Tri-Agency Workshop:
SUSTAINABILITY

September 9, 2022

DSA
DIVISION OF THE STATE ARCHITECT
DEPARTMENT OF GENERAL SERVICES

OPSC
OFFICE OF PUBLIC SCHOOL CONSTRUCTION
DEPARTMENT OF GENERAL SERVICES

CAL FIRE
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ARCHITECTS

FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

green schoolyards america

DSA

DIVISION OF THE STATE ARCHITECT

DEPARTMENT OF GENERAL SERVICES

Tri-Agency Presentation: Sustainability

09.09.22

Eric Driever, AIA, CASp
Principal Architect

DSA AUTHORITY

Design and Construction Oversight

- ✓ Structural | Fire & Life Safety | Access
- ✓ Post Approval Documents

Additional Responsibilities

- ✓ Project Inspector Certification
- ✓ Testing Lab Certification
- ✓ DSA Academy
- ✓ CASp Certification
- ✓ CASp Outreach (SB 1186)
- ✓ Sustainability Outreach

Code Development Responsibilities

- ✓ Structural Safety
- ✓ Sustainability
- ✓ Accessibility (Statewide)

DSA LEADERSHIP
Headquarters

State Architect
Ida A. Clair, AIA, LEED AP BD+C, CASp

Deputy to the State Architect
Kurt Cooknick

Principal Structural Engineer for
Codes and Standards
Diane Gould, SE

Principal Architect for
Codes and Policies
Eric Driever, AIA, CASp

Chief of Administration
Justin Smith

DSA Regions

Oakland Regional Office Manager:

Dessa Rooney, Principal Architect

Sacramento Regional Office Manager:

Harlan Reymont, Principal Architect

Los Angeles Regional Office Manager:

Douglas Humphrey, Principal Architect

San Diego Regional Office Manager:

Craig Rush, Principal Structural Engineer

Meet with us at……

Project Planning

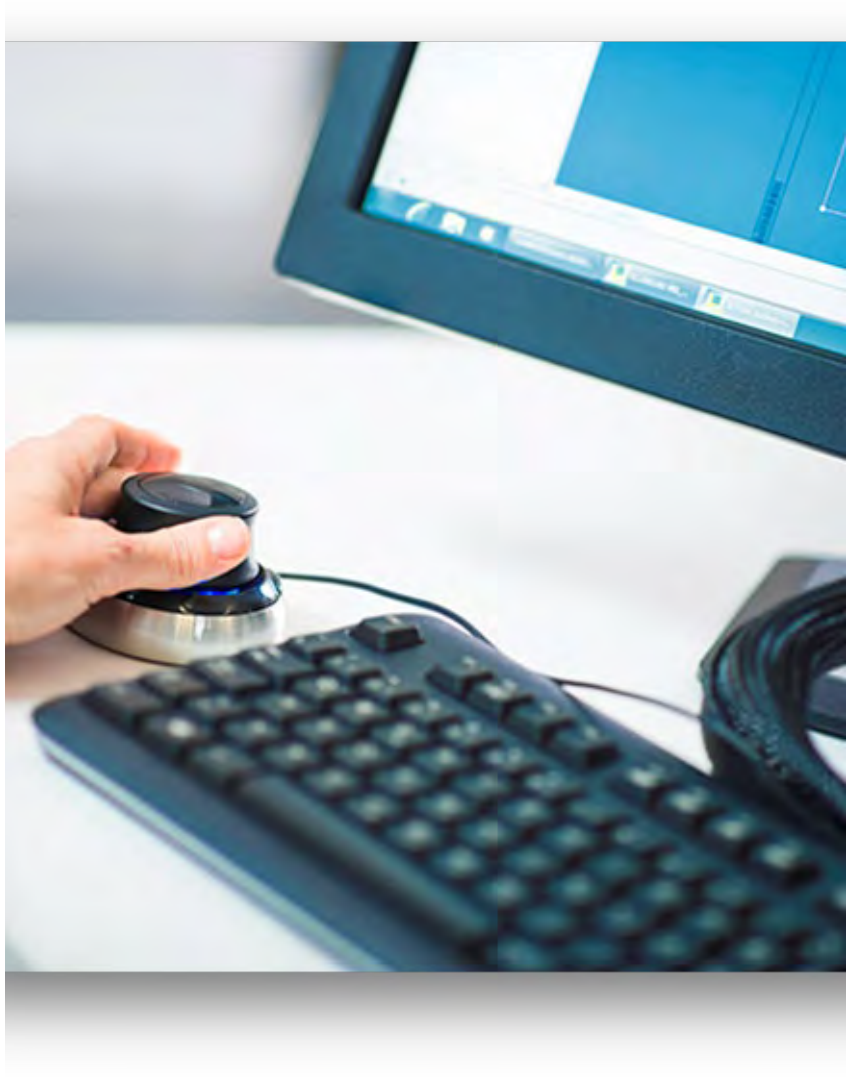
Ask DSA for a Preliminary Meeting with

- School District
- Design Professionals

Schematic Design

Ask DSA for a Preliminary Meeting

- With School District and Design Professionals
- Discuss Schedule
- Discuss Code Interpretations



Appointment Process/ Electronic Plan Review

- Projects registered 6 – 8 weeks in advance
- Submit documents to DSA box (cloud) for review upon appointment date, including fees
- All services are conducted electronically
- Real-time, remote “over-the-counter” review and backcheck upon request
- Review uses BlueBeam Sessions

As of September 6, 2022

Staff has returned to office:

- Available in office Tuesday, Wednesday, and Thursday
- Most staff will telework Monday and Friday

Photo by Tim Mossholder on Unsplash

Effective date of 2022
California Administrative Code
Title 24 Part 1
March 1, 2022

Effective date of 2022 Codes
Part 2-12
January 1, 2023

REGULATORY UPDATE
2022 CODES ARE PUBLISHED

2022 FIRE CODE RULEMAKING

- Chapter 7, Fire and Smoke Protection Features
  - Requires the building owner to maintain an inventory of all required fire-resistance-rated construction, and construction installed to resist the passage of smoke.
  - Such construction to be visually inspected annually and properly repaired, restored, or replaced where damaged, breached, or penetrated.
- Chapter 49, Requirements WUI Fire Areas
  - Requires landscaping within areas designated as Very High Fire Hazard Severity Zones to be fire-resistant vegetation
  - Must be maintained as it matures

Photo by Nikolay Maslov on Unsplash

APPROVED BY BSC DECEMBER 14, 2021
EFFECTIVE DATE 1.1.23

December 2021 Commission Meeting - SFM (ca.gov)

2022 ENERGY CODE APPROVED REGULATIONS

APPROVED BY BSC DECEMBER 14, 2021
EFFECTIVE DATE 1.1.23

- Prescriptive Method and Performance Method energy budgets based on heat pump technology for water heating and HVAC systems
- For Performance Method improvements to envelope are needed to meet energy budgets if using fossil fuels
- Zones 1 & 16 can meet requirements with dual fuel
- Photovoltaics and battery storage required
- Does not address cooking or other gas end uses

Energy Commission Adopts Updated Building Standards to Improve Efficiency, Reduce Emissions From Homes and Businesses (ca.gov)

Photo by Zbynek Burival on Unsplash

2022 CALGREEN RULEMAKING

- Clarification on shade tree requirements
- CO2 Monitors for new K-12 classrooms
- VOC limits for thermal insulation and acoustical tile ceilings

- Requirement for EVCS infrastructure installation to include charger installation at time of construction
- 20% total of new parking areas shall provide EV infrastructure (EV capable spaces)
- 25% of EV capable spaces must be provided with a charger

APPROVED DECEMBER 16, 2021
EFFECTIVE DATE 1.1.23

Photo by Ernest Ojeh on Unsplash

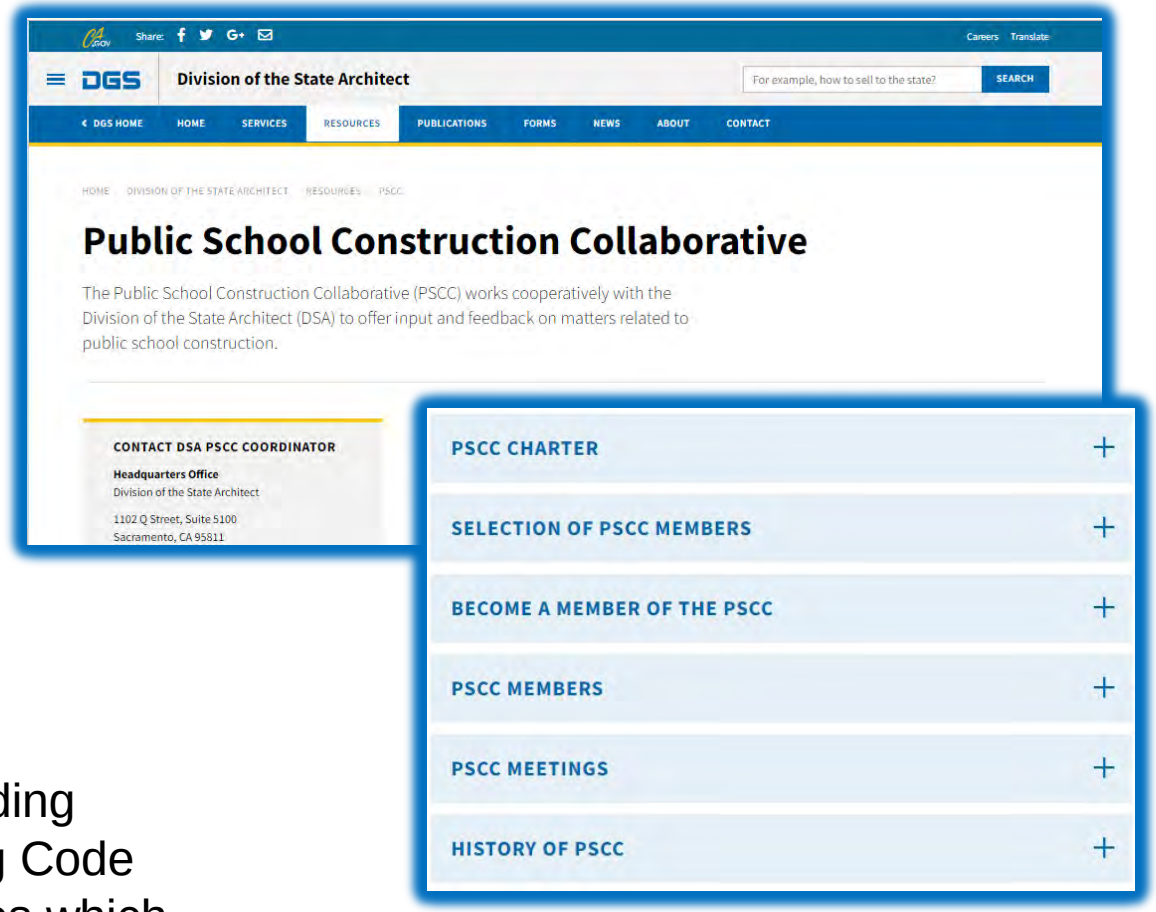
December 2021 Commission Meeting – DSA-SS-CC (ca.gov)

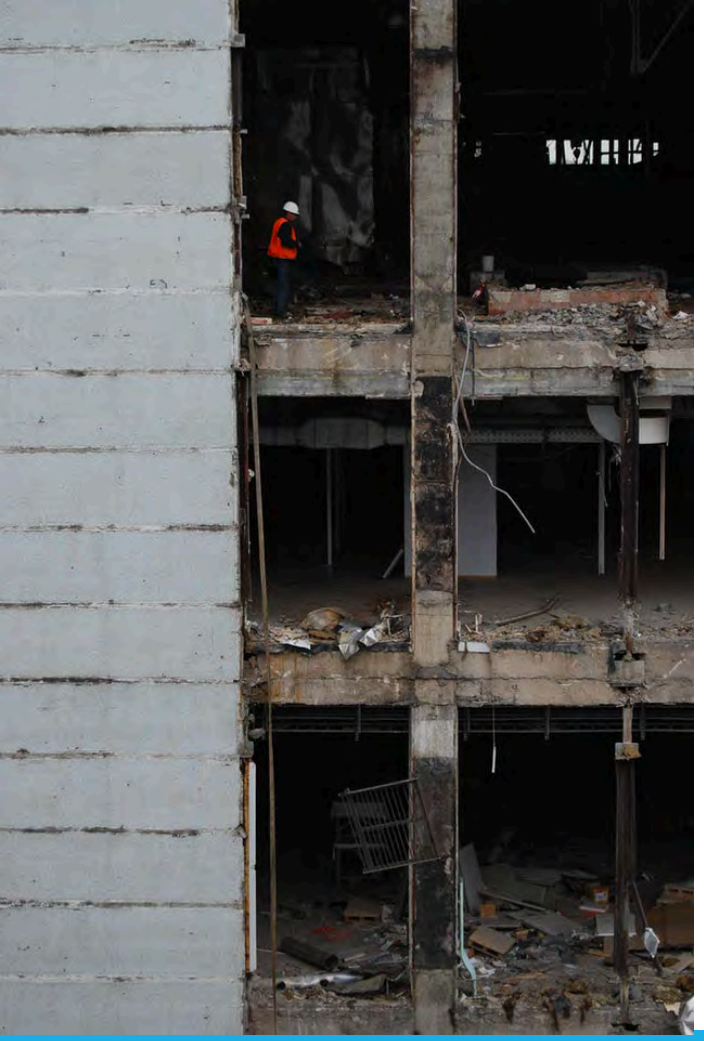
Photo by Vardan Papikyan on Unsplash

DSA COLLABORATIVES AND WORKGROUPS

PUBLIC SCHOOL CONSTRUCTION COLLABORATIVE (PSCC)

- Offer insight on matters that protect the intent of the Field Act.
- Advise DSA on policy issues.
- Review and comment on proposed legislation or offer insight on adopted legislative changes.
- Review and advise DSA on Interpretations of Regulations at the request of the State Architect.
- Serve as liaison to stakeholder groups.
- Review and comment on the California Building Standards Code at Triennial and Intervening Code Cycles and offer insight on interpretive issues which may arise between code cycles.





- Will evaluate changes to regulations that encourages building reuse and ensure when an existing school building is modernized that safety standards are also addressed.
- Convening March 2022 – September 2022
- Amendments, if adopted by BSC, will be effective September 2024

Photo by Kirill Sh on Unsplash

EXISTING BUILDINGS TASK FORCE: Exploring amendments to CAC § 4-309(c)

Strategic Goal: Roadmap to CALGreen Carbon Neutrality

Photo by Scott Webb on Unsplash

Establish Carbon Reduction Collaborative with BSC and HCD, other state agencies, and industry groups.

Identify methods to address embodied carbon in construction.

Support increasingly progressive regulations with an education and outreach program.

CALGREEN CARBON REDUCTION COLLABORATIVE

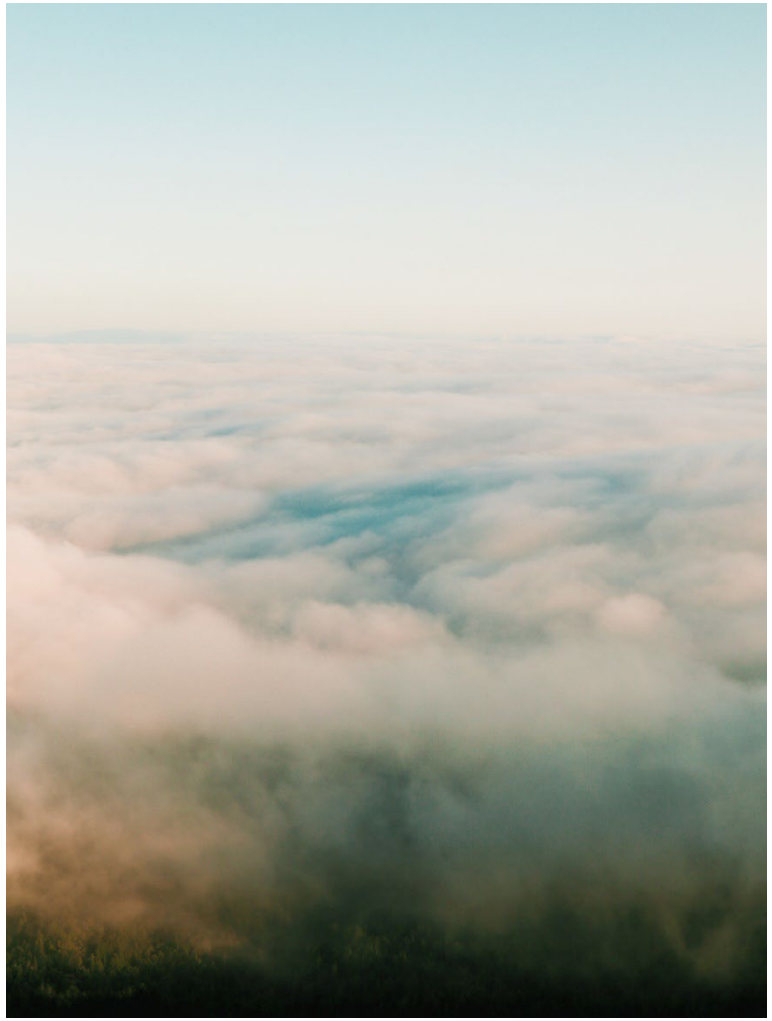


Photo by saira on Unsplash

A collaborative workgroup led by BSC/DSA/HCD and comprised of state and national climate action leaders including:

- AIA California
- USGBC
- Rocky Mountain Institute
- New Buildings Institute
- Industry Stakeholders

Aims for incremental increases in carbon reduction strategies to support and achieve California's climate action goals.

