COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS®

Better buildings. Better students.

CA-CHPS Criteria v2.0

For New Construction & Major Renovation/Additions of Classroom and Non-Classroom Buildings

REQUIREMENTS ONLY – NOT FULL GUIDE

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CA-CHPS Criteria

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This soft release PDF is provided to members and non-members as a convenience. The Requirements Only Copy contains the intent and requirements of our criteria and does not contain instructions, documentation for verification, or resources (links). CHPS is shifting to a digital edition for all criteria which will contain the most up-to-date content. As of this publication, the digital edition is in process. Once the digital edition is available, users should refer to it for the most up-to-date content. The Requirements Only PDF will not be maintained regularly and is not guaranteed valid for verification.

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INTRODUCTION

This is the sixth edition of the California CHPS Criteria™ (CA-CHPS) and the second edition to follow significant changes adopted in 2014, hence CA-CHPS v2.0. The Collaborative for High Performance Schools® (CHPS) began in November 1999, when the California Energy Commission called together Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison to discuss the best way to improve the performance of California's schools. Out of this partnership, CHPS grew to include a diverse range of government agencies, utility companies, school districts, non-profit organizations and private companies, all with a unifying goal: to improve the quality of educational facilities for California's children. When the first version of the CA-CHPS Criteria was released in late 2001, it was in anticipation of an unprecedented wave of new school construction. This edition of CA-CHPS also comes at an opportune moment as the recovery from the COVID-19 pandemic has placed an unprecedented amount of attention and focus on improving indoor air quality and creating healthy learning environments. From the beginning, the CHPS Criteria has always emphasized good indoor air quality and improving the quality of the spaces where our students learn. This focus is now more important than ever.

The release of CA-CHPS v2.0 comes at a time where there is a unique opportunity to invest in high performance schools in California. COVID-19 recovery is bringing a significant expansion in funding at the federal, state and local levels targeted at improving school facilities. At the same time California and the federal government are also renewing their efforts to combat climate change with energy efficiency, renewable energy and decarbonization at the center of that effort. While this is only a fraction of the estimated $117 billion in capital investment needed over the next decade to upgrade all of California's schools to be safe, modern, equitable, and sustainable learning environments, it is a promising start. CA-CHPS responds to all of these challenges with evidence-based standards to improve learning environment quality, reduce energy use and reduce the impact schools have on climate change. This update coordinates with DSA's Sustainability Plan for public school construction, incorporates Title 24 2019, and includes new and expanded credits and additional points focused on indoor air quality, Zero Net Energy, building decarbonization and connection to nature. CA-CHPS provides a tool to guide investment in school facilities to make the biggest impact as well as a platform to gain recognition for these efforts as a CHPS Verified or CHPS Designed project.

PRINCIPLES AND FRAMEWORK

Guiding Principles of CA-CHPS

CHPS has established our criteria based on evidence and best practices that form the foundation of every healthy, high performance school. Our criteria are structured around three priority outcomes:

1. Maximize the health, well-being, and performance of students, educators, and staff.
2. Conserve energy, water, and other resources to minimize greenhouse gas emissions and reduce operating costs.
3. Practice good environmental stewardship within schools to achieve community social and environmental goals.

Framework and Organization

CA-CHPS is divided into seven categories in order to streamline the implementation process: Integration & Innovation (II), Indoor Environmental Quality (EQ), Energy (EE), Water (WE), Site (SS), Materials & Waste (MW), and Operations (OM). Each category is comprised of prerequisites and credits (formerly called

"mandatory offerings"). Prerequisites are required to be implemented in every project unless non-applicable due to project type or other allowed exemption. CHPS assigns points to prerequisites and credits. This allows us to demonstrate the importance of the prerequisites on the same scale as credits.

CA-CHPS contains 250 points available for recognition.

Point Assignments in CA-CHPS

Category	% (Points)
Integration (II)	15% (39)
Indoor Environmental Quality (EQ)	30% (74)
Energy (EE)	24% (59)
Water (WE)	9% (23)
Site (SS)	9% (22)
Materials & Waste (MW)	6% (16)
Operations (OM)	7% (17)
TOTALS	100% (250)

How to Use the Guide

Prerequisites and credits are organized by the categories listed above. Each prerequisite and credit includes the following sections:

- **Intent**: The fundamental goal of the strategy or feature. Nested prerequisites and credits share the intent.
- **Background description**: The context for and helpful information about the strategy or feature. Nested prerequisites and credits share the background description.
- **Prerequisite or Credit:** Identification of whether the item is required or optional.
- **Applicability**: What types of projects can use the prerequisite or credit.
- **Verification Review Stage**: Indicates which review stages are required: Design Review prior to construction and/or Construction Review shortly after substantial completion or occupancy.
- **Scoring:** Guidance on how to calculate the points for multi-part items.
- **Related Criteria:** If applicable, a list of CHPS prerequisites and credits that are substantially related to the item.
- **Requirement**: Describes what is required to achieve compliance and receive points for the prerequisite or credit.
- **Implementation**: Describes in more detail strategies for implementing the requirements of the prerequisite or credit.
- **Documentation**: Describes how to appropriately document compliance for the purposes of participating in the CHPS Verified recognition program. Documentation guidance may be included

in the text of CHPS adaptations or may be contained in a separate document.

- **Resources**: Publications, websites, and other sources of additional information for support for compliance.

Additional information is found in:

Appendix A, Table A – Table of prerequisites that apply to major modernizations of existing buildings

Appendix A, Table B – Table of guidance for non-classroom projects

Glossary – https://chps.net/glossary

Verification User's Guide – download at https://chps.net/verification-programs

Topic Specific Guidance and Helpful Hints – https://chps.net/technical-tips

Verification Fees – https://chps.net/chps-verified and https://chps.net/chps-designed

Project Application Form – https://chps.net/project-application-form

System-Wide Approach

Most of the CHPS programs including CHPS Criteria, CHPS Verified™ and CHPS Designed™ are intended for school system-wide use. Public school districts, charter schools and private/independent schools (with an independent governing board) may become CHPS members for free and adopt a CHPS resolution committing to use CA-CHPS Criteria for all of their schools.

Projects

CA-CHPS may be used for individual public, charter and private school construction projects. Projects must meet or exceed applicable code requirements for school construction projects within that particular state or local jurisdiction, i.e. covered by CA-CHPS. For more details, see Eligible Project Types below.

What Has Changed in This Version

CA-CHPS Version 2.0 is the regular, comprehensive revision to the Criteria. This edition is based on the comprehensive revisions made to the National Core Criteria v3.0 in 2019 with the addition of a new credit for Biophilic & Responsive Design and other clarifications and corrections made in 2020. For a complete list of changes from the last version, please contact us at info@chps.net or 415-957-9888.

Effective Date

CA-CHPS v2.0 (2021 edition) became available for use effective March 4, 2021. The concurrency period for registering projects under either CA-CHPS 2014 (v1.02) or CA-CHPS v2.0 ends July 31, 2021.

Future Editions

CHPS has adopted a five-year cycle for comprehensive revisions to our criteria, with a 2-year cycle for interim updates as necessary. Changes during these cycles are made by the CHPS National Technical Committee with the approval of the CHPS Board of Directors in accordance with our consensus process. All major revisions are subject to two public comment periods prior to Board approval. Substantial changes to conform with changes to statutes or regulations may not be subject to public review.

Unless stated otherwise in the approval, the revised edition will take effect upon approval by the CHPS Board of Directors. A summary of substantive changes will be available by contacting CHPS at info@chps.net.

Non-Substantive Changes and Interpretations

Corrections, clarifications, editorial changes, additional compliance pathways, and interpretations to the criteria and supporting documentation may be made at any time by CHPS. An errata sheet will be posted on the Core Criteria webpage and in the document, and the document may be renumbered n.1, n.2, etc. Minor changes go into effect immediately. Changes to the supporting documents will be posted on the Core Criteria webpage. CHPS Criteria Interpretations (CCIs) will be posted in the CCI Library https://chps.net/criteria-interpretations-and-errata.

CHPS VERIFICATION

CHPS began as a self-certifying building rating program, referred to as CHPS Designed™. Later, CHPS introduced CHPS Verified™, a full technical review by a third party, in order for schools to have a more rigorous option, which is sometimes required by a funding entity or regulatory authority. The two levels of recognition under CHPS Verified are *Verified* and *Verified Leader*. CHPS offers both the CHPS Designed and CHPS Verified programs to schools in order to allow flexibility in compliance.

Further details on the options are provided here:

CHPS Designed is a semi-self-certification recognition system with a narrative reviewed by CHPS. Full documentation is not required. It is ideal for school districts or design teams with extensive internal capabilities and experience in using the CHPS Criteria and limited need for an independent project review. The program relies on a project scorecard that helps design teams manage the points they are claiming and can be used to designate responsible team members and track compliance with credits. Teams provide CHPS with a brief narrative for each prerequisite and credit they are claiming describing how they complied, and no additional documentation is reviewed. The primary accountability rests on the school administration and design team for ensuring compliance with the CHPS Criteria. CHPS Designed is available for a low registration fee.

CHPS Verified combines project management, the CHPS Criteria, and a third party assessment to ensure that the school project is designed and built to the highest performance standards. A school that is recognized as CHPS Verified is healthier, more environmentally efficient, and more cost-saving than standard schools, and has been verified by an independent third party. Participation in this program helps ensure that the school project has the required high performance features to realize all the benefits associated with high performance schools, including improved student and worker health, increased productivity of personnel, improved student performance, decreased operating costs through energy and resource savings, and reduced environmental impact. CHPS Verified helps design teams manage the design and documentation process with tools for project oversight, plan review and other resources. The Verification Program User Guide is available online and outlines design and construction review requirements and what each registered project will receive. CHPS Verified is ideal for school districts or design teams seeking to verify their project's performance. Accountability rests not only on the school district and design team but also on CHPS and an assigned independent reviewer.

CHPS Verified Leader is a higher level of recognition for school projects that perform well beyond minimum eligibility requirements. CHPS Verified Leaders exceed CHPS Verified and have inspirational designs that incorporate their high performance features into architectural expression. A Verified Leader school must be an image of environmental and social responsibility and must be balanced in providing benefits to student health and student performance, resource conservation and the environment.

More information on the available programs, costs, processes and documentation requirements are outlined on the CHPS website https://chps.net/verification-programs.

