



OPTIMIZING LEARNING ENVIRONMENTS FOR THE LITTLEST LEARNERS:

ELEMENTARY SCHOOL
DESIGN IN 360°

*Association for Learning Environments
Pacific Northwest Regional Conference*

June 21, 2019

PRESENTERS

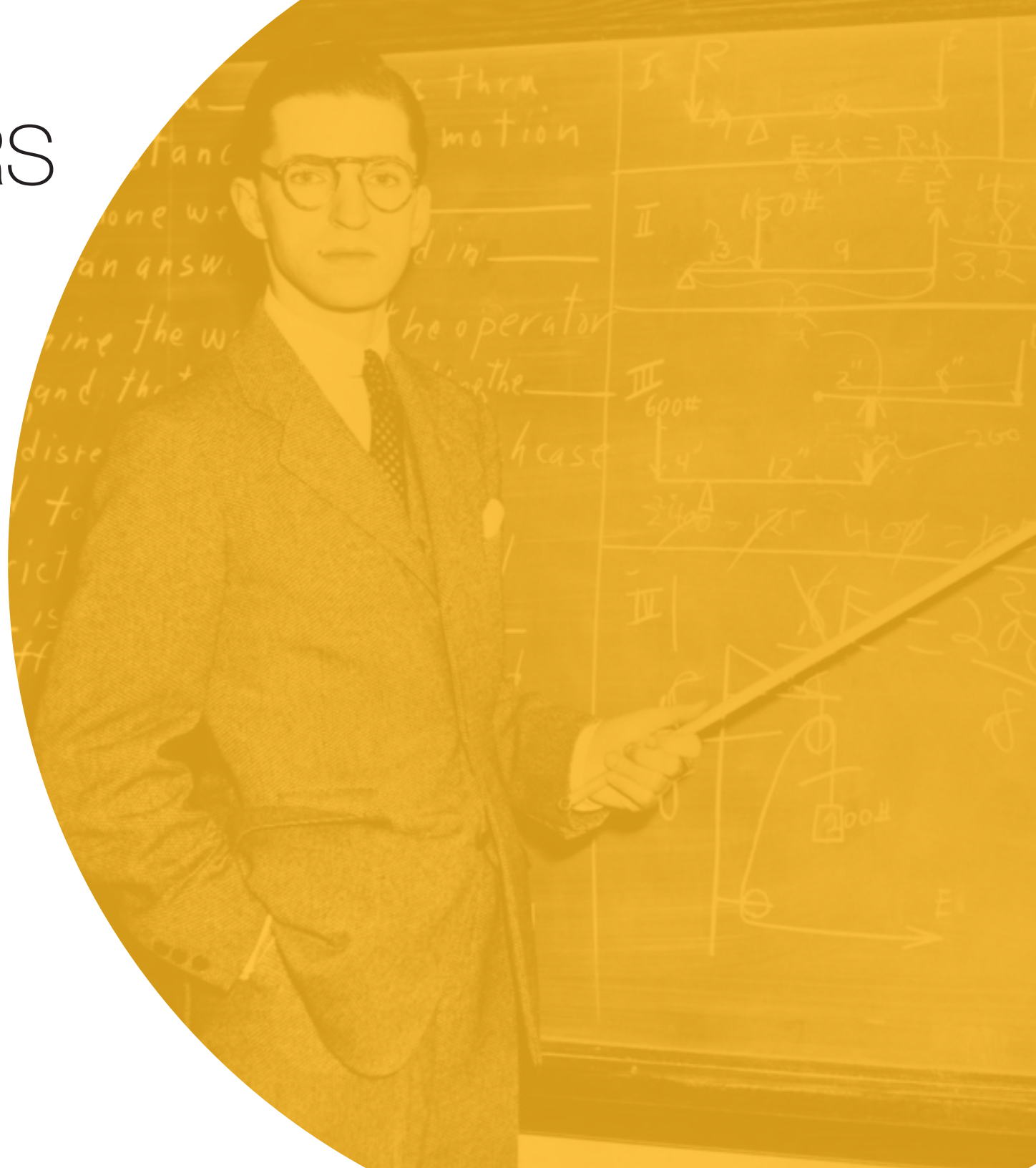
Richard Higgins, AIA, LEED AP
Principal
BLRB Architects

Dr. Linda Florence
Former Superintendent
Reynolds School District

Nick Collins, PE, LEED AP
Principal
PAE Engineers

*Association for Learning Environments
Pacific Northwest Regional Conference*

June 21, 2019



AGENDA

1. Overview
2. About the District
3. Parity & Equity
4. Whole Child Development
5. Integrated Sustainability
6. 360° Review
7. Q & A