ELECTRIC VEHICLE CHARGING WORKGROUP

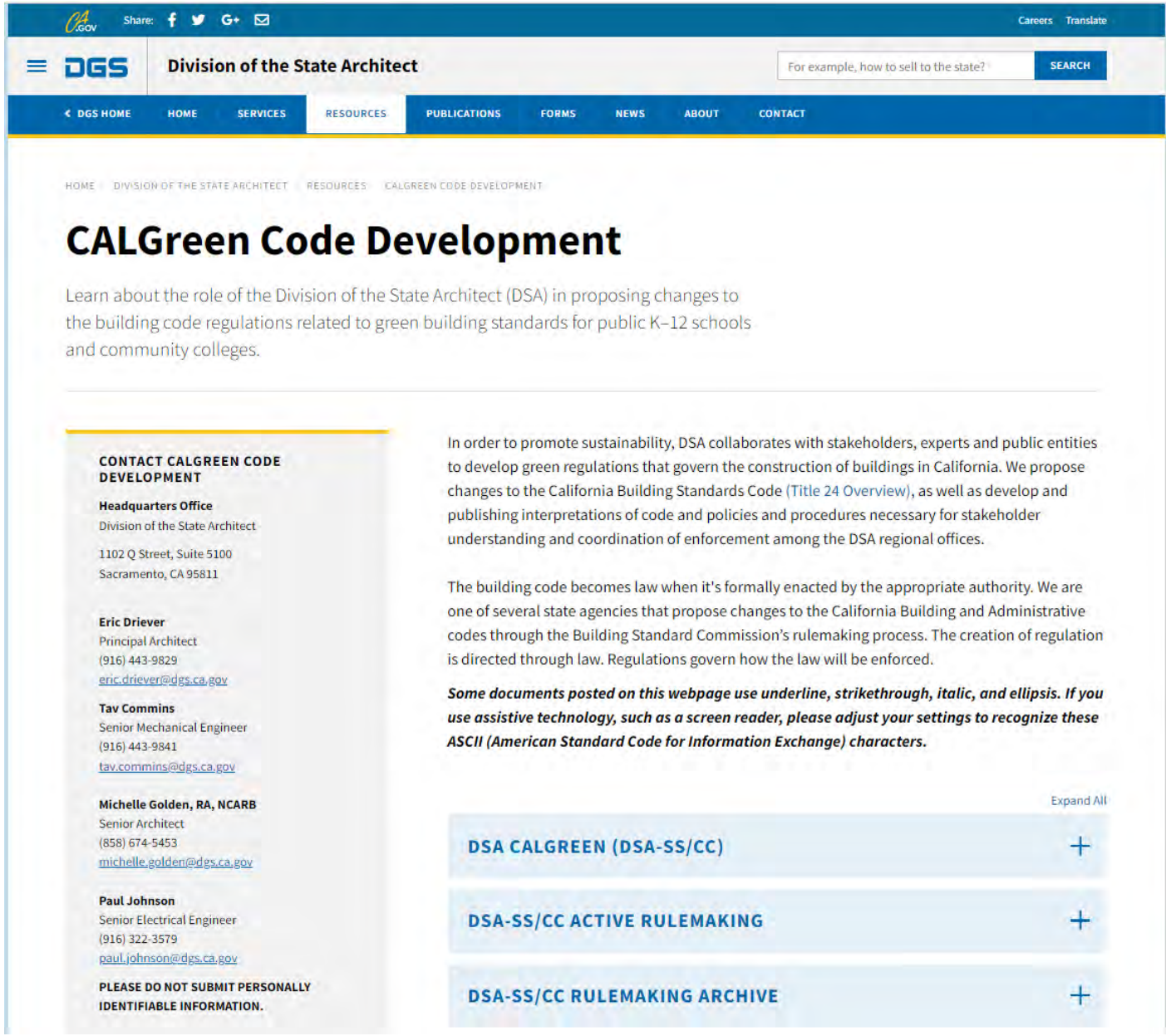
A collaborative workgroup led by BSC/DSA/HCD and comprised of stakeholders including:

- EV Users
- EV Service Providers
- Facility Owners
- Utility Companies
- EV Advocates
- Enforcement entities

Photo by myenergi on Unsplash

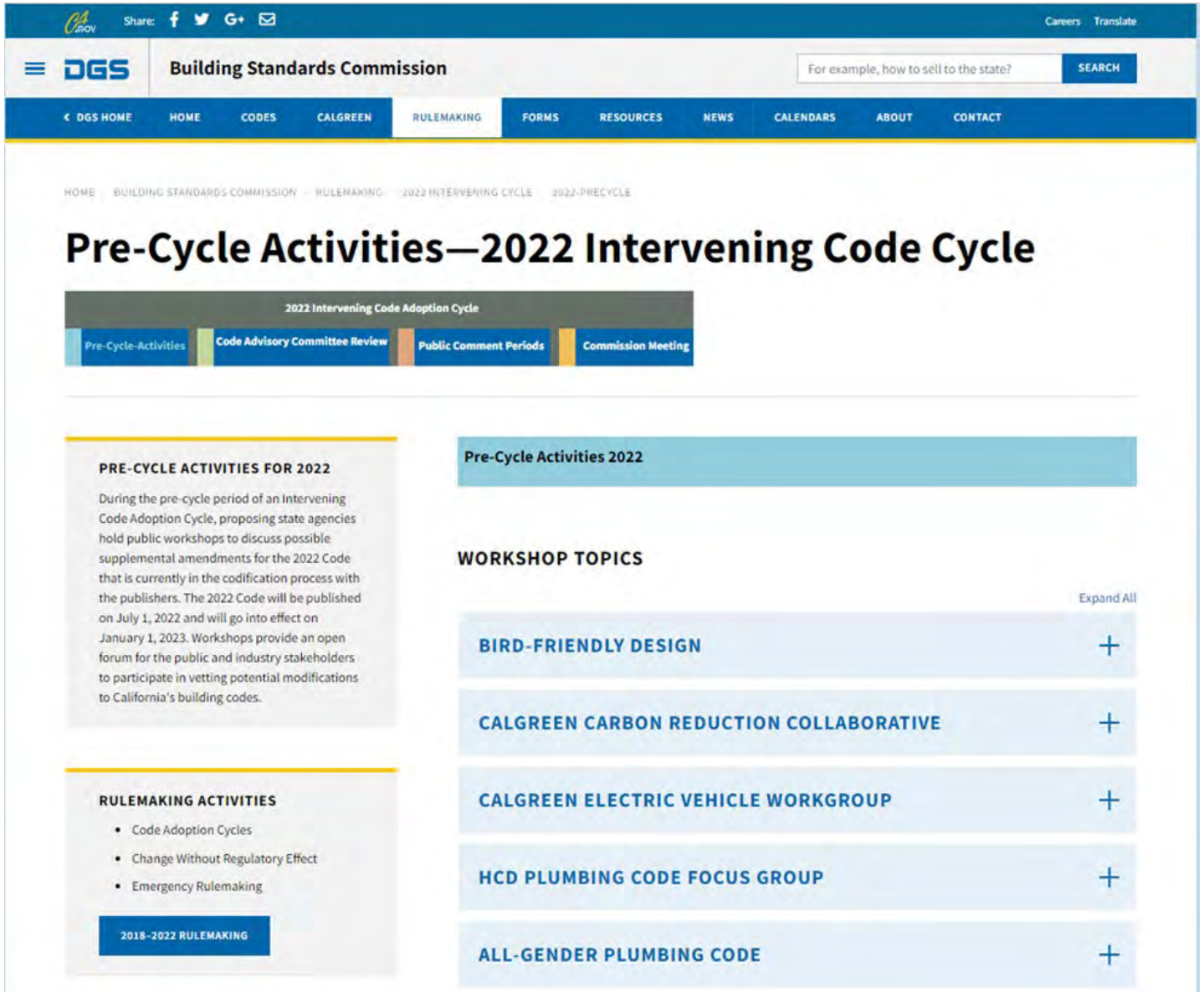
Aims for incremental increases in EV charging infrastructure to support and expand availability of electric vehicle charging facilities to all EV users and to achieve California's climate action goals.

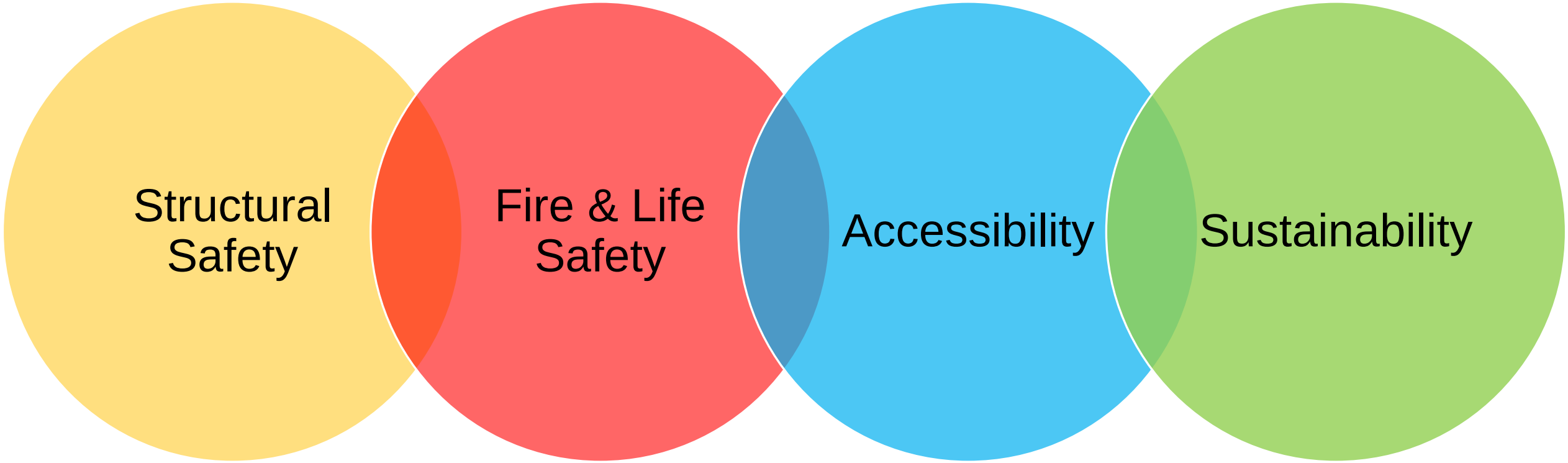
Find DSA Collaboratives and more active rulemaking under DSA-SS/CC Active Rulemaking tab.



[2022-PreCycle (ca.gov)]

Find More Information on rulemaking under BSC's Rulemaking tab under Pre-Cycle Activities.





SUSTAINABILITY is SAFETY

CALIFORNIA LEADS THE WAY

Executive Orders by Brown Administration

- B-16-12
  - Set goal of 1 million ZEVs by 2020
- B-30-15
  - Sets interim target of greenhouse gas emissions 40% less than 1990 levels by 2030
- B-55-18
  - Achieve statewide carbon neutrality by 2045

GOVERNOR NEWSOM'S EXECUTIVE ORDER N-19-19

Requires every aspect of state government to redouble its efforts to reduce greenhouse gas emissions and mitigate the impacts of climate change while building a sustainable, inclusive economy.

N-79-20

Sets a goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035.

DSA'S GOAL

Increase school facility energy efficiency and reduce greenhouse gas emissions with each new construction and modernization, leading to a zero net energy and zero net carbon future for school buildings.

FOCUS ON SUSTAINABILITY OF SCHOOLS

SUSTAINABILITY PLAN REVIEW

Shade Trees

Photo by Ryan Jacobson on Unsplash

EV Charging Infrastructure

Photo by myenergi on Unsplash

2019 Energy Code Acceptance Testing

In effect since October 1, 2021

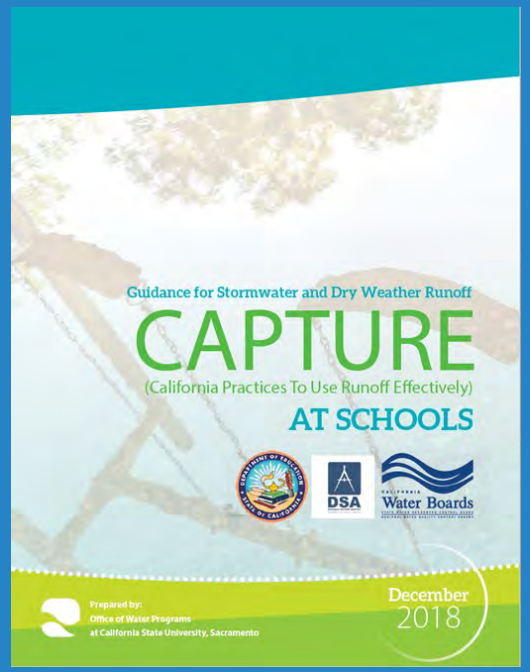
- Ensures that the installed equipment in nonresidential buildings is operating as designed and in compliance with the Energy Code.
- Requires certified Acceptance Testing Technicians (ATTs) to be used to close out projects
- ATTs are mandatory requirement for Indoor and Outdoor Lighting and Controls
- ATTs are mandatory requirement for HVAC Systems and Controls

CA-CHPS v2.0

5-year update that addresses:

- Indoor environmental quality
- Energy
- Water
- Site, materials, & waste management
- Operations & metrics

STORMWATER CAPTURE AND RUNOFF MANAGEMENT



Preserve, create, and enhance natural areas and features.

Minimize impervious surfaces.

