ENERGY INSTITUTE

{ from high school to corporate life }

2019 James D. MacConnell Award
Association For Learning Environments

EXECUTIVE SUMMARY

THE POWER OF POTENTIAL ENERGY

When Houston ISD's Westside High School launched its Geosciences Academy in 2011, something unique was in the air.

Westside Principal Lori Lambropoulos worked alongside Dorris Richardson and the education arm of the IPAA (Independent Petroleum Association of America) to kick start this grassroots program. As the program ignited interest, HISD administrators began initiating conversations with industry leaders about the future of their workforce and what was needed to help them succeed. And an idea began to take shape: **what better place than the Energy Capital of the World to build a high school completely devoted to the energy industry?**

In 2014 work began with students, teachers, business partners, community and architects and countless others to make this dream a reality: The Energy Institute High School.

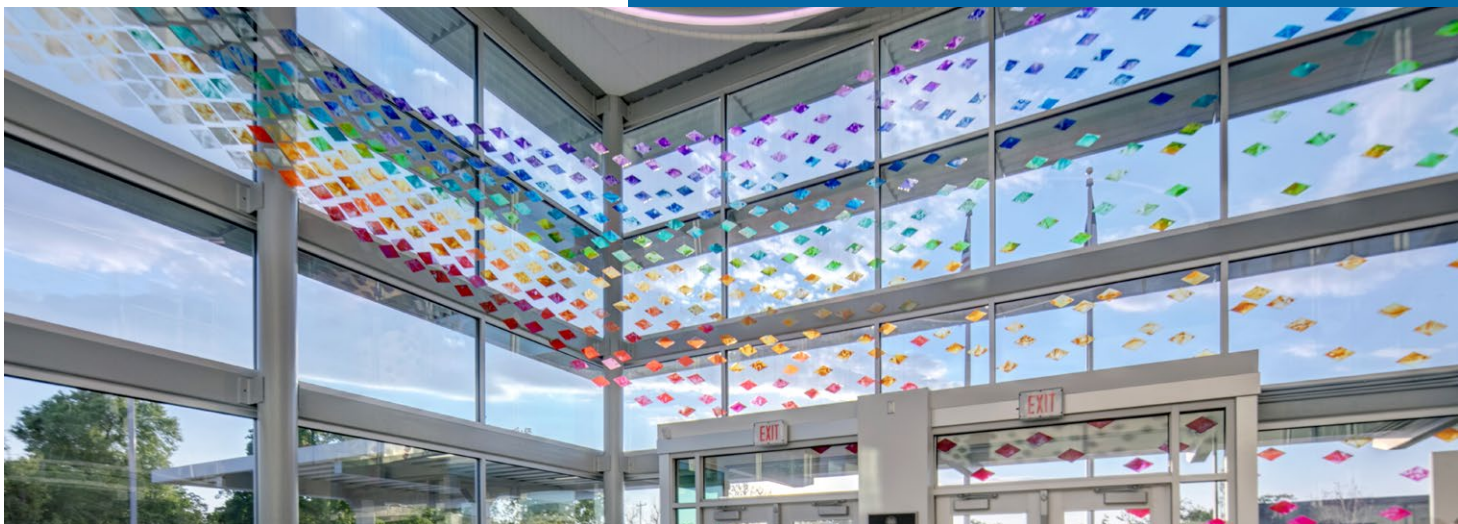
Open to all 9th through 12th graders across all of Houston ISD – Energy Institute connects academics with real world experiences in a wide range of fields, including Offshore Technology, Geoscience and Alternative Energy and core curriculum classes. Energy's curriculum is like no other high school curriculum in the country, specialized in the study of the Industry Energy.

HISD Energy Institute High School is the first school in the nation with a school-wide theme of Energy. Energy Institute High School's (EIHS) vision for learning goes far beyond that of a traditional high school. Students at EIHS will participate in authentic project-based learning that enables them to take ownership of their education. Learners will develop essential soft skills that will prepare them for the landscape of alternative energy, geoscience, and off-shore technology careers.

The basic organizational unit for this school is the **Learning Community**, consisting of general-purpose learning centers, teachers' work center, administrative spaces, small group rooms, extended teaching area, and science learning centers/wet labs. This concept provides a learning environment that is characterized by flexibility, a **sense of community for the students and teachers working and a safe/well-supervised environment**. Teachers have the option and flexibility within a cluster to create and organize learning environments that work for students and their learning styles.

TRANSFORMATIVE LEARNING ENVIRONMENT

During the planning and design process, stakeholders reinforced a desire for a design that would challenge the perception of a traditional high school. The facility's architecture makes a striking appearance in its design, elevating the stature of education and inspiring students to achieve. It also creates a high level of curiosity from the community about the creativity that's happening inside its walls. On approach to the main entry, it almost looks like you're walking into a company rather than a school. This was an important thread the design team wanted carried throughout the campus. The idea of the central courtyard with learning stair and writing surfaces was the idea of students who wanted an outdoor space that emulates the outdoor spaces where they intern at corporate campuses. Kids love it because it makes them feel grown up and important: "Oh my gosh! We're contributing." As you move throughout the three buildings, you'll notice a variety of collaborative teaching environments that promote innovation and give students continuous access to learning. One space that excites students and teachers is the "TED Talk" room. Students engage with industry leaders to give presentations on a world-wide platform. The furnishings and live video technology allow presenters to connect not only to the media wall and interactive TVs, but industry partners. In this information age, technology itself has torn down the typical walls that confine students and teachers to offices and classrooms: in the morning, students might be working on a project with people from Canada, and by two o'clock they might be connecting with people from Japan. "That's what we're doing. What better opportunity for students?"



SCOPE OF WORK & BUDGET

Situated in Houston's Third Ward community in a city that is home to more than 5,000 energy-related firms, Houston Independent School District (HISD) is paving the way for a new kind of energy boom – **industry-ready students versed in corporate culture.** Comprised of three buildings that converge at an outdoor learning courtyard the new campus supports students through collaborative learning communities.

$29,252,878
Budget

9-12
Grades

800
Students

116,000
SF

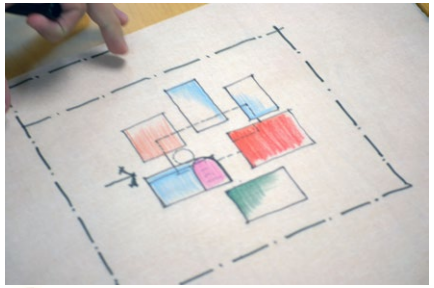
145
SF/student

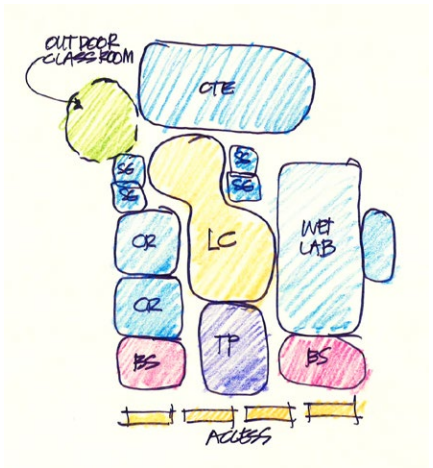
12
Acres

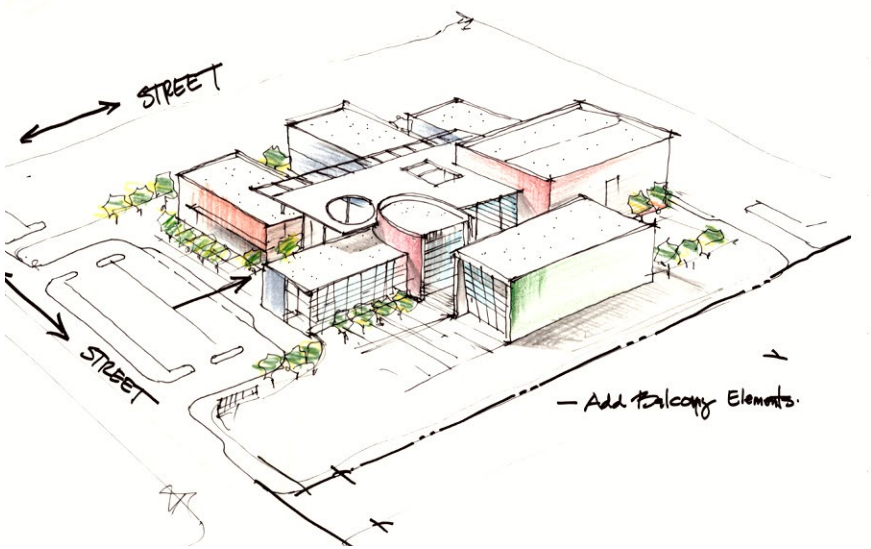
SCHOOL & COMMUNITY ENGAGEMENT

Energy Institute High School is a magnet high school in the Third Ward area of Houston, Texas. It is part of the Houston Independent School District and is the first high school in the nation that focuses on the energy industry. A project of this scope is a major revitalization for this part of the city.

The successful development of this project was due to the collaborative efforts of HISD, community members, industry leaders and members of the Project Advisory Team (PAT) consisting of parents, students, teachers and administrators. The work began with the detailed development of the Educational Specifications. The design process was kicked-off with a multi-day design charrette process we call **LAUNCH**. At the **LAUNCH**, teams worked together to develop preliminary design concepts for discussion.