Eligible Project Types

While any building project involving a school may follow the CHPS Criteria for guidance, only the following project types are eligible for recognition under CHPS Verified or CHPS Designed:

- New School Construction (new site)
- New Buildings on Existing Campus (classroom or non-classroom)
- Major Renovations/Modernizations with or without Additions (classroom or non-classroom)
- Combined Scope (new construction + major renovation)

Note: For the remainder of this manual, when references are made to a new building on an existing campus and renovations, these terms include both classroom and non-classroom buildings unless specified otherwise in the applicability section. CHPS uses the terms "renovation" and "modernization" interchangeably.

New Schools and New Building(s) on Existing Campus (Classroom Buildings)

Verification thresholds:

	CHPS Designed/Verified	CHPS Verified Leader
New Building	**110**	**160**

Note: For new buildings on existing campuses, all prerequisites apply with the exception of EQ P15.0 Acoustical Performance for buildings without classrooms. See Non-Classroom Projects below for more discussion.

Major Renovation/Modernization Projects (Classroom Buildings)

To qualify for CHPS recognition, the scope of the renovation must meet our threshold for Major Modernization, which is defined by a substantial improvement to a building of at least two of the following systems: lighting, HVAC, building envelope, interior surfaces, and/or site. A substantial improvement is when more than half the system or surfaces are being replaced or upgraded. The method for quantifying the amount varies by system.

	CHPS Designed/Verified	CHPS Verified Leader
Major Modernization	**85**	**135**

Appendix A, Table A shows the applicability of US-CHPS v2.0 prerequisites for Major Modernizations.

Note: For Modernizations that include Additions, the building must pass the EE P1.0 prerequisite to be eligible. In other words, the addition's systems must be independent of the main building and pass on their own or the whole building's systems must be modeled and pass the prerequisite.

Non-Classroom Projects

Non-Classroom Buildings, both new and renovated, as a stand-alone project type are now eligible for CHPS Designed and CHPS Verified/Verified Leader recognition. Taking into consideration the wide range of building uses and project scopes for non-classroom spaces, we have established the following point thresholds:

	CHPS Designed/Verified	CHPS Verified Leader
New Building	**83**	**120**
Major Renovation	**64**	**101**

Appendix A, Table B contains guidance on applying the prerequisites to non-classroom scopes. The only prerequisite that absolutely does not apply is EQ P15.0 Acoustical Performance. Even so, some non-classroom spaces may be well served by the same acoustical practices used in classrooms; similarly, most other prerequisites and credits apply based on the project scope and the goals of the project team. Many criteria that were originally intended for classrooms translate to non-classroom spaces quite readily. The lower point thresholds are an acknowledgement of the range of possibilities for this project type.

CHPS and Historic Preservation

CHPS supports the reuse and preservation of historic buildings for schools as a community and national interest. While we recognize that local, state, or federal rules for historic structures may limit the scope of a project in terms of alterations, CHPS does not offer automatic exemptions from prerequisites because in many cases some achievement is possible. This approach allows us to balance the values of historic preservation with the core principles of our criteria. The CHPS National Technical Committee has determined in recent CCIs pertaining in historic spaces that those teams did not have to follow the prerequisite to the letter but were asked to do what they can.

Teams working on projects in a historic structure may submit a waiver request to CHPS once the project is registered. CHPS reviews waiver requests on a case-by-case basis and may issue a determination of full exemption, partial exemption, or no exemption.

ACKNOWLEDGEMENTS

We gratefully acknowledge the support of our CA-CHPS v2.0 sponsor:

"Quattrocchi Kwok Architects is proud to have supported the development of CA-CHPS v2.0. Never has our shared goal to make a difference by building healthier more sustainable schools been more important. We look forward to these criteria guiding the development of many school projects to support schools and communities across California."

Aaron Jobson, QKA Principal/President

Thank you to the CA-CHPS 2020 Advisory Committee:

Co-Chairs:
Aaron Jobson, Quattrocchi Kwok Architects & CHPS Board of Directors
Ida Clair, Division of the State Architect

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INTEGRATION & INNOVATION (II)

II P1.0 INTEGRATED DESIGN
II C1.1 ENHANCED INTEGRATED DESIGN

Integrated design is the consideration and design of all building systems and components together. It brings together the various disciplines involved in designing a building to develop and review their recommendations as a whole. It recognizes that each discipline's recommendations have an impact on other aspects of the building. For example, the HVAC system selection and design should take into consideration the building envelope and other building systems such as lighting and daylighting. A lack of teamwork can result in oversized systems or systems that are optimized for non-typical conditions. Integrated design allows professionals working in various disciplines to take advantage of efficiencies that are not apparent when they work in isolation. The earlier the integration is introduced into the design process, the greater the benefit for both new construction and renovation/modernization projects.

Intent

Establish the district's high performance goals early in the conceptual design phase and work collaboratively as a team to ensure these goals are incorporated. Goals identifying building efficiencies, site impacts, indoor environmental health and wellbeing should be captured in this early planning process.

II P1.0 INTEGRATED DESIGN

PREREQUISITE

1 point

APPLICABILITY: All Projects

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: All

II P1.0 REQUIREMENTS

1 point

Conduct a minimum of three integrated design team workshops that identify the project's high performance goals, ensure the incorporation of all CHPS prerequisites, and target the appropriate CHPS credits and best practices as part of an ongoing programming and design decision-making process. The outcome shall be a plan, scorecard matrix, or checklist of how each prerequisite and credit will be implemented, the person(s) responsible, and a timeline of key deliverables or implementation procedures.

The first workshop must take place at the point at which the project team is making design decisions, and preferably in the programming or first conceptual or Schematic Design phase meeting.

The second workshop must occur sometime during the Design Development phase, prior to the mid-point (50%) of the construction documentation phase and should coordinate with the owner's project requirements and any other district or project specific CHPS guidelines or environmental performance requirements. This integrated design workshop should include a quality check of the documents for high performance features and continued achievability of the earlier identified prerequisites and credits with an emphasis on maintenance and operational aspects of the building systems. School staff in charge of HVAC controls, maintenance, lighting, cleaning, landscaping, recycling, trash collection, and consumables purchasing are required to attend.

The third workshop must occur during the early part of construction, preferably in concert

with the construction kick-off meeting, where all parties review the CHPS scorecard goals, schedule of deliverables, and expectations of respective responsible parties, especially contractors, school site and maintenance and operations staff. Discuss implementation issues and confirm continued achievability of design intent, CHPS scorecard prerequisites and targeted credits.

Set any remaining deadlines for respective CHPS design and construction review, prerequisites, and credit documentation to be uploaded to the CHPS project account in Basecamp.

The following groups must be represented at least once in the process to speak to their responsibility for a CHPS prerequisite or credit:

- *Owner Representatives Group* – owner's project manager, facilities maintenance representative, district or school capital project staff, utility representative, commissioning agent, and any sustainability officer or green schools staff.
- *Design Consultants Group* – architect, interior designers, engineers (mechanical, electrical, civil, and plumbing), food service, acoustic and energy consultants, lighting designer, landscape architect, and green building/CHPS consultant.
- *Construction Representatives Group* – construction manager, general contractor, and major subcontractors. For projects that are Design-Bid-Build-Delivery, the contractor may not yet be under contract until the Construction Phase.
- *School Occupants Representatives Group* – principal, teachers, special education representatives, students, parents, operations staff, and community members.

II C1.1 ENHANCED INTEGRATED DESIGN

CREDIT

1 point

APPLICABILITY: All Projects

VERIFICATION: Design Review

SCORING: 1 point for completing one of the 3 options: 1.1.1, 1.1.2, 1.1.3

RELATED CRITERIA: All

II C1.1 REQUIREMENTS

II C1.1.1 *Energy Modeling Variations*

1 point

During the Design Phase, perform at least three iterations or variations of whole building energy analysis and document how the models responded to synergistic issues raised during the first two CHPS workshops and/or Interim Design Phase to improve overall high performance (see Prerequisite above).

OR

II C1.1.2 *Advanced Design Modeling*

1 point

Utilize an advanced BIM decision-making tool for integrated sustainable design; whole building life cycle assessment (WBLCA); or environmental impact modeling tool such as Tally, Athena, One Click, or Skanska's Embodied Carbon in Construction Calculator (EC3); or others that facilitate calculation of embodied and/or operating carbon emissions.

OR

II C1.1.3 Cross-Category Workshops

1 point

During CHPS integrated design workshops, set aside time to specifically discuss design opportunities to improve multiple high performance outcomes by identifying criteria across categories (Materials & Waste, Indoor Environmental Quality, Site, Water, Energy) that contribute to the achievement of other category credits and/or design strategies that also promote human health, nutrition, or wellness.

II P2.0 CENTRAL EDUCATIONAL DISPLAY
II C2.1 SCHOOL AS A LEARNING TOOL

Using the school and grounds as a learning tool, students, staff, and the community can benefit by having an educational display to illustrate the healthy, efficient, environmentally sustainable features of the school.

Intent

Promote environmental awareness and eco-literacy by utilizing the high performance features of the school to demonstrate the basics and benefits of sustainable, healthy buildings.

High performance features offer excellent opportunities to teach students about the specific ideas and technologies incorporated into the school. Demonstrating these features in the architecture of the school provides a hands-on experience for students, teachers, and staff.

School gardens and campus landscape can provide a richly engaging learning environment, as well as a beautiful respite from the demands of the school day. Gardens promote learning about the social and environmental systems and healthy foods. Students who are not engaged by traditional learning methods often find the experience of working in the garden and campus landscape a welcome path to experiential-based learning.

II P2.0 CENTRAL EDUCATIONAL DISPLAY

PREREQUISITE

1 point

APPLICABILITY: All Projects

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: All

II P2.0 REQUIREMENTS

1 point

Provide a permanent educational display, such as signage, kiosk, showcase, or digital device, in a central location on the school site that describes the high performance features that are part of the building and site.

The permanent educational display must be located in a prominent location at the school, such as the main lobby. The display shall include a list of all CHPS high performance features with a statement of the intent and an explanation of each feature. Visual aids or drawings may be used to illustrate features as needed. If demonstration areas are established in II C2.1, the display shall include a map identifying their locations.

II C2.1 SCHOOL AS A LEARNING TOOL

CREDIT

1-3 points

APPLICABILITY: All projects

VERIFICATION: Design Review, Construction Review

SCORING: 1 point each for 2.1.1-2.1.3

RELATED CRITERIA: All

II C2.1 REQUIREMENTS

II C2.1.1 *Demonstration Areas*

1 point

Create at least two demonstration areas highlighting any of the school's high performance features including: indoor environmental quality, energy, water, site, materials & waste, and climate resilience. The demonstration areas are in addition to the central educational display.