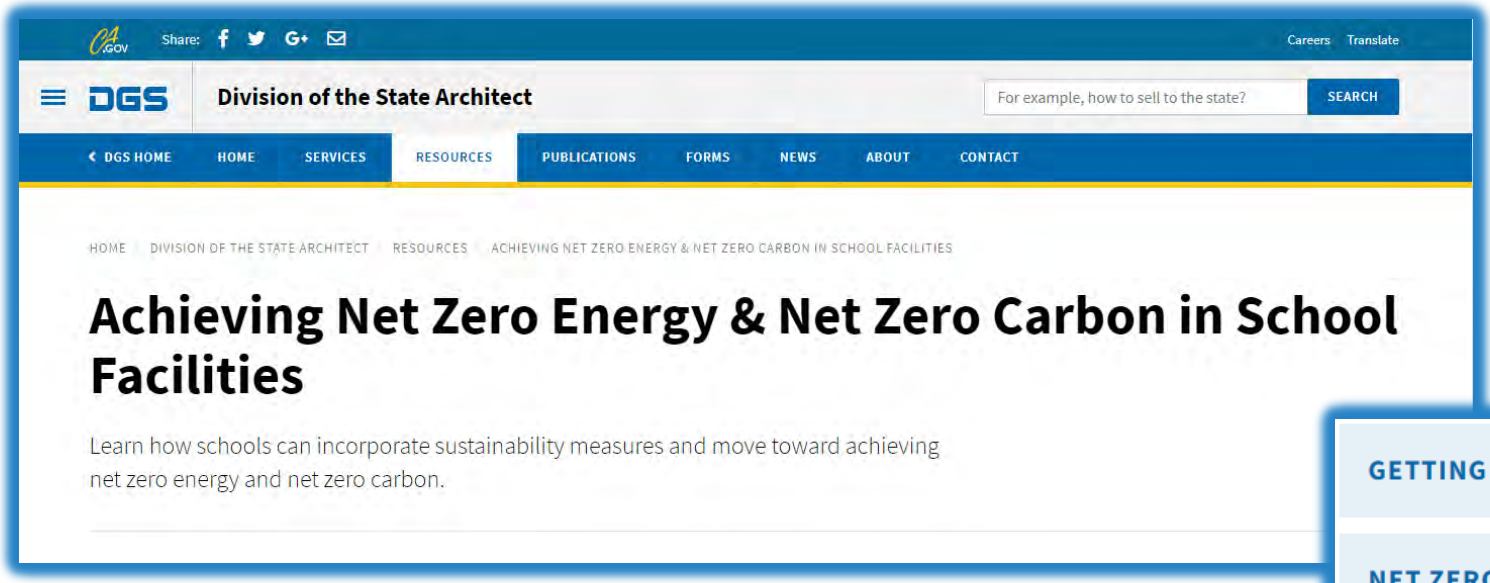
Design with soils that promote infiltration.

Arrange impervious surfaces to drain to permeable surfaces.

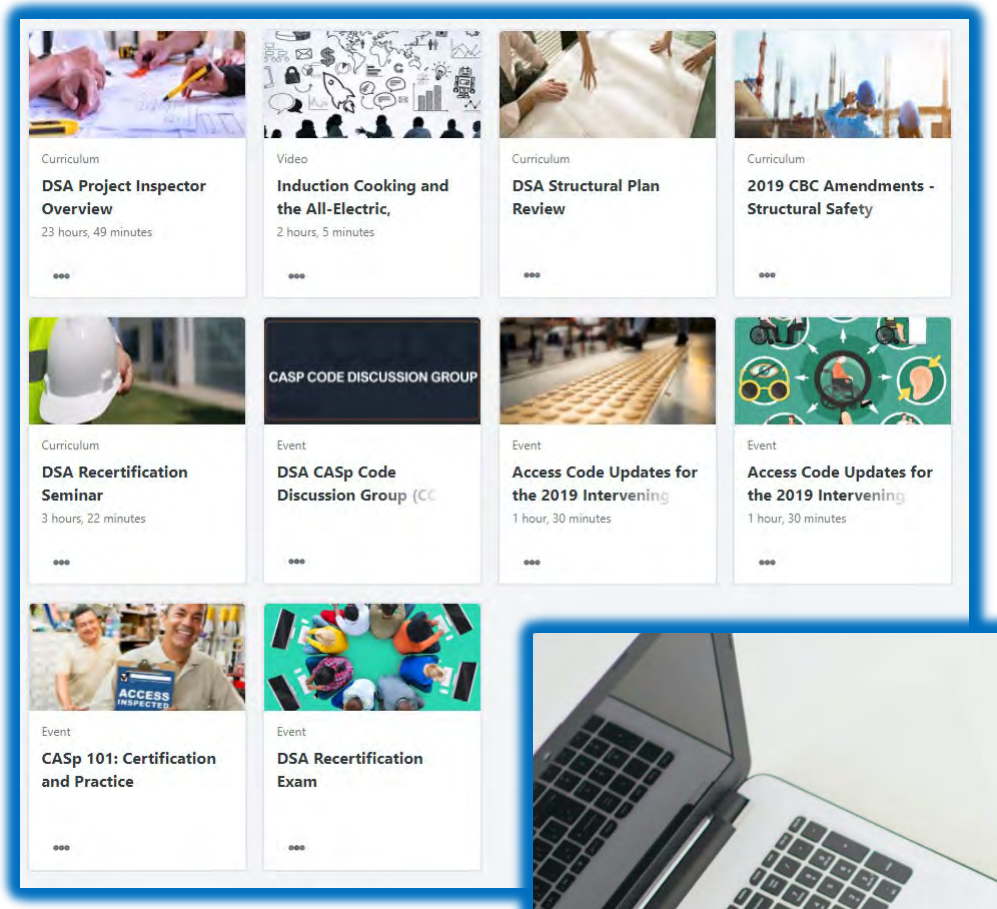
Design areas to prevent irrigation runoff.

Allocate space to stormwater control measures.

Incorporate visual stormwater features and learning opportunities.



DSA SUSTAINABILITY EDUCATION AND OUTREACH



DSA ACADEMY

Now offered:

California EVCS Accessibility

Free, On Demand

Provides CEU credit

All-Electric California Schools

Kitchen of the Future

Green Schoolyards

DSA Academy

Photo by J. Kelly Brito on Unsplash

The All-Electric California Schools Kitchen of the Future

A DSA collaboration with:

Photo by Jonathan Borba on Unsplash

GETTING TO ZERO OVER TIME

K-12 PUBLIC SCHOOL DISTRICT COHORT

a DSA collaboration with the

ROADMAP

- Long term, strategic approach to energy management
- Set measurable goals
- Focus on the benefits to the learning environment
- Leverage every opportunity to improve performance and reduce emissions

nbi new buildings institute

DEVELOP DISTRICT SUSTAINABILITY PLANS TIED TO BUILDING LIFE CYCLE EVENTS

- New Construction
- Major Modernization
- System Replacement
- Equipment Replacement
- Operations & Maintenance

PARTICIPATING IN THE GETTING TO ZERO COHORT

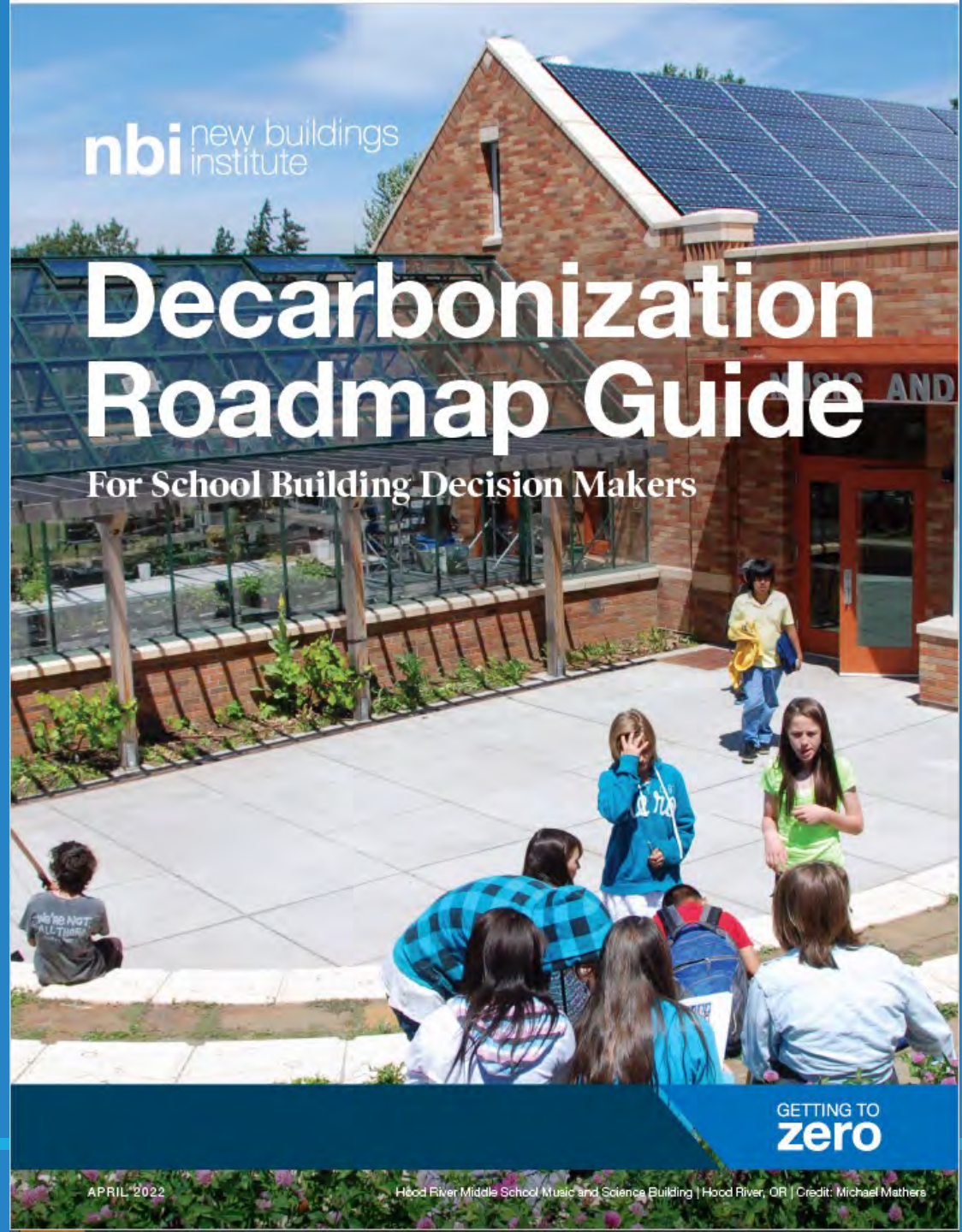
- Meet you where you are
- Build on your success within your district and beyond
- Work collaboratively to get ahead of state policy impacts
- Share best practices
- Discuss and develop solutions to real-world concerns

Photo by Chris Montgomery on Unsplash

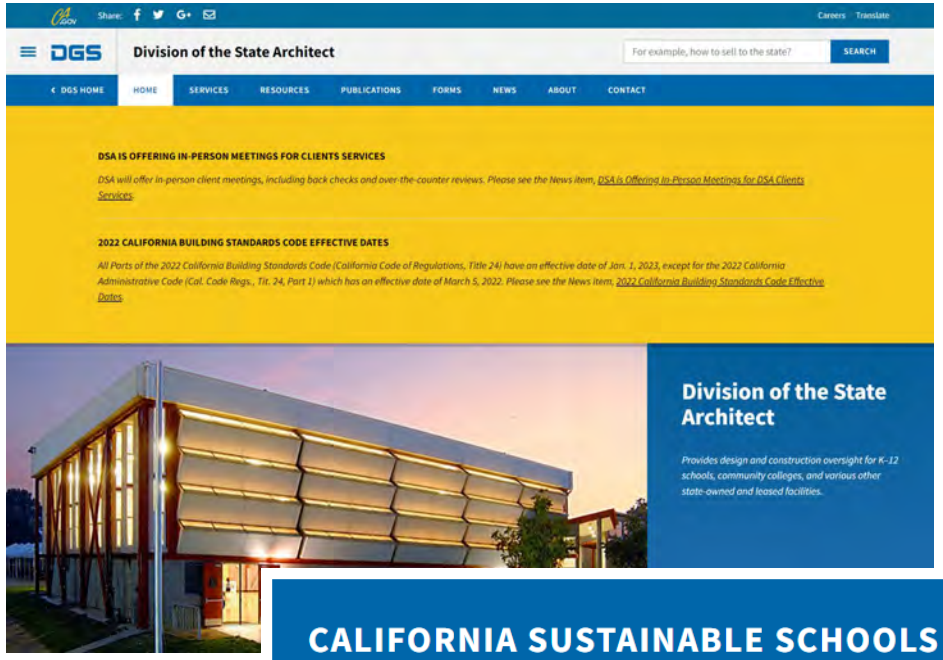
ROADMAP TOOLKIT

- Stakeholder Engagement
- Goals
- Resolution
- Facility Assessment
- RFP
- Interview Q's
- OPR
- Project Checklist
- Reporting Template
- Media Release
- ZNC Bond Criteria

Decarbonization Roadmap Guide for School Building Decision Makers - New Buildings Institute



School Sustainability Showcase



Los Altos School District's Blach Intermediate School

CALIFORNIA SUSTAINABLE SCHOOLS SHOWCASE

The California Sustainable Schools Showcase aims to acknowledge challenges, dispel myths, and share innovative solutions by showcasing school districts' efforts to plan for and prioritize sustainability in public school facilities in California. Educational, administrative, and maintenance buildings that exhibit innovative ideas and successfully capture both sustainability and energy efficiency through building programming, design, and the implementing of cutting edge technology systems will be featured. Zero net energy, low carbon and carbon neutral facilities, and other strategies for sustainable schools will be highlighted to showcase those districts throughout the state who have been able to implement these strategies in both new construction and alterations to existing buildings.

California Sustainable Schools

- Los Altos School District's Blach Intermediate School
- Yosemite Community College

Green California Schools Summit

October 18, 2022

green CALIFORNIA
SCHOOLS & COMMUNITY COLLEGES
Summit and Exposition

SAVE THE DATE!

The 2022 Green California Schools and Community Colleges Summit is a unique in-person AND virtual event. The Summit will provide a forum for sustainability leaders in the k-12 and Community Colleges to share how they are addressing the changes and challenges in Design, Facilities, M&O, Environmental Literacy and Transportation.

Date: October 18, 2022
Place: Pasadena Conference Center, Lower Level
Time: 8:30 am to 4:30 pm

Early Bird Dates & Attendee Pricing:
Prior to or on August 5, 2022 – $150
Prior to or on September 16, 2022 – $175
After September 16, 2022 – $200
Free Keynote, Awards Reception & Exhibits Only – $0
(not available for virtual only attendees)

greenTECHNOLOGY
Strategy and leadership for clean and sustainable communities

Photo by Bill Oxford on Unsplash

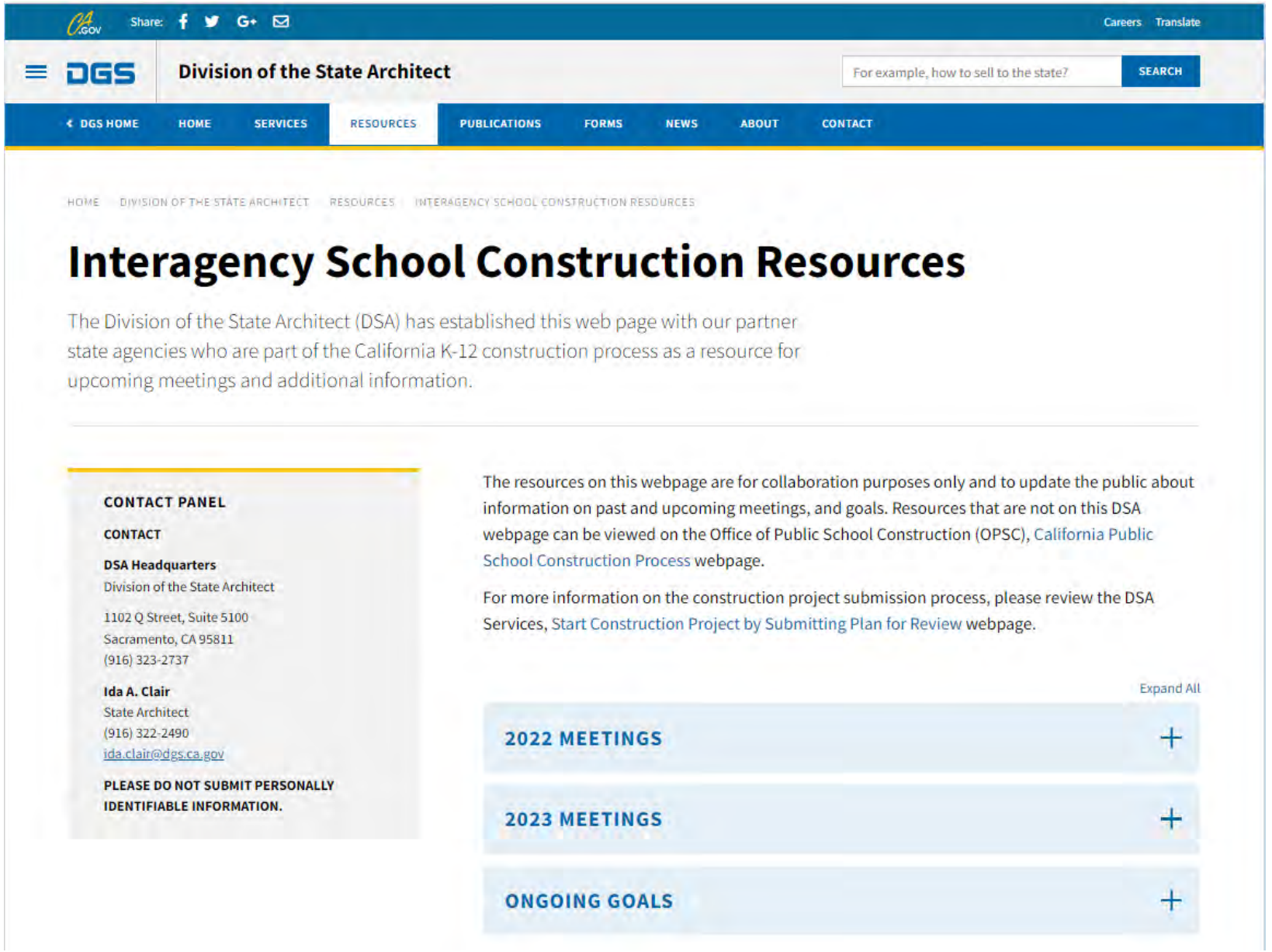
WHAT'S NEXT?

