



2030 COMMITMENT SUSTAINABLE ACTION PLAN

SIEGEL & STRAIN Architects

MARCH 2018

PORTOLA VALLEY TOWN CENTER



CAMP NEWMAN, SANTA ROSA



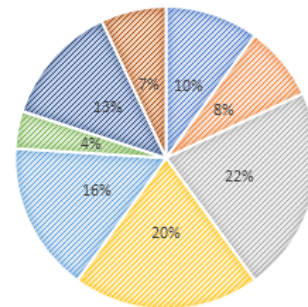
SIEGEL & STRAIN ARCHITECTS design places that engage and inspire people. A few simple design principles guide our approach to every project:

- › Great projects are tied to place and tuned to climate;
- › Sustainable design is a fundamental aspect of good design;
- › Simple, elegant, and well-crafted design has staying power;
- › Close collaboration leads to better buildings and stronger communities.

Siegel & Strain has long been a leader in sustainable design and we aim to raise the bar with every project. We design resilient and net-zero energy projects that are non-toxic, minimize embodied carbon, capture and reuse water, restore habitat, and mitigate the impacts of climate change. We are actively engaged in sustainable design advocacy, research, and education, serving on boards, advisory panels and advocacy groups, and sharing our knowledge and experience with students and colleagues. Over the last 30 years we have worked with extraordinary clients over the last 30 years on a wide variety of projects, master planning large sites, and designing new buildings and rehabilitation, adaptive reuse, and historic preservation projects. Many have been recognized with awards for design excellence, innovation in sustainable design, historic preservation, and research that sets new standards for our profession.

OUR PROJECTS

- CAMPS & RETREATS
- CIVIC
- COMMUNITY
- EDUCATION
- HISTORIC
- LIBRARIES
- PARKS & RECREATION
- RESIDENTIAL



4 AIA COMMITTEE ON THE ENVIRONMENT TOP TEN PROJECTS

9 AWARDS FOR SUSTAINABILITY & HISTORIC PRESERVATION IN 2017

2 ZERO NET ENERGY VERIFIED PROJECTS

91 AWARDS & RECOGNITION OVERALL



WILSHIRE BOULEVARD TEMPLE CAMPS



NATIONAL ENVIRONMENTAL SCIENCE CENTER

OUR APPROACH

ALL BUILDING DESIGN IS ENVIRONMENTAL — and buildings, landscapes and cities are all subsets of the larger environment. Paraphrasing environmental educator David Orr from his seminal piece *Environmental Literacy: Education as if the Earth Mattered*, we start every project by asking the big questions:

- › Is it needed?
- › What impact will it have on the community?
- › Is it safe to make and use?
- › Can it be repaired, reused or recycled?
- › What is the real environmental cost over its lifetime?
- › Is there a better way to do it?

Our goal is to create buildings that are functional, beautiful and well-loved, because well-loved buildings are well cared for and ultimately that's what makes them sustainable. Along the way, we seek to eliminate or at least minimize the impacts of constructing and operating buildings. Specific elements of our approach include:

COLLABORATIVE DESIGN

Sustainable design is participatory, interactive and iterative. It is too complex to be understood through a single discipline. Good design, especially good sustainable design, requires strong collaboration between designers, clients and project users.

REGIONAL & SITE SPECIFIC DESIGN

Architecture is a dialog with place; we design to make strong connections to that particular place. We investigate the predevelopment ecological profile of the site for clues to appropriate design strategies. We consider the lay of the land, the project context, the impacts of land use, transportation and density. We use local resources and materials.

CLIMATE-BASED DESIGN

We design buildings to take best advantage of their climate. We use passive strategies – orientation, shading, thermal mass, natural ventilation – to optimize building performance. We can then condition our buildings with smaller and more efficient systems, powered by fewer renewable energy resources.

WATER CONSERVATION

We consider the local watershed, where water on the site comes from and where it drains. Where we can, we keep water on site; we conserve it, collect it, treat it, and re-use it.