Within the demonstration sites, at least one feature of a high performance category must be showcased. The demonstration area must explain how the high performance feature works, its environmental and economic benefits, and how it exemplifies a holistic and integrated approach to sustainable design.

II C2.1.2 *Educational Integration/Environmental Curriculum*

1 point

Create an educational plan, program, or activity that utilizes the school's high performance features in teaching and learning to contribute to environmental awareness and/or eco-literacy. If the plan or program is obtained through a third party, it must address the school's high performance features. Include a letter of commitment from the school principal, teacher(s), or governing board stating that the sustainability education will occur on a yearly basis. The educational program should consist of the following primary components:

- Science, technology, environmental arts, or math (STEM/STEAM) hands-on learning that explores high performance design features.
- A core group of learners, or CHPS Champions, who will be responsible for educational outreach within the school community. The number of CHPS Champions will vary from school to school but is preferably at least 2 students per grade.
- Support staff, preferably 2, who will administer the program and mentor the CHPS Champions.

Educate entire student community (100% of student population) on high performance design. Each student should be exposed to at least one design feature, exposing them to level appropriate learning-outcome relevant information.

Educational integration should incorporate the central educational display and/or demonstration areas.

II C2.1.3 *School Gardens*

1 point

Provide a site on campus for one or more school gardens with a minimum of 200 ft^2 for a student enrollment of 499 or fewer students, and a minimum of 500 ft^2 for student enrollment equal to or greater than 500 students. At a minimum, the garden(s) must provide for learning about the social and environmental systems of the local natural systems and about healthy foods, in the case of an edible garden. The garden(s) shall have a permanent source of water through an irrigation system or by access to a tap and hose and/or access to a rain collection system. There must also be dedicated storage space for garden maintenance supplies and tools. Informal seating or gathering space for instruction within the garden or nearby is encouraged, but not required.

Provide signage to designate the area as a school garden and to differentiate it from the surrounding grounds. Develop a long-term ecologically sustainable operations and

maintenance plan to ensure the garden is implemented and continues to thrive; update the plan as-needed.

For existing school sites (major renovations/modernizations or new building on existing campus project) the soil must be tested to ensure there are no harmful contaminants. New school sites are covered under SS P1.0 site requirements.

II C3.1 DISTRICT LEVEL COMMITMENT

Intent

Integrate high performance goals into district planning.

School and district leaders who institutionalize high performance programs are not just building better schools; they are protecting student and staff health, improving student performance, and lowering the district's operating expenses. Institutionalizing high performance schools allows districts to leverage suppliers and vendors for products and services that comply with high performance school standards, standardize specifications and building strategies to minimize time and expenses, and maximize the benefits of high performance schools on a district-wide basis.

II C3.1 DISTRICT LEVEL COMMITMENT

CREDIT

1 point

APPLICABILITY: All Projects

VERIFICATION: Design Review

SCORING: 1 point for either 3.1.1 or 3.1.2

RELATED CRITERIA: All

II C3.1 REQUIREMENTS

II C3.1.1 *CHPS Membership & Construction Resolution*

1 point

The administration must maintain an active CHPS membership and pass a board or trustee-level resolution that mandates compliance with CHPS Criteria for the corresponding project type to formalize district-wide commitment to high performance schools, as follows:

Meet or exceed the CHPS qualifying threshold using the CHPS Criteria for:

- New Schools
- Major Renovation/Modernization Projects
- New Buildings on an Existing Campus, including Non-Classroom Buildings
- Additions to an Existing Building
- Prefabricated/Modular Classrooms

OR

II C3.1.2 *Benchmarking Resolution*

1 point

The governing board must pass a board or trustee-level resolution that mandates conducting annual monitoring and benchmarking (see OM C4.1 High Performance Operations) district-wide, if applicable.

II C4.1 SCHOOL MASTER PLAN & ENHANCED PLANS

While a school is being designed or renovated it is important to consider future needs and how those needs may be met while keeping high performance principles in mind. It is also important to have a master plan in place to ensure that the intent of the design or renovation/modernization is carried out when the school is renovated and maintained in the future.

Intent

Ensure high performance measures are implemented throughout the life of the school. Plan for and take meaningful actions to measure and reduce GHG emissions over time.

Climate action planning provides a roadmap for schools and districts to reduce greenhouse gas (GHG) emissions. Electricity use and combustion of fuels for heating in buildings contribute to nearly 40 percent of national GHG emissions. High performance design and construction of new schools as well as sustainable operation and renovation of existing schools offers great potential to reduce GHG emissions.

II C4.1 SCHOOL MASTER PLAN & ENHANCED PLANS

CREDIT

1-4 points

APPLICABILITY: All Projects

VERIFICATION: Construction Review

SCORING: 1 point for 4.1.1, 2 points for 4.1.2, 3 points for 4.1.3, 4 points for 4.1.4

RELATED CRITERIA: EE C1.1 Superior Energy Efficient Design, OM P3.0 Energy & GHG Performance Benchmarking, OM C8.1 Green Power

II C4.1 REQUIREMENTS

Create a written, actionable master plan with goals for continuous implementation and improvement of the high performance elements of the school over at least a 10 year period from occupancy/project completion. Enhanced plans contain goals for significant additional steps towards sustainability over the baseline performance of the building, such as zero net energy or zero waste. Enhanced plans should cover 50-80 years.

II C4.1.1 *High Performance School Master Plan or Commitment to Complete Enhanced Plan*

1 point

Do either of:

High Performance School Master Plan

The administration shall develop a school master plan for the site and facilities in collaboration with school board members and community stakeholders covering 10-15 years from occupancy that:

- Supports continued compliance with high performance strategies followed in these Criteria.
- Is consistent with the district-wide facilities master plan, if applicable.
- Assesses and plans for future transportation impacts on the school and offers flexibility for alternative forms of transportation.

- Assesses and plans for the possibility of increased or decreased student enrollment.
- Assesses use of the school for emergency preparedness such as a shelter or for climate adaptation and resilience.
- Assesses and plans for future high performance upgrades and renovations/modernizations by documenting:
  1) Life expectancy of major systems and materials.
  2) Opportunities for high performance replacement such as reuse or recycle.
- Identifies current and future opportunities for pedestrian and bike connections to surrounding neighborhoods, community services, and bike paths.
- Considers protecting outdoor spaces for school gardens, landscaping, permeable paving, and ideal solar orientation.

OR

Commitment to Enhanced Plan

The administration shall make a written commitment to complete any one of the following sustainable/climate action plans (4.1.2-4.1.4), including the GHG Emissions Inventory. The commitment must include the timeframe for completion of the plan and identification of the responsible individuals.

II C4.1.2 *ZNE School Master Plan*

2 points Exceed the school master plan above to create a zero net energy (ZNE or ZE) plan. The ZNE plan should address all of 4.1.1 as well as include goals and actions to achieve the following over time:

- Zero net energy for the whole site/all buildings using the criteria in EE C1.1 Superior Energy Efficiency Design
- Energy resiliency using the criteria in II C7.1 Design for Adaptation & Resilience or other criteria appropriate to the local climate and conditions

II C4.1.3 *Sustainable School Master Plan*

3 points Exceed the above plans by doing all of 4.1.2 plus:

- At least 40% water use reduction using strategies including but not limited to those in WE C2.1 & C3.1; “water neutral” or “zero water” goals are encouraged
- Additional waste reduction measures beyond those in MW P1.0 and MW C1.1; “zero waste” is encouraged
- Provide for ZEV/carpool preferred parking and electric vehicle charging facilities
- Coordinate with district-wide sustainability planning, if applicable
- Integrate education on all the above into curriculum

II C4.1.4 *Sustainable School Climate Action Plan or Low/Zero Carbon School Master Plan*

4 points Do all of 4.1.3 plus either of:

Sustainable School Climate Action Plan

Develop and implement an administration-approved climate action plan that includes a goal for annual reporting of GHG emissions to raise awareness of the school community’s carbon

footprint and engage students, staff, and the community in reducing the footprint. The plan must establish a baseline year, identify measures that will lead to reduction in GHG emissions by at least 25% from the baseline year within 10 years and 80% by 2050. The climate action plan shall address Scopes 1 and 2 emissions (see Implementation) at a minimum and may also include Scope 3 emissions.

OR

Low/Zero Carbon School Master Plan

The Low/Zero Carbon plan is eligible for an additional point in II C8.1 Innovation.

Complete the Climate Action Plan above plus:

- Commit to no fossil fuels used on-site for space heating, water heating, cooking, or other small process loads.
- Address GHG emissions from transportation related to school district employee/teacher/student commute or pick-up/drop-off through performing a baseline survey and developing a plan for minimum 25% reduction by 2030 and 80% reduction by 2050.

II C5.1 SAFER SCHOOLS BY DESIGN

Intent

Ensure school grounds, buildings, and interiors incorporate proven strategies that deter crime, reduce the fear and incidence of crime, and improve the quality of the life for students.

The design of learning environments can dramatically affect behavior, feelings, and attitudes towards one another. While schools in the United States remain relatively safe, it is imperative to increase feelings of safety and reduce opportunities for violence. Crime Prevention Through Environmental Design (CPTED) principles focus on reducing crime opportunities, and promoting positive social behavior. The CPTED Principles are:

- Natural surveillance – Integrate themes of openness and transparency for all to see and be seen.
- Natural access control – Direct the flow of people towards entrances that are most visible.
- Territorial reinforcement – Create a sense of place and ownership to deter crime.
- Maintenance and management – Well-maintained spaces feel safer and are proven to deter crime.

There are strong overlaps and synergies among the four CPTED principles. In practice, it may be useful to recognize that the principles can meet other design goals as well, like Responsive Design (II C8.1 Biophilic & Responsive Design). The implementation of strategies should create a warm and welcoming environment, foster a sense of physical and social connection, increase a sense of place, and provide more opportunities for natural surveillance.

To incorporate CPTED Principles effectively, schools must involve those responsible for design, use, and maintenance. Key stakeholders include school officials, teachers, designers, students, community members, and local emergency response agencies. The most effective CPTED strategies are those that improve the quality of the learning environment and that bring communities closer. This is in contrast to implementing visually affronting security or target hardening measures such as armed security patrols or razor wire fences. Effective CPTED strategies include:

- Increasing visibility between interior rooms and circulation spaces.
- Adequate site lighting at drop-off/pick-up areas, trash enclosure, and along pedestrian paths.
- Directing the flow of people toward proper and visible entrances.
- Eliminating unnecessary doors or gates, such as at restrooms.
- Promoting land use mix to encourage activities during critical time periods.
- Creating a sense of ownership and placemaking through design, maintenance and management.