*Association for Learning Environments
Pacific Northwest Regional Conference*

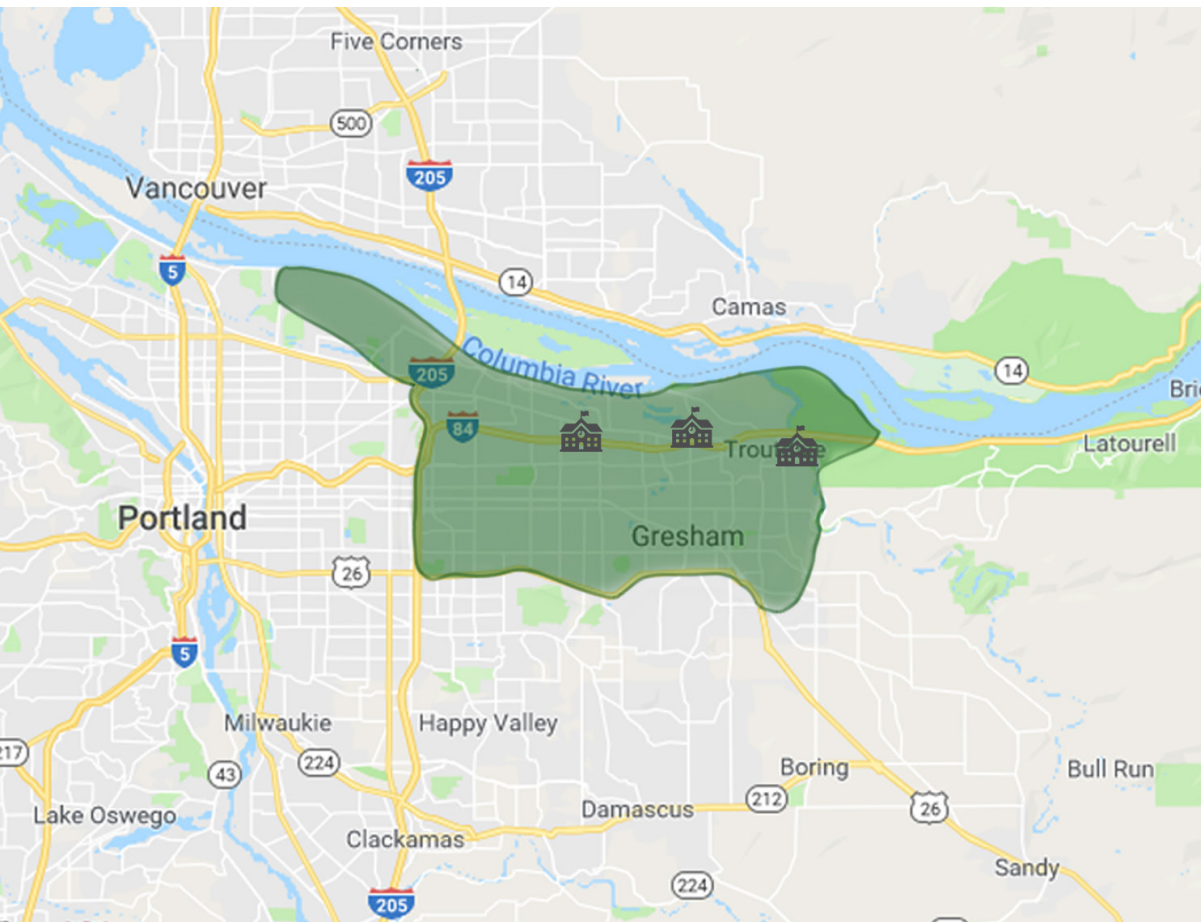
June 21, 2019



OVERVIEW

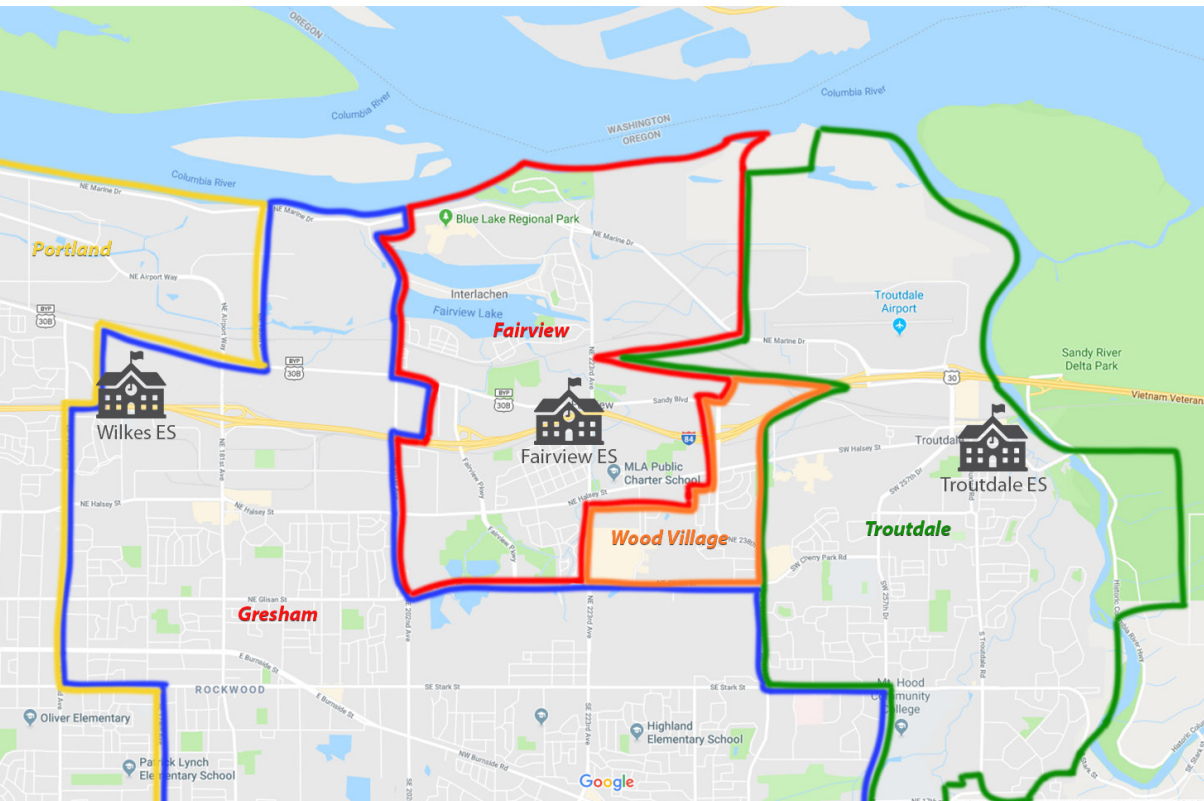


ABOUT THE DISTRICT



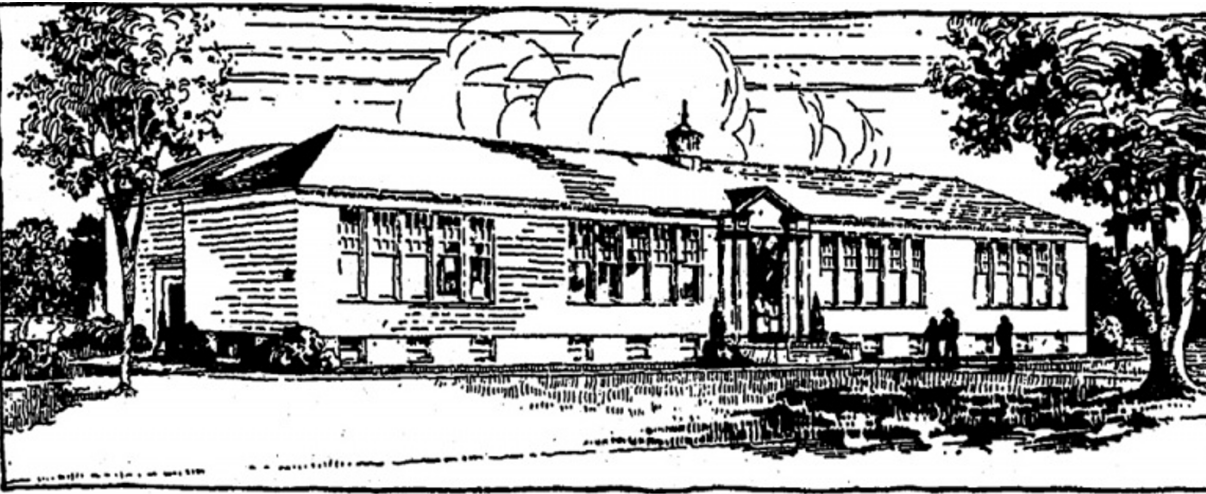
- East Multnomah County
Portland, Oregon
- Serves 1,200 Students
- Covers Five Municipalities:
 - Portland
 - Gresham
 - Fairview
 - Wood Village
 - Troutdale

ABOUT THE DISTRICT



- East Multnomah County
Portland, Oregon
- Serves 1,200 Students
- Five Municipalities:
 - Portland
 - Gresham
 - Fairview
 - Wood Village
 - Troutdale

WILKES ELEMENTARY



- Original Pioneer School House
- Modern Day Pioneers
- Multi-Cultural Identity



FAIRVIEW ELEMENTARY



- Established Suburban Community
- Surrounded by Metro-Portland Growth
- Historic Red Brick School

TROUTDALE ELEMENTARY



- Gateway to Historic Hwy 30 & Columbia Gorge
- Historic Downtown
- Walkable Community School

GUIDING PRINCIPALS



New Elementary Schools | *guiding principles of design*



Be a learner-centered environment

- A variety of spaces, both interior and exterior, will be provided to support multiple intelligences and encourage multiple learning modalities.
- The schools will incorporate Small Learning Communities to enhance learning, connectedness, and collaboration.
- Ample, robust, and flexible technology options will be available to support learning.
- The learning environment is to include space for hands-on project-based learning.
- Utilize evidence-based design when selecting interior colors and materials so as to positively impact student behavior, productivity, and achievement.



Be a safe environment

- The schools will be designed to support security and personal safety.
- The school's main entrance will be adjacent and visible to the administration and incorporate a "secured vestibule" for controlled entry during the school day.
- Access points to the school will be limited, easily supervised, and controlled.
- The schools will be zoned for before- and after-school community use.
- Design the Small Learning Communities as "safe havens" in case of emergency lock downs.
- Provide separate and discreet vehicular drop-off zones for parents and buses.
- Provide adequate exterior site lighting throughout pedestrian and vehicular zones.
- Provide emergency access and exiting throughout the schools.

Be flexible and adaptable

- Various learning spaces will promote multiple uses to enable high utilization of all spaces.
- Include a variety of spaces such as learning studios, learning commons, and small group rooms in each Small Learning Community to provide diverse and agile places of learning.
- Buildings shall be designed to accommodate change over time; consider building structure, infrastructure, and technology.
- Furniture and equipment will be selected to support flexibility and multi-use.
- Consider providing flexible space that can support and encourage community partnerships.
- Provide adequate covered outdoor space to allow for year-round outdoor play.
- Efficient use of space.

Promote meaningful collaboration

- Small personalized learning communities will be provided that promote collaborative activities.
- Provide staff team/planning spaces in each Small Learning Community to promote teacher communication and teaming.
- Provide spaces such as learning commons and small group rooms to support student collaboration and interaction.
- Accommodate staff professional development needs.
- Consider the concept of "the open office" to encourage better communication and collaboration in the school admin area.
- Consider providing common space for parent and community volunteers.
- Provide a "Community Living Room" to welcome and foster communication.

Be a community resource

- The school will be well lit, visible, inviting, and accessible for community use.
- Zone the facilities in such a way as to promote and support community use.
- Consider the school facility as a potential community FEMA shelter in an emergency.
- Accommodate and allow for community use of playfields, gymnasiums, and other school facilities as deemed appropriate.
- Unity of school community will be supported and promoted through the inclusion of Small Learning Communities, shared spaces, and multi-use of spaces.

Be a model school for stewardship & sustainability

- The school facilities will incorporate natural light and daylight harvesting features.
- The school building and site will be a teaching tool for environmental stewardship.
- Select bldg. materials/systems that are sustainable, durable, and cost-effective. Select mechanical systems that are both energy efficient and simple/easy to operate and maintain.
- Use renewable energies (i.e. solar, wind) where appropriate and cost effective.
- Provide a healthy indoor school environment; including quality indoor air, quality acoustics, and supporting physical activity.
- Encourage environmentally responsible behavior through the inclusion of recycle stations, energy performance reporting stations and outdoor learning labs.
- Effectively use public funds to deliver a resource and energy-efficient school.
- Foster student health and wellness by encouraging physical activity, active lifestyle, and healthy eating.