DESIGN FOR REUSE & LONG LIFE

Buildings last a long time. They are part of a longer story than most things we make. This has led us away from trends towards design that is simple, adaptable and durable. We consider the full life-cycle of the products and assemblies we use from extraction and manufacturing to design and construction and through deconstruction and reuse.

GREEN MATERIALS

We consider both the long-term and short-term impacts of our buildings, selecting materials that conserve resources and minimize impacts on the environment and human health. We prefer local materials that are durable and easy to maintain. We track embodied energy and CO₂ emissions in our projects so that we can reduce them.

RESEARCH / LESSONS LEARNED

We measure impacts and outcomes of our projects with post-occupancy evaluations and in-house research. We ask questions, try out new materials and technologies, and share what we learn with colleagues. With each project, we gauge how close we come to attaining our central goal: eliminating or minimizing impacts — and we apply lessons learned to our next project.



OUR TOOLS

THE 2030 COMMITMENT

We are a proud signatory of the 2030 Commitment, a national initiative to track energy use reductions for all new building with the goal of achieving carbon neutrality by 2030. Since its start, the reduction target has been steadily increased. Currently, the goal is a 70% reduction in energy use compared to similar buildings. The goal will increase to 80% in 2020, 90% in 2025 and finally 100% in 2030. The platform allows firms to compare data, best practices and energy use from around the nation. In 2016, signatory firms achieved a national average of 42% energy use reduction vs the national average, short of our goal, but an increase from previous years.

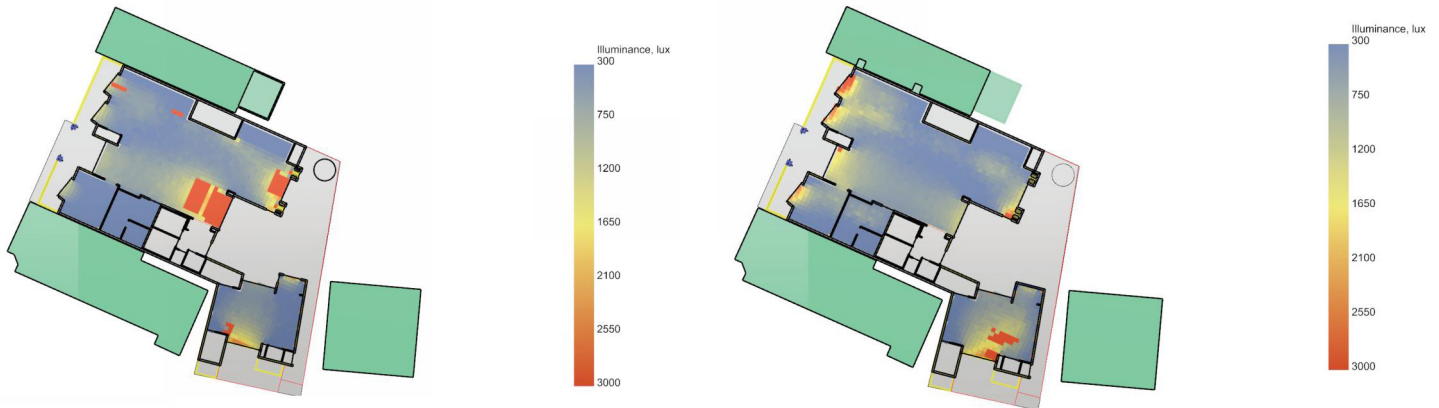
Our Goal: Hit the target of 70% reduction versus the national average.