II C5.1 SAFER SCHOOLS BY DESIGN

CREDIT

1 point

APPLICABILITY: All Projects

VERIFICATION: Design Review

RELATED CRITERIA: II C8.1 Biophilic & Responsive Design, Most Site criteria especially SS C9.1 Living Schoolyards, MW P1.0 Storage & Collection of Recyclables

II C5.1 REQUIREMENTS

Complete all the following:

Conduct a CPTED workshop with key project stakeholders and a CPTED professional at the outset of, or before, schematic design to identify site, building and interior issues, and define strategies aligned with CPTED principles for addressing them in a CPTED Plan. Key project stakeholders must include representatives of the designers, users, and emergency responders.

The CPTED Plan must articulate strategies categorized by CPTED Principles.

The design team must incorporate these strategies in the project design. The CPTED professional shall review the design prior to construction and provide comments as necessary to align the design with CPTED Principles.

II C6.1 LOW/ZERO GHG SCHOOLS & EXISTING BUILDING DECARBONIZATION

> **Intent**
>
> In new buildings, design for all-electric facilities that use 100% renewable energy and low embodied carbon materials to reduce GHG emissions. In existing buildings, transition away from fossil fuels to all-electric using 100% renewable energy and low embodied carbon materials.

Zero Net Energy (ZNE) schools are not zero GHG or zero carbon emission schools. If ZNE schools use natural gas or other fossil fuels, they are a major source of direct GHG emissions in buildings, even if offset by renewable energy. Low carbon schools avoid use of natural gas or other fossil fuels for space heating, water heating, cooking, and other process loads, are energy efficient, all-electric facilities that use 100% renewable energy. Low carbon schools are on track to becoming zero emission schools when they also ensure that low embodied carbon materials are used and that environmentally preferable refrigerants are incorporated into equipment and building material selection.

Low carbon is not just for new buildings. Transitioning our existing schools to both ZNE and Zero Carbon is immediately important to avoid 20-40 more years of emissions and stranded assets in the near future. A major renovation project is an opportunity to improve energy efficiency, transition to all-electric and renewable energy, and install low embodied carbon materials.

II C6.1 LOW/ZERO GHG SCHOOLS & EXISTING BUILDING DECARBONIZATION

CREDIT

2-13 points

PROJECT TYPE: All Projects

VERIFICATION: Design Review, Construction Review

SCORING: 6 points for 6.1.1a or 6.1.1b; 2 points each for 6.1.2 and 6.1.4; 3 points for 6.1.3

RELATED CRITERIA: EE C1.1 Superior Energy Efficient Design & Zero Net Energy, OM C7.1 Green Power, II C1.1 Enhanced Integrated Design, II C4.1.4 Low/Zero Carbon School Master Plan, II C7.1 Design for Adaptation & Resilience, EQ C2.1 Pollutant & Chemical Source Control

II C6.1 REQUIREMENTS

II C6.1.1a *Energy Efficient, All-Electric (New Construction)*

6 points

Design a highly efficient, all-electric building using one of the following options:

1. Passive House approach;
2. Achieve a minimum of 35% savings beyond ASHRAE 90.1-2016; or
3. Achieve a site-based Energy Use Intensity (EUI) of less than 30 kBtu/sf/yr or target from NREL's EUI target chart by climate zone, whichever is higher. [8]

II C6.1.1b *Deep Energy Retrofit & Conversion to All-Electric (Modernizations)*

6 points

Implement a deep energy retrofit that results in an all-electric building targeting one of the following:

1. Achieve a minimum of 35% savings beyond current Title 24; or
2. Achieve a site-based Energy Use Intensity (EUI) of less than 30 kBtu/sf/yr or target from NREL's EUI target chart by climate zone, whichever is higher. [8]

During any natural gas infrastructure work:

- Ensure proper safety and inspections are performed.
- Methane leakage is checked, prevented, and mitigated, especially during any capping off.
- Gas meter is removed at any final decarbonization of the campus, when all-electric systems are fully operational.

II C6.1.2 *100% Renewable Energy / Zero Carbon*

2 points

Achieve the zero net energy level in EE C1.1 for an all-electric building where on-site renewable energy systems produce as much energy on an annual basis as is used by the sum of all the building systems;

OR

100% of purchased electricity to power the building, whether through the local grid, a Community Choice Aggregator (CCA) or through a Power Purchase Agreement (PPA), is from 100% renewable sources.

OR

ZNE/ZNC is achieved through a combination of on-site renewables, smart inverters, battery storage, and purchased electricity.

II C6.1.3 *Low Embodied Carbon Materials*

3 points

Select low carbon building materials through an assessment of embodied carbon using whole-building life-cycle assessment (WBLCA) or other appropriate calculator. Teams are invited to propose a methodology to CHPS for approval.

II C6.1.4 *Environmentally Preferable Refrigerants*

2 points

Comply with CALGreen, Section 5.508.1, Outdoor Air Quality, requiring the use of no CFC-based refrigerants in building HVAC & refrigeration, and fire suppression systems.

HFC refrigerants are being phased out per CARB regulation and preference should be given to specifying HVAC, refrigeration, and water heating equipment that utilizes low GWP refrigerants, including carbon dioxide (CO_2) refrigerant.

II C7.1 DESIGN FOR ADAPTATION & RESILIENCE

A well maintained building designed today should last 60-100 years, at least in terms of its building shell and foundation. High performance school facilities may perform well on paper, but the design is often based on outdated climate data that does not reflect changes in weather data, let alone future changes in climate. Changing climate is already contributing to increased overheating and other weather-related hazards at schools, and is expected to worsen through this century and beyond. Due diligence should be taken to assess and mitigate the vulnerability of school facilities to climate change.

Intent

Encourage building design practices that assess climate change vulnerability and that plan for changing climatic conditions over the building lifespan, in order to avoid excessive energy costs, repair costs, carbon emissions, and liability risks; while preserving access to safe water, sanitation, life safety, and minimizing health and student performance impacts. This approach of planning now for ***future*** changing conditions and disruptive events, particularly when combined with related CHPS Criteria, can allow schools to serve as sustainable centers of community resilience.

Building designers around the world have been designing buildings in recent years to perform well under future climate conditions and during power outages. This life cycle approach will increase the long-term durability and performance of buildings, and help avoid unnecessary and perhaps catastrophic impacts on facilities and their occupants. It will also help state-level adaptation, mitigation and resilience planning, such as in New York, California, Massachusetts, and others, in meeting goals for energy efficiency, emergency disaster planning, and GHG reductions in their schools, despite a changing climate.

II C7.1 DESIGN FOR ADAPTATION & RESILIENCE

CREDIT

2-9 points

APPLICABILITY: All projects. For renovations/major modernizations, see Implementation for details.

VERIFICATION: Design Review

SCORING: 2 points each for 7.1.1-7.1.2, 2-4 points for 7.1.3, 1 point for 7.1.4

RELATED CRITERIA: All Integration, EQ P1.0 Ventilation & IAQ, EQ C10.1 Thermal Comfort, EQ C12.1 Daylight Availability, All Energy, All Water, SS P1.0 Environmental Site Assessment, SS C5.1 Sedimentation & Stormwater Management, SS C4.1 Joint Use, SS C7.1 Reduce Heat Islands, OM C6.1 Indoor Environmental Management and C8.1 Green Power

II C7.1 REQUIREMENTS

II C7.1.1 *Climate Vulnerability Assessment*

2 points

If no recent climate risk assessment exists for the site, conduct an assessment of the location's vulnerability to significant weather events. Assume at least 60-100 years of service life for the building shell, foundation, and other major structural components. Use the most recent and most localized (local, regional, and/or state, and/or national) climate change vulnerability assessments, maps, and/or adaptation plans to assess the magnitude and likelihood of climate change hazards at the school site and district wide, if applicable. Consider potential hazards such as, extreme heat event/overheating, wildfires, power

outages, extreme drought/water shortage, air pollution, extreme wind, sea level rise, winter storms, tornadoes, and episodic flooding or storm surge. State and federal (USGCRP, EPA, NOAA, or DOE) online resources, databases, or tools may be utilized, if no local climate risk assessments have been done recently.

Identify the top one to two hazards from the vulnerability assessment above based on the likelihood and potential magnitude of impacts on human health and safety and on economic impacts. For the top hazard(s), identify potential actions, design strategies, and opportunities to adapt the school building project, site, and district design standards (if applicable), operational policies, and school site activities and address future emergency events and climate conditions. Outreach and partnering with the local community, state, and regional agencies is highly recommended.

II C7.1.2 *Design for Climate Adaptation*

2 points

Design the building to meet the EE C1.1 criteria for zero energy and:

For the top hazards identified above, incorporate all feasible adaptation measures in the project design. Assess the feasibility, scheduling, and cost-effectiveness of the measures. Evaluate the potential benefits in terms of energy, water, and cost savings, disruption of service and other cost avoidance, improved staff and student performance, health, and safety, and reduced liability. Seek to identify and leverage other community benefits, both short and long term.

If integration of climate adaptation measures is not feasible under the current project budget or other constraints, provide the school administration with a recommendation for how to assess and implement the measures in the future, such as by designing and preparing construction alternates. Phasing the measures in over time is allowed if necessary, but plan for any necessary infrastructure or preparations in the initial construction phase, e.g., brackets for external shades, substructure for green roofs, and electrical transformer/panel/wiring for more electrification, PV panels, internet of things, EV charging, and microgrids. These recommendations can be used in the plan in II C4.1 School Master Plan.

II C7.1.3 *Energy Resilience*

2-4 points

Meet the criteria for zero net energy in EE C1.1. and design the building to meet at least two of the following measures for 2 points or all four measures for 4 points:

1. No less than 75% of the floor area is located within a daylit zone as defined by the IECC-2015, ASHRAE 90.1-2016 or the Spatial Daylight Autonomy methodology.
2. No less than 75% of the floor area is located in a space provided with an operable fenestration area to the exterior of at least 5% of the floor area of the space. Operable fenestration area shall be capable of manual operation.
3. All power systems are divided into primary/critical and secondary/non-critical sub-systems so that no more than 50% of the building loads are on the primary subsystem and the secondary sub-system can be disconnected from energy sources.
4. It contains an on-site energy storage system sized to serve the loads on the primary subsystem for no less than 4 days without any interaction with energy supply infrastructures such as the electricity grid or is connected to renewable backup power with the same capacity. A microgrid or renewable district energy system is acceptable for this criterion.