- Launch a Community College District Sustainability Planning Cohort
- Partnering with other state agency grant programs
  - CALFire/Green Schoolyards
  - SGC Community Resilience Centers
- Looking to partner with other NGOs to further advance school sustainability

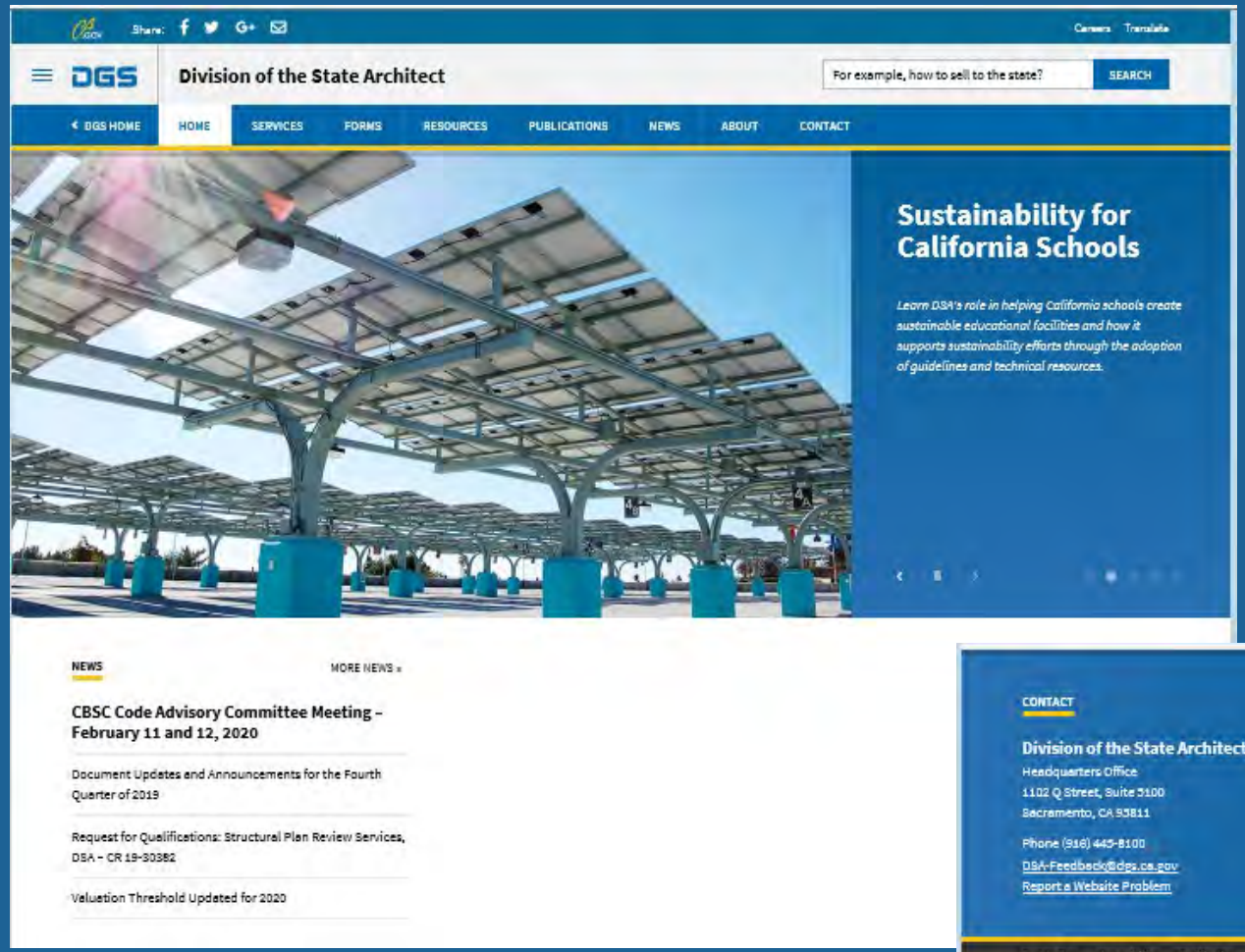
Partners in the Design and Construction of Great Schools

Having a Project Tour? Please let us know! DSA-Feedback@dgs.ca.gov

Tri-Agency Workshops: Recordings Available



STAY INFORMED



SUBSCRIBE TO OUR LISTSERV!

Sustainable Schools Support the Whole Child

CALIFORNIA DEPARTMENT OF EDUCATION
Tony Thurmond, State Superintendent of Public Instruction

Our Role

- California *Education Code* (*EC*) Section 17251
  - Develop and establish standards
  - Provide guidance and resources requested by school districts
- *EC* Section 17070.55
  - Assist school districts in the evaluation and utilization of existing school facilities and the justification of the need for schoolsites, new facilities, and the rehabilitation or replacement of existing facilities

Our Work

- Pre-application planning and design consultation
- Site and plan review
  - *California Code of Regulations*, Title 5 compliance
  - Health and safety
  - Educational appropriateness
  - Specialty grant programs
- Regulations, guidance, and best practices

Schools of the Future (2011)

- High Performance Schools Recommendations
  - High efficiency schools
  - Renewable energy
  - Grid neutral schools
  - Financing

Schools of the Future Report

Tom Torlakson

State Superintendent of Public Instruction
California Department of Education

September 2011

U.S. Department of Education Green Ribbon Schools (2011)

- Pillar I: Reduced environmental impact and costs
- Pillar II: Improved health and wellness
- Pillar III: Effective environmental and sustainability education

California Green Ribbon Schools (2014)

- Excellence in whole-school sustainability
- Awards beginning at 55% achievement
- An inspiring roadmap

Green Schools Best Practices

- Efficient buildings
- Student-led audits
- Waste diversion
- Active transportation
- School gardens and forests
- Infrastructure is a learning and teaching tool
- Indoor environmental quality
- Healthy cleaning practices
- Integrated pest management
- Outdoor learning
- STEM skills
- Green career pathways

Illustrated Best Practices

Interagency Collaboration

- California Energy Commission
  - California Clean Energy Jobs Act [Proposition 39 (2012)]
  - California Schools Healthy Air, Plumbing, and Efficiency Program [CalSHAPE, authorized by AB 841(2020)]
- State Water Resources Control Board
  - Drought Response Outreach Program for Schools [DROPS (2014)]
- California Health in All Policies Task Force
  - Land Use, Schools, and Health
  - Farm to School

California’s Climate Goals

Carbon neutrality by 2045

“What this means for California is an ambitious and aggressive approach to squeezing the carbon out of every sector of the economy.”

(AB 32 Climate Change Scoping Plan, 2022 Draft Update)

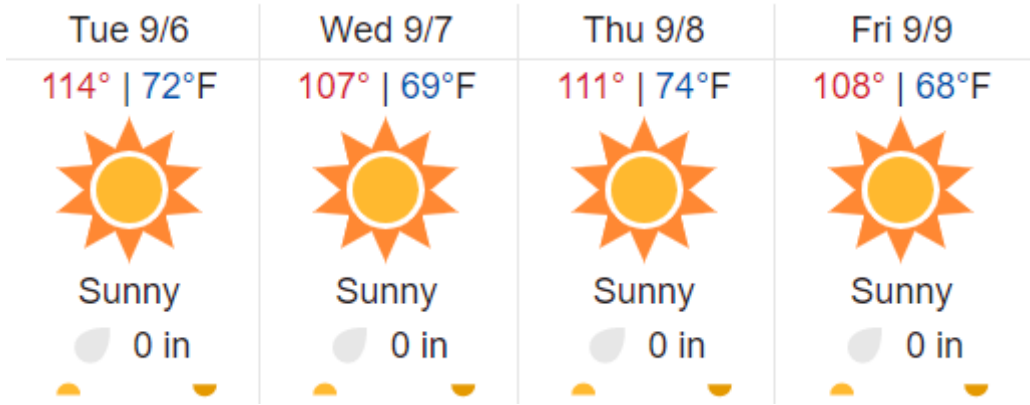
More than 11,000 public schools sit on nearly 8,500 properties, totaling 124,616 acres and containing 730 million square feet of buildings.

(Geospatial research by the Center for Cities + Schools, UC Berkeley)

Extreme Heat

"California's best climate science projects that every corner of the state will be impacted in years and decades to come by higher average temperatures and more frequent and severe heat waves. These changes will pose a risk to every region and sector across natural, built, and social systems."

California's Extreme Heat Action Plan (April 2022)



Air Quality

- Indoor
  - Infiltration, mechanical and natural ventilation
  - Illness prevention
  - IAQ Tools for Schools Action Kit (US EPA)
- Outdoor
  - Land use and vehicle emissions
  - Wildfire smoke
  - Air Quality Flag Program (AirNow.gov)

Indoor Environmental Quality (IEQ)

- Indoor Air Quality (IAQ)
- Lighting
- Thermal Comfort
- Acoustic Comfort

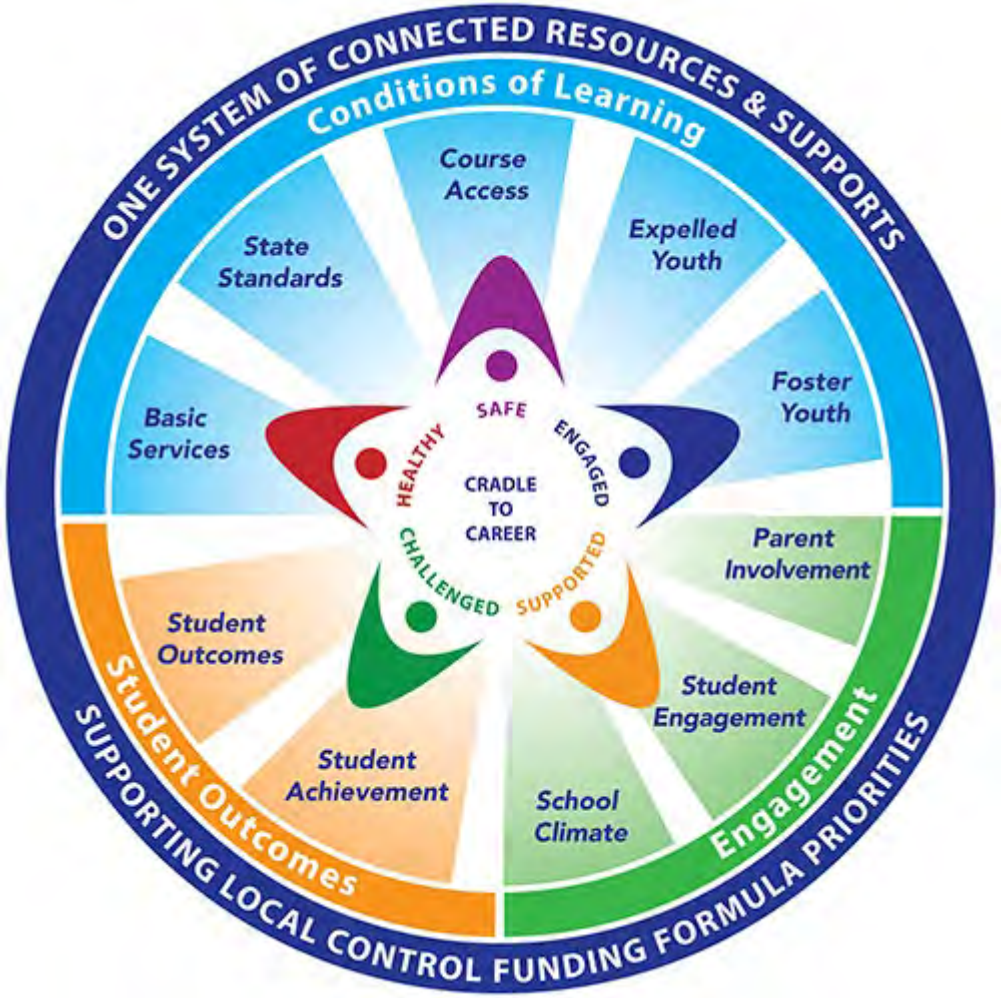
Climate Impacts and Children's Needs

- Climate impacts disproportionally burden children
- "Almost every child on earth is exposed to at least one climate and environmental hazard…"

(United Nations Children's Fund (UNICEF), August 2021)

Conditions of Learning

- Local Control Funding Formula (LCFF) State Priority 1 - Basic Services
  - School facilities in good repair [*EC* Section 17002(d)(1)]
- Facility master planning and educational specifications
  - Buildings and grounds



Green Schools Advance Equity

- Health equity
- Racial equity
- Closing the opportunity gap
- Environmental justice
- “Triple bottom line”
  - Financial, social, and environmental outcomes

School Facilities and Transportation Services Division
Office of Learning Environments

SFTSD@cde.ca.gov
GreenRibbonSchools@cde.ca.gov

Twitter: @CDEFacilities @CAGreenRibbon

CALIFORNIA DEPARTMENT OF EDUCATION
Tony Thurmond, State Superintendent of Public Instruction

State Agency Workshop
Designing and Constructing Sustainable Facilities and Outdoor Spaces

Applying for Funds Through the School Facility Program

Brian LaPask, Operations & Policy Manager

Office of Public School Construction

Friday, September 9, 2022

Background on School Facility Program

The School Facility Program, or SFP, has many different sub-programs and options for funding:

- New Construction
- Modernization
- Facility Hardship & Seismic Mitigation
- Career Technical Education Facilities
- Charter School Facilities
- Preschool, Transitional Kindergarten and Kindergarten Facilities (Separate from the SFP)

Program Features

- Programs are funding on a state and local matching share basis.
- Financial Hardship is available.
- Some programs have funding cycles, while others are funding continuously as program authority is available.

Program Features

Ok, these programs sound good, but where do the Sustainable Facilities come into the picture?

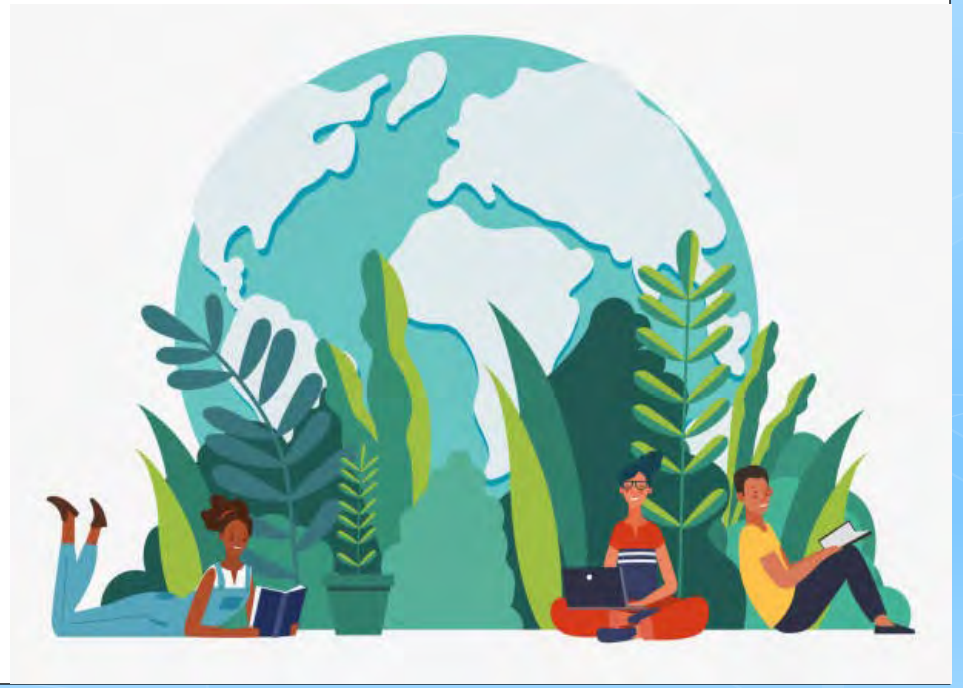
- While OPSC does not currently have funding that is specifically for sustainable or “green” building features, all the programs we’ve discussed allow sustainable features to be built into each project.