ENERGY MODELING AND PERFORMANCE DRIVEN DESIGN

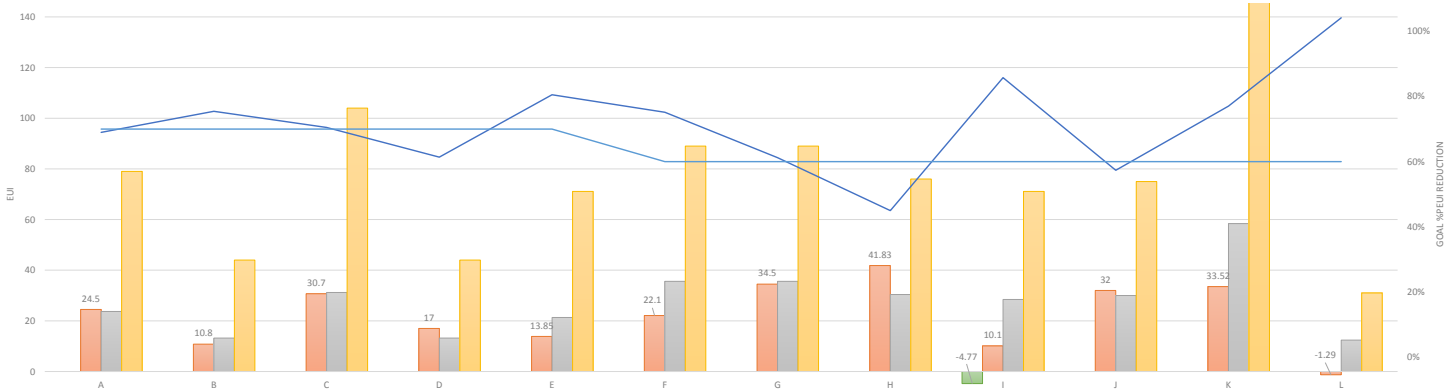
We hold ourselves accountable and ensure our projects perform as intended. Beyond the 2030 goals of energy use reduction, we track 80 different data points on a range of sustainability goals including cost, energy, building envelope, lighting, water, materials and site. When possible, we collect post occupancy data to compare how our projects perform. Some of the modeling criteria we perform includes:

- › Life Cycle Analysis
- › Daylighting
- › Energy Modeling, auditing and benchmarking
- › Building Assembly Analysis
- › Water Conservation Analysis

Our Goal: Track and compare data points on all incoming projects. Perform energy modeling at the conceptual stage of every project.



DAYLIGHT MODELING OF THE BRISBANE LIBRARY



TRACKING OUR PROJECTS ENERGY USE INTENSITY AGAINST 2030 COMMITMENT GOALS

Actual EUI Predicted EUI EUI Goal EUI Baseline % pEUI Reduction % pEUI Goal



CAMP ARROYO, AIA COTE TOP TEN PROJECT: Strawbale walls in the Dining Hall; Bath Houses

SUSTAINABLE MATERIALS AND EMBODIED ENERGY

The current gold standard for reducing emissions from buildings is to build new, net-zero-energy (NZE) buildings—super-efficient buildings powered by renewable energy sources. The AIA 2030 reporting process focuses on reducing predicted EUI (Energy Use Intensity) of new projects. This is an important piece of getting to a carbon-neutral built environment, but there is a problem with this strategy: building those new NZE buildings will still generate a lot of emissions. We need to reduce carbon emissions immediately to avoid to most dramatic repercussions of climate change.

Two other sources of emissions may be even more important to address in the short term:

- › Embodied emissions from building materials, products, and construction processes.

Embodied emissions are the first emissions a building generates. Based on Siegel & Strain’s own experience with building low-carbon buildings, we know we can reduce embodied emissions by around 30% by selecting existing materials and technology, by using lower-carbon materials, and by employing more-efficient design and construction processes. But an even more effective way to reduce embodied emissions is to reuse existing buildings. Building renovation generates significantly less emissions than new construction does and creates an opportunity to reduce operating emissions from existing buildings. Yes, we still need new buildings. Buildings wear out, priorities change,

and populations shift and grow. That said, we could be reusing a lot more buildings than we currently do.

- › Operating emissions from the buildings we already have.