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Energy Institute HS is committed to developing symbiotic relationships with our partners that will provide real-world project connections, relevant field experiences, industry certification opportunities, and internships. Learners will also participate in energy-focused competitions. Our partners will regularly engage through judging panels, in consultant roles on projects, and serve as learning mentors for students. Through critical collaborative partnerships and an industry support model, Energy Institute HS learners will leverage lifelong, positive relationships with the wider community, providing a truly limitless educational experience.

Chevron
lyondellbasell
SWN Southwestern Energy®
IPAA INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA
bp
Discover Fantastic Learning Opportunities
PESA PETROLEUM EQUIPMENT & SERVICES ASSOCIATION
noble energy

EDUCATIONAL ENVIRONMENT

"As principal of the first high school devoted to preparing students for careers in the energy field, my goal is to deliver ***extraordinary firsts*** *in learning. I am thrilled to be the leader of a school that is participating in a thematic approach to the school experience –* ***mingling the exploration of energy careers with cutting-edge education.*** *What a rich learning experience it will be to connect students' passion to their educational know-how!"*

- Principal Lori Lambropoulos

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EDUCATIONAL ENVIRONMENT

The schools' vision is to focus on science, technology, engineering, and mathematics while breaking the barriers of the traditional classroom. Energy Institute students will participate in the first cutting-edge school programs to integrate new ideas such as:

- For the first time, making a concerted school commitment to have students learn their core curriculum alongside both teachers and engineering professionals;
- Being among the first to use corporate level mathematical and scientific problem-solving simulations;
- Being the first high school students exposed to the concept of engineering and technology curriculum that has traditionally been reserved for the college student;
- Giving students first-time scholarship and externship opportunities through corporate partnerships;
- Being the first school in HISD absolutely devoted to remaining current, giving each student access to the most updated technological innovations in learning.

Flow into and out of the labs is facilitated by overhead garage doors.

EDUCATIONAL ENVIRONMENT

Energy Institute is founded on three core pillars: Implementation of campus-wide Project-Based Learning (PBL), the incorporation of cutting-edge technology, and the integration of engaging interactions with experts and field experiences in the energy industry. Utilizing PBL within the disciplines of English, history, engineering, and science allows students to develop global graduate skills while gaining content-specific knowledge. Next, Energy Institute provides students with opportunities to interact with technology in all aspects of their learning.

Students use technology as part of their presentations.

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EDUCATIONAL ENVIRONMENT

EDUCATIONAL ENVIRONMENT

Energy Institute is part of the PowerUp 1:1 initiative so each student has his or her own laptop. All classrooms and labs are equipped with 70-inch Smart interactive TVs and students have access to iPads in the classrooms as well. Access to these types of technologies opens up a whole new world for students and creates a worldwide classroom.

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PHYSICAL ENVIRONMENT

The basic organizational unit for this school is the **Learning Community**, consisting of general-purpose learning centers, teachers' work center, administrative spaces, small group rooms, extended teaching area, and science learning centers/wet labs. This concept provides a learning environment that is characterized by flexibility, a **sense of community for the students and teachers working and a safe/well-supervised environment**. Teachers have the option and flexibility within a cluster to create and organize learning environments that work for students and their learning styles.

Labs are flexible with the use of movable walls.

The building is designed to emulate a corporate campus

Custom designed wall graphics and inspirational quotes identify each Learning Community.

PHYSICAL ENVIRONMENT

The school is organized into four Learning Communities around a central outdoor learning courtyard that will allow students at EIHS to participate in **authentic project-based learning, enabling them to take ownership of their education.** Every effort has been taken to create Learning Community environments that are open and flexible allowing students to work in project teams. The design also allows students to have individual focus work areas when needed and space for students to collaborate with multi-media.

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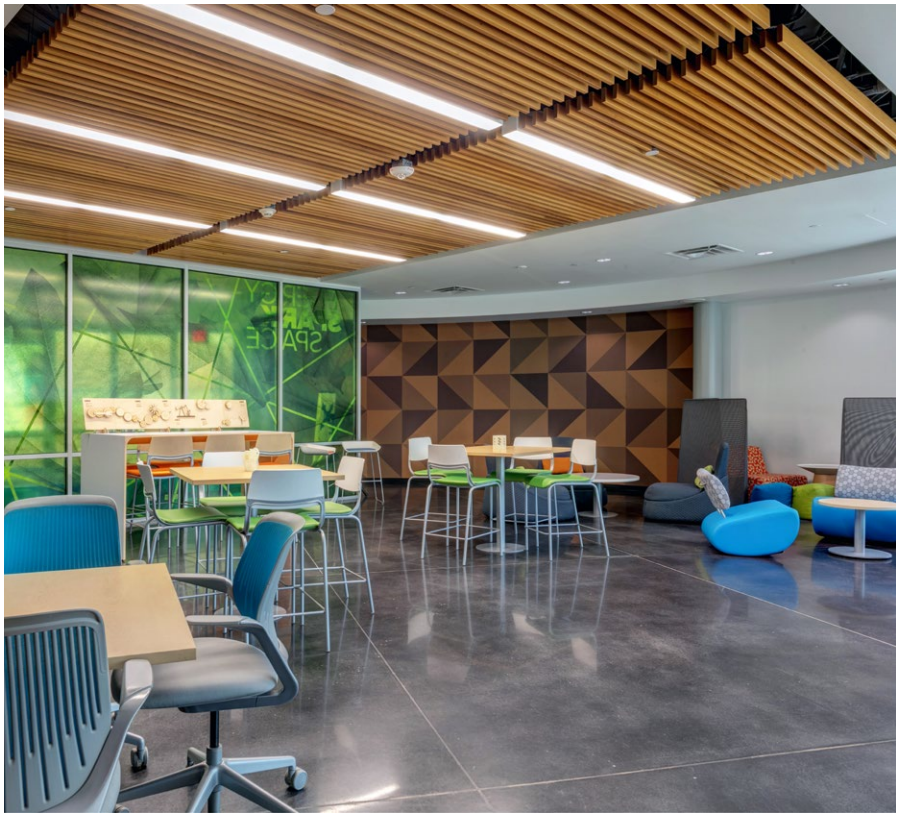
PHYSICAL ENVIRONMENT

Public spaces (dining commons, multi-purpose activity learning center, and large group instruction) have been zoned for after-hours use. Building materials consist of masonry, glass and composite metal panels organized in a manner that gives each neighborhood its own identity. By carefully studying the site, program, and user objectives, the resulting design provides a safe, aesthetically pleasing, and dynamic facility that is a community centerpiece for students, families, neighbors, faculty and staff of HISD Energy Institute High School.



An industry partner provided the budget to create and install custom artwork inside and outside the school.

The media lounge gives students a variety of seating options for working on projects or focused work.

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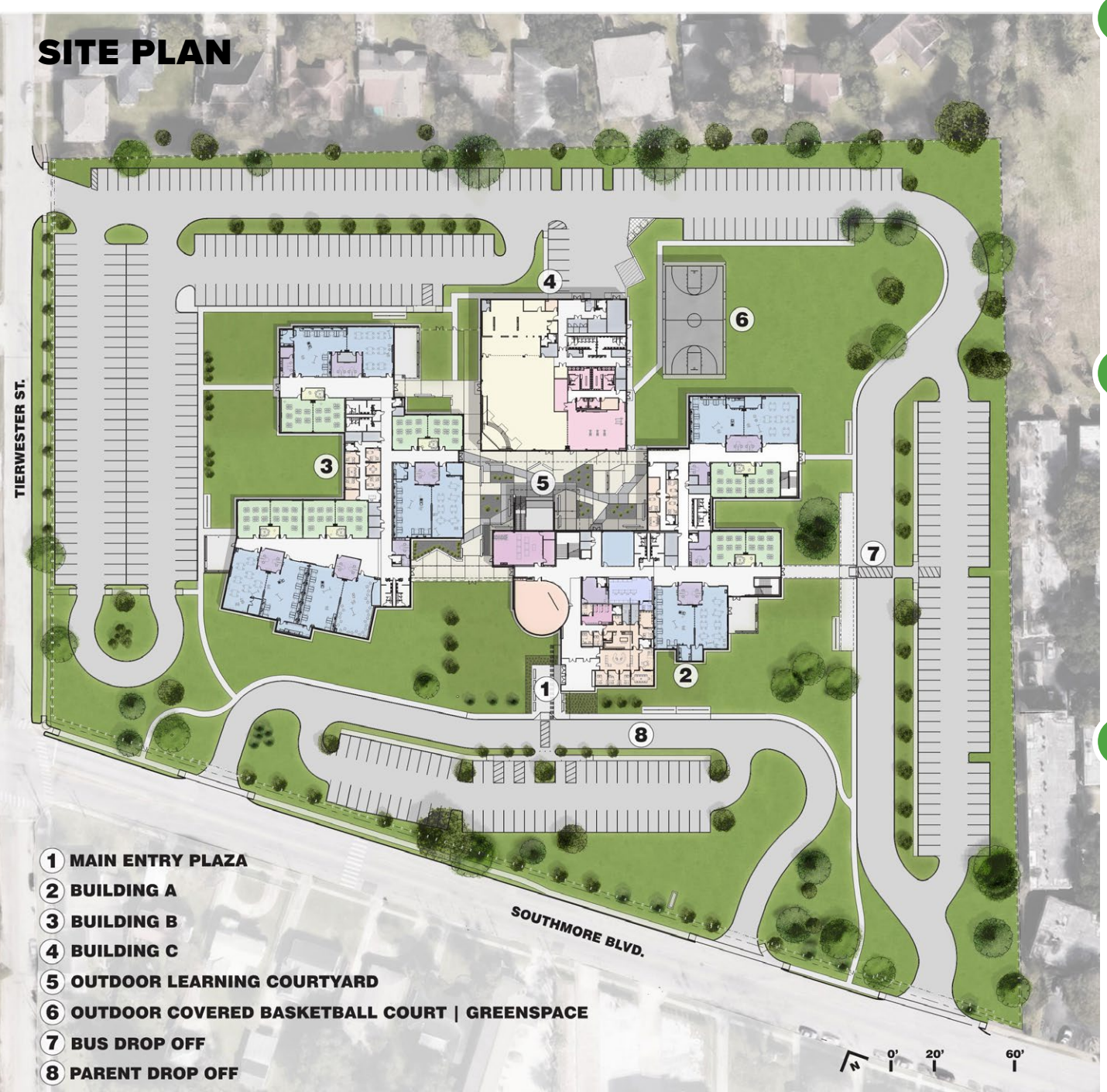
PHYSICAL ENVIRONMENT