Program Features

- New Facilities can incorporate sustainable features into the new building designs.
- Modernization or Rehabilitation projects can replace existing systems with new energy efficient or sustainable systems.
- Outdoor spaces can be redesigned or enhanced to provide more sustainable features or landscaping.

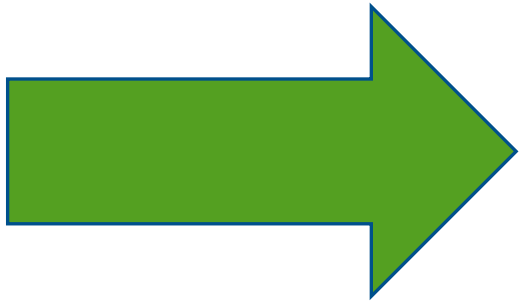
Enhancing Education

- The impacts of sustainable facilities and outdoor spaces have been shown to improve and enhance education at sites that incorporate them.
- It provides an opportunity for children to learn more about sustainable facilities and practices.



How to Obtain Funding

- California Department of Education Approval
- Division of the State Architect Approval
- Cost Estimate
- Application Form and Support Documentation



OPSC Online Database

- OPSC has an Online Application Submittal Portal that provides:
  - Complete Paperless Submittal
  - Real-Time Project Status
  - Application Versioning
  - Improved Grant Calculator
  - Self-Service user profiles, school district profiles, and school site information
  - https://www.webapps.dgs.ca.gov/OPSC/OPSCOnline/

Helpful Links

OPSC's Website contains information on all of the programs discussed today, and they can be accessed in the Services section of the OPSC website:

https://www.dgs.ca.gov/OPSC/Services

In addition, OPSC has a Resources section that contains guidebooks, application tools, and training series that will assist in program understanding:

https://www.dgs.ca.gov/OPSC/Resources

Lastly, OPSC's YouTube Page "OPSCYou" has archived recordings of meetings, trainings, and workshops that cover almost all programs:

https://www.youtube.com/user/OPSCYou

Contact Information

Depending on the program you are applying to, OPSC's Directory of Services will provide you with the connections you need.

To access the Directory of Services, click the link on the Home tab on the OPSC website:

https://www.dgs.ca.gov/OPSC

green schoolyards america

Sharon Danks, CEO and Founder

sharon@greenschoolyards.org

Green Schoolyards America seeks to transform asphalt-covered school grounds into park-like green spaces that improve children's well-being, learning, and play while contributing to their communities' ecological health and climate resilience.

green schoolyards america

We are working to change the paradigm for school ground design, use, and management so all students will have access to the natural world in the places they already visit on a daily basis.

Why should we care about school grounds?

Every day,

6 million K-12 students
attend public schools in California
on 130,000 acres of public land.

Too many of our school grounds look like this —
and are covered in acres of unshaded asphalt that do not improve
the wellbeing of students, their communities, or the environment.

green
schoolyards
america

School grounds

across California need systemic investment to reach their potential to become thriving centers for learning, public health, community access to nature, and climate and ecological resilience.

green schoolyards america

Learning Environments

GROUNDS ARE OUTDATED

Most American schoolyards were designed for 1940s educational goals and practices.

Curricula today includes hands-on, place-based learning which is often easiest to accomplish in outdoor spaces near the school building.

green schoolyards america

Human Rights

ACCESS TO NATURE

"Children spend less time outside each day than prison inmates do in the United States. Inmates are guaranteed two hours of outdoor time daily, whereas one in two children is outside for less than an hour."

- Katherine Martinko
TreeHugger, March 2016

green schoolyards america

Equity

ACCESS TO NATURE

Many of our cities do not have equitably distributed public green spaces.

Nature-rich school grounds have the potential to connect every child with the natural world, every day.

green schoolyards america

Impact

LAND MANAGEMENT

School districts are one of the largest land managers in every city.

The choices they make about how they manage their land are important and greatly impact the environmental footprint of their cities and the health of children and their communities.

green schoolyards america

2006 — Commodore Sloat Elementary School, San Francisco

Reimagine the Grounds

LANDSCAPES SPEAK

The physical condition of school grounds speak to children and their communities about their place in the world and their value to society.

green schoolyards america

2009 — Commodore Sloat Elementary School, San Francisco

2019 — Commodore Sloat Elementary School, San Francisco

green
schoolyards
america

What are Living Schoolyards?

"Richly layered park-like environments that strengthen local ecosystems and climate resilience while providing place-based, hands-on learning resources for children and youth of all ages."

— Green Schoolyards America

Outdoor Learning

AT SCHOOL

- Supports the curriculum across grade levels and subject areas with engaging, convenient, hands-on resources
- Real-world context improves understanding and enjoyment for students of all ages
- Enhances ecological and climate literacy

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Infrastructure Choices

Play Policies

Health

PHYSICAL ACTIVITY

Living schoolyards provide opportunities to increase exercise and physical fitness through child-directed play.

Children need basic infrastructure to encourage play—and play policies that encourage best practices for child development.

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Mental Health

SOCIAL-EMOTIONAL WELLBEING

Living schoolyards provide:

- Contact with nature, reduced stress
- Places for relaxation and collaboration
- Places to learn social skills that lead to autonomy, confidence, and healthy relationships

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Happiness

CENTER CHILDREN AND YOUTH

Living schoolyards are places designed to increase children's joy, laughter, and happiness.

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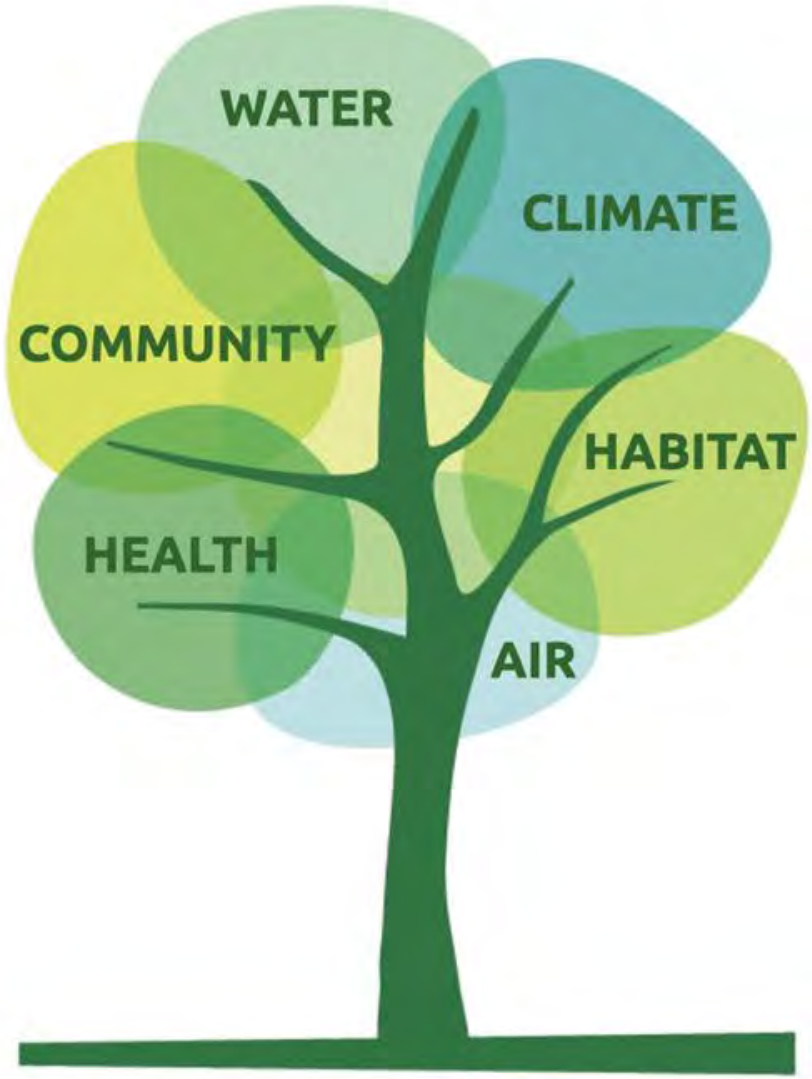

Resilient Cities Require Collaboration

Resilience

INTERDISCIPLINARY PLANNING

Cities today face complex problems that need to be addressed systemically and simultaneously.

This work requires interdisciplinary collaboration across traditional silos.

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Ecological Resilience

GREEN INFRASTRUCTURE

Developing school grounds as child-friendly green infrastructure can support local ecological systems, strengthen wildlife corridors, infiltrate stormwater, cool urban heat islands, and improve air quality.

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Consider the Scale of Ecological Impact

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DEMONSTRATION SCALE

SCHOOL-LEVEL IMPACT

DISTRICT-SCALE IMPACT

Wildlife Habitat

COORDINATED PLANTING

School grounds can become important habitat for native plants and wildlife when coordinated at the city and regional levels.

Schoolyard habitat can contribute to wildlife corridors and foraging areas, particularly for birds and butterflies.

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DEMONSTRATION SCALE GREEN INFRASTRUCTURE

Stormwater Management

RAINWATER HARVESTING

- Small scale seasonal garden irrigation and conservation demonstration
- Useful teaching tool

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SCHOOL SCALE GREEN INFRASTRUCTURE

Stormwater Infiltration

DESIGNED FOR NATURE PLAY AND LEARNING

Child-accessible green infrastructure design preserves students' ability to use the entire school site while also managing stormwater

Diversifies play and learning opportunities

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SCHOOL SCALE GREEN INFRASTRUCTURE

Stormwater Infiltration

DESIGNED FOR NATURE PLAY AND LEARNING

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SCHOOL SCALE GREEN INFRASTRUCTURE

Stormwater Infiltration

DESIGNED FOR NATURE PLAY AND LEARNING

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CITY SCALE GREEN INFRASTRUCTURE

Stormwater Infiltration

BERLIN, GERMANY

- "Sponge School Grounds"
- All schools are required to infiltrate 100% of the rain that falls onsite in a 10 year storm.
- Green infrastructure optimized for children

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CITY SCALE GREEN INFRASTRUCTURE

ASPHALT REMOVAL AND TOPOGRAPHY

Park-like school grounds, created from a flat slab of asphalt

Green infrastructure optimized for children

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Climate Resilience and Adaptation

THE CLIMATE CRISIS IMPACTS CHILDREN'S HEALTH AND WELLBEING

Schools across California and around the world need to adapt their grounds to respond to climate change and protect vulnerable children and youth from extreme heat.

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Children Need Shade at School

TREE PLACEMENT

Often prioritizes curb appeal over children's health, comfort, and happiness

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Materials Matter

SOME CHOICES INCREASE TEMPERATURES

Unshaded asphalt, plastic grass, and rubber surfaces increase temperatures on school grounds and contribute to urban heat island effects.

Avoid these materials if your school grounds are too hot.

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SCHOOL SCALE GREEN INFRASTRUCTURE — DESIGNED FOR CHILDREN

Climate Resilience

ECOLOGICAL BUFFERS

Trees and shrubs can be placed to provide shade where children will use it during the school day.

Trees can also shade school buildings to reduce sun exposure, urban heat island effects, and interior cooling costs.

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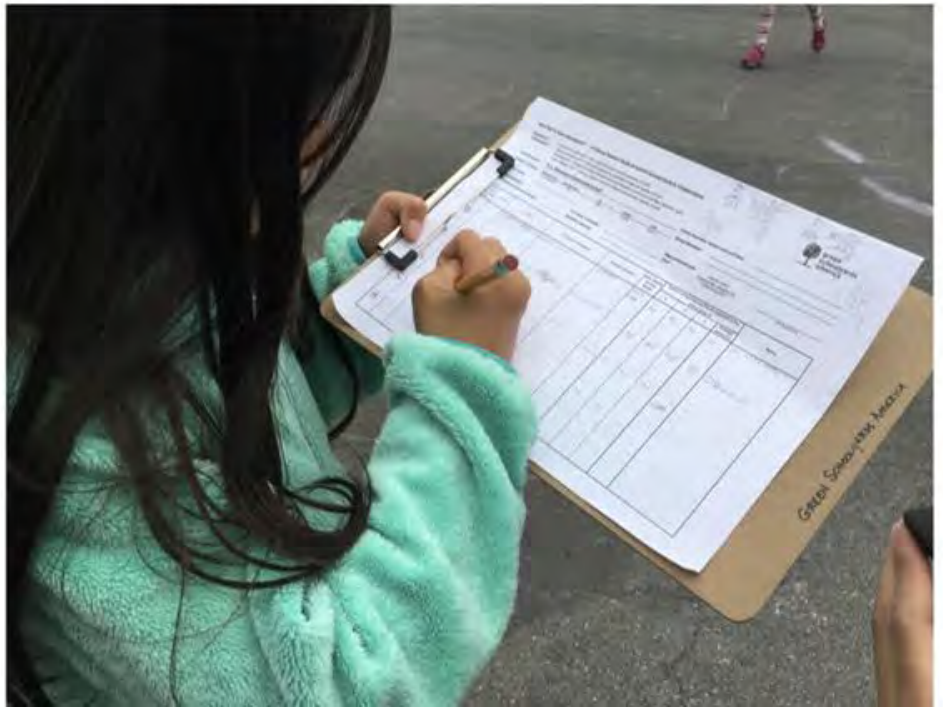

Climate Science at Student Scale

CONNECTIONS TO TANGIBLE OUTCOMES

Students can document temperatures on their grounds and create proposals for shade trees.

This is an empowering way to approach climate science and build confidence and hope in finding solutions.

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Scaling Schoolyard Greening Requires Collaboration

Models Exist

LEARN FROM OTHERS

- Some schools across USA and abroad have been greening their grounds for decades.
- A growing number of districts, counties, and states are scaling up their school ground greening efforts.
- Your school and district can, too!

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Policy and Planning

INCLUDE SCHOOL GROUNDS

- District facilities plans
- Add to city and regional stormwater, climate, habitat, air quality plans
- Optimize for children and the environment at the same time
- Include students in the transformation process

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Design and Implementation

GOALS / STRATEGIES

- Plant trees where they will shade children during the school day
- Remove as much asphalt as possible
- Cut and fill to create topography optimized for stormwater and kids
- Design for children's happiness

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Reflections

CHILDREN'S SPACE AND URBAN ECOLOGY

Public land devoted to children is precious and in short supply. We need to use it wisely.

Choices schools and districts make about how they use their land matters—to children and for the environment.

Climate change and other environmental problems are too big for any one organization to address alone.

Collaboration is key.

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Reflections

HAPPINESS IS A PRIORITY

Students returned to school carrying added mental health burdens from the pandemic.

Spending time outside at school will help improve long-term mental health.

This is centrally important now and will also be crucial in the future.

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america

Closing Thoughts

The urgency of the climate crisis requires transformational change, rather than incremental change.

The scale of the problem requires that everyone take action. Your role matters.

Do what you can, where you are!

California Schoolyard Forest System℠

FOUNDING PARTNERS

green schoolyards america

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
CAL FIRE
SINCE 1885

DEPARTMENT OF EDUCATION
STATE OF CALIFORNIA

Ten Strands
Connecting Education, Environment, and Community

California Schoolyard Forest System℠

VISION

Create schoolyard forests across PK-12 public school grounds statewide to directly shade and protect students from extreme heat and rising temperatures due to climate change.