Honor community context

- Design each of the three elementary schools (Wilkes, Fairview, and Troutdale) to reflect and honor the unique community/ neighborhood in which it resides while adding to the strength and stability of the neighborhood.
- Ensure that the design of each school is equitable in quality, program, and features.
- Design each school to celebrate and showcase the school's heritage and history.
- Utilize a design aesthetic that is not trendy and will pass the test of time. Consider the use of masonry as a preferred exterior building material.

PARITY & EQUITY



PROGRAMMING



	WILKES ES	FAIRVIEW ES includes SD administrative offices	TROUTDALE ES
School Area	66,067	73,902	59,136
		18206	
		55,696	
Programmed Capacity	527	480	450
SF/student	125.4	116.0	131.4
General Classrooms	17	16	15
Special Use Classrooms	5	5	5
Computer Labs	1	2	2
Music & Science/Art	1	2	2
Portables	0	0	0
Cafeteria size	4260	4050	3672
capacity	284	270	244

- Initial Programming – Create Individual Schools
- Enrollment
- Unique Program Elements

PROGRAMMING

FAIRVIEW ELEMENTARY

FAIRVIEW ELEMENTARY 7-Mar-16		max capacity	588	
SPACE ALLOCATION SUMMARY		average capacity	546 STUDENTS 73,033 SF	
PROGRAM DESCRIPTION	AREA ALLOCATION			
	TEACHING STATIONS	# ROOMS	SQUARE FEET	TOTAL SF
CORE ACADEMICS				
• KINDERGARTEN				
› Kindergarten Classrooms	4	4	1,100	4,400
› Kindergarten Toilet		4	50	200
› Learning Commons		1	900	900
• GRADE LEVELS 1-2				
› Classrooms - 4 per Grade Level	8	8	900	7,200
› Learning Commons		2	900	1,800
› Small Group Room		2	120	240
› Teacher Work/Prep/Storage		2	250	500
› Student Restrooms			INCLUDED IN BUILDING SUPPORT	
› Staff Uni-sex Restroom			INCLUDED IN BUILDING SUPPORT	
• GRADE LEVELS 3-5				
› Classrooms - 3 per Grade Level	9	9	900	8,100
› Learning Commons		3	900	2,700
› Small Group Room		3	120	360
› Teacher Work/Prep/Storage		3	250	750
› Student Restrooms			INCLUDED IN BUILDING SUPPORT	
› Staff Uni-sex Restroom			INCLUDED IN BUILDING SUPPORT	
Sub-Total	21			27,150
SPECIALIZED EDUCATION				
• Special Classrooms				
› SPED CLASSROOM	2	1	900	900
› SPED RESOURCE	1	1	900	900
› TITLE 1	2	2	400	800
› ELD Office/Conf/Meeting	3	1	320	320
Sub-Total	8			2,920
SPECIALTIES				
• PROJECT STUDIO (Sci/Art)				
› PROJECT STUDIO		1	1100	1,100
› Material/Supply Storage		1	100	100
› Project Storage		1	100	100
• MUSIC				
› Music/Stage		1	1100	1,100
› Music/Stage Storage		1	200	200
• FLEX CLASSROOMS (Computer Labs)				
› Flex Projects/ Classroom	2	2	1100	2,200
Sub-Total	4			4,800

- District-Wide Opportunities
- Program Parity & Equity
- Efficiency & Economy

PROGRAMMING

TROUTDALE ELEMENTARY

TROUTDALE ELEMENTARY				
March 7, 2016		max capacity	588	
SPACE ALLOCATION SUMMARY		average capacity	546 STUDENTS	
			73,033 SF	
PROGRAM DESCRIPTION	AREA ALLOCATION			
	TEACHING STATIONS	# ROOMS	SQUARE FEET	TOTAL SF
CORE ACADEMICS				
• KINDERGARTEN				
› Kindergarten Classrooms	4	4	1,100	4,400
› Kindergarten Toilet		4	50	200
› Learning Commons		1	900	900
• GRADE LEVELS 1-2				
› Classrooms - 4 per Grade Level	8	8	900	7,200
› Learning Commons		2	900	1,800
› Small Group Room		2	120	240
› Teacher Work/Prep/Storage		2	250	500
› Student Restrooms	INCLUDED IN BUILDING SUPPORT			
› Staff Uni-sex Restroom	INCLUDED IN BUILDING SUPPORT			
• GRADE LEVELS 3-5				
› Classrooms - 3 per Grade Level	9	9	900	8,100
› Learning Commons		3	900	2,700
› Small Group Room		3	120	360
› Teacher Work/Prep/Storage		3	250	750
› Student Restrooms	INCLUDED IN BUILDING SUPPORT			
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› PROJECT STUDIO	1			
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› Project Storage		1	100	100
› Project Storage		1	100	100
• MUSIC				
› Music/Stage	1			
› Music/Stage Storage		1	1100	1,100
› Music/Stage Storage		1	200	200
• FLEX CLASSROOMS (Computer Labs)				
› Flex Projects/ Classroom	2			0
› Flex Projects/ Classroom		2	1100	2,200
Sub-Total	4			4,800

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Page 1

- District-Wide Opportunities
- Program Parity & Equity
- Efficiency & Economy

PARITY & EQUITY

PROGRAMMING

WILKES ELEMENTARY

WILKES ELEMENTARY 10-Mar-16		max capacity	588	
SPACE ALLOCATION SUMMARY		average capacity	546 STUDENTS 73,033 SF	
PROGRAM DESCRIPTION	AREA ALLOCATION			
	TEACHING STATIONS	# ROOMS	SQUARE FEET	TOTAL SF
CORE ACADEMICS				
• KINDERGARTEN				
› Kindergarten Classrooms	4	4	1,100	4,400
› Kindergarten Toilet		4	50	200
› Learning Commons		1	900	900
• GRADE LEVELS 1-2				
› Classrooms - 4 per Grade Level	8	8	900	7,200
› Learning Commons		2	900	1,800
› Small Group Room		2	120	240
› Teacher Work/Prep/Storage		2	250	500
› Student Restrooms	INCLUDED IN BUILDING SUPPORT			
› Staff Uni-sex Restroom	INCLUDED IN BUILDING SUPPORT			
• GRADE LEVELS 3-5				
› Classrooms - 3 per Grade Level	9	9	900	8,100
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Page 1

- District-Wide Opportunities
- Program Parity & Equity
- Efficiency & Economy

PARITY & EQUITY

PLANNING & CONSTRUCTION



- Equity v. Prototype
- Concurrent Construction
- Occupied Sites
- Same Products & Systems
- Same Construction Conditions
- Same but Tailored – Orientation, Access, Parking

WHOLE CHILD DEVELOPMENT

A circular inset image of a classroom. In the foreground, a young boy is seen from behind, sitting at a desk and reading a book. Other students are seated at desks in the background, some looking towards the camera. A teacher is standing near a desk in the middle ground. The classroom has white walls, a large window, and a bookshelf filled with books. The text 'WHOLE CHILD DEVELOPMENT' is overlaid in white, sans-serif font across the center of the image.

SAFE ENVIRONMENT



- Monitoring Access & Entry
- Grade Level Learners Organized Around Common Areas
- Belonging to a Smaller Community

TEACHING & LEARNING



- “Fat L” Learning Studio
 - Plenary
 - Small Group
 - Independent Learners

TEACHING & LEARNING



- Large Group
- Essential Service Within the Community
- Grade-Specific Spaces
 - Grades K-1
 - Grades 2-3
 - Grades 4-5

PHYSICAL NEEDS



- Free & Reduced Meals Program
- Family Support Services

PHYSICAL NEEDS



- Outdoor & Indoor Play Areas
- Before & After School Programs

COMMUNITY



- Wall Mural –
History & Heritage of
Each School

COMMUNITY



- Oversized & Flexible Commons/Gymnasium
- Maker Space – Hands On Learning + Community Use
- School-Based Facilities for Families

A vibrant green leaf is shown dripping a single drop of water into a pool of water below it. The water droplet is captured mid-fall, just above the surface, where it has just created a series of concentric ripples. The background is a solid, bright green color, and the overall composition is clean and minimalist, symbolizing nature and sustainability.