The site development achieves the following:

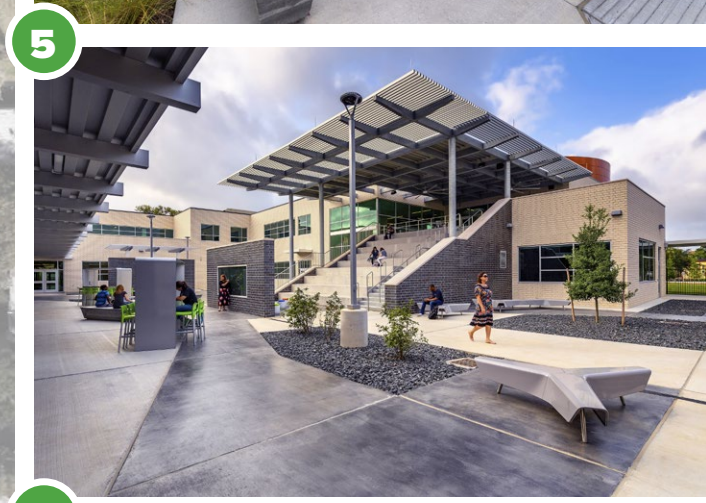
- Maximizes the use of green space.
- Provides for a separate parent drop-off and visitor parking lot at the front of the building.
- Separate bus loop and parking lot on the west side of the building.
- Provides security fencing around the perimeter of the site, as well as secondary security fencing at entry points to the central outdoor learning courtyard.

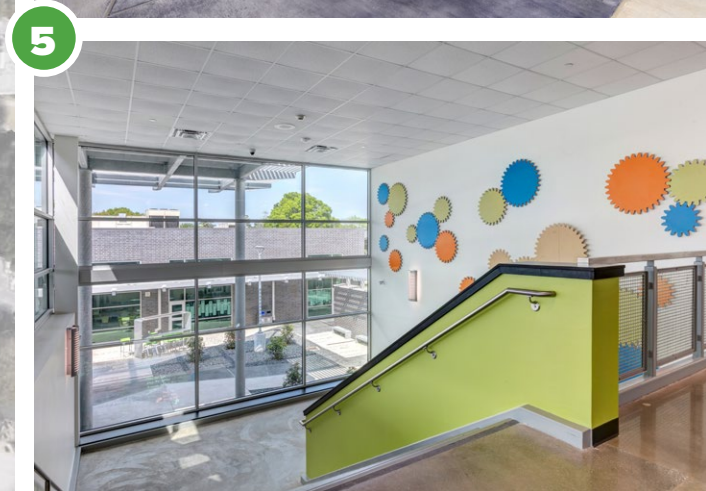
PHYSICAL ENVIRONMENT

SITE PLAN

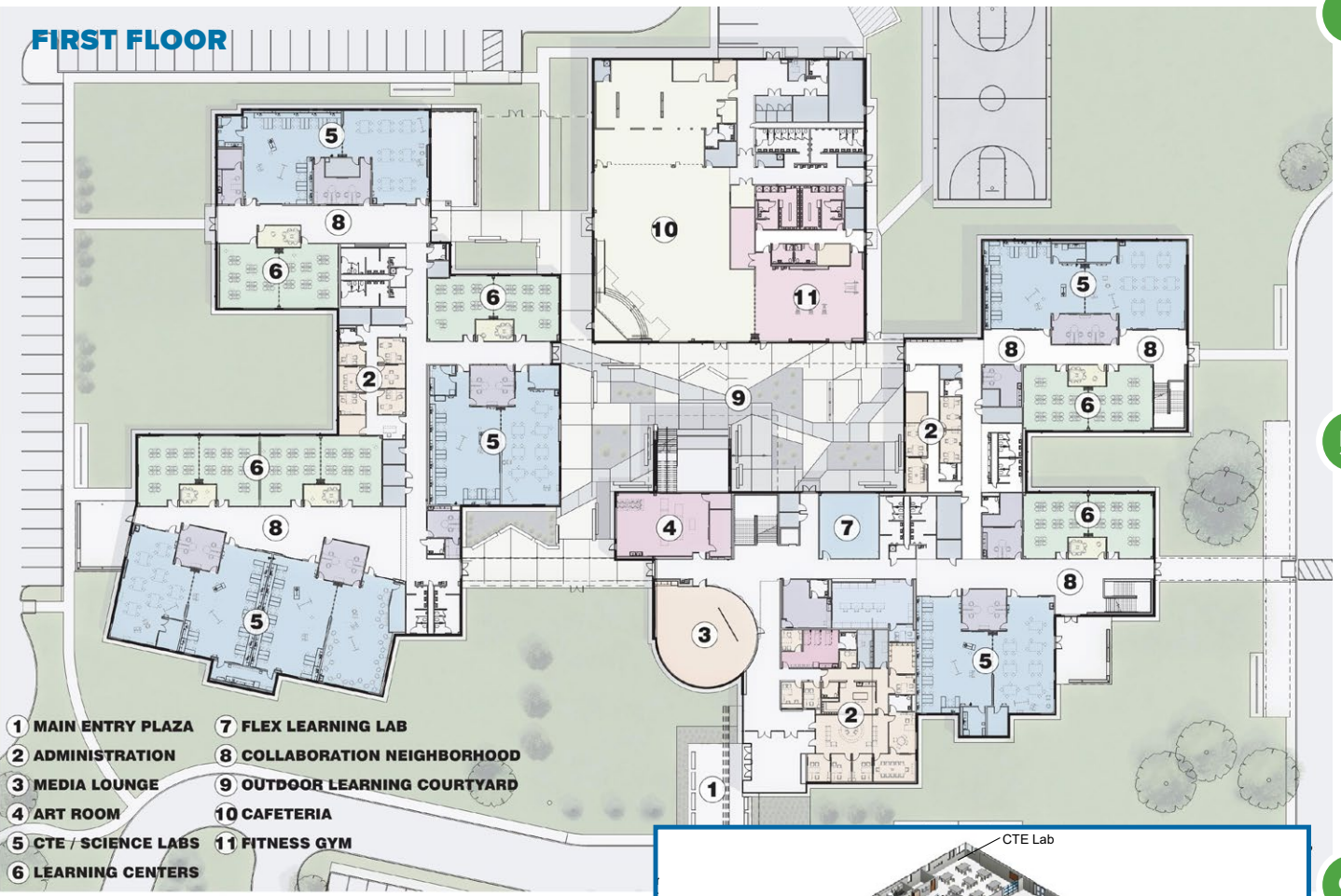


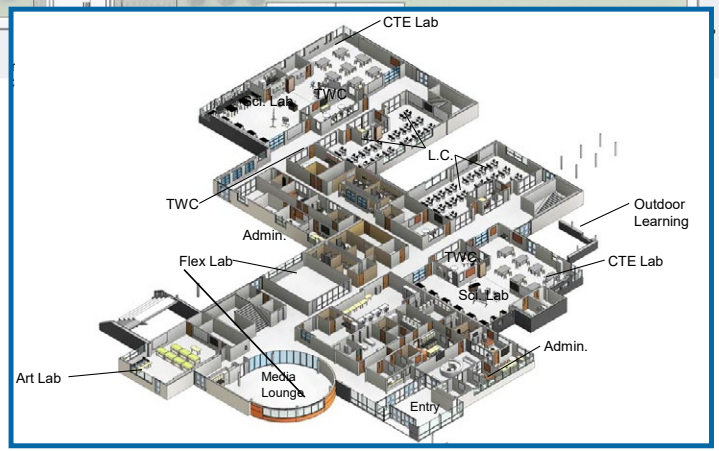
1. MAIN ENTRY PLAZA
2. BUILDING A
3. BUILDING B
4. BUILDING C
5. OUTDOOR LEARNING COURTYARD
6. OUTDOOR COVERED BASKETBALL COURT | GREENSPACE
7. BUS DROP OFF
8. PARENT DROP OFF