California Schoolyard Forest System℠

GOALS

1. **Plant enough trees** by 2030 that, when mature, will cover at least 30% of each school property in the areas used by children and youth during the school day.
2. **Center equity** by prioritizing schools and districts in under-served communities with the highest poverty level, fewest trees, and hottest climates.
3. **Use school grounds as a PK-12 learning laboratory** across the curriculum and grade levels.
4. **Build environmental and climate literacy** by engaging students in standards-based hands-on research, design, planting, and stewardship of their schoolyard forests.

CAL FIRE

FALL 2022
GRANT CYCLE

- Overview and goals
- Application process
- Eligibility
- Timeline

DESIGNING AND CONSTRUCTING SUSTAINABLE FACILITIES AND OUTDOOR SPACES

STATE AGENCY WORKSHOP

DSA DIVISION OF THE STATE ARCHITECT
DEPARTMENT OF GENERAL SERVICES

OPSC
OFFICE OF PUBLIC SCHOOL CONSTRUCTION
DEPARTMENT OF GENERAL SERVICES

nineteen SIX 196 ARCHITECTS

FAIRFIELD-SUISUN
UNIFIED SCHOOL DISTRICT

Jas Bains Wright

Suisun Valley Elementary K-8 School Principal

FAIRFIELD-SUISUN
UNIFIED SCHOOL DISTRICT

Mariana Alvarez-Parga

19six Architects Principal

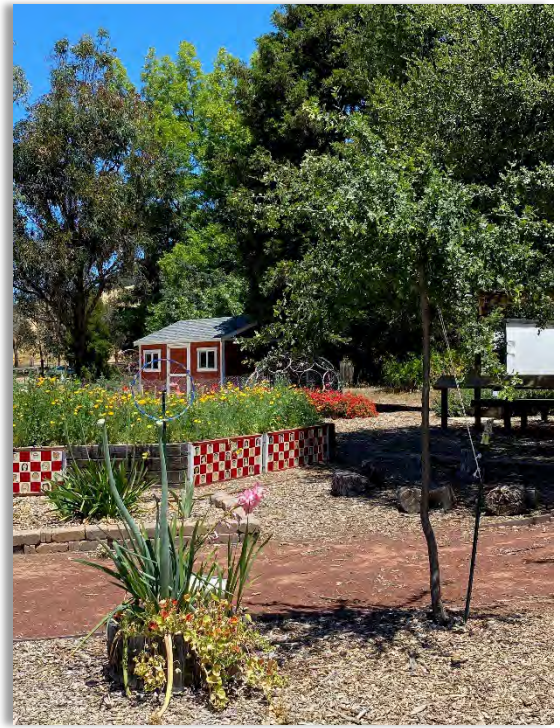
nine teen six 196 ARCHITECTS

Outline

- About the School
- Program Needs & Design Response
- Extensive Daylighting
- Efficient HVAC
- Natural Colors + Views
- Cool Roof
- Post-Occupancy


SUISUN VALLEY


SUISUN VALLEY GARDEN



Program Needs

FSUSD SUISUN VALLEY K-8 SCHOOL
New Admin-Library draft program

3-Mar-17

NEW CONSTRUCTION

Item #	Description	Dims	Qty	SF	Comment
1	Circulation Area		1	100	
2	Staff Workroom		1	275	
3	Librarian Storage		1	90	
4	Supply Room		1	90	
5	Library Stacks & Catalogs and Magazine display			1,200	20,760 volume
	• single faced unit with 5 shelves (60" shelving) === 120 v.		65		7,800 volume
	• single faced unit with 3 shelves (42" shelving) ==== 72 v.		0		-
	• double faced unit with 3 shelves (42" shelving) === 144 v.		90		12,960 volume
6	Reading Open area			700	
	• at tables (25 SF/seat)				28 students
	• Informal/Reading Lounge (40 SF/seat)				students
7	Study Room #1			220	
	• around tables (25 SF/seat)		1		9 students
8	Study Room #2		1	185	7 students
9	Study Room #3		1	185	7 students
10	Innovation Lab		1	1,200	
11	Lobby/Open office		1	993	
12	Principal's office		1	168	
13	Office		2	140	
14	Conference Room		1	140	
15	Staff Restrooms		1	222	
16	Faculty Lounge		1	426	
17	Health Office with restroom/staff restrooms		1	200	
18	Common areas, circulation, walls, etc.			1,166	
		TOTAL		**7,700**	**SF**

Design Response

Design for all

- Inclusive Design Process
- Innovative Design Tied to the existing Campus
- Flexible Design Spaces
- Tailor Design to Different Learning Methods
- Safety and Security
- Transparency
- Technology for Future Expansion

17-0125 – 03

Suggested Modifications

i. Work area shall be in a room. Staff prefers to have a large workroom, close to the entrance, that is shared between teachers and librarian.

ii. Faculty lounge needs to be larger, but not as big as the current one (regular classroom) as teacher development and training will occur at the innovation lab.

iii. Staff restroom shall be closer to the faculty lounge.

iv. Staff restroom shall be closer to the faculty lounge.

v. The staff patio can be made accessible from the Innovation Lab and has potential to make it a garden.

vi. The innovation lab shall be accessible from the outside for afterhours use. The glass wall to the library shall be lockable during these hours.

v. Staff restroom shall be accessible during these hours.

Massing Study

Emphasize Admin entrance, views, and site context

Site Plan

1. NEW ADMIN, LIBRAY AND INNOVATION LAB
2. EXISTING BUILDING
3. UTILITY ENCLOSURE
4. NEW SITE WORK
5. NEW ORNAMENTAL SECURITY FENCE
6. VISITOR'S ENTRANCE
7. EXISTING PARKING LOT
8. COMMUNITY EVENT ACCESS

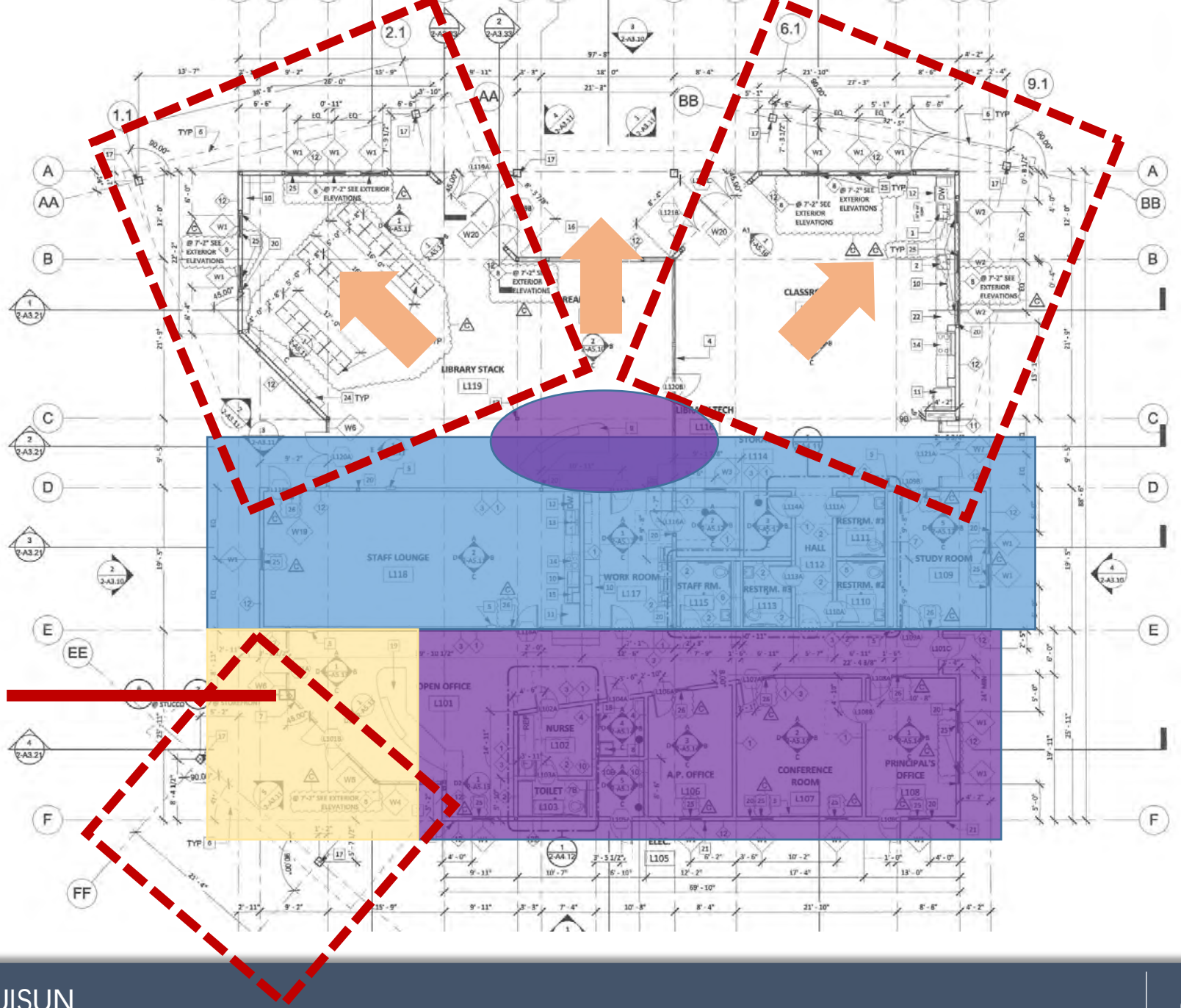
Design Part I

Spine for common/shared uses

Playful roofs to form three flexible zones

Prioritize views and extend Interior spaces to the outside

Secured entry to campus thru administration



Floor Plan

ADMINISTRATION 1

LIBRARY 2

INNOVATION LAB 3

STAFF LOUNGE 4

CLASSROOM 5

RESTROOM CORE 6

COMMUNITY EVENT ACCESS 7

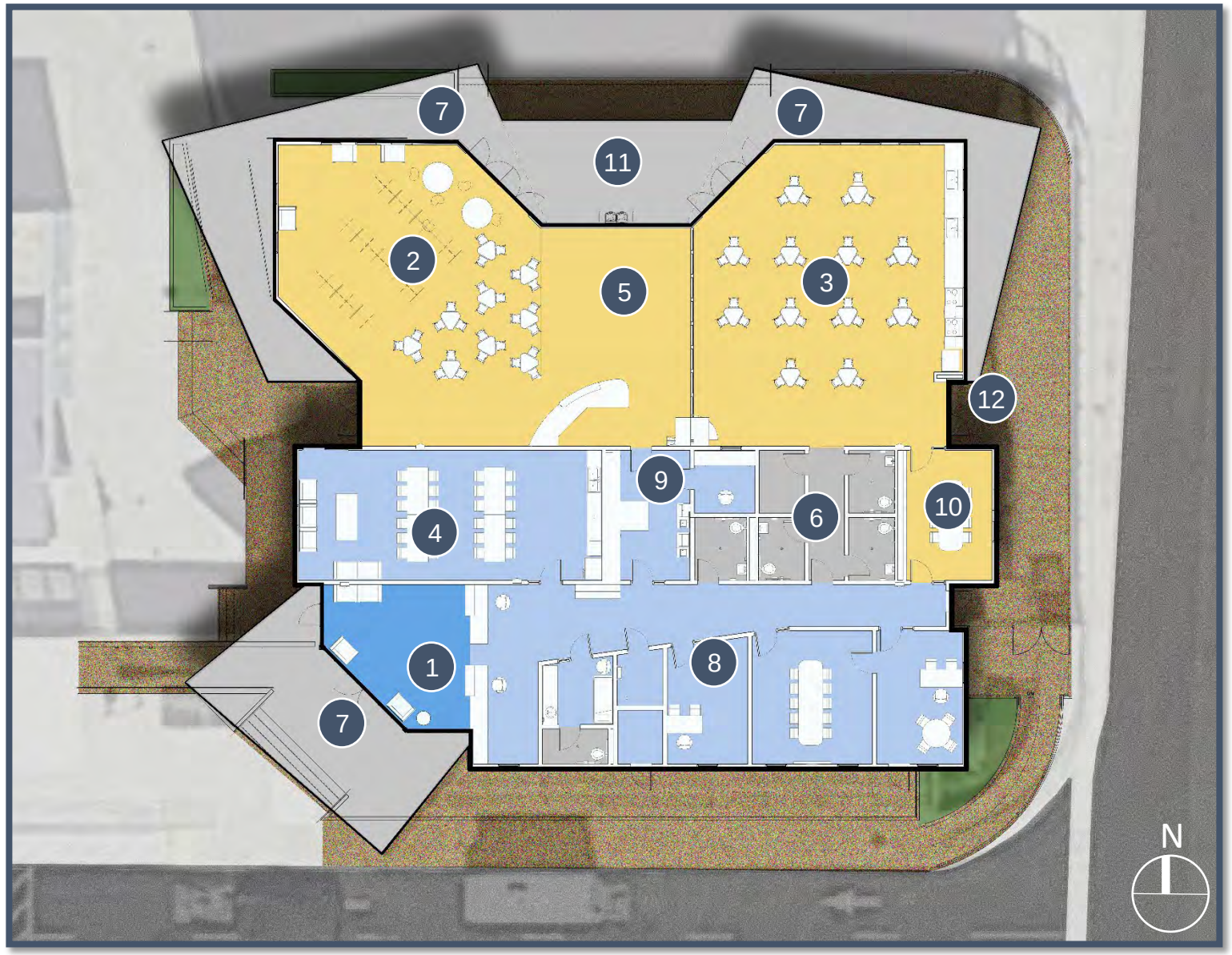
OFFICES 8

LIBRARY AND ADMIN WORKROOM 9

STUDY ROOM 10

READING PATIO 11

AFTER HOURS ACCESS 12



Extensive Daylighting

BENCHMARKS

WHERE DO WE NEED TO BE?

Energy

133
National Average

27
2030 Target

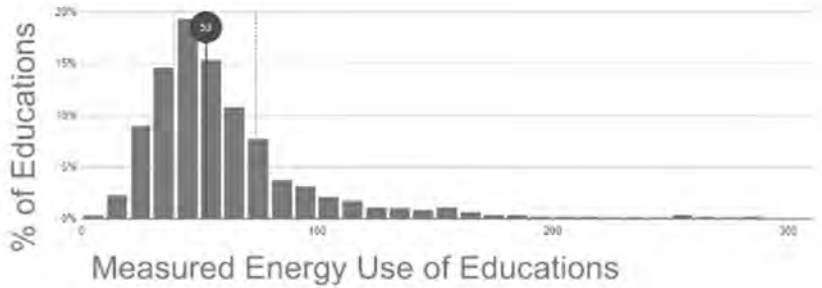
EUI is expressed as energy per square foot per year. It is calculated by dividing the total energy consumed by the building in one year (measured in kBtu) by the total floor area of the building. The most common unit for EUI is kBtu/ft²/year.

55%
Daylight

Spatial Daylight Autonomy (sDA) describes the percentage of floor area that receives at least 300 lux for at least 50% of the annual occupied hours.

10%
Glare

Annual Solar Exposure (ASE) refers to the percentage of space that receives too much direct sunlight (1000 Lux or more for at least 250 occupied hours per year), which can cause glare or increased cooling loads.



Original campus square footage: 34,145 s.f.
Final campus square footage after Project completion: 41,914 s.f.