INTEGRATED SUSTAINABILITY

DISTRICT GOALS



- Resource & Energy Efficient
- Daylight Harvesting

DISTRICT GOALS



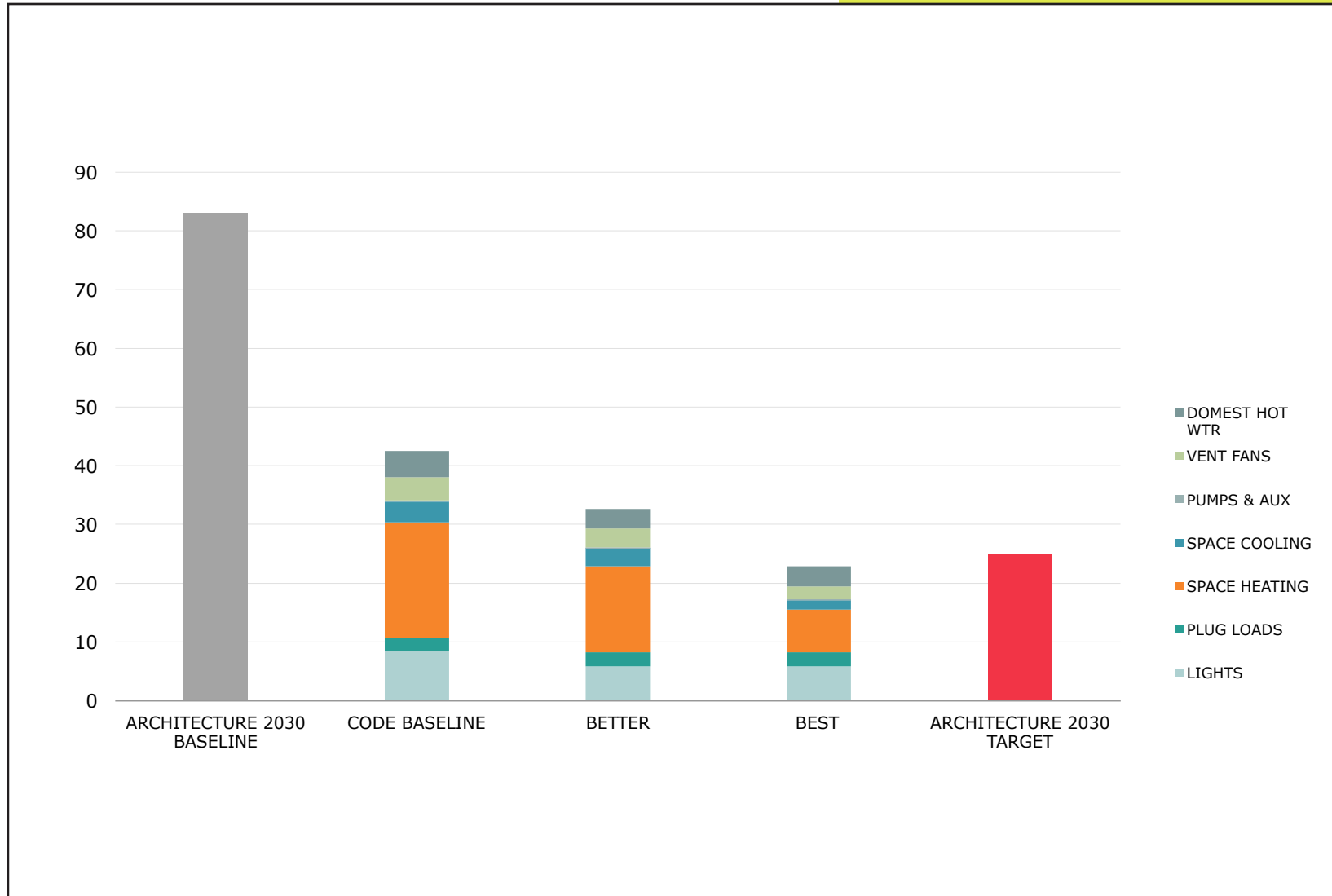
- Cost-Effective Maintenance
- Teaching Environmental Stewardship
- Path to Net Zero
- PV Ready

PROCESS TO NET ZERO



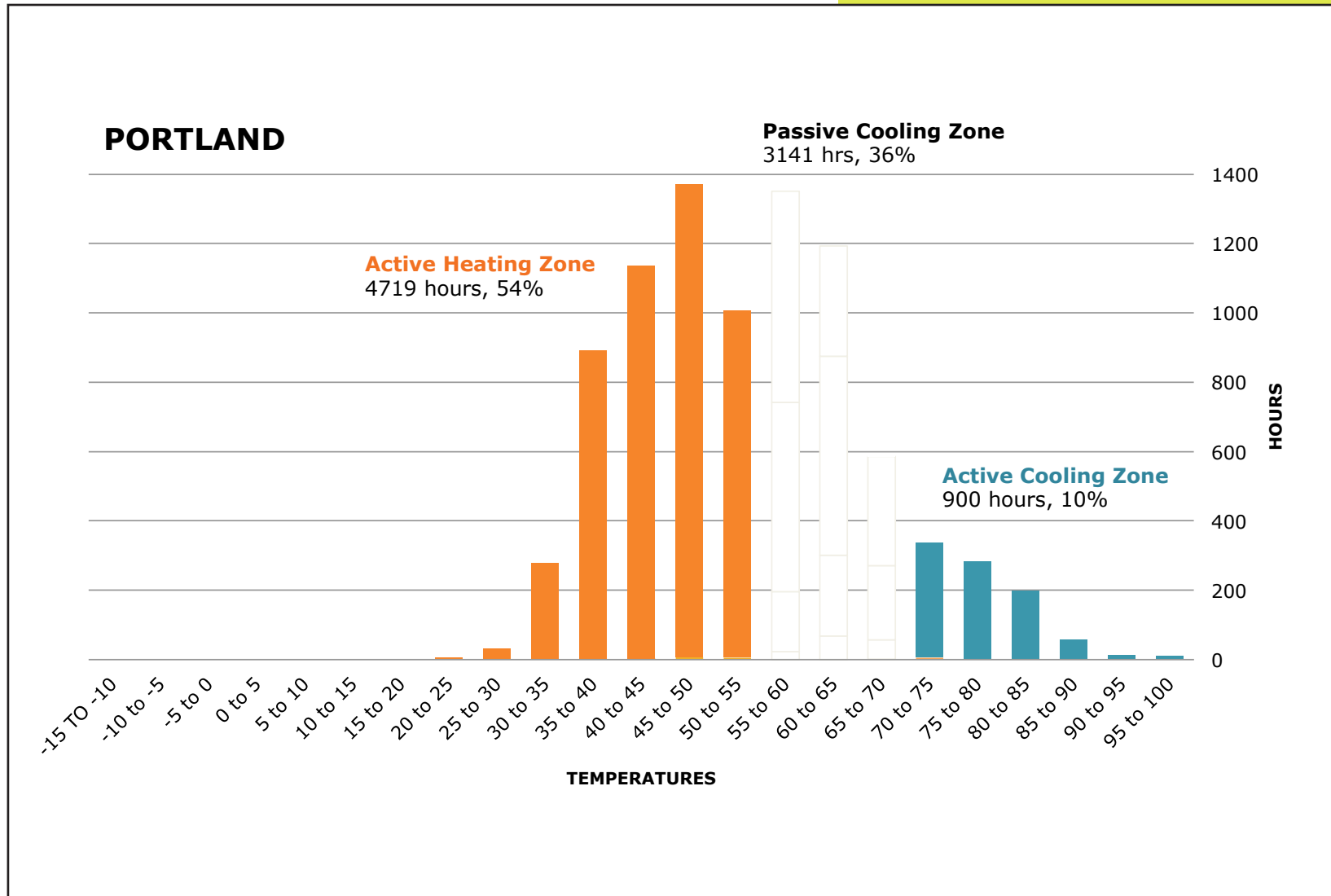
- Guiding Principals
- Multiple HVAC Options
- High Performance Building Envelope
- Natural Ventilation
- Active Supplemental Systems for Heating & Cooling