   Critical energy systems such as HVAC equipment, energy distribution systems for the primary energy sub-system, onsite renewable energy systems and energy

storage systems are built and located to protect them from the most likely disturbances or natural disasters. For example, in tornado-prone areas, these systems would be built in accordance with, or located in portions of the building built in accordance with, tornado-resistant standards. Or in flood-prone areas, these systems would be located above the flood level. In areas prone to high wind, especially tornadoes and hurricanes, it is especially important that onsite renewable systems be built to withstand high wind loads.

Include the systems in training and O&M Manual in OM P1.0 and in the Systems Maintenance Manual in OM C4.1, if applicable.

II C7.1.4 *Passive Habitability/Survivability*

1 point

If/when the school/district establishes readiness for emergencies by working with the Red Cross or other local lead agency, then comply with the criteria below. It is not required that the school achieve formal designation as an emergency shelter.

- Using dynamic thermal modeling such as EnergyPlus or Passive House certification, design and construct the facility, first maximizing energy efficiency and passive strategies, with 100% renewable energy systems including energy storage that can safely support the maximum occupancy for a 4-day power outage, at minimum.
- Meet the energy storage/backup power criterion in 7.1.3 to cover critical services such as access to sanitation facilities, potable water, refrigeration of medicines and food, cooking, charging of cell phones and other essential communication and electronic devices, shade/cooling and fresh air/exhaust fans, and perhaps portable air cleaners, as well as others identified in the vulnerability assessment above.
- Take additional measures as needed if the quality of potable water may also be affected, such as having backup filtration or a backup source. Coordinate with lead public agencies and plan with local community around other needs such as food supplies.
- Include details on all passive features in the O&M Manual in OM P1.0 and in the Systems Maintenance Plan in OM C4.1. Provide a brief User's Guide to designated emergency personnel on the operation of the features.

II C8.1 BIOPHILIC & RESPONSIVE DESIGN **NEW***

As we spend increasing amounts of time inside, we create a disconnect between our day to day experiences and the natural world. Biophilic design aims to recreate that connection to nature by activating the senses with natural elements or mimics of natural systems, such as daylight, natural patterns, fresh air, moving water, and plant life.

Intent

To contribute to occupant health and wellness by providing an experience that is grounded in place, connected to nature, and promotes a sense of calmness and wellbeing.

Biophilic design principles are organized into three categories: nature in the space, nature of the space, and natural analogues. Nature in the space is the direct presence of nature. Nature of the space is about mimicking or replicating the feelings that natural spaces give us. Natural analogues use indirect methods to reflect nature, such as the use of patterns, shapes, textures, and numerical arrangements found in nature. The key to biophilic design principles is to integrate these forms in a way that feels natural.

Responsive design is the term we use to encompass design features that create safe and calming spaces, contribute to a sense of community, and allow for students of all abilities, backgrounds, and perspectives to learn together. Responsive design features support equitable education by making all children feel safe, welcome, and engaged.

Contact with nature and feeling connected is essential to the human experience. Schools should be designed and planned in ways that connect us with nature and with each other, something that we know produces numerous benefits including improved focus, awareness, social interactions, sense of wellbeing, and reduced absenteeism.

II C8.1 BIOPHILIC & RESPONSIVE DESIGN

Credit

1-3 points

APPLICABILITY: All projects

VERIFICATION: Design Review

SCORING: 1 point each for 8.1.1, 8.1.2, 8.1.3

RELATED CRITERIA: II P1.0 Integrated Design, II P2.0 Central Educational Display, II C2.1 School as a Learning Tool, II C5.1 Safer Schools by Design, EQ C13.1 Views, SS C2.1 Sustainable Site Use & Sensitive Lands Conservation, OM P1.0 Facility Staff and Occupant Training

II C8.1 REQUIREMENTS

II C8.1.1 *Biophilic Design*

1 point

Incorporate a minimum of six biophilic features, with at least two elements in each of the three categories: Nature in the Space (physically experiencing nature), Nature of the Space (spatial configurations), Natural Analogues (nature-inspired elements).

II C8.1.2 *Responsive Design*

1 point

Provide a minimum of two interior or exterior features that create safe and calming spaces, provide sensory input, or contribute to a sense of community. Features may include the sites' cultural, spiritual, archeological, or architectural history.

II C8.1.3 *Educational Curriculum Integration*

1 point Provide educational materials for students and teachers that document the successful biophilic and responsive design strategies in C8.1.1 or C8.1.2. These could include but not be limited to signage indicating the benefits of a biophilic element, or a user guide highlighting the biophilic patterns included in the building, or a curriculum that further explores a responsive feature.

II C9.1 INNOVATION

The purpose of this criterion is to encourage school project teams to be creative and take advantage of and/or test new technologies or strategies for improving the health and performance of students, schools, and the environment. The innovation may take an existing CHPS criterion to a significant new height or address a topic or practice not currently offered within the CHPS Criteria. Users are encouraged to refer to the CHPS Criteria Library for potential Innovation credit strategies.

Intent

Test, understand, and implement innovative approaches to improving the health of school occupants and performance of school facilities.

II C9.1 INNOVATION

CREDIT

1-2 points

APPLICABILITY: All projects, does not apply to CHPS Designed recognition

VERIFICATION: Design Review, Construction Review

SCORING: The CHPS National Technical Committee will determine whether a submission warrants 1 or 2 points. Two submissions may be awarded 1 point each or a single submission may be awarded 2 points.

II C9.1 REQUIREMENTS

Implement new technologies or strategies that do at least one of the following not currently offered in the CHPS rating program:

- Improves the health and performance of students and staff.
- Improves the performance and efficiency of school facilities, or operation of those facilities.
- Improves the natural environment and/or addresses GHG reductions.

OR

The innovation points can reward exceptional performance in an existing criterion area through submission of a narrative explaining how the intent was exceeded by a significant amount.

INDOOR ENVIRONMENTAL QUALITY (EQ)

EQ P1.0 VENTILATION & IAQ
EQ C1.1 ENHANCED VENTILATION, FILTRATION, AND DEDICATED OUTDOOR AIR SYSTEM

Establishing a minimum level of indoor air quality positively impacts student and teacher performance, may reduce absenteeism, and reduces the potential for long- and short-term health problems. The criteria in this prerequisite and credit are used to achieve excellent indoor air quality, which starts during construction with preventative measures to keep pollutants out of the building and includes good filtration and ventilation during building operation. [1]

Intent

Provide a foundation for providing clean, breathable air to protect student and staff health and increase potential for better performance and attendance.

EQ P1.0 VENTILATION & IAQ

PREREQUISITE

5 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: All of EQ and EE, SS P1.0 Environmental Site Assessment, OM C4.1 Systems Maintenance Plan, OM C5.1 Indoor Environmental Management

EQ P1.0 REQUIREMENTS

5 points

For new schools, replacement schools and new buildings on existing campuses, comply with CALGreen section 5.506.1 and Title 24 Section 120.1.

Design and construct the HVAC system to provide continuous outdoor air (OA) ventilation to each space during occupied hours, including all full- and part-load conditions. Follow ASHRAE 62.1-2019 unless a local equivalent is more stringent. Comply with all of the following:

1. The design shall ensure the ventilation system is not readily defeated. Assume no windows are open.
2. Ventilation rates during occupied hours including all full-and part-load conditions in all school areas shall be no less than required by the outdoor ventilation rate calculated according to the outdoor air ventilation rate procedure in ASHRAE 62.1-2019 §6.2 or §6.4 if natural ventilation is used.
3. The ASHRAE 62.1 Mechanical Ventilation Calculation Worksheet shall be completed in full and included in the project drawings and design documentation. The table shall list for each room: HVAC system ID number and HVAC type, minimum outdoor air flow rate, room air classification, and all exhaust fans.
4. HVAC systems and equipment shall meet the requirements of ASHRAE Standard 62.1-2019 §5.
5. Design of condensate pans shall meet all requirements in ASHRAE Standard 62.1-2016 §5.10.

6. Outdoor air intakes shall meet all requirements in ASHRAE Standard 62.1-2016 §5.5. All intakes must be 6 feet above landscaped grade including soil, lawn, shrubs, or any plant life within 1.5 ft. horizontally of intake.

   Additionally, for projects where locating an air intake near a Class 2 exhaust source is unavoidable, such as in a renovation/modernization project, the intake opening shall be a minimum of 2 feet below the Class 2 exhaust and 10 feet horizontally from the nearest edge of the air intake to the nearest edge of the Class 2 exhaust.

7. The particulate matter filters or air cleaners shall meet all requirements in ASHRAE Standard 62.1-2019 §5.8, §6.2.1.1 and §6.2.1.2. In addition, filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 or higher for all new HVAC systems. All HVAC filtration media must be replaced immediately prior to occupancy.

8. Mold resistance of air stream surfaces shall meet all requirements in ASHRAE Standard 62.1-2019 §5.4.

9. All in-room plug in Air Cleaning Devices used in the school classrooms shall be models that are Certified and Labeled in accordance with California Air Cleaning Device regulation California Code of Regulations, Title 17, Section 94804. [1]

10. The school shall be in compliance with ASHRAE 62.1-2019 §6.2.1.3, as applicable.

For multiple spaces served by variable air volume (VAV) systems, this means that the minimum supply setting of each VAV box should be no less than the design outdoor ventilation rate calculated for each space. The box must be controlled so that the minimum required airflow is maintained at all times when the space is occupied, even when the fan has modulated to its minimum capacity. Additionally, for art classrooms, darkrooms, kitchens and kitchenettes, locker rooms, copy printing rooms, science lab classrooms, woodwork shops and any other rooms with significant pollutant sources, the pollutants shall be exhausted directly to the outside and not recirculated. Local contaminate exhaust in rooms such as fume hoods may meet this requirement. The exhaust airflow rates shall be no less than required in ASHRAE 62.1-2019 §6.5. Occupancy or CO_2-based demand control ventilation shall be in compliance with ASHRAE 62.1-2019 §6.2.7.

HVAC systems and equipment shall meet the requirements of ASHRAE Standard 62.1-2016 §5, which addresses among other things the design of drain pans (§5.10), outdoor air intakes (§5.5), and air stream surfaces (§5.4).