Energy Use		Energy Use Intensity		% Site Savings
Before	After	Before	After	10.8%
757 MMBTU/yr	829 MMBTU/yr	22.2 kbtu/ft²	19.8 kbtu/ft²	

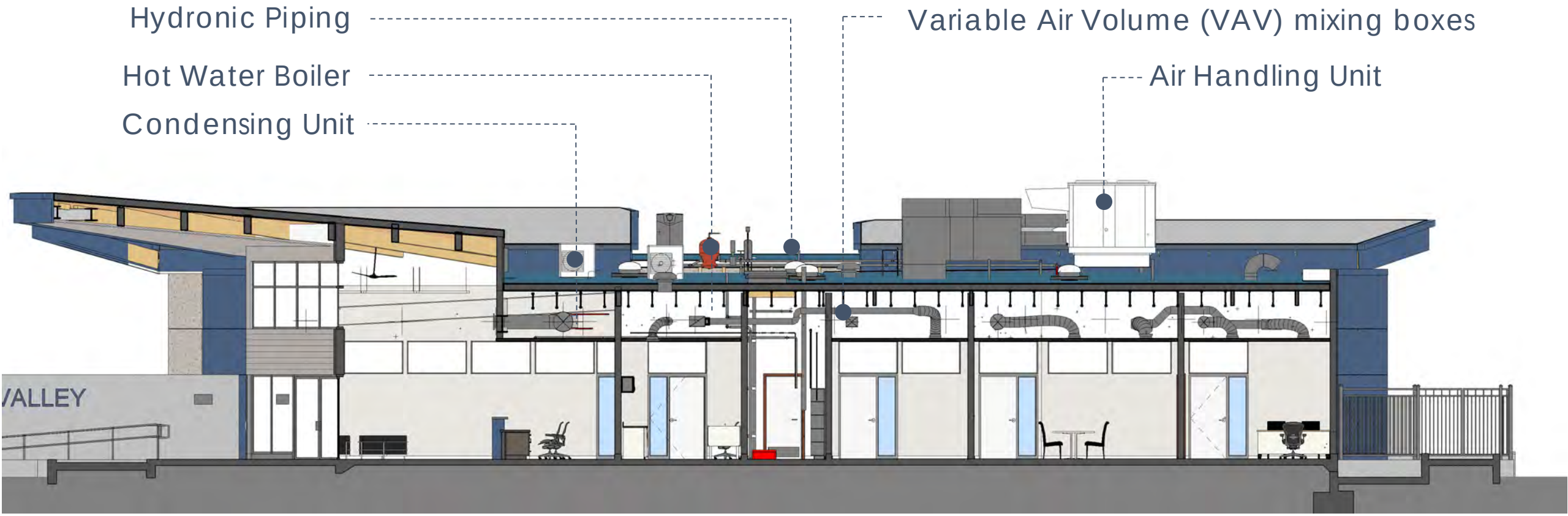
Extensive Daylighting

- Book Stacks 1
- Innovation Lab 2
- Teacher's Lounge 3
- Workroom 4
- Restrooms 5
- Study Room 6
- Main Entrance 7
- Administration 8
- Nurse's Office 9
- Office 10


EXIT


FORSIVES
DARE'S
CARES
WE ARE!

Heating, Ventilation, and Air Conditioning



The VAV system is considered an eco-friendly alternative to constant volume systems and reduces net energy consumption. This is achieved via efficient variable speed fans that deliver air optimally when needed to each zone via VAV boxes with dampers that modulate the optimal amount air.

Ceiling Fans

Clean open ceilings

Ceiling fans create a perceived cooling effect of up to 10° Fahrenheit.
The fans use minimal energy, reduce bills by up to 30%, and are 76.2% better in energy compliance over the standard Title 24 requirement.

Variable Air Volume

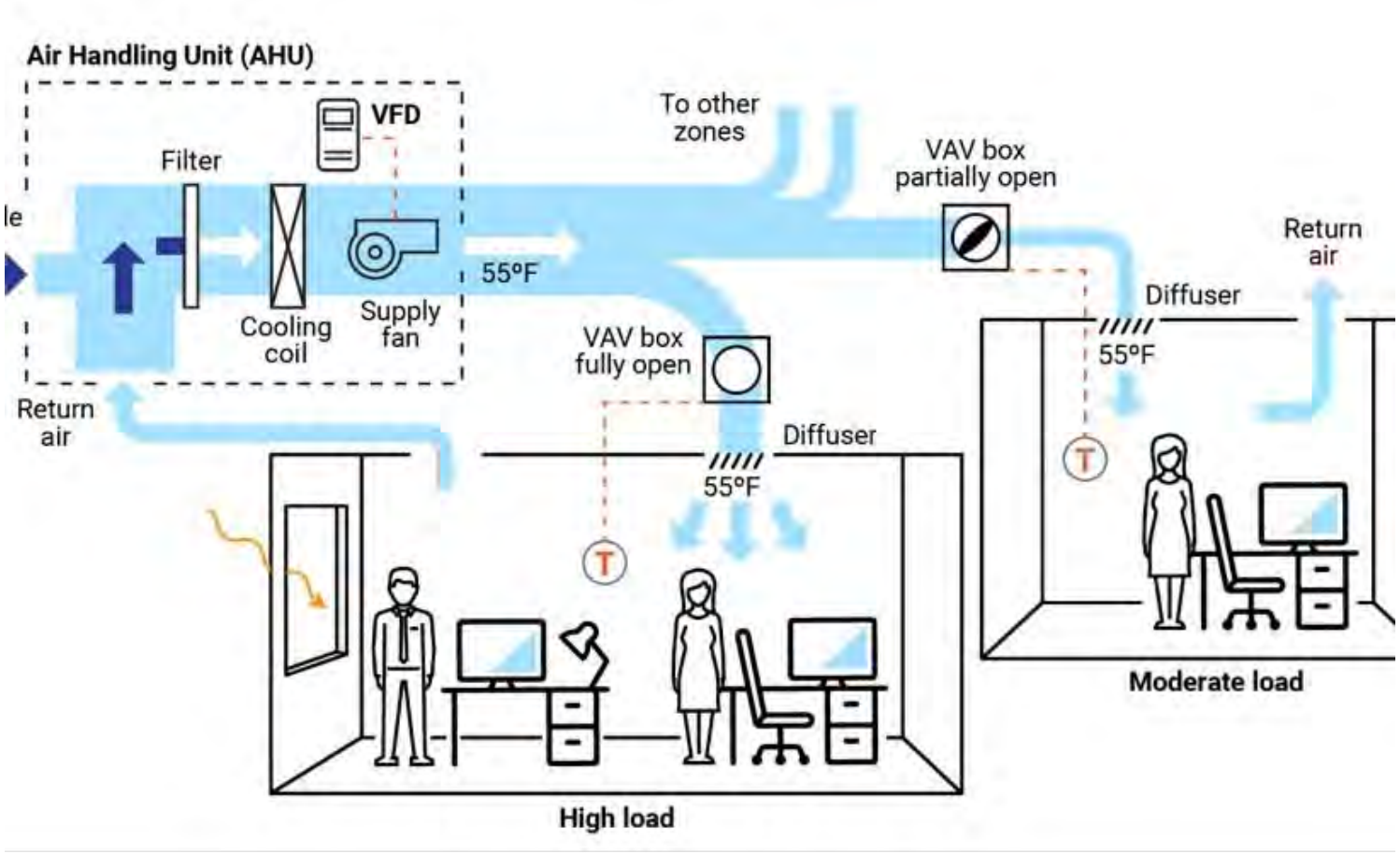
Reduces Net Energy Consumption compared to Constant Volume Systems