ENERGY USE GOAL SETTING



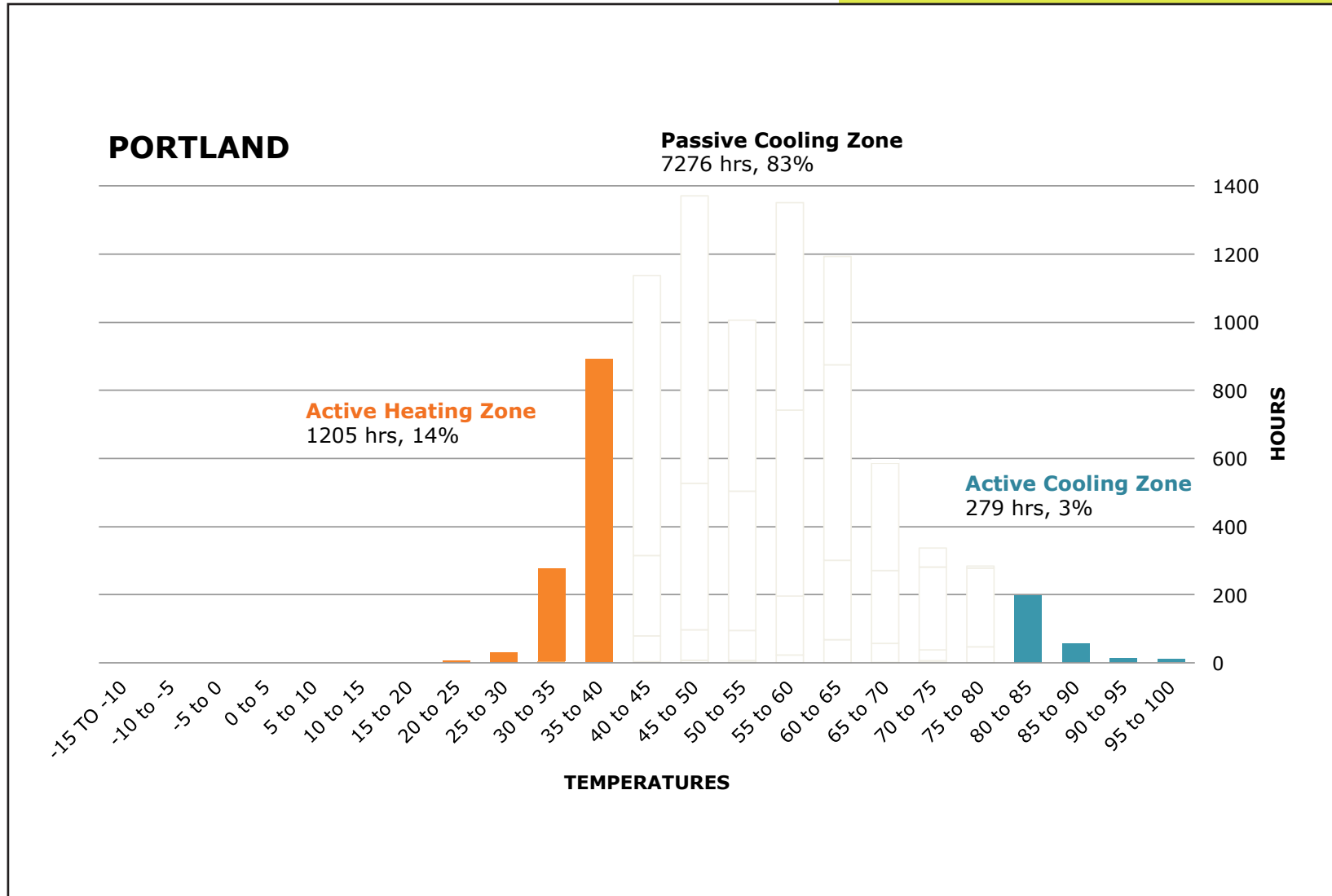
CLIMATE ANALYSIS

BIN DATA TYPICAL

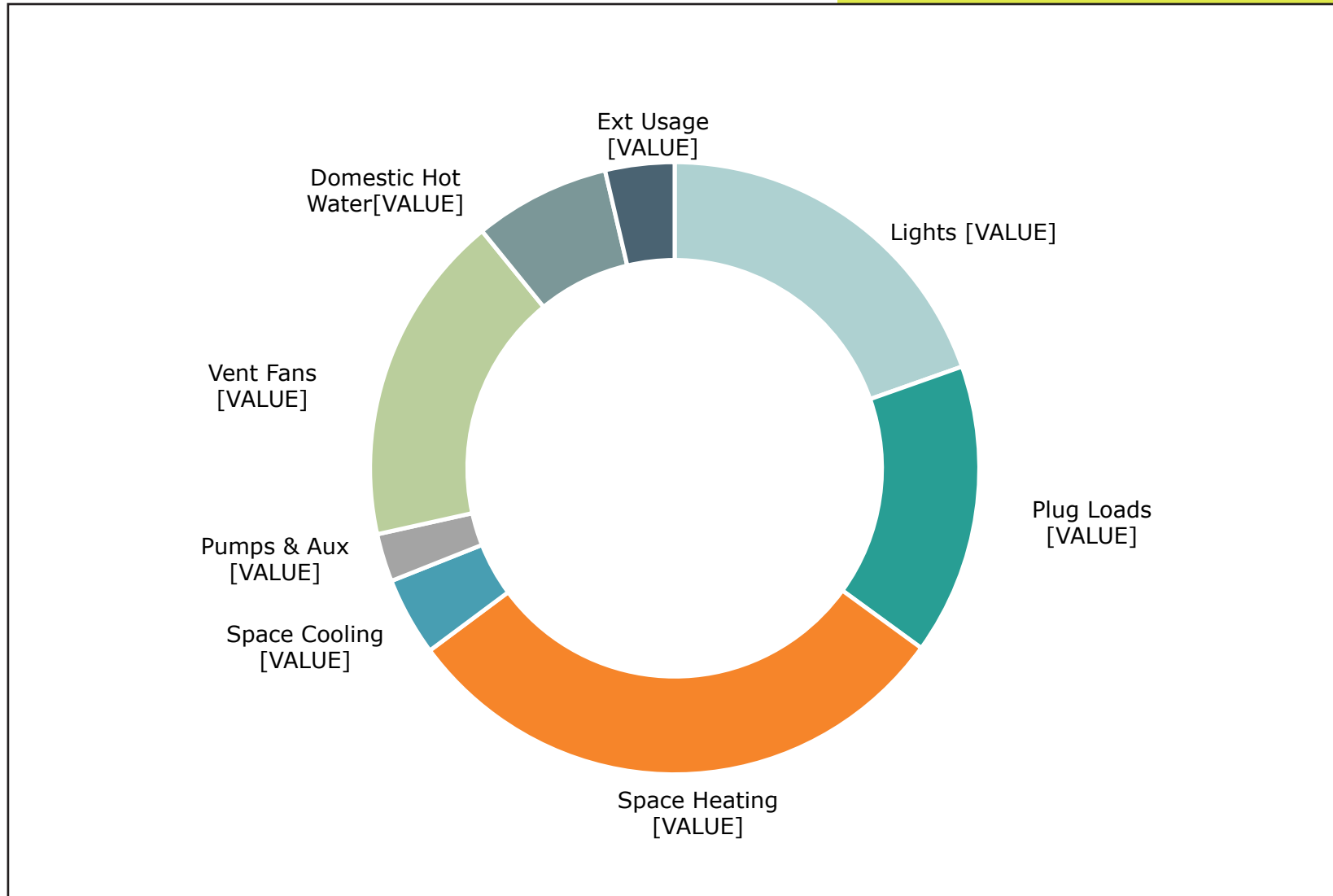


CLIMATE ANALYSIS

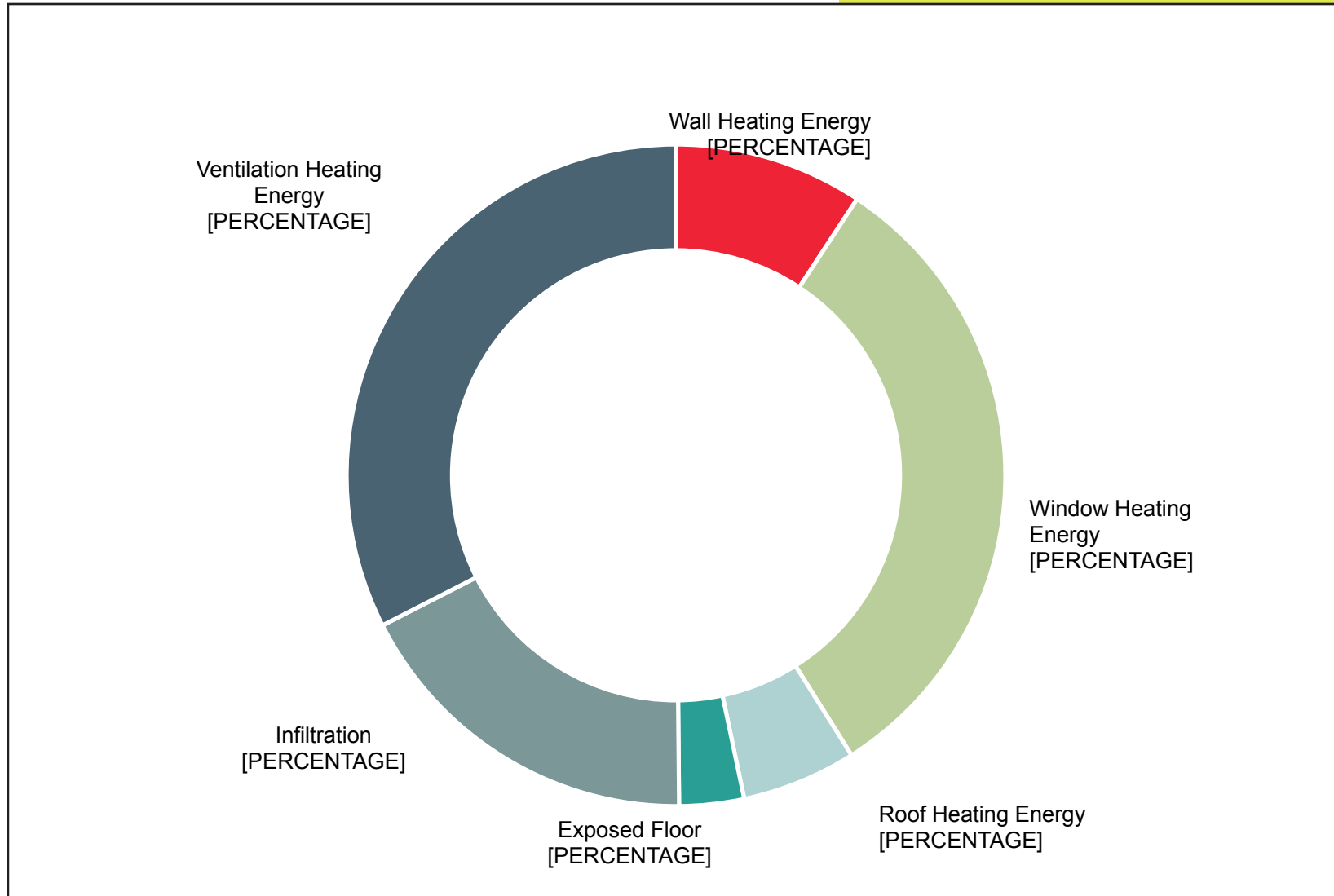
BIN DATA PASSIVE



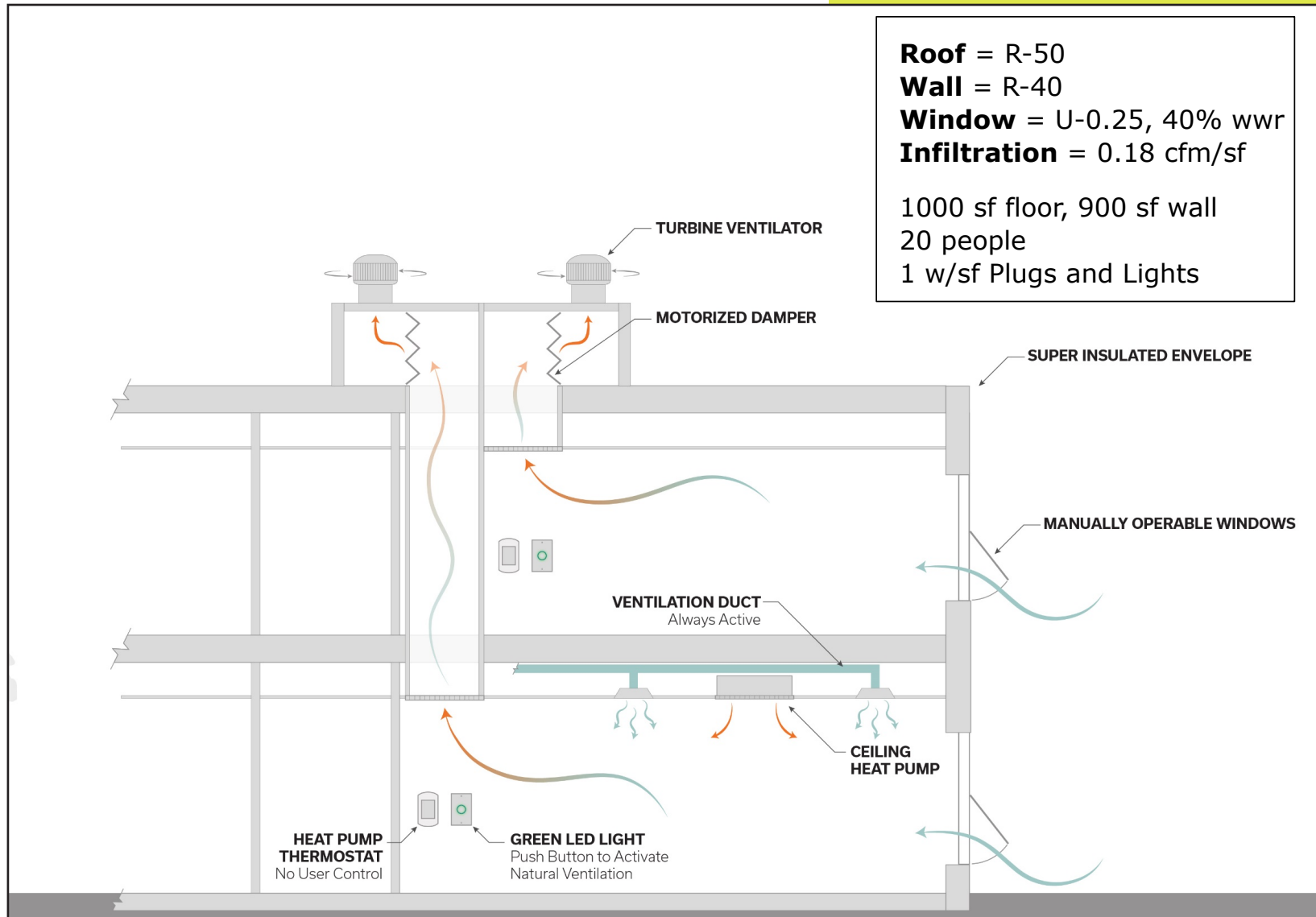
ENERGY USE BREAKDOWN



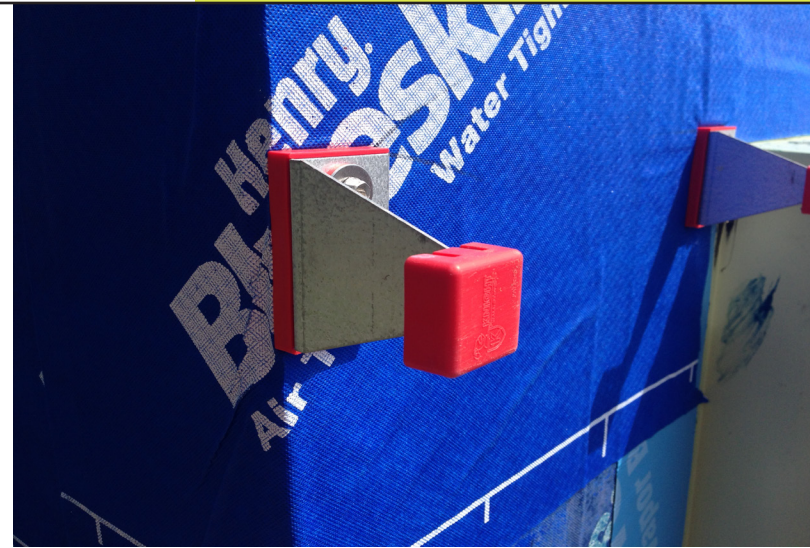
HEATING ENERGY BREAKDOWN



PASSIVE APPROACH



PASSIVE HEATING WALL DETAILS



INTEGRATED SUSTAINABILITY

PASSIVE HEATING

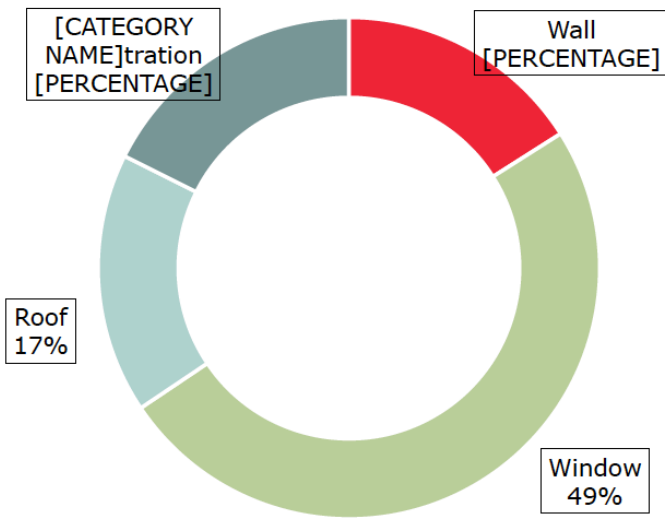
WALL DETAILS



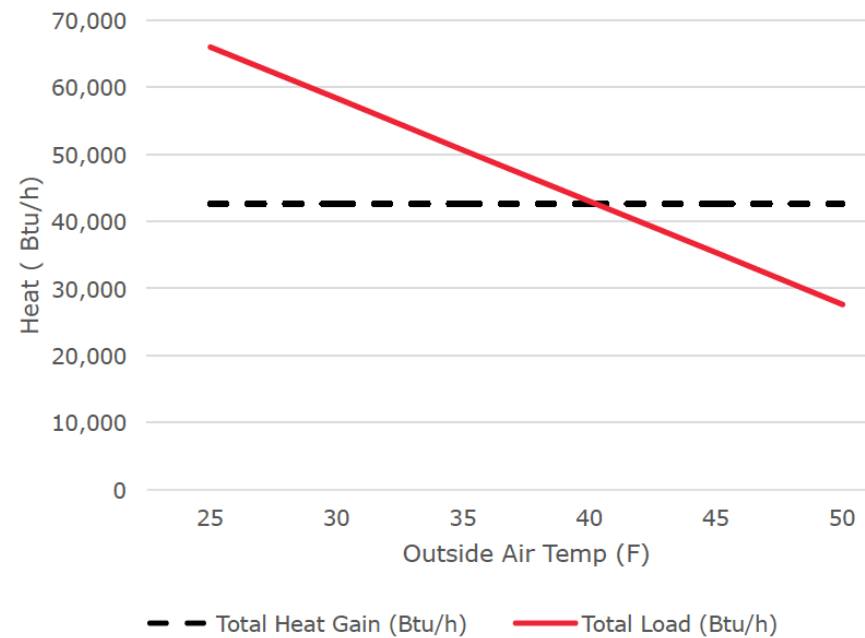
INTEGRATED SUSTAINABILITY

BALANCE POINT TEMPERATURE

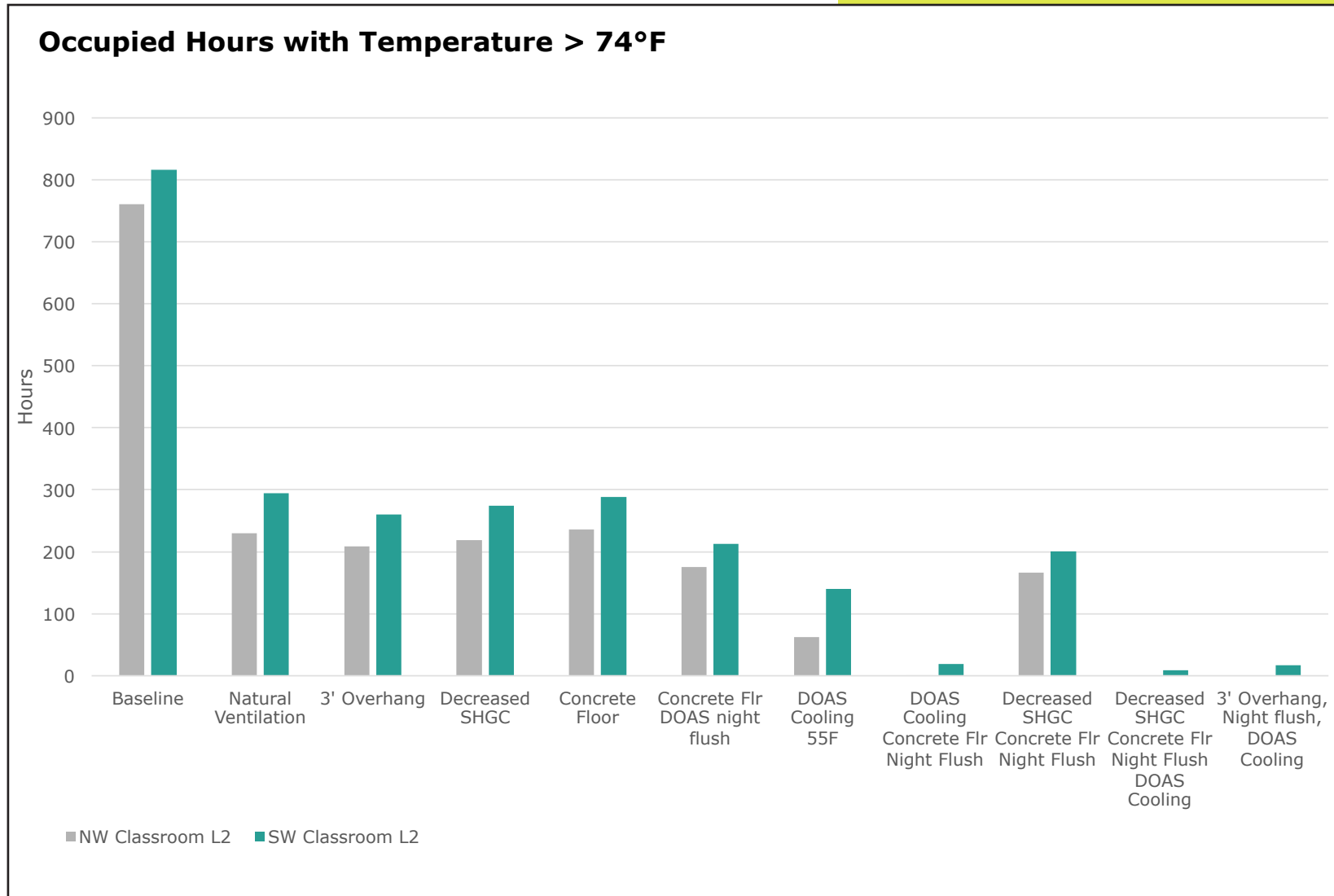
Heat Load in Passive Buildings



Balance Point Temperature



PASSIVE COOLING THERMAL COMFORT



PASSIVE COOLING HEAT MAPS

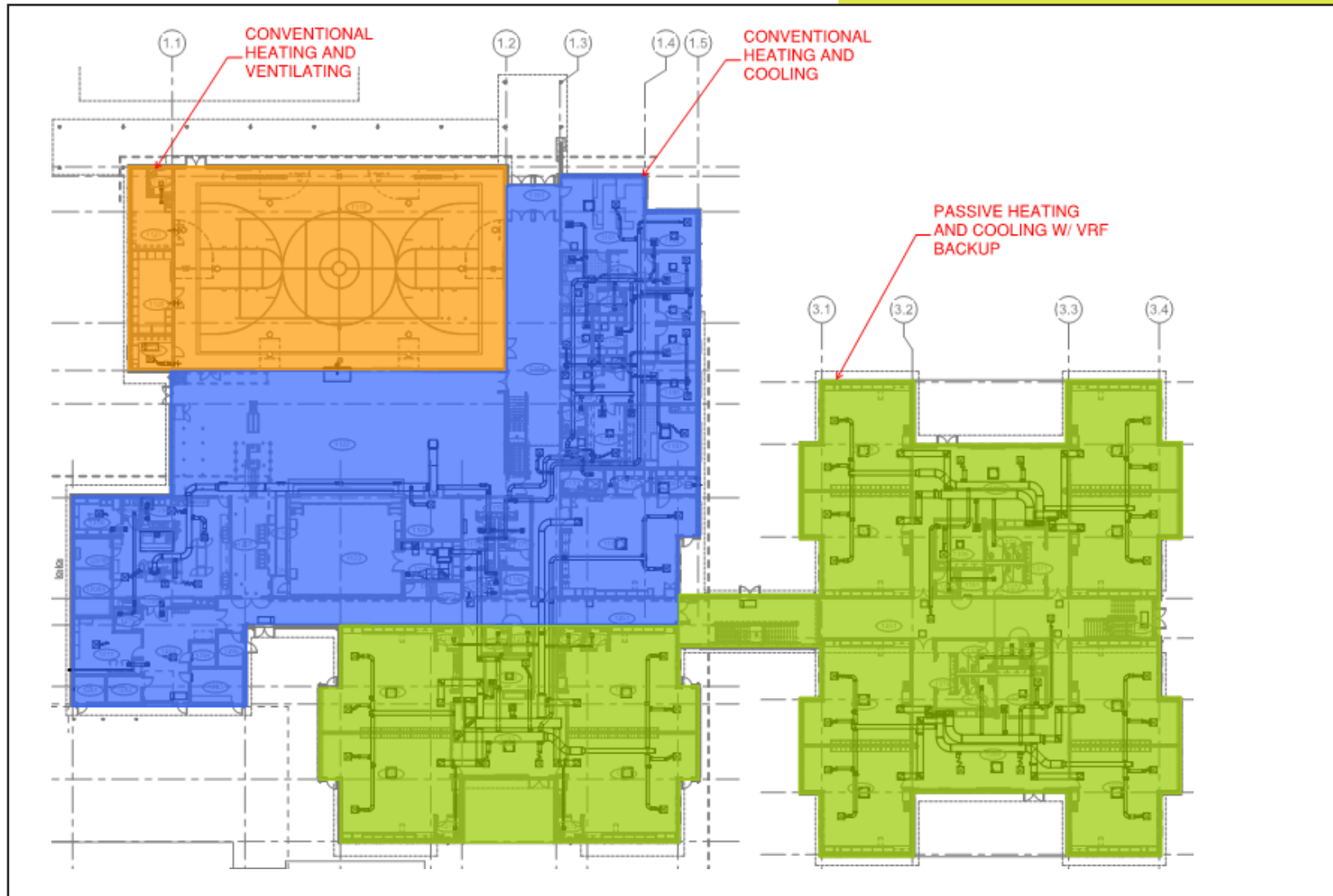
August – Option 12

Hour	1-Aug	4-Aug	5-Aug	6-Aug	7-Aug	8-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	
7	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0