Operating emissions from existing buildings are an even bigger source of emissions. There are about 310 billion ft² of buildings in the United States, and operating them generates about 2.2 billion metric tons of GHG emissions every year—about one-third of total U.S. GHG emissions. The majority of the buildings in use today will still be in use in 2030, so existing buildings are the buildings we need to improve. When the renovations include deep energy upgrades—even making them NZE buildings—we address two sources of GHG missions at the same time. We reduce embodied emissions compared to new buildings, and we reduce operating emissions from existing buildings. And the good news is, we already know how to do this:

- Improve efficiency: upgrade the lighting, HVAC systems, equipment, controls, etc.
- Improve the building envelope: insulation, windows, shading, air sealing, daylighting.
- Power them with renewable energy.



YOUNTVILLE COMMUNITY CENTER

OUR 2030 COMMITMENT SIGNATORY LETTER

OUR DATA

January 21, 2015

SIEGEL & STRAIN Architects

Robert Ivy, FAIA
 EVP/Chief Executive Officer
 The American Institute of Architects
 1735 New York Ave., NW
 Washington, DC 20006-5292

Dear Robert:

Siegel & Strain Architects, an 18-person firm located in Emeryville, California is hereby signing on to the AIA 2030 Commitment program and its goal of carbon-neutral buildings by the year 2030.

The places where we live, work, and play represent the largest sources of greenhouse gas emissions in America, as well as around the world. The design and construction industry has made significant strides toward creating high performance buildings of all types and uses. As a result, the industry is positioned to have a profound impact by continuing to foster high building performance and reducing building-related greenhouse gas emissions.

As architects, we understand the need to exercise leadership in creating the built environment. We believe we must alter our profession's practices and encourage our clients and the entire design and construction industry to join with us to change the course of the planet's future. A multi-year effort will be required to alter current design and construction practices and realize significant reductions in the use of natural resources, non-renewable energy sources, and waste production and promote regeneration of natural resources.

We therefore commit Siegel & Strain Architects to take the following steps which are part of the AIA 2030 Commitment program:

- Within two months of the commitment date, establish a team or leader to guide the development and implementation of the firm's plan
- Within six months of signing the commitment, the firm will implement a minimum of four operational action items from the list provided. These actions will be undertaken while the long-term sustainability plan is in development
- Within one year of signing the commitment, the firm will develop a sustainability action plan that will demonstrate progress toward the AIA's 2030 goals.
- At the conclusion of the year, and each year thereafter, the firm will report on the progress of the firm's design portfolio towards meeting the 2030 goals by using the [AIA 2030 Commitment Reporting tool](#).

We also support the critical need for more consistent and more rigorous metrics related to actual building performance. We further commit our firm's assistance to the AIA and others in the ongoing development of effective metrics and standards for reporting purposes. It is understood that reporting through the AIA 2030 Commitment program must respect the confidentiality of information about specific clients, projects, and proprietary tools.

We look forward to working with you and our professional colleagues to achieve the goals of the 2030 Commitment.

Sincerely,



Henry Siegel, Principal, FAIA, LEED AP

cc: Larry Strain, Principal, FAIA, LEED AP
 Susi Marzuola, Principal, AIA, Board Member, AIA East Bay, LEED AP
 Nancy Malone, Principal, AIA, LEED Fellow
 Burton Edwards, Principal, AIA, LEED AP