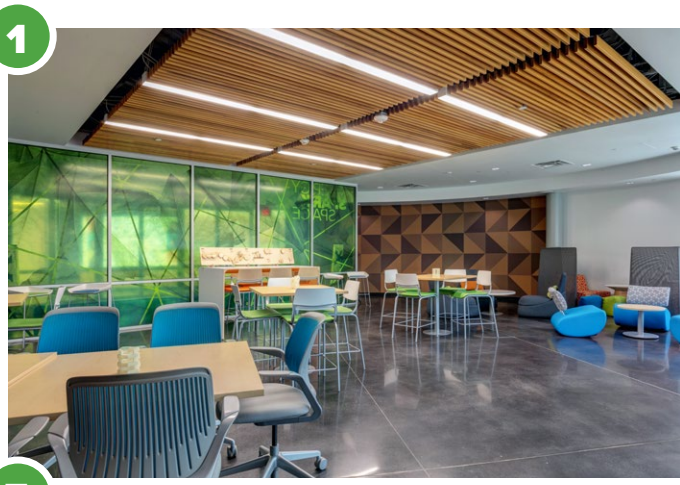


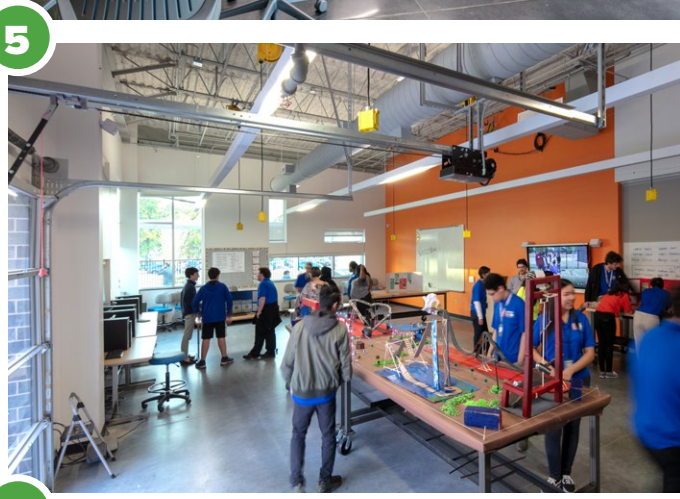
PHYSICAL ENVIRONMENT





FIRST FLOOR - BUILDING A





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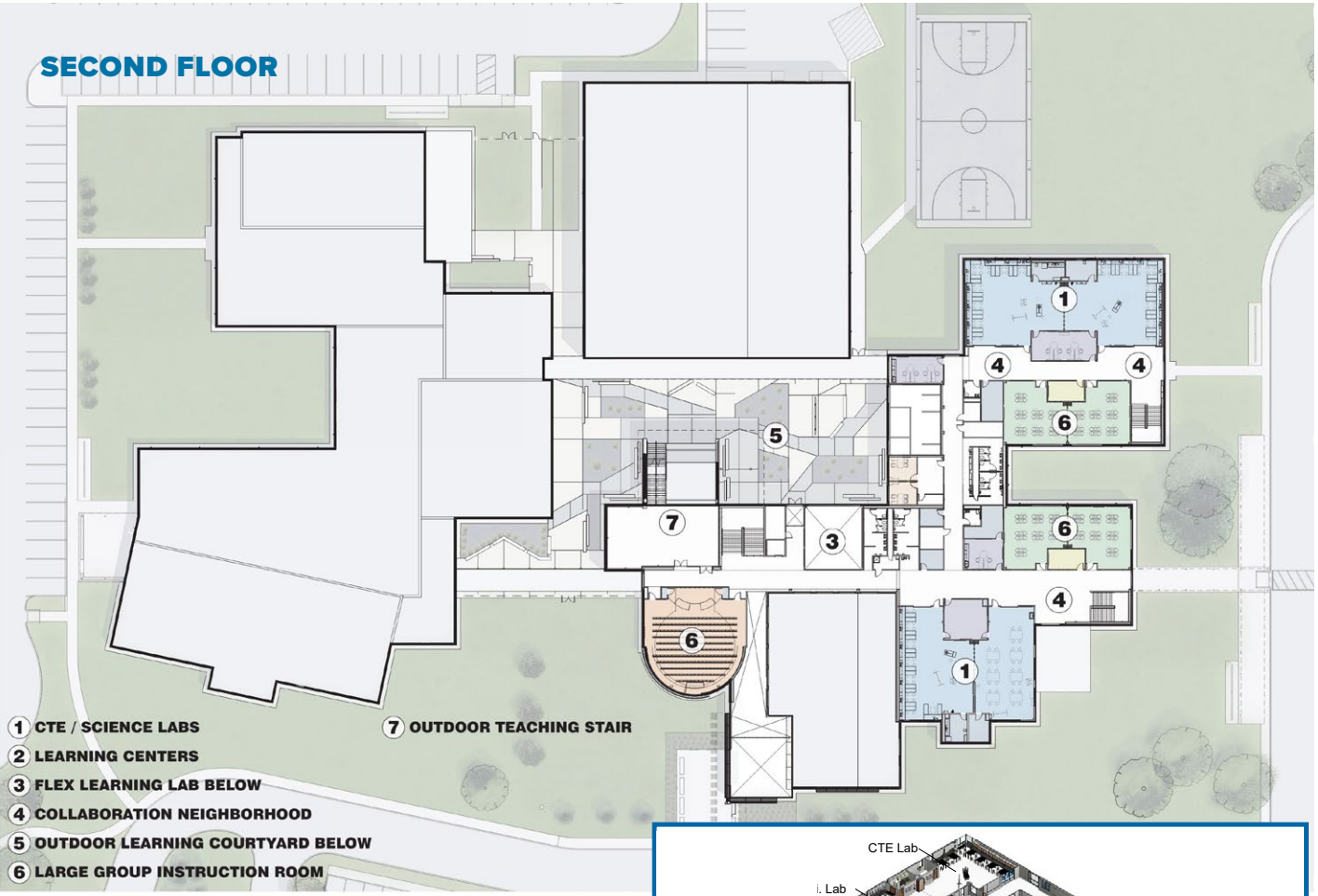
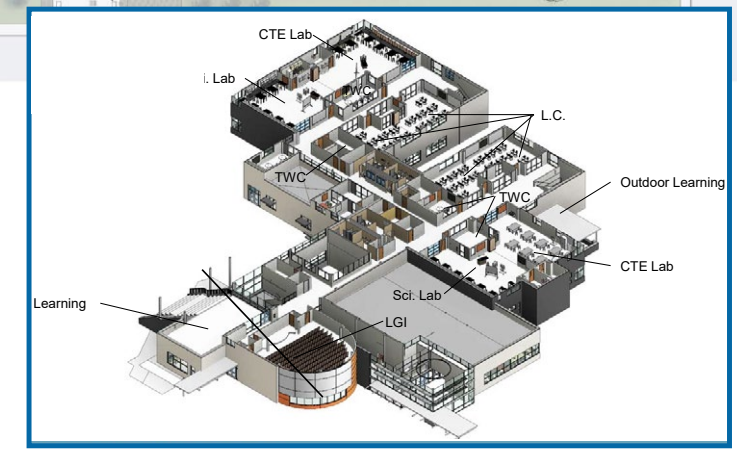
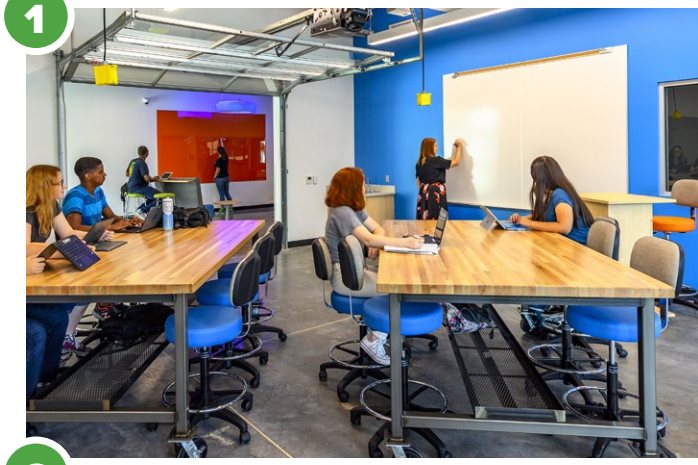
PHYSICAL ENVIRONMENT





SECOND FLOOR - BUILDING A

1



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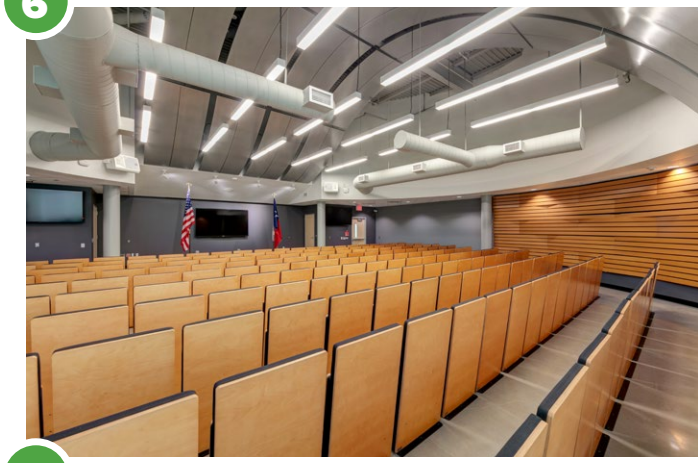

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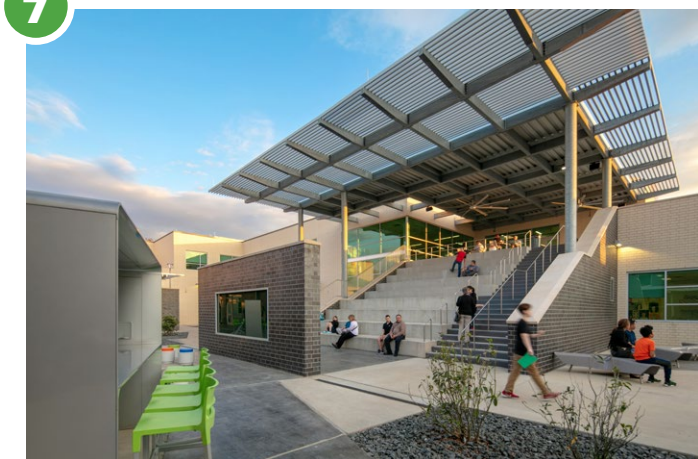