76% Better in Energy Compliance over standard Title 24 requirements

Tailor Design to Different Spatial Loads

Ability to be monitored by the District and Energy Manager

Uses hydronic piping to provide heating and cooling to the VAV boxes



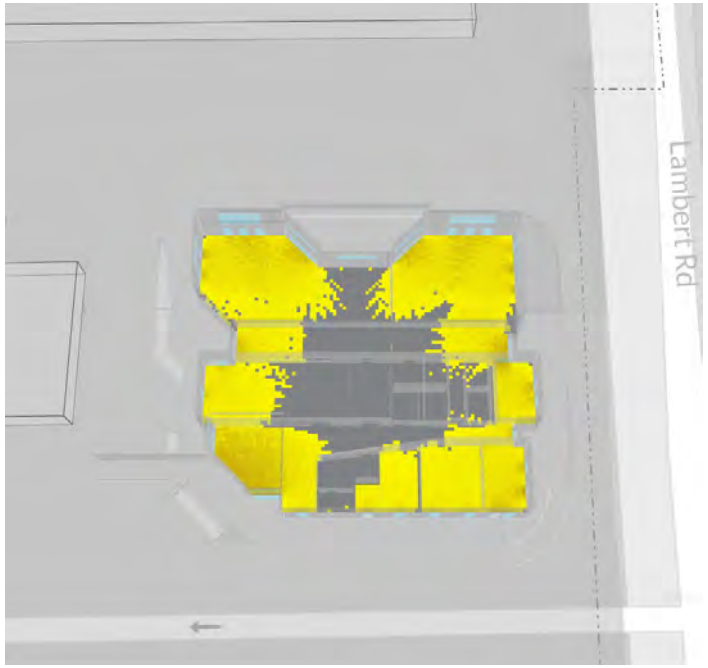

EXIT

Natural Colors and Views

VIEWS

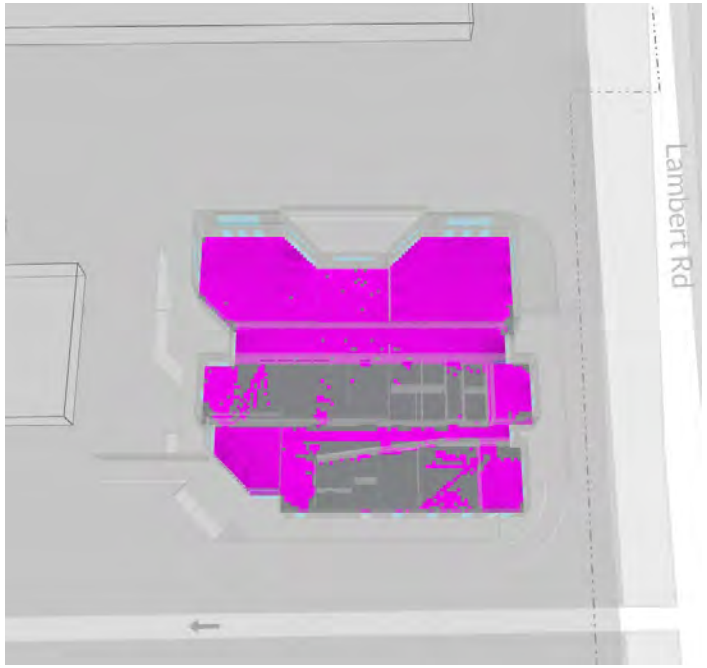
UNOBSTRUCTED VIEWS

62%



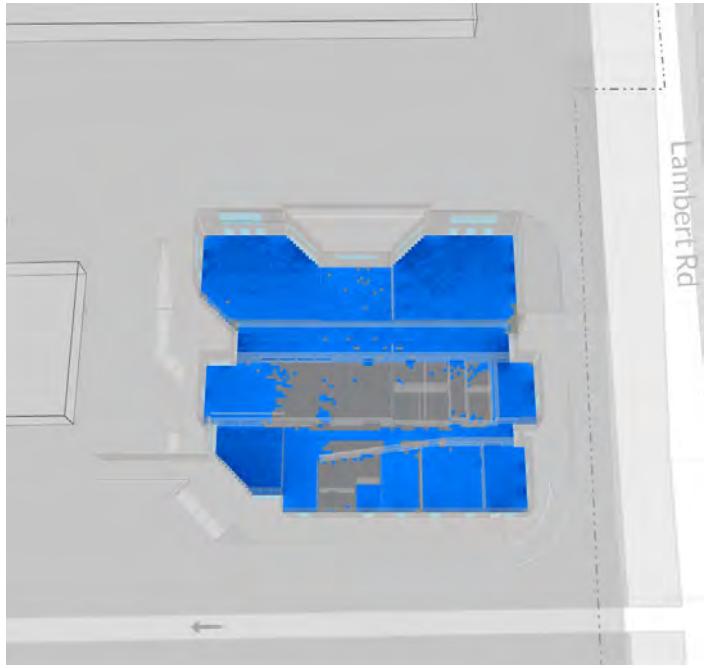
DAYLIGHT

63%



TOTAL VIEWS

78%



LEED Views Credit

78%

Total Quality Views

LEED: Pass

Create LEED Report

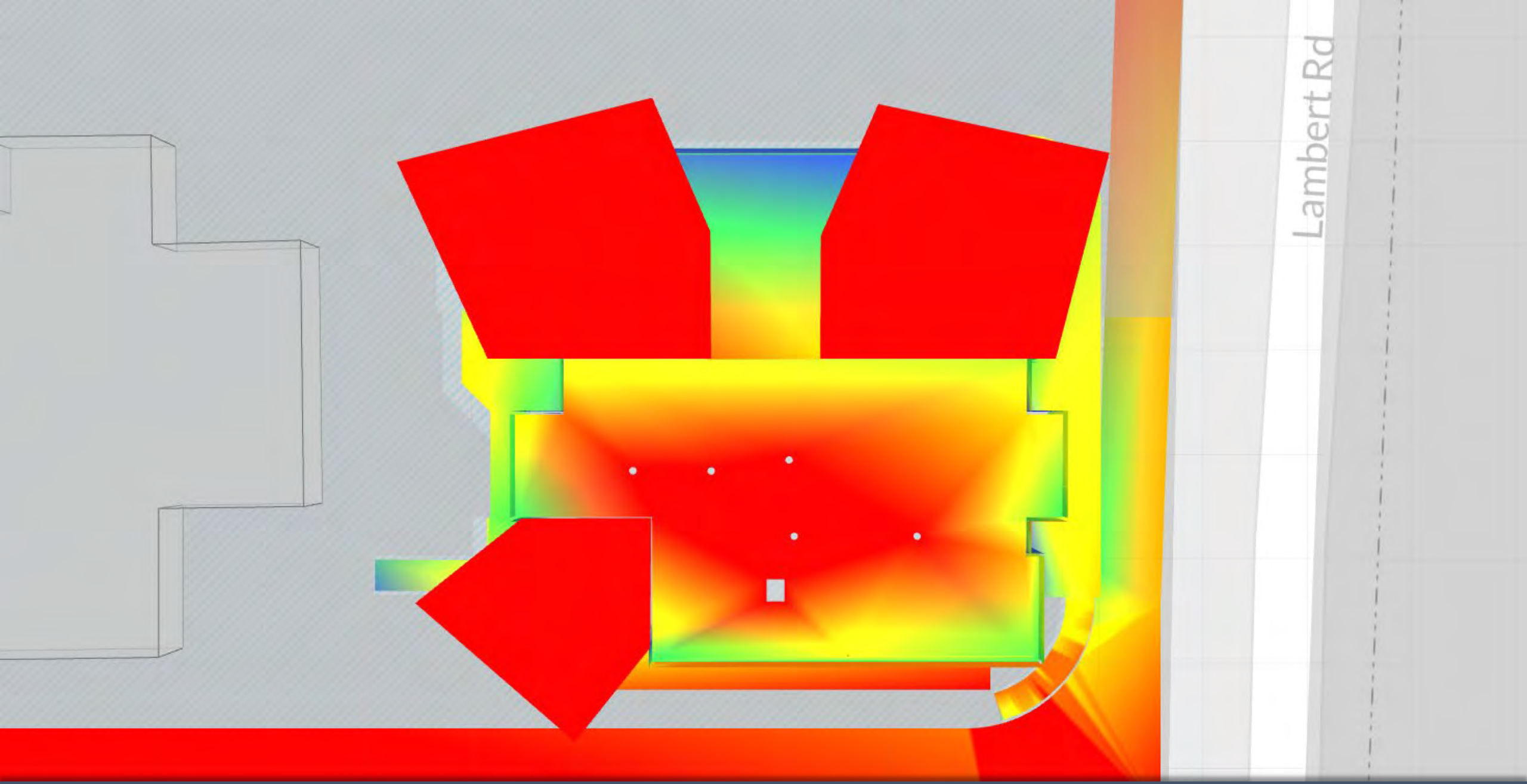

EXIT

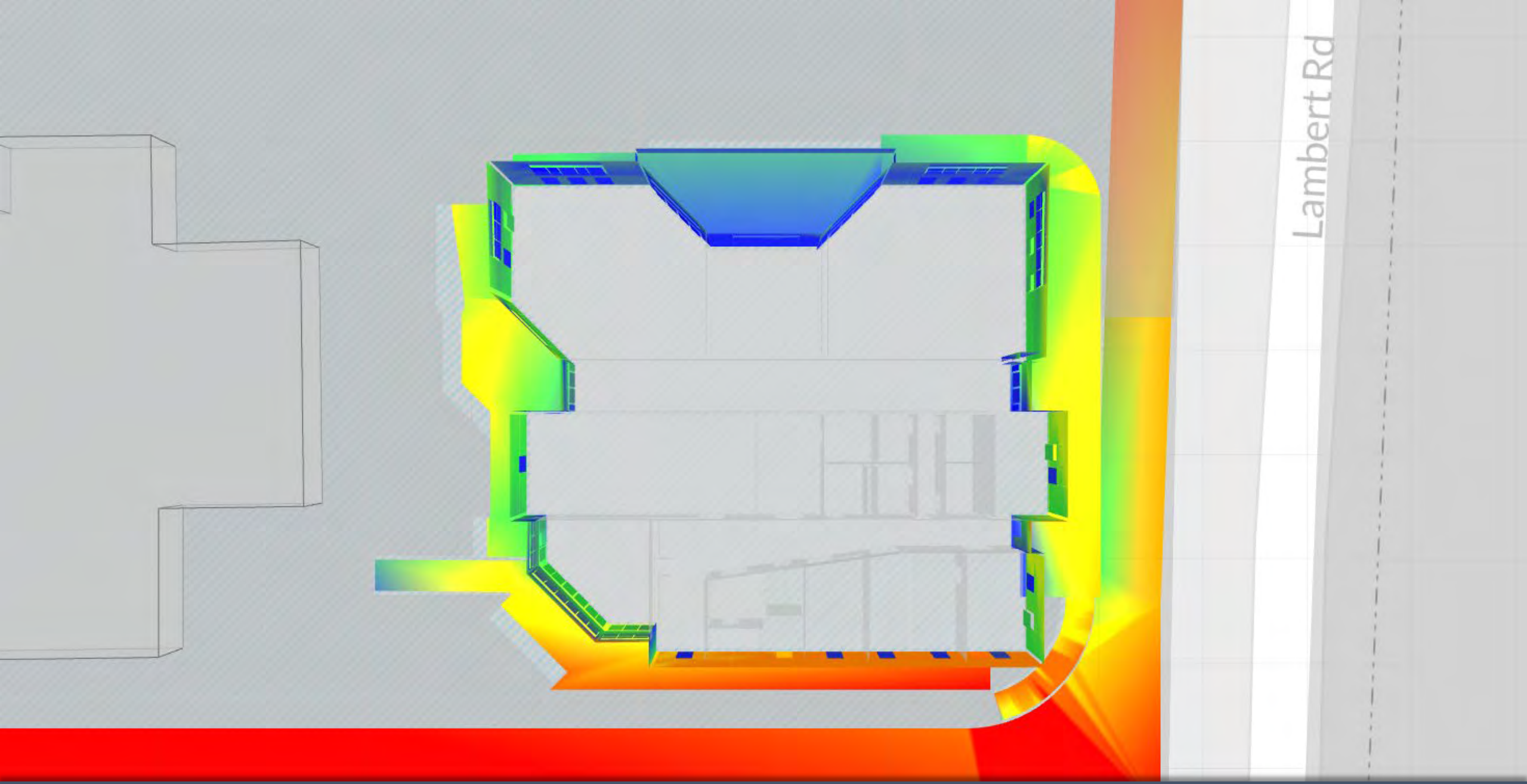

EXIT


EXIT


EXIT

Cool Roof Reduced Heat Island Effect


Lambert Rd


Lambert Rd

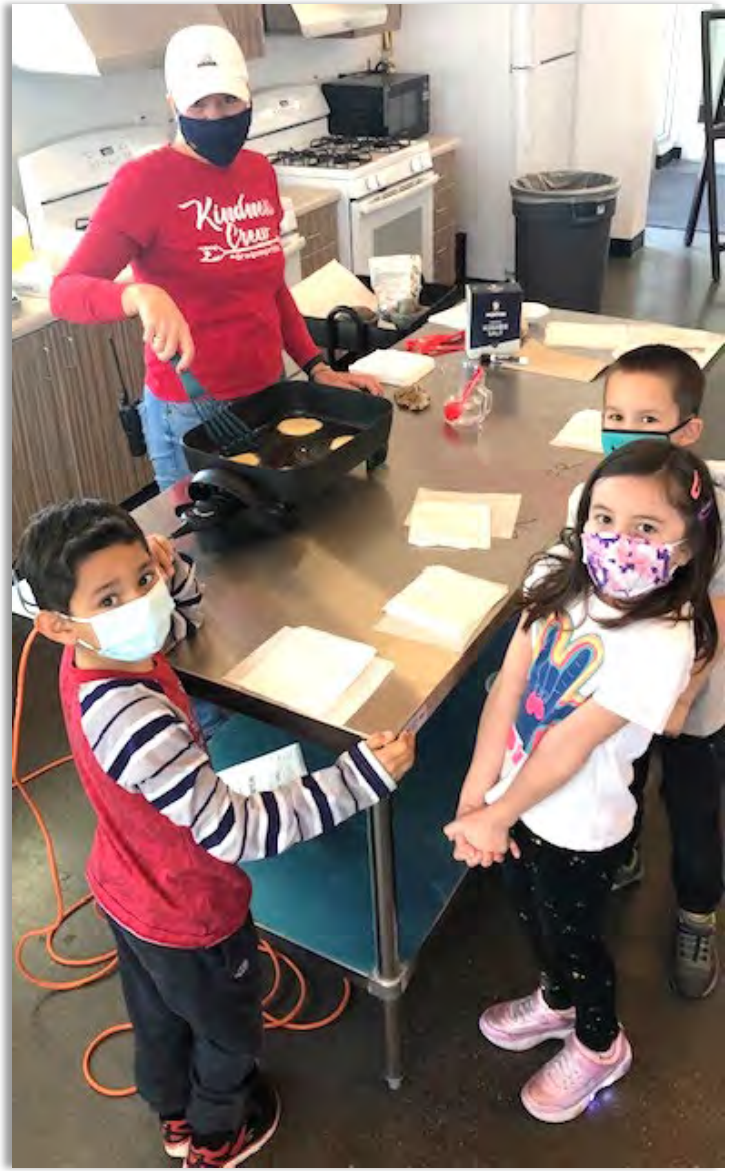
DROP OFF ZONE ONLY
DROP OFF ZONE ONLY
DROP OFF ZONE ONLY


SUISUN VALLEY


SUISUN VALLEY

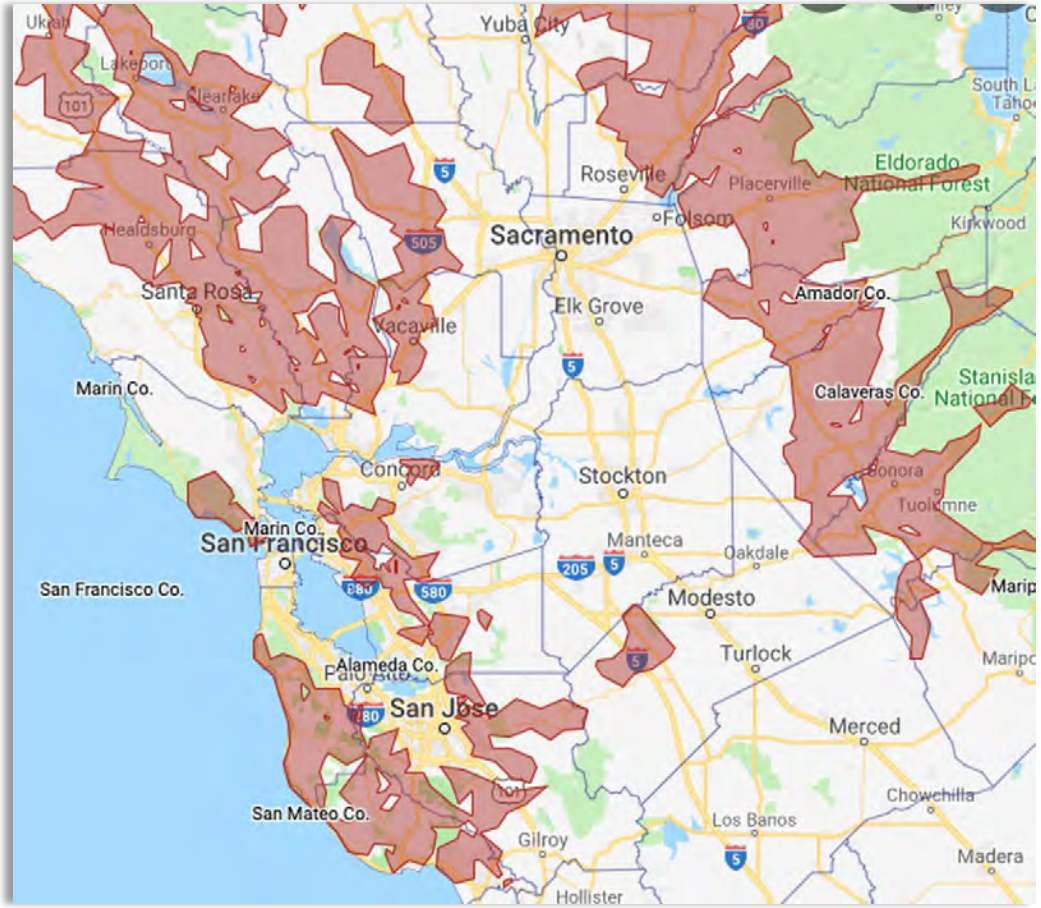
Post-Occupancy


CHILI
CHILI
BANG
BANG


Kindness
Counts


Please donate to our
Farmer's Market

RESILIENCY



2019 map of PG&E blackout zones in Northern California

2020 Pandemic impact on learning spaces

CALIFORNIA GREEN RIBBON SCHOOLS

A CALIFORNIA DISTINGUISHED SCHOOL

CSBA Golden Bell Award Winner

GOLD RIBBON SCHOOLS — CALIFORNIA DEPARTMENT OF EDUCATION

LEARNING BY DESIGN Outstanding Project 2021

COMBINED-LEVEL SCHOOL | **NEW CONSTRUCTION/ADDITION** | LIBRARY/MEDIA CENTER

Suisun Valley K–8 School New Library and Administration Building

Fairfield, CA

This project is exemplary in being a custom building respecting the small nurturing feel of a rural K–8 school located in a prime agricultural area of Suisun Valley. The new building designed by 19six Architects houses 7,728 square feet of administration offices, a waiting area, teachers' lounge, workroom, conference rooms, library, and two instruction areas. Completed on schedule using the Design-Bid-Build method, the single-story wood-framed building with large roof overhangs provides a new front of the school that is inviting and warm, mimicking the natural materials and colors of the surrounding environment. Within the original budget, the design was adapted to be built above the recently revised 100-year flood plain and it included a new 9,100-gallon Fire Water Storage Tank.

In addition to administration spaces and teacher collaboration areas, the program needed spaces to promote 21st Century Learning Skills, providing tech-based instruction and hands-on agricultural learning activities.

Using building orientation and shape to maximize daylighting and flexibility throughout the footprint were key elements of the design. Mariana Alvarez-Parga, AIA, Principal at 19six architects, is excited to witness the design realized, noting, "It is very rewarding to see the built space as envisioned by the design team, with warm colors and plenty of natural light. I fully enjoy ribbon-cutting ceremonies where I get to see the users' first reactions to the new spaces where students can learn, connect and enjoy learning authentically."

The Innovation Lab was designed to accommodate group work including cooking with ingredients grown in the school garden. Polished concrete floors in this space and movable furniture permit students to work freely, and as actively, as needed. A retractable glass partition wall allows the space to shift into an assembly area merged with the library classroom, showcasing a dynamic ceiling of varying heights that extends to the exterior overhangs. Exposed wood surfaces, interior glazing, and colorful finishes contribute to a well-lit environment that is aesthetically appealing to staff, students, and parents to collaborate in the learning experience.

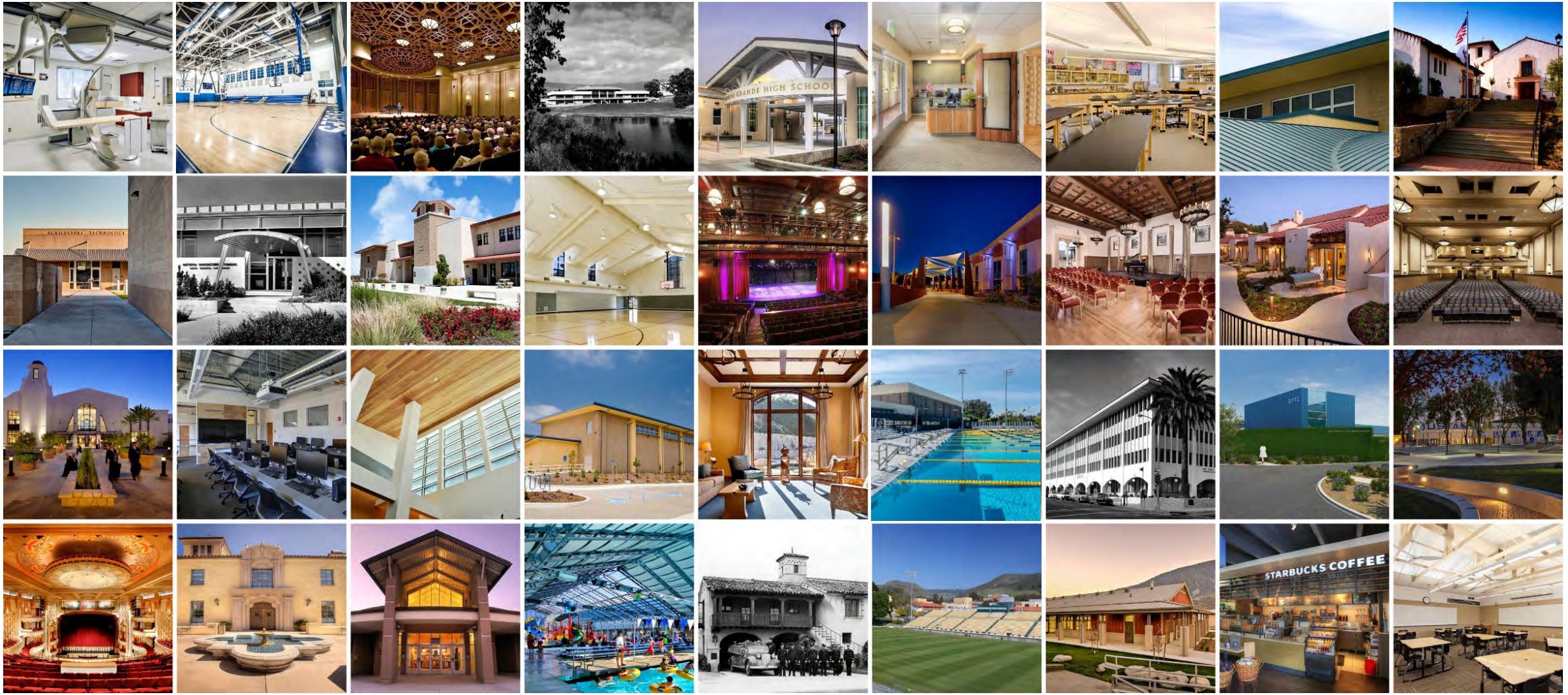
The building also helped frame an outdoor existing space that was underutilized at the time. By providing direct connections to the Library and Innovation Lab, ample north-facing windows, and storefronts to the outdoor, this became a gathering space and the heart of the campus. The resulting exterior and interior spaces contribute to a flexible and encouraging campus climate that supports students' academic, social, and emotional development.

19six Architects
40 S. 1st St., Ste. A
San Jose, CA 95113
19six.com
Mariana Alvarez Parga, AIA, LEED AP, Principal Architect/Designer | AOR
408/715-4470

DESIGN TEAM
Daniel Villarreal, 19six Architects, Job Captain
Josh Reynolds, Miyamoto International, Structural Engineer
Abby Banerjee, Optimum Energy Design, Mechanical Engineer
Marty Gee, Warren Consulting Engineers, Civil Engineer

OWNER/CLIENT
Fairfield-Suisun Unified School District
Fairfield, CA
Kris Corey, District Superintendent

KEY STATS
Grades Served: K–8
Capacity of Students/Occupants: 580
Size of Site: 15.29 acres
Gross Area of Bldg./Space: 9,926 gsf
Space per Student: 17 sq. ft.
Cost per Student: $10,741
Square Foot Cost: $627
Project Cost: $6,230,000
Occupation Date: 12/19/2021



DEDICATED TO PROJECTS THAT ENRICH THE COMMUNITY

THANK YOU