To avoid particulate accumulation and/or mold in the ductwork, duct liners must meet the American Society for Testing and Materials (ASTM) standards C 1071 or UL 181 for surface erosion resistance and ASTM standards C 1104 or C 209 (at <0.5% absorption by volume) for water vapor sorption.

To minimize dust and microbial growth, all regularly occupied spaces in the school must be served by a ducted HVAC return.

EQ C1.1 ENHANCED FILTRATION, VENTILATION, AND DEDICATED OUTDOOR AIR SYSTEM

CREDIT

1-10 points APPLICABILITY: All projects except 1.1.1 not applicable to those with unit ventilators.

VERIFICATION: Design Review, Construction Review

SCORING: 1 point for 1.1.1; 7 points for 1.1.2; 2 points for 1.1.3

RELATED CRITERIA: All of EQ and EE, SS P1.0 Environmental Site Assessment, OM C4.1 Systems Maintenance Plan, OM C5.1 Indoor Environmental Management

EQ C1.1 REQUIREMENTS

EQ C1.1.1 *Enhanced Filtration Media*

Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 15 or higher.

EQ C1.1.2 *Enhanced Ventilation Rate*

The outdoor airflow shall be no less than 130% of the value determined in accordance with the ASHRAE 62.1 ventilation rates.

EQ C1.1.3 *Dedicated Outdoor Air System*

Provide a dedicated outdoor air ventilation system (DOAS) with the ability to efficiently process and manage ventilation down to the individual room level.

EQ C1.2 DEMAND CONTROLLED VENTILATION ***NEW***

Intent

To promote high quality learning spaces with adequate ventilation and appropriate carbon dioxide levels.

Proper ventilation is critical for creating an effective learning environment. Studies have shown that decreasing the carbon dioxide concentration in spaces improves cognitive function. Studies have also shown that many school HVAC systems do not deliver the levels of ventilation as designed and have higher than recommended carbon dioxide levels. By utilizing carbon dioxide sensors to control the ventilation systems schools can ensure that their spaces have the correct carbon dioxide levels to provide the highest performance learning environments. This use of Demand Controlled Ventilation is somewhat different than the use of the term in the CA Energy Code. In that context the term is used in the context of decreasing ventilation (with the goal of saving energy) when occupancy of a space is low. The focus of this credit is increasing the amount of ventilation for periods of high occupancy. These two strategies are not mutually exclusive. In fact, they can be implemented together to use sensors to provide the right amount of ventilation for the real time needs of the space.

EQ C1.2 DEMAND CONTROLLED VENTILATION CREDIT

1-3 points

APPLICABILITY: All projects

VERIFICATION: Design Review

SCORING: 1-3 points for threshold achieved

RELATED CRITERIA: EQ 1.0 HVAC Design – ASHRAE 62.1, EQ 1.2 Dedicated Outdoor Air Systems.

EQ C1.2 REQUIREMENTS

1-3 points

The HVAC controls system shall be designed to include carbon dioxide sensors in each classroom (or dedicated learning space) as part of the controls system and/or thermostat and meet the Energy Commission requirements of Section 120.1(d). Each classroom shall have a Co2 sensor built into or next to the thermostat that lists the ppm of the space. The thermostat shall not have the option to set the fan to AUTO. Sensors must be calibrated and certified per the requirements of the California Energy Code Section 120.1(d)4F The carbon dioxide level in each classroom shall control the amount of outside air provided to each classroom to ensure that the carbon dioxide level remains at or below the level indicated in the table below for each point level. For dedicated outdoor air systems to comply with energy efficiency requirements or ASHRAE 90.1, they must utilize energy recovery to reduce the energy used to condition outdoor air.

Points	Design Carbon Dioxide Level
1	1000 ppm
2	800 ppm
3	600 ppm

EQ P2.0 OFF-GASSING
EQ C2.1 POLLUTANT & CHEMICAL SOURCE CONTROL

Intent

Achieve good indoor air quality to protect student, educator, and staff health and increase the potential for improved performance and attendance.

Good indoor air quality includes preventing potential air-borne contaminants from being released into occupied spaces and reduces the building's overall environmental footprint. Volatile organic compounds (VOCs) are contributors to health problems in humans and are widely believed to cause low-level ecosystem damage. For example, VOCs from construction materials, cleaning products and plug-in or spray fragranced air fresheners can cause smog, causing disruption to human breathing and to the ecosystem surrounding the building. This section includes an array of best practices to prevent or eliminate pollutants and chemicals releases.

EQ P2.0 OFF-GASSING

PREREQUISITE

2 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: EQ P1.0 Ventilation and C1.1 Enhanced Ventilation, OM C4.1 High Performance Operations

EQ P2.0 REQUIREMENTS

2 points

Where use of chemicals with likely VOCs occurs, including housekeeping areas, chemical mixing areas, copying/print rooms, photography labs, and vocational spaces, use deck-to-deck partitions with dedicated mechanical exhaust to the outdoors (no air recirculation, and negative pressure) at a rate of at least 0.50 cubic feet per minute per square foot, and adequate make up air. These spaces must have negative air pressure when the doors are closed. Negative air pressure is defined as mechanical exhaust to the outdoors at a rate of at least 0.50 cubic feet per minute per square foot. The spaces must maintain a negative pressure of at least 5 Pa (0.02 inches of water gauge) to a minimum of 1 Pa (0.004 inches of water) compared to their immediate environment and when their doors are closed. In photo labs, specify table vents to draw chemical vapors away from the breathing zone of dark room users.

Doors to areas where hazardous materials are stored and used must be secured with self-locking and closing mechanism.

EQ C2.1 POLLUTANT & CHEMICAL SOURCE CONTROL

CREDIT

2 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

SCORING: 2 points for any three of 2.1.1-2.1.6

EQ C2.1 REQUIREMENTS

EQ C2.1.1 *Walk Off Mats*

1. Provide a minimum of a 20 foot walk off mat system with a combination of scraper, absorption mat, and finisher mat at every major outside common entryway to school buildings. These areas do not include entryways to kitchens and loading docks. Mat systems must be appropriate to the region, and the length of each segment may vary accordingly. Vacuuming of mats should be done with a HEPA vacuum that meets or exceeds the CRI Seal of Approval standards. The mat system must consist of one of the following:
   - Non-Permanent Mats: The district must have at least a two-year signed contract for non-permanent mats to be cleaned as seasonally appropriate. It is expected that maintenance staff will provide regular cleaning in between.

     OR

   - Permanent Mats: Shall consist of a grate or grill 4-6 feet long exterior of every major entry or within an entry vestibule that scrapes and provides water drainage, an interior absorption mat at least 6 feet long that traps and hides dirt and water, and a finisher mat at least 8 feet long to clean and dry any residual dirt and moisture. Mats must be permanently installed. Any recessed grates, grills, or slotted materials must be designed to be lifted for cleaning. Specify daily cleaning and periodic maintenance of walk off mat systems.
2. Finger-Plan Schools with Outdoor Circulation: Provide a walk off mat system at the entrance to all classrooms with primary exterior entrances. Mat systems must be at least 6 feet in length and width and appropriate to the region. Roll-out mats may only be used if they are maintained at least weekly. Alternately, provide permanent exterior grates 4-6 feet long at every classroom entry where there is a continuous covered walkway.

EQ C2.1.2

Control surface dust by providing hard-surfaced paving not less than eight feet by eight feet at all outside entrances or doorways to any school room (concrete or equivalent), together with covered walkways or entry canopies covering the entire 8'X8' area to keep rain from the walkway surface.

EQ C2.1.3 *Electric Ignitions for Gas-Fired Equipment*

Specify electric ignitions for the following gas-fired equipment: water heaters, boilers, air-handling units, and cooking stoves.

EQ C2.1.4 *No Mobile Fossil Fuel Powered Equipment Indoors*

Do not acquire fossil fuel-powered machinery that is mobile and whose specific function is for use inside the building. This is to prevent accumulation of exhaust inside the building from equipment such as polishers and burnishers. This criterion does not include stationary equipment such as gas stoves, chemistry equipment, and vocational equipment.

EQ C2.1.5 *Carbon Monoxide (CO) Sensors*

Install a carbon monoxide monitor in occupied spaces served by gas fired appliances, and/or adjacent to parking areas where cars may idle to prevent unhealthful exposures to carbon monoxide and other combustion gasses. These sensors are intended for life safety purposes. Sensors capable of detecting very low concentrations of CO are not required.

EQ C2.1.6 *Electronic Product Environmental Assessment Tool (EPEAT)*

All school electronic devices including computers, imaging devices, and TV/AV systems shall meet the requirements of the EPEAT rating system, Silver or Gold level. See EPEAT website for a comprehensive list of current Silver and Gold-rated products.

EQ P3.0 OUTDOOR MOISTURE MANAGEMENT

Due to health risks associated with mold and microbial growth and the damage caused to buildings by water infiltration, all surface grades, drainage systems, and HVAC condensate must be designed to move water away from buildings and their foundations.

Intent

Achieve good indoor air quality to protect student and staff health and increase the potential for improved performance and attendance.

EQ P3.0 OUTDOOR MOISTURE MANAGEMENT

CREDIT

2 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: WE P2.0 & C2.1 Outdoor Water Use Reduction

EQ P3.0 REQUIREMENTS

2 points

Comply with both the following:

Drainage

Design surface grades to slope away from the building and the building foundation to drain away rainwater, snowmelt, and HVAC condensate and to prevent ponding, pooling or otherwise saturating the building envelope or foundation. Rain leaders, or downspouts, must be directed to infiltration structures, on site storage, rain gardens, or daylight provided that surface drainage moves water well away from the building and does not result in unintended ponding or pooling. HVAC systems that use evaporation drip pans for condensate removal are prohibited.

Lawn Irrigation Systems

Design to prevent spray on building walls. Comply with CALGreen Section 5.407 including weather-resistant exterior wall and foundation envelope, sprinkler spray control, and designing exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings. Notes: Use features such as overhangs and recesses, and flashings integrated with a drainage plane. Use nonabsorbent floor and wall finishes within at least two feet around and perpendicular to such openings. Drip and bubbler irrigation systems comply.

EQ C4.1 CONSTRUCTION IAQ MANAGEMENT

Good indoor air quality starts during design, is implemented during construction, and is maintained during operation. Cleanliness during construction is especially important to reduce the chance of dust settling in the building and causing problems during occupancy. Protecting building materials from moisture and removing water-damaged materials are important practices to prevent mold growth in the building.

Intent

Achieve good indoor air quality to protect student and staff health and increase the potential for improved performance and attendance.