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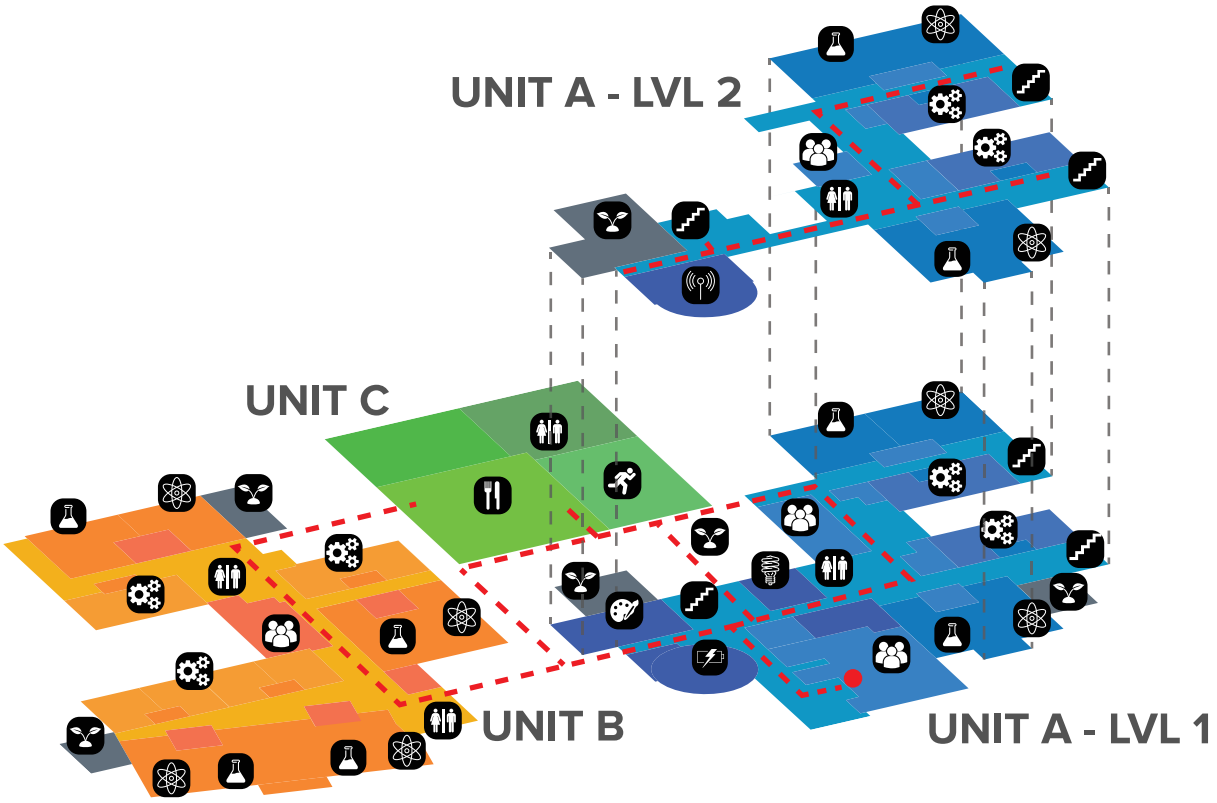
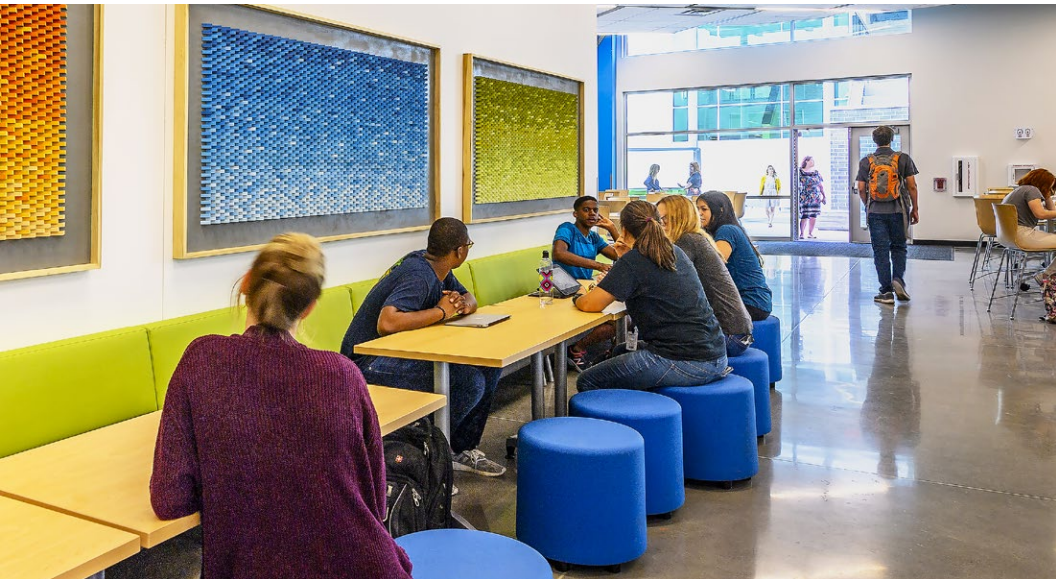
PHYSICAL ENVIRONMENT



- ADMINISTRATION
- ART ROOM
- CAFETERIA
- CAREER TECH LABS
- FITNESS GYM
- FLEX LEARNING LAB
- LARGE INSTRUCTION
- LEARNING CENTER
- SPARK MEDIA LOUNGE
- OUTDOOR COURTYARD
- RESTROOM
- SCIENCE LAB
- STAIRS



RESULTS OF THE PROCESS & PROJECT

One of design team deliverables was integrating industry into the building design. The way something looks makes a difference in how students work and in their creativity level. We pressed to ensure the building design would be conducive to the type of work students would experience as they progress throughout their careers. In a school like this, that was a tall order. It's not just STEM, it's ENERGY. Energy is electricity, energy is biomedical, energy is alternative, energy is oil and gas, energy is geo-science.

"We've had several tours and events leading up to our school opening and industry partners come in and say, ***"Wow! They're preparing kids for something more."*** *When you walk in and see the synergy in spaces such as our media lounge, it's definitely in line with what you might experience in a professional environment."*

- Principal Lori Lambropoulos

RESULTS OF THE PROCESS & PROJECT

The architecture team partnered with a major university and designed a phenomenological, qualitative research study aimed at exploring the impact purposefully designed learning spaces have on the high school students' engagement in learning at The Energy Institute High School.

Through purposeful sampling, students were selected for the pre and post- focus group interviews by the school administration to ensure all participants could compare their experiences in the old and new buildings.

From the research, students consistently indicated that the purposefully designed learning spaces had an impact on their learning and engagement in learning. Themes included: (1) ease of use and access, (2) learning preferences, and (3) space for collaboration.

*"One of my favorite things about this entire campus is there are white boards and dry ease boards all over the place... **It really helps with collaboration, when you need to jot something down or have some ideas.** Also petty much everyone has their phones on them at all times so you can take a picture once you are done and you don't have to worry about erasing other people's board...it's just really nice to have all that white board space all over the place."*

RESULTS OF THE PROCESS & PROJECT

"Last year, we ran all their work on laptops and when one person is low, that means we have to go across the room to charge up and they won't hear your ideas until after the presentation. ***In this building, we have outlets coming from the ceiling and already on the table*** *which lets our groups stay together."*

RESULTS OF THE PROCESS & PROJECT

"Sometimes, if we feel like we are going to get distracted we ask our teachers if we can get into a small group room. It's a small room right next to the actually classroom... when we are doing group work, or watching videos that everyone is going to have out loud, ***[we] just to go into there and focus up with our group."***

RESULTS OF THE PROCESS & PROJECT

*"**The extra space that we get from having flipping walls helps out a lot** because generally the way we organize is we have a bunch of sub teams to like five-ish people working on different prototypes or whatever and having all of the space of two giant classrooms. It makes it so much easier for the sub teams to collaborate with each other and to go find someone that can help you."*