Project Code		3/15/2017	3/15/2017	3/15/2017	12/18/2017
Last updated		SD	Final	Final	CA
Current Project Phase (SD, DD, CD, CA)					
Year started		2016	2015	2016	2017
Year completed		2016	2016	2016	2016
OSR		6700	11678	27720	9500
Total Occupants					
Building use/type	Residential	Office, Clinic	Education	Community Center	
Construction type	V		III-A	V-B	
New or Rehab	NEW	NEW	Rehab	NEW	
Construction budget (Millions)		\$2		\$5	\$5
Bid				\$5.1	
Final Construction Cost				\$5.1	
Change Orders - Amount (excluding owner initiated)				\$5.1	
Change Orders - % of bid				0%	
Cost per square foot (Building only)		\$300		\$184	\$536
Operating cost (Btu reduction from baseline)					
Building Code/year		2016	2013	2013	2016
Energy Code/year (T-24)		2016	2013	2013	2016
LEED					
Living Building					
Passive House					
2030 goal	70%	70%	N/A		70%
% pEUI Reduction	75%	69%			21%
Actual % EUI Reduction					
Baseline EUI	44	79			94.3
T-24 Baseline EUI					28.3
Goal EUI	13.2	23.7			
pEUI w/ renewables (kbtu/sf)	10.8	24.5			
pEUI w/o renewables (kbtu/sf)					74.67
Actual EUI (if available)					
T-24 Modeling software used (bottom of T-24 report)					EnergyPro 7.2
Mechanical system type	Air Source Heat Pump		Hydronic Radiators	Air Source Heat Pump	
Additional Energy Modeling used?	Insight 360				
at what phase(s)	SD				
Commissioning performed?	N		N	N	
Cooling eliminated?	Y		Y	N	
Natural Ventilation?	Y		Y	N	
Ceiling Fans?	N		Y	N	
Solar PV?	Y		N	N	
Solar Thermal?	N		N	N	
Gas Eliminated?	N		N	N	
Cogen?	N		N	N	
Economizer?	N		N	N	
Geothermal?	N		N	N	
Radiant Heating?	Y		Y	N	
Unconditioned circulation?	N		Y	N	
High Efficiency HVAC?	Y		Y	Y	
HVAC Occ. Sensor?	N		N		
Increase Comfort Range?			Y		
Other?					
Roof R value	40				46
Wall R value	24				25
Window Wall Ratio					32%
Optimized Orientation?	Y		N	N	
Continuous Insulation?	N		N	Y	
Cool Roof?	N		N	N	
Exterior Shading?	N		N	Y	
Interior Shading?	Y		Y	Y	
High Performance Glazing?	Y		Y	Y	
Fritted Glazing?	N		N	N	
Envelope Commissioning?	N		N	N	
Therm Modeling?	N		N	N	
Thermal Mass?	Y		Y	N	
Massing suitable to climate zone?	N		N	Y	
Other?					
LPD (watts/sf)				0.53	0.71
% Daylit					
LED Lighting?	Y		Y	Y	
Occupancy/Vacancy Sensors?	Y		Y	Y	
Daylight Sensors?	Y		Y	Y	
Light Reflecting? (Light pipe, shelf, blind)	N		N	N	
Task Lighting?			N	N	
Predicted building gal/person/year					
Actual building gal/person/year					
Rainwater Capture?	Y		N	N	
Greywater/blackwater system?	N		N	N	
% water saved					
No cooler H2O?	N		Y	Y	
Low Flow Fixtures?	N		Y	Y	
Bottle Station?	N		N	Y	
Operating Carbon lb/sf/year					
Total Embodied Carbon lb/sf/year					
Foundation Embodied Carbon lb/sf/year					
Structure Embodied Carbon lb/sf/year					
Envelope Embodied Carbon lb/sf/year					
Interior Embodied Carbon lb/sf/year					
MEP Systems					
Site					
Tally used?	N		N	N	
LCA performed?	N				
% waste diverted?			65%	65%	
HDP's used?					
EPD's used?					
Red List materials avoided?	Y		N		
VOC's reduced?	Y		Y	Y	
Formaldehyde avoided?	Y		Y	Y	
HFR's reduced?	Y		Y	Y	
(Halogenated flame retardant)	Y		Y	Y	
Highly Fluorinated chemicals avoided?	Y		Y	Y	
Antimicrobials avoided?	Y		Y	Y	
Bisphenols and Phthalates avoided?	Y		Y	Y	
Solvents avoided?	Y		Y	Y	
Heavy Metal avoided?	Y		Y	Y	
Salvaged material used?	N		Y	Y	
Reduced finishes/materials?	N		Y	Y	
% of site supporting vegetation			75%	63%	
% supporting veg. before project			75%		
% permeable			75%	63%	
Permeable hardscape used?	Y		N	N	
Green Roof?	N		N	N	
Bio-wales?	Y		N	Y	
Rain Gardens?	N		N	N	
Infiltration System?	Y		N	Y	
Indigenous Plants?	Y		Y	Y	
Outdoor Assembly?	Y		Y	Y	
Therapeutic Gardens?	Y		N	N	
Protected Trees?	Y		Y	Y	
Minimize site disturbance?	Y		Y	Y	
Reforesting?	Y		N	N	