EQ C4.1 CONSTRUCTION IAQ MANAGEMENT

CREDIT

5 points

APPLICABILITY: All projects. 4.1.2 applies only to renovation projects with new HVAC systems.

VERIFICATION: Design Review, Construction Review

SCORING: 1 point each for 4.1.1-4.1.2 and 4.1.4, 2 points for 4.1.3

RELATED CRITERIA: OM C4.1 High Performance Operations, OM C5.1 Indoor Environmental Management

EQ C4.1 REQUIREMENTS

EQ C4.1.1 *SMACNA Guidelines*

1 point

During construction, meet the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) *IAQ Guideline for Occupied Buildings Under Construction*, 2007, Chapter 3. Include the erosion and sedimentation control measures to minimize site dust during occupied renovations. [4]

EQ C4.1.2 *Duct Cleanliness – New Ducts Only*

1 point

For new schools, replacement schools, or new buildings on existing campuses, follow CALGreen Section 5.504.3.

If installing a new duct system, follow the SMACNA guidelines for “Duct Cleanliness for New Construction Guidelines” according to Advanced Levels of cleanliness. Of specific importance are the following:

- Specify that ductwork be sealed when transported to the construction site.
- Store ductwork in clean, dry conditions and keep sealed while it is stored.
- Wipe down internal surfaces of ductwork immediately prior to installation to remove dust.
- Seal open ends on completed ductwork and overnight work-in-progress.
- During installation, protect ductwork waiting to be installed with surface wrapping, etc.
- During construction, seal HVAC supply and return openings to protect them from construction dust infiltration (e.g., from drywall installation or wood floor sanding).

EQ C4.1.3 *Building Flush-Out*

2 points

The project team shall develop a plan, and include it in the specifications, to flush out the building with outdoor air (no return air) based on the requirements and recommendations in the specifications to remove indoor pollutants prior to occupancy. The information should also be detailed in the projects TAB and control sequence of the specifications or project manual.

The specifications at minimum must state that the maximum amount of outdoor air (the design outdoor air flow rate for maximum occupancy) must be provided during and after installation of VOC emitting materials for the maximum amount of time feasible, but not less than continuously (i.e. 24 hrs.) for seven days. It should be noted that the maximum amount of ventilation provided by an HVAC system may be limited not only by the system's capacity but also by the temperature and humidity of the outdoor air.

After substantial completion, conduct the flush out for 24 hours a day continuous ventilation for 7 days with all supply fans at their maximum rate and position. Internal temperatures are maintained at the most energy efficient level above 60°F; relative humidity is maintained no higher than 60%. Under conditions where the heating cannot be met (60°F) at that fan speed, then adjust the fan to achieve 60°F.

All air handling unit dampers are at their maximum outdoor air position during the 7-day flush out. If the 60% relative humidity level cannot be achieved with maximum outdoor air position, reduce fan speed and/or outdoor air position as needed, but extend flush-out period beyond 7 days to accomplish roughly the same amount of total air throughput that would have occurred at maximum outdoor air position.

After flush-out, replace air filters with new filters and provide two sets of additional replacement filters prior to occupancy.

Occupied Flush-Out:

For the case where a project has fallen behind schedule, the contractor may alternatively conduct the flush-out while the building is occupied according to the requirements below or conduct air testing to identify classrooms that exceed the limits below and remedy any non-compliant rooms.

1. Conducting Occupied Flush-Out

   Conduct the flush-out for 24 hours a day with continuous ventilation for the total number of days identified in the plan with all supply fans at their maximum rate and position. Thermal comfort must be maintained during occupied hours, per the criteria in ASHRAE Standard 55. Internal temperatures must be maintained at the most energy efficient level above 60°F; relative humidity must be maintained no higher than 60% during non-occupancy hours.

   All air handling unit dampers are at their maximum outdoor air position during the flush-out. If the 60% relative humidity level cannot be achieved with maximum outdoor air position, reduce fan speed and/or outdoor air position as needed, but extend flush-out period beyond the established period to accomplish roughly the same amount of total air throughput that would have occurred at maximum outdoor air position. Classrooms shall not be “baked out”. The temperature in the building space shall not be increased to attempt to bake out contaminants. (If continuous ventilation is not possible, flush-out must total the equivalent of 14 days of maximum outdoor air.)

2. Air Testing

The square root of the total number of all classrooms must be tested for compliance with the following criteria. Any non-compliant rooms must be remedied and re-tested until they are compliant. Two additional classrooms per non-compliant classroom must also be tested in all items below in the event of non-compliance. Conduct IAQ testing using protocols consistent with the methods listed in Table EQ4-1. Use current versions of ASTM standard methods, EPA compendium methods, or ISO methods, as indicated. Laboratories that conduct the tests for chemical analysis of formaldehyde and volatile organic compounds must be accredited under ISO/IEC 17025 for the test methods they use. Demonstrate that contaminants do not exceed the concentration levels listed in Table EQ4-1.

Remedies may include spot ventilation or flush-out.

Table EQ4-1. Maximum Concentration Levels* by Contaminant and Testing Method

Contaminant	Maximum concentration	ASTM and U.S. EPA Methods	ISO method
Formaldehyde	27 ppb	ASTM D5197; EPA TO-11 or EPA Compendium Method IP-6	ISO 16000-3
Particulates (PM10 & PM2.5)**	PM10: 20 µg/m3 PM2.5: 12 µg/m3	EPA Compendium Method IP-10	ISO 7708
Total volatile organic compounds (TVOCs)	500 µg/m3	EPA TO-1, TO-15, TO-17, or EPA Compendium Method IP-1	ISO 16000-6
Target chemicals listed in CDPH Standard Method v1.2, Table 4-1, except formaldehyde	CDPH Standard Method v1.2, Allowable Concentrations, Table 4-1	ASTM D5197; EPA TO-1, TO-15, TO-17, or EPA Compendium Method IP-1	ISO 16000-3, 16000-6
Carbon monoxide (CO)	9 ppm; no more than 2 ppm above outdoor levels	EPA Compendium Method IP-3	ISO 4224

*ppb = parts per billion; ppm = parts per million; µg/m3 = micrograms per cubic meter
**Only required if located in an EPA non-attainment area.

Post-Occupancy Ventilation

When the contractor is required to perform touch-up (including furniture after occupancy) work involving products with chemical emissions, provide temporary construction ventilation during application and extend the building flush-out by a minimum of 4 days after touch-up application, with 100% tempered outdoor air for 24 hours each day. [1]

EQ 4.1.4 *Mold Prevention/Moisture Management*

1 point

Building materials, especially gypsum wallboard, wood, porous insulation, paper, and fabric, should be kept dry to prevent the growth of mold and bacteria. Cover these materials to prevent rain damage, and if resting on the ground, use spacers to allow air to circulate

between the ground and the materials. Water damaged materials shall be dried within 24 hours. Due to the possibility of mold and bacterial growth, materials susceptible to moisture that are damp or wet for more than 24 hours must be discarded. Immediately remove materials showing signs of mold and mildew, including any with moisture stains, from the site and properly dispose of them. Replace moldy materials with new, undamaged materials.

EQ C5.1 POST-CONSTRUCTION INDOOR AIR QUALITY

Carpet and other soft surfaces and ventilation systems are susceptible to the accumulation of construction dust. Effective vacuuming will reduce the accumulation and distribution of particulates.

Intent

Improve indoor air quality by minimizing the amount of indoor pollutants that are distributed and retained by the surface materials and ventilation systems during construction.

EQ C5.1 POST-CONSTRUCTION INDOOR AIR QUALITY

CREDIT

1 point

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

EQ C5.1 REQUIREMENTS

1 point

Vacuum carpeted and soft surfaces with a certified vacuum or high-efficiency particulate air (HEPA) filter vacuum that meets or exceeds the CRI Seal of Approval program after construction is complete and prior to occupancy. For phased, occupied renovations, HEPA vacuum the carpet daily in occupied areas and in areas adjacent to those affected by construction activities. [1]

For hard surfaces, either use a HEPA vacuum that meets the above criteria with a brush or hard floor attachment, or use microfiber mops, cloths, and sponges that will capture the dust.

EQ P6.0 LOW EMITTING MATERIALS
EQ C6.1 ADDITIONAL LOW EMITTING MATERIALS

Intent

Minimize air concentrations of harmful volatile organic compounds that derive from building products and building materials used indoors.

Many common building products and building materials used indoors in the construction of educational facilities and other buildings are sources of volatile organic compounds (VOCs). When emitted to indoor air, these pollutants are inhaled by occupants. Such inhalation exposures can result in adverse health effects, including sensory and upper respiratory irritation, pulmonary irritation, asthma, damage to organ systems and neurological and reproductive systems, and increased risk of cancer. Exposure to airborne VOCs is an especially important issue for schools as children may be more susceptible than adults. In order to reduce the potential for adverse effects due to inhalation exposures to VOCs, it is important to specify and utilize products and materials in the construction of the interiors of classrooms and other educational buildings that have low emissions of VOCs know to be harmful.

EQ P6.0 LOW EMITTING MATERIALS

PREREQUISITE

2 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: MW C3.1 and C5.1 for material environmental attributes, EQ C7.1 Material Health Disclosures, OM C5.1 Indoor Environmental Management, all ventilation prerequisites and credits

EQ P6.0 REQUIREMENTS

2 points

Comply with all the following:

Paints & Coatings

Applicable to all paints and coatings that are applied onsite in the project's interior:

For new schools, replacement schools and new buildings on existing campuses architectural paints and coatings shall comply with CALGreen section 5.504.4.3. Aerosol paints and coatings shall comply with CALGreen section 5.504.4.3.1.

The affected products include but are not limited to sealers, stains, clear wood finishes, floor sealers and coatings, waterproofing sealers, primers, flat paints and coatings, non-flat paints and coatings, and rust preventative coatings.

Flooring Systems

Applicable to all resilient flooring and carpet systems installed in the project's interior:

For new schools, replacement schools and new buildings on existing campuses, all carpet systems installed in the building interior shall comply with CALGreen section 5.504.4.4.

For new schools, replacement schools and new buildings, at least 80% of resilient flooring shall comply with CALGreen section 5.504.4.6.

Composite Wood

Applicable to all composite wood panels and building products with composite wood cores that are installed onsite in the project's interior: Affected products are those defined in the California Air Resources Board (CARB) Airborne Toxic Control Measure (ATCM) to Reduce Formaldehyde Emissions from Composite Wood Products (California Code of Regulations, Title 17, Sections 93120-93120.12), comprising composite core and veneer core hardwood plywood (HWPW, particleboard (PB), medium density fiberboard (MDF), and thin MDF.