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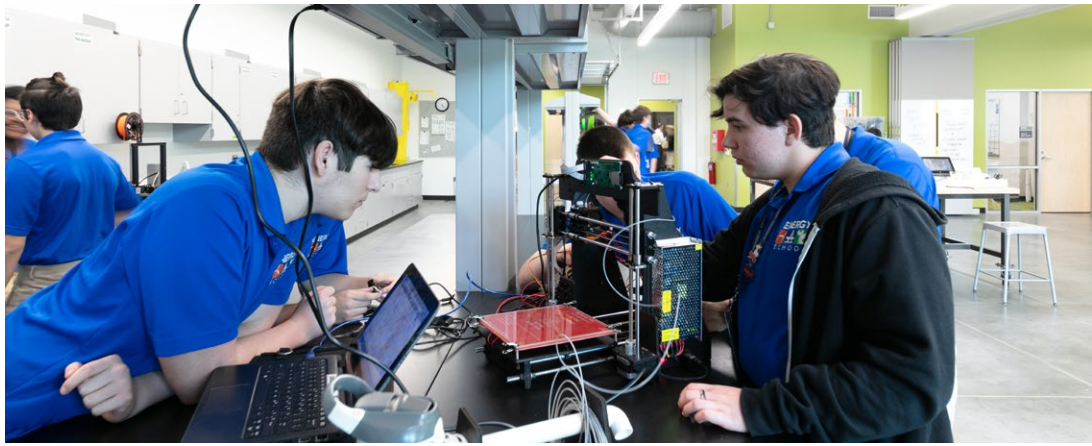
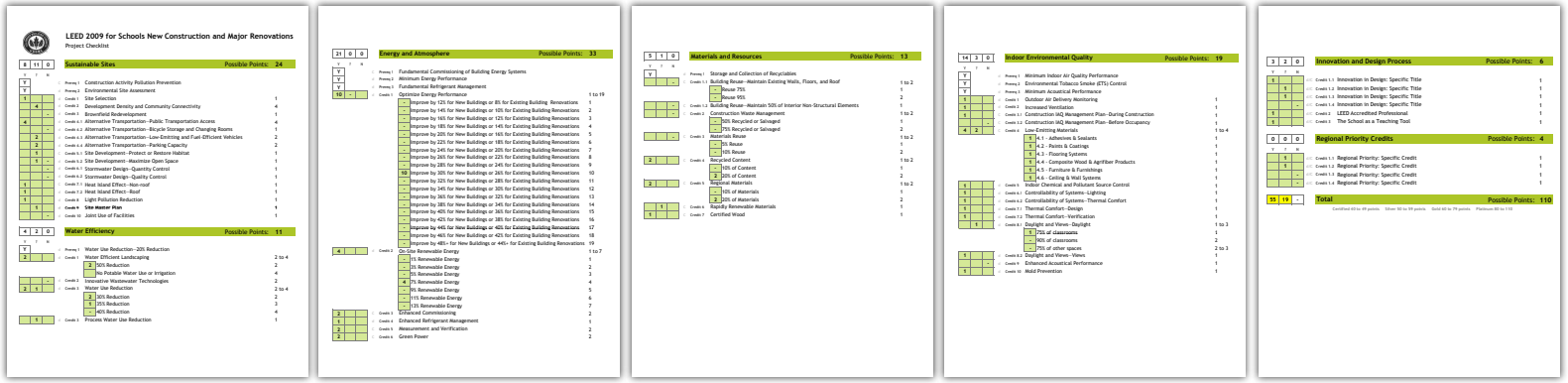
RESULTS OF THE PROCESS & PROJECT



Students display and demonstrate the 3D printers they built themselves.

As a project focused on energy, it was important for the building to minimize its energy use. The project is LEED Silver Certified, includes reflective roofing materials, water efficient landscaping, high efficiency HVAC system and uses Low-E glazing materials.



LEED 2009 for Schools New Construction and Major Renovations
Project Checklist

Sustainable Sites — Possible Points: 24

Prereq 1	Construction Activity Pollution Prevention	
Prereq 2	Environmental Site Assessment	
Credit 1	Site Selection	1
Credit 2	Development Density and Community Connectivity	4
Credit 3	Brownfield Redevelopment	1
Credit 4.1	Alternative Transportation–Public Transportation Access	4
Credit 4.2	Alternative Transportation–Bicycle Storage and Changing Rooms	1
Credit 4.3	Alternative Transportation–Low-Emitting and Fuel-Efficient Vehicles	2
Credit 4.4	Alternative Transportation–Parking Capacity	2
Credit 5.1	Site Development–Protect or Restore Habitat	1
Credit 5.2	Site Development–Maximize Open Space	1
Credit 6.1	Stormwater Design–Quantity Control	1
Credit 6.2	Stormwater Design–Quality Control	1
Credit 7.1	Heat Island Effect–Non-roof	1
Credit 7.2	Heat Island Effect–Roof	1
Credit 8	Light Pollution Reduction	1
Credit 9	**Site Master Plan**	1
Credit 10	Joint Use of Facilities	1

Water Efficiency — Possible Points: 11

Prereq 1	Water Use Reduction–20% Reduction	
Credit 1	Water Efficient Landscaping	2 to 4
	2 50% Reduction	2
	No Potable Water Use or Irrigation	4
Credit 2	Innovative Wastewater Technologies	2
Credit 3	Water Use Reduction	2 to 4
	2 30% Reduction	2
	3 35% Reduction	3
	4 40% Reduction	4
Credit 4	Process Water Use Reduction	1

Energy and Atmosphere — Possible Points: 33

Prereq 1	Fundamental Commissioning of Building Energy Systems	
Prereq 2	Minimum Energy Performance	
Prereq 3	Fundamental Refrigerant Management	
Credit 1	Optimize Energy Performance	1 to 19
	Improve by 12% for New Buildings or 8% for Existing Building Renovations	1
	Improve by 14% for New Buildings or 10% for Existing Building Renovations	2
	Improve by 16% for New Buildings or 12% for Existing Building Renovations	3
	Improve by 18% for New Buildings or 14% for Existing Building Renovations	4
	Improve by 20% for New Buildings or 16% for Existing Building Renovations	5
	Improve by 22% for New Buildings or 18% for Existing Building Renovations	6
	Improve by 24% for New Buildings or 20% for Existing Building Renovations	7
	Improve by 26% for New Buildings or 22% for Existing Building Renovations	8
	Improve by 28% for New Buildings or 24% for Existing Building Renovations	9
10	Improve by 30% for New Buildings or 26% for Existing Building Renovations	10
	Improve by 32% for New Buildings or 28% for Existing Building Renovations	11
	Improve by 34% for New Buildings or 30% for Existing Building Renovations	12
	Improve by 36% for New Buildings or 32% for Existing Building Renovations	13
	Improve by 38% for New Buildings or 34% for Existing Building Renovations	14
	Improve by 40% for New Buildings or 36% for Existing Building Renovations	15
	Improve by 42% for New Buildings or 38% for Existing Building Renovations	16
	Improve by 44% for New Buildings or 40% for Existing Building Renovations	17
	Improve by 46% for New Buildings or 42% for Existing Building Renovations	18
	Improve by 48% for New Buildings or 44%+ for Existing Building Renovations	19
Credit 2	On-Site Renewable Energy	1 to 7
	1% Renewable Energy	1
	2% Renewable Energy	2
	3% Renewable Energy	3
	4 4% Renewable Energy	4
	5% Renewable Energy	5
	6 6% Renewable Energy	6
	7% Renewable Energy	7
Credit 3	Enhanced Commissioning	2
Credit 4	Enhanced Refrigerant Management	1
Credit 5	Measurement and Verification	2
Credit 6	Green Power	2

Materials and Resources — Possible Points: 13

Prereq 1	Storage and Collection of Recyclables	
Credit 1.1	Building Reuse–Maintain Existing Walls, Floors, and Roof	1 to 2
	Reuse 75%	1
	Reuse 95%	2
Credit 1.2	Building Reuse–Maintain 50% of Interior Non-Structural Elements	1
Credit 2	Construction Waste Management	1 to 2
	50% Recycled or Salvaged	1
	75% Recycled or Salvaged	2
Credit 3	Materials Reuse	1 to 2
	5% Reuse	1
	10% Reuse	2
Credit 4	Recycled Content	1 to 2
	10% of Content	1
	2 20% of Content	2
Credit 5	Regional Materials	1 to 2
	10% of Materials	1
	2 20% of Materials	2
Credit 6	Rapidly Renewable Materials	1
Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 19

Prereq 1	Minimum Indoor Air Quality Performance	
Prereq 2	Environmental Tobacco Smoke (ETS) Control	
Prereq 3	Minimum Acoustical Performance	
Credit 1	Outdoor Air Delivery Monitoring	1
Credit 2	Increased Ventilation	1
Credit 3.1	Construction IAQ Management Plan–During Construction	1
Credit 3.2	Construction IAQ Management Plan–Before Occupancy	1
Credit 4	Low-Emitting Materials	1 to 4
	1 4.1 – Adhesives & Sealants	1
	1 4.2 – Paints & Coatings	1
	1 4.3 – Flooring Systems	1
	1 4.4 – Composite Wood & Agrifiber Products	1
	1 4.5 – Furniture & Furnishings	1
	1 4.6 – Ceiling & Wall Systems	1
Credit 5	Indoor Chemical and Pollutant Source Control	1
Credit 6.1	Controllability of Systems–Lighting	1
Credit 6.2	Controllability of Systems–Thermal Comfort	1
Credit 7.1	Thermal Comfort–Design	1
Credit 7.2	Thermal Comfort–Verification	1
Credit 8.1	Daylight and Views–Daylight	1 to 3
	1 75% of classrooms	1
	90% of classrooms	2
	75% of other spaces	2 to 3
Credit 8.2	Daylight and Views–Views	1
Credit 9	Enhanced Acoustical Performance	1
Credit 10	Mold Prevention	1

Innovation and Design Process — Possible Points: 6

Credit 1.1	Innovation in Design: Specific Title	1
Credit 1.2	Innovation in Design: Specific Title	1
Credit 1.3	Innovation in Design: Specific Title	1
Credit 1.4	Innovation in Design: Specific Title	1
Credit 2	LEED Accredited Professional	1
Credit 3	The School as a Teaching Tool	1

Regional Priority Credits — Possible Points: 4

Credit 1.1	Regional Priority: Specific Credit	1
Credit 1.2	Regional Priority: Specific Credit	1
Credit 1.3	Regional Priority: Specific Credit	1
Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Power is available through ceiling-mounted reels so it can be delivered anywhere in the lab

The entire building can be used for teaching.