OUR ADVOCACY & OUTREACH

SIEGEL & STRAIN HAS BEEN A LEADER IN SUSTAINABLE design since the early 1990s and actively engaged in sustainable advocacy, education, and research. Principals at Siegel & Strain have authored guideline specifications for GreenSpec, the most widely recognized directory of green materials in the United States; served on the boards of the Carbon Leadership Forum, the Northern California Chapter of the US Green Building Council and the Ecological Building Network; chaired the national American Institute of Architects' Committee on the Environment; served on the US Green Building Council's Technical Advisory Groups developing LEED standards; taught sustainable design courses at UC Berkeley; written many articles and sections of books on sustainable design; and spoken about sustainable design and the work of the firm at local, regional and national conferences.

Some of our current efforts include:

- › Advocacy for the use of Health Product Declarations and Environmental Product Declarations.
- › Advocacy for an alternative to Halogenated Flame Retardants.
- › Advocacy for the use of Life Cycle Assessments and the reduction of Embodied Carbon.
- › Advocacy for the elimination of Red List materials that contain VOCs, Highly Fluorinated Chemicals, Antimicrobials, Bisphenols, Phthalates, Solvents and Heavy Metals.
- › Advocacy in our schools by using the design process as a teaching tool to engage the next generation.

CENTER FOR ENVIRONMENTAL STUDIES, BISHOP O'DOWD HIGH SCHOOL: DESIGN CHARRETTES & WORKSHOPS WITH STUDENTS



OUR FIRM CULTURE

We are a Certified Green Business and walk our talk. 40% of our firm is LEED Accredited. More than half either walk, bike or take public transportation on a frequent basis. We have implemented various office policies to keep our carbon footprint low and our handprint high.

OFFICE ENERGY USE

- › Install occupancy sensors in meeting rooms and other common spaces.
- › Procurement of Energy Star-rated equipment and appliances.
- › Institute office-wide policy of shutting down computers when leaving the office.
- › Replacement of incandescent lamps with LED.

WASTE REDUCTION AND SUPPLIES

- › Reduce paper consumption by using electronic documents and forms.
- › Reduce paper consumption by implementing printing policies (i.e. printing double-sided, print drafts on discarded paper).
- › Institute a firm-wide recycling policy.

- › Implement policies for purchasing environmentally friendly office, kitchen, and cleaning supplies.
- › Implement policies for purchasing environmentally friendly office furniture.

TRANSPORTATION

- › Establish a policy for fuel-efficient rental cars for firm travel.
- › Establish a policy for offsetting firm travel.
- › Provide bike storage for employees.

MEETING PROCEDURES

- › Encourage virtual meetings when possible.
- › Encourage meeting participants to coordinate travel plans and share rides from the airport.

EDUCATION AND TRAINING

- › Appoint employees to head different areas of environmental research and share knowledge.
- › Encourage employees to attend lectures and conferences that address sustainable design approaches.

CENTER FOR ENVIRONMENTAL STUDIES, BISHOP O'DOWD HIGH SCHOOL: LEED PLATINUM, ZERO-NET ENERGY VERIFIED



