, low-maintenance school facility that could adapt to different needs over time. Care was taken in the selection of exterior and interior materials accordingly. In addition to views to the natural surroundings, biophilia is enhanced through use of natural wood surfaces and images of nature in common areas. Natural linoleum flooring is low maintenance and can last for decades. Interior walls are typically stud-framed, which can accommodate reconfiguration in the future more easily than the former concrete block school.

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The new facility is all electric and no fossil fuels are used on campus. To achieve this, designers worked closely with faculty members to implement and train them on electric alternatives to typically gas-powered equipment, like kitchen stoves and Bunsen burners.

The design team worked with an independent cost estimator to confirm that, under the Passive House framework, the cost increases from an improved envelope were largely offset by the cost decreases from the simplified HVAC system.

Simplifying the building's energy systems through the Passive House framework was envisioned as both a cost and time-saving measure for the school, both critical considerations for a rural district with limited resources. This approach to systems was envisioned to create predictable, low-cost energy use over time while reducing the burden on staff to have expertise to maintain complicated building systems or risk those systems decreasing in performance and increasing utility usage over time.

The average Energy Use Intensity (EUI) among Colorado school buildings is 80. Typically, new schools have a EUI of 50-60. Sierra Grande PK-12's EUI will be between 20-30—just half of a typical new school built today.

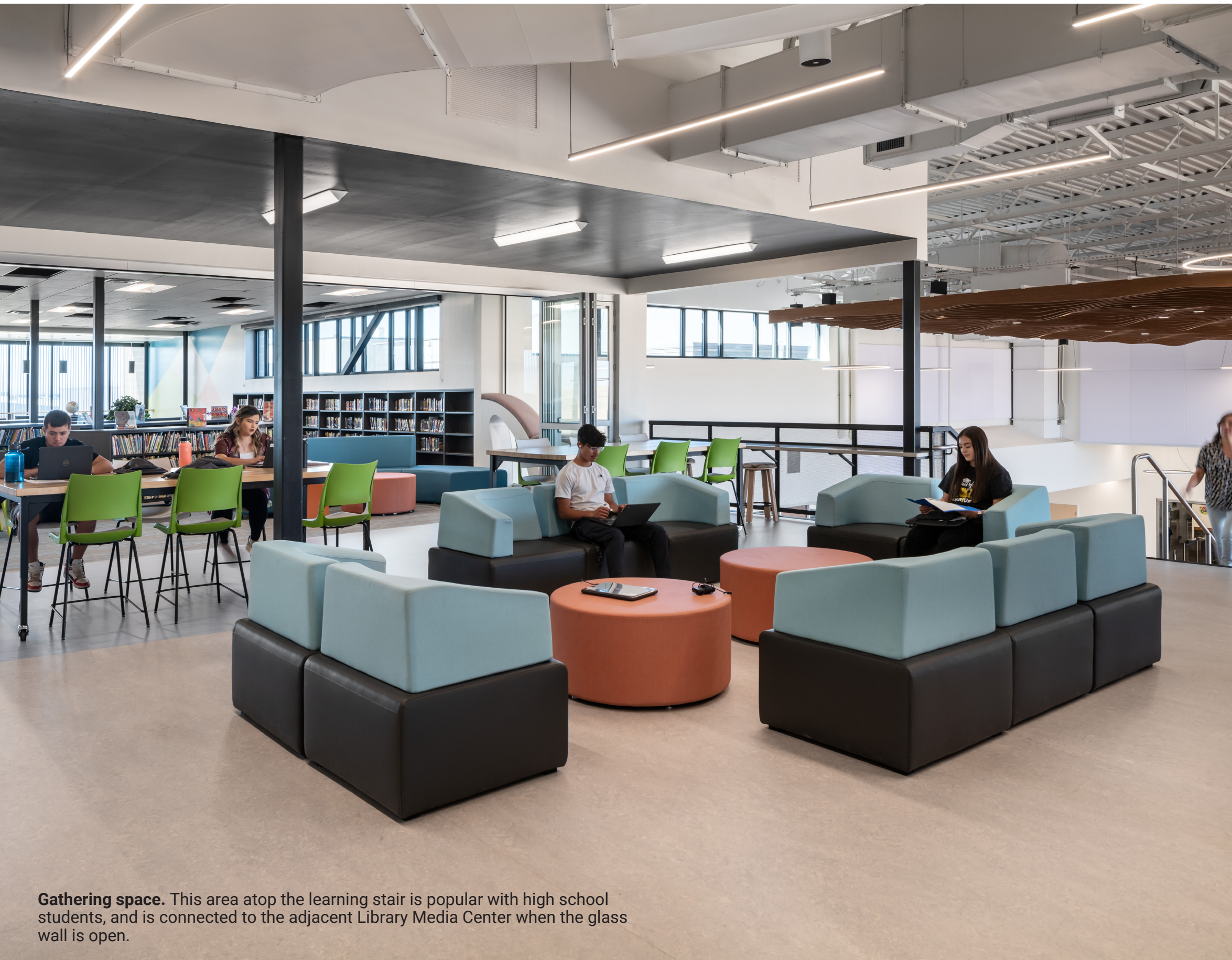
*"We want to be good stewards in our community. We want our kids to understand the process of sustainability. I thought it was really important for our school to highlight and showcase that."*

WENDY FISCHER, SIERRA GRANDE SCHOOL DISTRICT BOARD MEMBER









**Gathering space.** This area atop the learning stair is popular with high school students, and is connected to the adjacent Library Media Center when the glass wall is open.







**Design for multiple uses.** With limited resources, it was important for the design of spaces to support multiple uses. For example, the Elementary Gym (at left) features a stage classroom and telescoping theater seating.



