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EDUCATIONAL SPECIFICATIONS

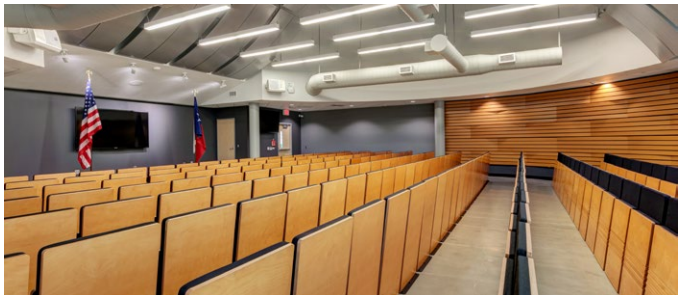
The educational specifications evolved through a collaborative process with the school and its Project Advisory Team (PAT). It was developed by exploring program requirements of high schools with consideration for extensive flexibility to address multiple approaches to the delivery of education with evolving pedagogies. Since new buildings are expected to serve multiple generations of learners, spaces must be planned to respond to changing program delivery strategies over time without “bricks and mortar” changes to the building. The educational specification has been prepared to provide spaces in a variety of sizes, interior zoning to enhance after-hours use, and a rich infrastructure to support current and emerging approaches to educational program delivery.

ENERGY INSTITUTE HIGH SCHOOL SCHEMATIC DESIGN SQUARE FOOTAGE ANALYSIS

Neighborhoods	Required Spaces				SD Submittal			
	Teaching Stations	Quanity	Square Feet	Net Area	Quanity	Net Area	Quanity Difference	Square Feet Difference
Learning Community - A	2	1	2700	2700	1	3091	0	391
Huddle Spaces/Small Group Rooms		4	200	800	4	807	0	7
Learning Center	2	2	850	1700	2	1708	0	8
Science Learning Center/Wet Lab	2	1	3256	3256	1	3236	0	-20
Wet Lab Storage		1	300	300	1	292	0	-8
Storage		1	100	100	1	100	0	0
Covered Outdoor Classroom (Square feet listed is listed as half to reflect reduced cost of non-conditioned space)		1	425	425	1	430	0	5
Total	**6**			**9281**		**9664**		**383**
Learning Community - B	2	1	2700	2700	1	2700	0	0
Huddle Spaces/Small Group Rooms		4	200	800	4	818	0	18
Learning Center	2	2	850	1700	2	1708	0	8
Science Learning Center/Wet Lab	2	1	3256	3256	1	3261	0	5
Wet Lab Storage		1	300	300	1	306	0	6
Storage		1	100	100	2	228	1	128
Covered Outdoor Classroom (Square feet listed is listed as half to reflect reduced cost of non-conditioned space)		1	425	425	1	200	0	-225
Total	**6**			**9281**		**9221**		**-60**
Learning Community - C	2	1	2700	2700	1	2703	0	3
Huddle Spaces/Small Group Rooms		4	200	800	4	799	0	-1
Learning Center	2	2	850	1700	2	1700	0	0
Science Learning Center/Wet Lab	2	1	3256	3256	1	3262	0	6
Wet Lab Storage		1	300	300	1	313	0	13
Storage		1	100	100	1	105	0	5
Covered Outdoor Classroom (Square feet listed is listed as half to reflect reduced cost of non-conditioned space)		1	425	425	1	708	0	283
Total	**6**			**9281**		**9590**		**309**
Learning Community - D	2	1	2700	2700	1	2694	0	-6
Huddle Spaces/Small Group Rooms		4	200	800	4	801	0	1
Learning Center	2	2	850	1700	2	1700	0	0
Science Learning Center/Wet Lab	2	1	3256	3256	1	3235	0	-21
Wet Lab Storage		1	300	300	1	301	0	1
Storage		1	100	100	1	100	0	0
Covered Outdoor Classroom (Square feet listed is listed as half to reflect reduced cost of non-conditioned space)		1	425	425	1	425	0	0
Total	**6**			**9281**		**9256**		**-25**

ENERGY INSTITUTE HIGH SCHOOL SCHEMATIC DESIGN SQUARE FOOTAGE ANALYSIS

Administration/Guidance	Required Spaces				SD Submittal			
	Teaching Stations	Quanity	Square Feet	Net Area	Quanity	Net Area	Quanity Difference	Square Feet Difference
Main Administration								
Reception, Administration		1	350	350	1	450	0	100
Office A (STEM, Sec., Testing Co-ord.)		3	100	300	2	225	1	-75
Test Storage		1	200	200	1	196	0	-4
Office C (Principal)		1	250	250	1	249	0	-1
Principal's Restroom		1	50	50	1	60	0	10
Conference Room, Main		1	250	250	1	250	0	0
Workroom/Breakroom		1	300	300	1	305	0	5
Mail Room		1	100	100	0	0	1	-100
Storage		1	125	125	1	116	0	-9
Registrar/Attendance								
Office A (Registrar, Attendance, Itinerant)		4	125	500	4	480	0	-20
Records/File Room		1	130	130	1	130	0	0
Distributed Administration								
Office B (Dean)		4	125	500	4	500	0	0
Dean Reception/Waiting (shared between two Deans)		2	125	250	2	250	0	0
Conference Room, Small		4	150	600	5	803	-1	203
Storage		2	50	100	2	102	0	2
Office A (Security Office)		1	100	100	1	99	0	-1
Health Clinic								
Health Clinic		1	300	300	1	294	0	-6
Reception/Waiting		1	75	75	1	99	0	24
Office A		1	100	100	1	77	0	-23
Restroom		1	65	65	1	64	0	-1
Guidance/Student Services								
College Center		1	850	850	1	848	0	-2
Office B (College, Magnet, Counselor, SPED)		4	125	500	3	375	1	-125
Shared								
Teacher Work Center		4	1000	4000	6	3970	-2	-30
Multi-use/Community Room		1	425	425	1	422	0	-3
New Mother's Room		1	50	50	1	65	0	15
Total	**0**			**10470**		**10429**		**-41**



ENERGY INSTITUTE HIGH SCHOOL SCHEMATIC DESIGN SQUARE FOOTAGE ANALYSIS

Distributed Learning Commons/Media Lounge - included in Learning Community								
Central Media Lounge		1	1200	1200	1	1756	0	556
Learning Commons Storage		5	100	500	5	521	0	21
Office/Workroom		1	175	175	1	175	0	0
Computer Repair/Storage Room		1	850	850	1	850	0	0
Total	**0**			**2725**		**3302**		**577**
Total Neighborhoods	**24**			**39849**		**41033**		**1184**

Career & Technical Education (CTE)	Required Spaces				SD Submittal			
	Teaching Stations	Quanity	Square Feet	Net Area	Quanity	Net Area	Quanity Difference	Square Feet Difference
Engineering Lab A (9th Grade)	2	1	3256	3256	1	3267	0	11
Engineering Lab B (Geoscience)	2	1	3256	3256	1	3229	0	-27
Engineering Lab C (Alternative Energy)	2	1	3256	3256	1	3246	0	-10
Engineering Lab D (Off Shore)	2	1	3256	3256	1	3266	0	10
Lecture Presentation Hall (Seats 200)		1	1800	1800	1	1839	0	39
Podium		1	200	200	1	222	0	22
Total	**8**			**15024**		**15069**		**45**

Visual Arts	Required Spaces				SD Submittal			
	Teaching Stations	Quanity	Square Feet	Net Area	Quanity	Net Area	Quanity Difference	Square Feet Difference
Visual Arts Wet Lab	1	1	1200	1200	1	1213	0	13
Kiln		1	80	80	1	80	0	0
Storage		1	250	250	1	246	0	-4
Total	**1**			**1530**		**1539**		**9**

Physical Education/Athletics	Required Spaces				SD Submittal			
	Teaching Stations	Quanity	Square Feet	Net Area	Quanity	Net Area	Quanity Difference	Square Feet Difference
Multipurpose Activity Learning Center/Fitness Center	1	1	2000	2000	1	2107	0	107
Girls/Boys PE Locker Room		2	200	400	2	400	0	0
Student Toilets/Showers		2	200	400	2	400	0	0
Adult Toilet/Shower/Locker		2	100	200	2	206	0	6
Office (shared)		1	150	150	1	153	0	3
PE Equipment Storgae		1	300	300	1	0	0	-300
Total	**1**			**3450**		**3266**		**-184**

ENERGY INSTITUTE HIGH SCHOOL SCHEMATIC DESIGN SQUARE FOOTAGE ANALYSIS

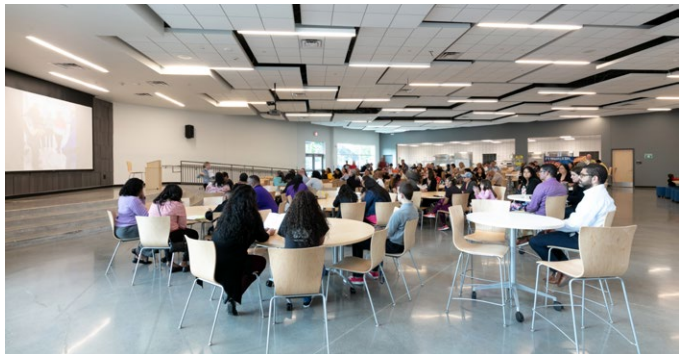
Food Service	Required Spaces				SD Submittal			
	Teaching Stations	Quanity	Square Feet	Net Area	Quanity	Net Area	Quanity Difference	Square Feet Difference
Kitchen/Prep Area		1	900	900	1	920	0	20
Serving Area		1	1000	1000	1	1003	0	3
Dry Storage		1	225	225	1	225	0	0
Freezer		1	175	175	1	175	0	0
Cooler		1	150	150	1	150	0	0
Kitchen Manager's Office		1	100	100	1	100	0	0
Laundry/Custodial Area		1	75	75	1	131	0	56
Locker Room/Toilet		1	150	150	1	154	0	4
Student Dining Commons (seating for 1/3 (capacity = 200) at one time)		1	4894	4894	1	4759	0	-135
Stage		1	400	400	1	804	0	404
Control Room		1	100	100	1	100	0	0
Dining Commons Storage		1	150	150	1	153	0	3
Total	**0**			**8319**		**8674**		**355**