8	69.3	69.5	69.3	69.3	69.3	68.9	68.7	69.2	69.5	69.8	69.7	69.3	69.4	68.7	68.6	68.7	69.5	69.3	69.3	69.1	68.9	
9	70.0	69.8	69.7	69.9	69.8	69.5	69.6	69.7	70.8	71.1	70.1	69.6	69.2	69.7	69.4	69.6	69.9	69.7	69.9	69.5	69.7	
10	70.2	70.4	70.1	70.5	69.4	69.7	69.8	70.1	72.0	72.3	71.0	69.7	69.3	69.3	69.6	69.7	71.1	70.3	69.8	69.3	69.9	
11	69.9	70.7	70.5	71.5	70.0	70.0	70.0	69.9	72.6	72.9	71.8	69.8	69.4	69.7	69.5	70.3	72.0	71.6	70.0	69.6	70.2	
12	70.7	71.9	71.8	72.6	70.3	70.7	71.1	70.7	73.2	73.6	73.1	70.2	69.6	69.5	69.7	71.4	72.9	72.8	70.6	70.2	71.3	
13	72.0	72.8	72.8	73.4	70.2	71.7	72.0	71.6	74.1	74.5	74.0	71.3	70.2	70.3	70.1	72.3	73.9	73.8	72.1	71.0	72.5	
14	72.5	73.4	73.3	74.0	70.2	72.4	72.6	72.5	74.6	75.0	74.7	71.8	70.2	71.1	70.5	73.0	74.5	74.5	73.3	72.2	73.1	
15	70.6	71.4	71.3	72.0	69.5	70.4	70.7	70.7	72.6	73.1	72.7	70.6	68.8	69.8	69.5	71.2	72.7	72.7	71.5	70.7	71.3	

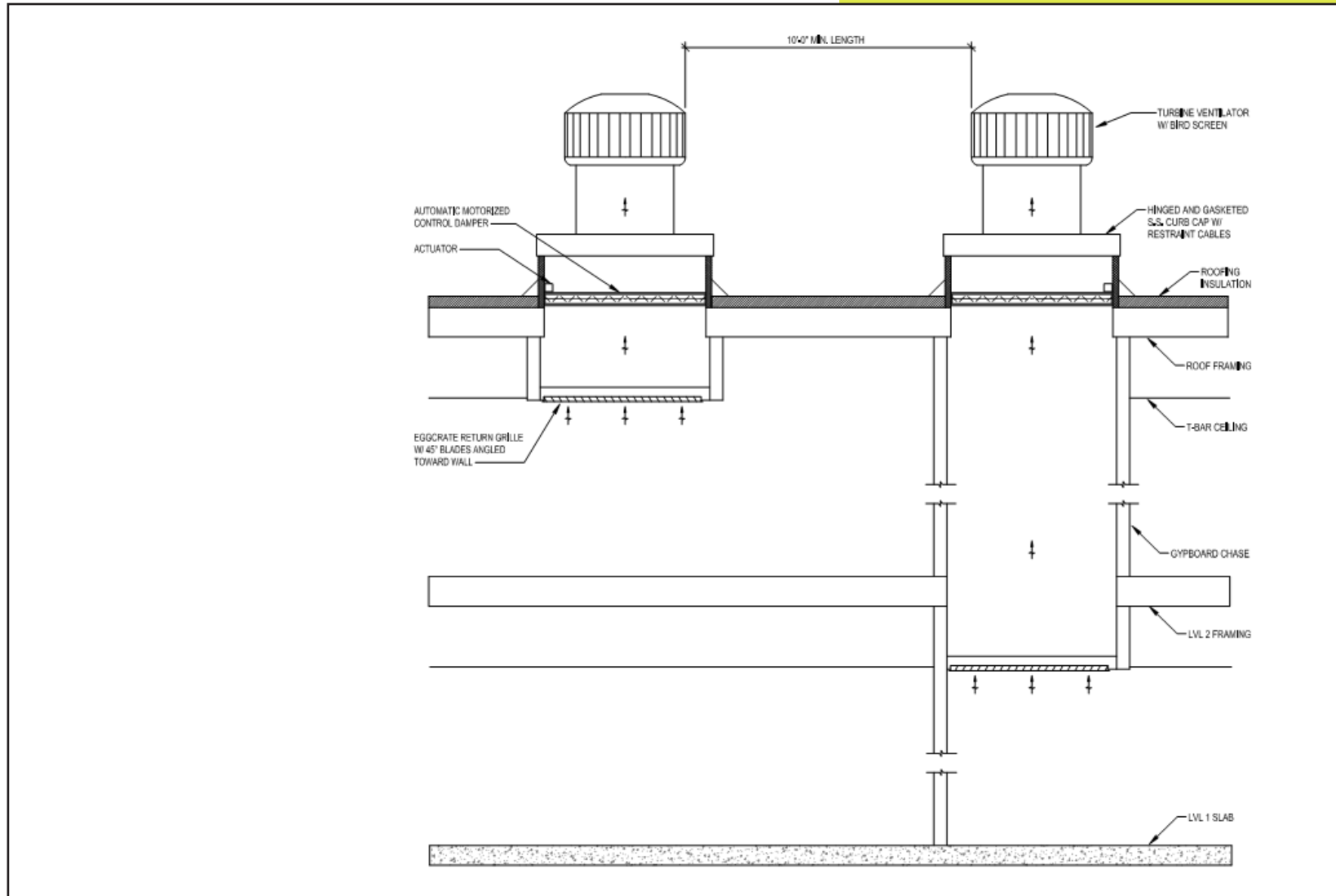
August – Option 7

Hour	1-Aug	4-Aug	5-Aug	6-Aug	7-Aug	8-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug
7	69.6	69.8	69.1	69.9	70.6	68.0	68.0	69.8	70.0	72.3	71.8	71.5	69.4	68.0	68.0	68.0	69.7	70.3	70.0	68.6	68.0
8	70.2	69.7	70.0	70.4	70.7	69.4	69.3	70.4	70.8	73.5	71.5	70.6	69.6	69.4	69.0	69.4	70.5	70.1	70.3	69.5	69.2
9	71.4	71.6	70.6	71.3	70.7	69.6	70.0	70.4	73.7	74.8	73.4	70.8	69.3	69.2	69.5	69.6	71.5	70.9	70.6	69.6	69.8
10	72.3	73.2	72.0	73.4	70.9	70.1	70.5	71.1	77.9	77.5	75.2	70.8	69.7	70.0	69.8	70.5	74.1	72.5	70.9	69.4	70.8
11	71.0	73.0	73.2	74.6	71.4	71.4	72.0	71.7	80.5	80.0	76.6	70.7	69.2	69.8	70.2	72.1	76.1	74.2	71.6	70.7	72.5
12	72.6	74.5	74.5	77.3	72.0	72.3	74.2	72.9	82.5	82.7	78.7	72.2	70.0	70.1	70.5	74.4	78.7	77.9	73.4	71.7	73.9
13	75.3	76.7	76.1	79.3	71.0	73.3	75.8	74.6	84.1	84.8	80.8	74.1	71.6	71.7	70.7	77.3	81.3	81.3	75.2	73.2	75.7
14	75.5	78.7	77.7	80.9	71.3	74.4	77.8	75.0	85.6	86.5	82.8	74.6	71.9	73.3	71.9	79.7	83.5	83.4	76.6	74.6	77.7
15	74.1	78.4	77.9	80.7	71.0	74.4	77.9	75.8	84.8	85.9	82.8	73.8	70.4	73.4	71.6	79.5	83.1	83.2	76.1	74.5	77.8

HVAC SYSTEMS



NATURAL VENTILATION STACK



NATURAL VENTILATION STACK



INTEGRATED SUSTAINABILITY

SYSTEM CONTROLS



Thermostat

+



LED Sensor



Ceiling Heat Pump

360°

REVIEW

REYNOLDS IN 360°

ENSURING PARITY & EQUITY

RSD Board & Administration are committed to serving all students equally by providing comparable:

- Schools, not just replacements
- Equipment & finishes
- Size & amenities
- Flexible funding to build parity



REYNOLDS IN 360°

WHOLE CHILD DEVELOPMENT

RSD Board & Administration are committed to helping the whole child succeed:

- Mind, body & a sense of belonging
- Safety & security
- Age-specific environments
- Integration of contemporary learning environments
- Student & family services beyond the classroom
- Supporting the community through families



REYNOLDS IN 360°

INTEGRATED SUSTAINABLE DESIGN

RSD Board & Administration are committed to a sustainable future:

- Durability & maintainability are priorities
- Energy conservation is a priority
- High performance building design
- Integrated student learning in controlling the learning environment via system controls



QUESTIONS?