Custodial Maintenance	Required Spaces				SD Submittal			
	Teaching Stations	Quanity	Square Feet	Net Area	Quanity	Net Area	Quanity Difference	Square Feet Difference
Receiving Entry		1	150	150	1	236	0	86
Office. Plant Manager		1	75	75	1	75	0	0
Custodial/Maintenance Storage		1	200	200	1	198	0	-2
Supply Storage		1	200	200	1	197	0	-3
IT Support		1	100	100	1	100	0	0
Custodial Closet		3	100	300	7	528	4	228
Custodial Locker Room/Restroom		1	75	75	1	90	0	15
Total	**0**			**1100**		**1424**		**324**

ENERGY INSTITUTE HIGH SCHOOL SCHEMATIC DESIGN SQUARE FOOTAGE ANALYSIS

Total Net Programmed Area	**34**			**79742**	69%	**81434**		**1692**
Building Support (38%)				**30302**	31%	**36733**		**6431**
Total Gross Square Footage				**110044**	100%	**118167**		**8123**

The schematic design has 69% of its square footage as programmed square footage and 31% of its square footage as unassignable building support square footage.



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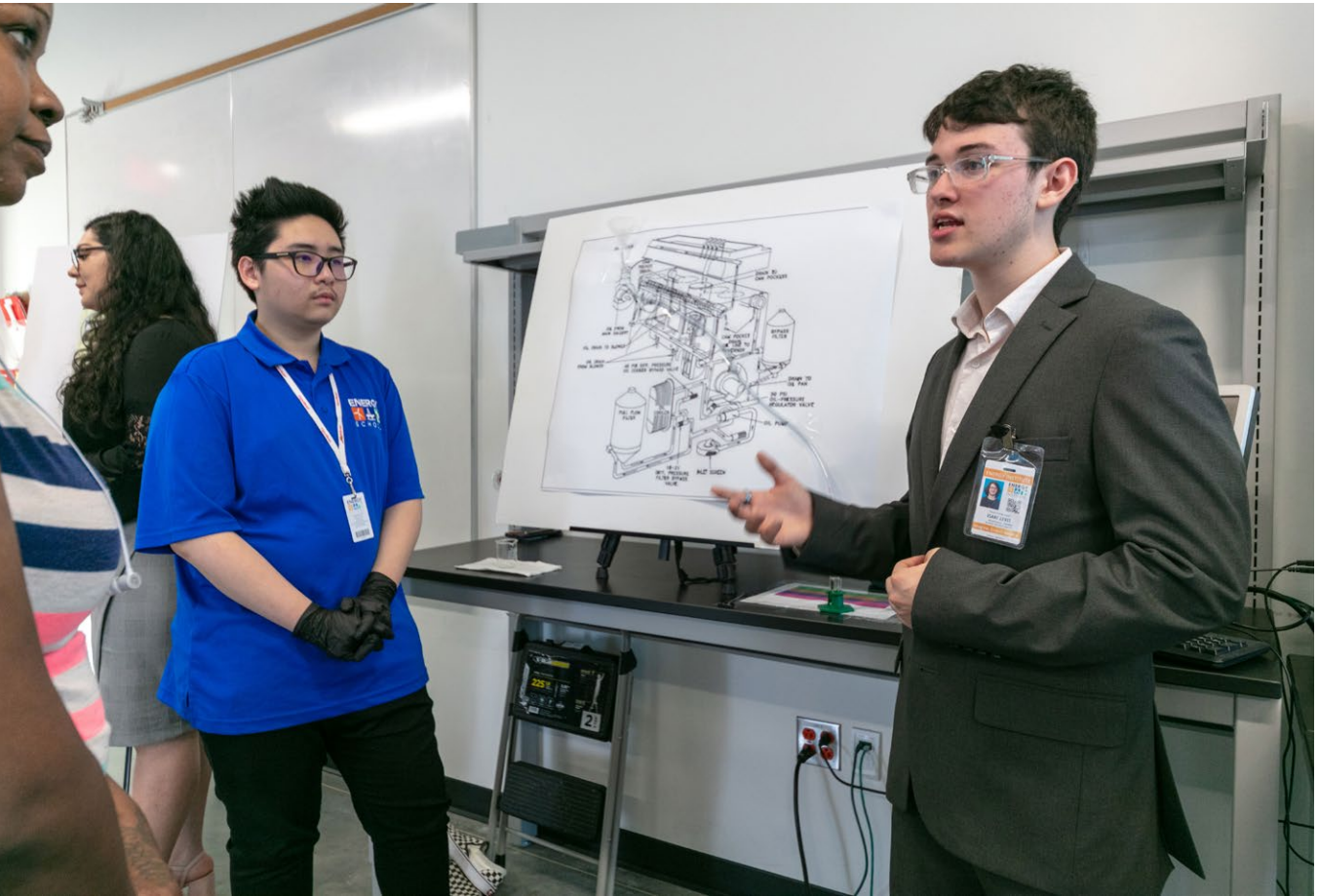
EDUCATIONAL VISIONING DOCUMENTS

In conjunction with Houston ISD, the architectural team, community members, industry leaders and the Project Advisory Team members focused on the importance of education and the effect it has on our everyday lives. A set of guiding Principles were developed that articulate the school's vision, values, hopes and ideals to the design team. These Guiding Principles were used to test the decisions made throughout the design process, since every element of the building must be created to support the school's vision and values.

TWENTY-FIRST CENTURY SKILLS/ PROJECT-BASED LEARNING CAMPUS:

Students at EIHS develop 21st century skills through our campus-wide implementation of project-based learning. Our space should:

- Provide open, flexible, collaborative, and creative space for students to work in project teams.
- Allow for students to have individual focus work areas when needed, and space for students to collaborate with multi-media.
- Provide presentation spaces for practice as well as professional presentations in-front of a panel of experts.



EDUCATIONAL VISIONING DOCUMENTS

TECHNOLOGY:

Continuously updated technology is a priority at EIHS. Our space should include:

- A school structure that lends itself to current and future technological updates.
- Technology to be seamlessly integrated into our workspaces.

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EDUCATIONAL VISIONING DOCUMENTS

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PATHWAYS

EIHS has three pathways for students: Offshore Technology, Geoscience, and Alternative Energy.

Our space should include:

- Areas for students who select each of these three pathways to form a learning community.
- A way to use space within each area to highlight information regarding the pathways.
- Lab space that exceeds the needs of these specialized curriculums.
- Eco-friendly concepts that are appropriate examples of energy usage.

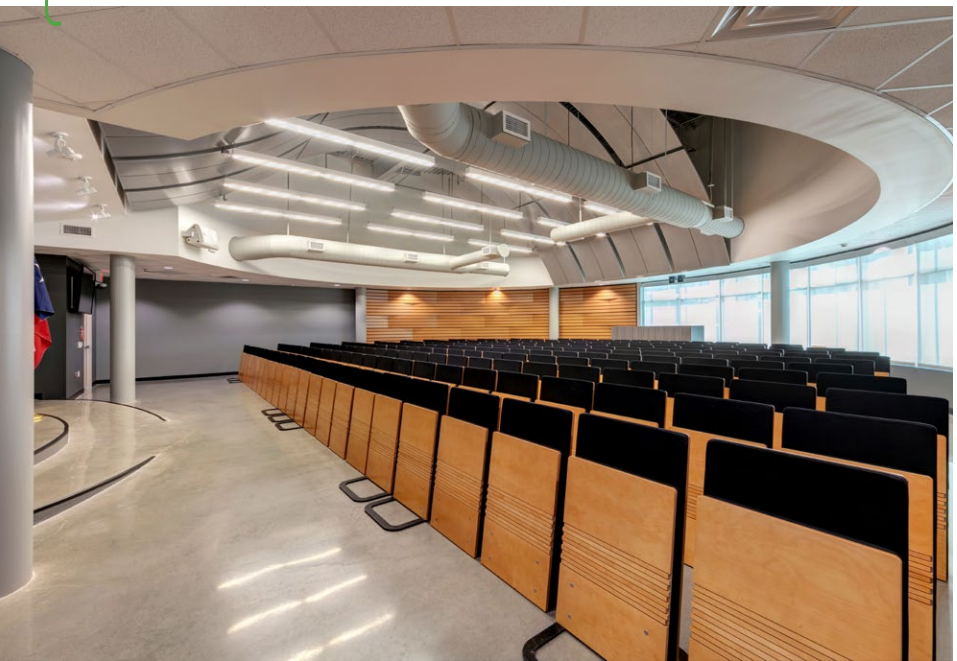
EDUCATIONAL VISIONING DOCUMENTS

ENERGY COMMUNITY

EIHS is part of a larger energy industry. Houston is the energy capital of the world. Our facility should include:

- Space that can serve as a nexus where industry and the local community can come together to develop partnerships and provide educational experiences.
- A learning community within our building where the architecture and structure inspires and doesn't limit thinking and learning. All space and structures should become part of the learning from wall to window and ceiling to floor.

TED Talk room for large presentations by students or industry professionals.



Flexible seating and writable surfaces create collaboration spaces as an extension of the classroom/lab