For new schools, replacement schools and new buildings on existing campuses, hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the building shall comply with CALGreen section 5.504.4.5.

Adhesives, Sealants & Caulks

Applicable to all adhesives, sealants, and caulks used in the project:

For new schools, replacement schools and new buildings on existing campuses adhesives, sealants, and caulks shall comply with CALGreen section 5.504.4.1.

EQ C6.1 ADDITIONAL LOW EMITTING MATERIALS

CREDIT

4 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

SCORING: Six available options for 1 point each, up to a total of 4 points

EQ C6.1 REQUIREMENTS

Meet the requirements in up to four of the following six categories of materials:

EQ C6.1.1 Adhesives & Sealants

1 point

Products in this category include but are not limited to carpet and resilient and wood flooring adhesives; base cove adhesives; ceramic tile adhesives; drywall and panel adhesives; aerosol adhesives; adhesive primers; acoustical sealants; fire stop sealants; HVAC duct sealants, sealant primers; and caulks. Note that structural adhesives are excluded, and sealers including concrete floor sealers and other waterproofing sealers are treated under C6.1.5 for Paints & Coatings.

90% or more, by volume, of the adhesives and sealants covered under this criterion shall be tested for emissions of VOCs of concern with respect to chronic inhalation exposures following the specifications of the CDPH/EHLB Standard Method V1.2, 2017. The test results shall be compliant with the Standard Method when modeled to the school classroom scenario as follows: Flooring adhesives and sealants shall be modeled using the manufacturer's specified coverage and the classroom flooring area. Wall applied adhesives and sealants shall be modeled using the manufacturer's specified coverage and the classroom wall paint and wall coverings area. Wall base adhesives shall be modeled similarly using the wall base area. Non full-spread products in this category shall be modeled based on their potential worst-case application in the school classroom model following the procedures in the CDPH standard.

EQ C6.1.2 Flooring Systems

1 point

100% of resilient flooring shall comply with the certification or testing requirements of CALGreen 5.504.4.6.

Selected flooring shall not require the use of heavy-duty strippers and finishes. Solid wood flooring is exempt, although adhesives and sealants used with it must comply. For the purposes of this subcredit, it is assumed that ceramic tile, organic-free mineral-based flooring, and concrete flooring are negligible sources of VOCs and are available for credit without any testing requirements.

EQ C6.1.3 Composite Wood and Agrifiber Products

1 point

Applicable to composite wood as defined in the California Air Resources Board (CARB) Airborne Toxic Control Measure (ATCM) to Reduce Formaldehyde Emissions from Composite Wood Products (California Code of Regulations, Title 17, Sections 93120-93120.12). The affected materials are composite core and veneer core hardwood plywood (HWPW, particleboard (PB), medium density fiberboard (MDF), and thin MDF. Agrifiber products are composite boards produced from agricultural/biobased materials and a chemical binder system.

At least 90%, by area, of the composite wood and the composite wood cores of finished building products (e.g., engineered wood floors, doors, trim/molding, cabinetry, and counter tops) installed onsite in the project's interior shall either 1) be manufactured with no-added formaldehyde (NAF) based resins, or 2) be manufactured with ultra-low emitting formaldehyde (ULEF) resins and shall meet the appropriate emission requirements established by the ATCM for NAF and ULEF products.

Additionally, at least 90%, by area, of all agrifiber products installed onsite in the project's interior shall be manufactured with NAF based resins.

Structural plywood, structural panels, oriented strand board, structural lumber, glue laminated timber, prefabricated wood joists, and finger jointed lumber, are excluded from these requirements.

EQ C6.1.4 Furniture & Furnishings

1 point

This option is only available if 75% or more of the total number of individual stations (defined as a chair and associated work surface, i.e., either a desk or a desk/chair combination) are new and/or newly remanufactured/refurbished. All such furniture totaling 90% or more of new individual stations (e.g., combined classroom and administrative stations) shall meet this requirement.

The furniture, both classroom and administrative, shall be tested for VOC emissions following the procedures in ANSI/BIFMA M7.1-2011 (R2016). Workstations and seating, both classroom and administrative, shall be tested individually except a pupil desk/chair combination is treated as a single unit. Administrative area and teacher workstations and seating shall be evaluated for VOC emissions using the parameters for an open plan workstation and seating as defined in M7.1. Pupil classroom workstations and seating shall be evaluated for emissions using parameters defined for the classroom in CDPH Standard Method V1.2, 2017. The furniture modeling parameters are listed in f., below. The furniture shall meet the VOC emissions guidelines defined in ANSI/BIFMA X7.1-2011 (R2016), *FES Test Method*, and ANSI/BIFMA e3-2019, *Furniture Sustainability Standard*, as specified in Table EQ6-1.

Table EQ6-1: Modeling Parameters and VOC Emission Guideline Requirements

	Admin Area & Teacher		Classroom Pupil	
Modeling Parameters	Workstation	Seating	Workstation	Seating
Number of units	1	1	27[a]	27[a]
Air Flow rate, m^3/h	15.01[b]	24.84[b]	191[c]	191[c]
Total workstation area, m^2	21.75[d]	n/a[e]	n/a[e]	n/a[e]
VOC Emission Guidelines				
Meet ANSI/BIFMA X7.1-2011	Yes	Yes	n/a	n/a
Meet ANSI/BIFMA e3-2014, Section 7.6.1[f]	Same as X7.1	Same as X7.1	Yes	Yes
Meet ANSI/BIFMA e3-2014, Section 7.6.2[f,g]	Yes	Yes	Yes	Yes
Meet ANSI/BIFMA e3-2014, Section 7.6.3[h]	Not required	Not required	Yes	Yes

a. CDPH Standard Method specifies 27 occupants per classroom.
b. Air flow rates specified in M7.1 for open plan workstations and seating.
c. Classroom air flow rate from CDPH Standard Method.
d. Total open plan workstation area (work surface + storage + panel) as defined in M7.1.
e. Not applicable. Modeling of seating is performed on a per unit basis, not area.
f. Administrative workstations shall meet the requirements using either the concentration or the emission factor approach defined in M7.1. For the latter, use the open-plan workstation emission factor requirements. Classroom furniture (either workstations, seating, or combined desk seating units) shall meet the concentration limits for a workstation system as specified in the e3 standard.
g. Workstation individual VOC concentration limits and open-plan workstation emission factor limits are defined in the e3 standard, Annex C.
h. The formaldehyde concentration limit is 9 µg/m3.

EQ C6.1.5 Paints & Coatings

1 point

See EQ P6.0 for the description of the paints and coatings covered under this criterion.

90%, or more, by volume of all interior paints and coatings normally applied to walls, ceilings, floors or trim shall be tested for emissions of VOCs of concern with respect to chronic inhalation exposures following the specifications of the CDPH Standard Method V1.2, January 2017. The test results shall be compliant with the Standard Method when modeled to the school classroom scenario as follows. Flooring sealers and paints shall be modeled using the manufacturer's specified coverage and the classroom flooring area. Wall applied paints and coatings shall be modeled using the manufacturer's specified coverage and the classroom wall paint and wall coverings area. Ceiling applied paints and coatings shall be modeled similarly using the ceiling area. Wood stains and finishes and trim applied paint shall be modeled similarly using the area of the classroom door plus the area of the wall base (i.e., 125 ft^2 or 11.6 m^2).

EQ C6.1.6 Ceiling & Wall Systems

1 point

Ceiling and wall systems include but are not limited to ceiling insulation installed within the structural envelope, wall insulation, acoustical ceiling panels, gypsum board wall panels, tackable wall panels, and wall coverings. Ceramic tile and other organic-free, metal-, or mineral-based wall coverings are available for credit without any testing requirements. Site applied adhesives and sealants are treated under EQ C6.1.1 Adhesives & Sealants, and site applied paints and coatings associated with ceiling and wall systems are treated under EQ C6.1.5 Paints & Coatings.

90% or more of the total areas of ceiling and wall systems shall be tested for emissions of VOCs of concern with respect to chronic inhalation exposures following the specifications of the CDPH Standard Method V1.2, January 2017. The test results shall be compliant with the Standard Method when modeled to the school classroom scenario using the applicable modeling scenario in Table 4-3 of the CDPH Standard. For systems consisting of more than one distinct layer (e.g., walls comprised of insulation, wall panel and wall covering), all layers shall individually meet the requirements of the CDPH Standard Method.

EQ C7.1 MATERIAL HEALTH DISCLOSURES

Demand for transparency in environmental and health impacts of products has resulted in multiple options for identifying products that have disclosed the health hazards of their contents. It is important for specifiers to look for these products to ensure that everything that goes into a school building is free from hazardous materials.

Intent

Specify products and materials with publicly available health related information of their ingredients.

EQ C7.1 MATERIAL HEALTH DISCLOSURES

CREDIT

1-2 points

APPLICABILITY: All projects.

VERIFICATION: Design and Construction Review

SCORING: 2 points for Performance Approach, 1-2 points for Prescriptive Approach

EQ C7.1 REQUIREMENTS

The following programs are approved for use in this credit, using either the Performance or Prescriptive Approach below:

- Health Product Declaration (HPD): the product has a published HPD with full disclosure of known hazards in accordance with the HPD Standard. [1]
- Cradle to Cradle Product Certification Standard (C2C): the product has been certified at the C2C v2 Silver Level or above or the C2C v3 Bronze Level or above. [2]
- Cradle to Cradle Material Health Certificate (MHC): the product has an MHC at the Bronze level or above
- Declare.: the product has a Declare. label. [3]
- Manufacturer Inventory: the product has a published list of ingredients identified by name and CAS number and a GreenScreen Benchmark and/or GreenScreen List Translator Benchmark. [4,5]
- UL Product Lens: the product has been certified to Product Lens for materials transparency and disclosure. [6]
- Other CHPS approved certification program meeting the criteria.

EQ C7.1.1 *Performance Approach*

2 points

Use at least 20 permanently installed products from at least five different manufacturers that use any of the approved programs to demonstrate the material health and inventory of a product down to 1000 ppm (0.1%).

OR

EQ C7.1.2 *Prescriptive Approach*

1-2 points Specify the use of at least 50% (by cost) of two or more of the following major interior finish or structural materials categories demonstrating the material health and inventory of a product down to 1000 ppm (0.1%) using the approved programs. (1 point for 2 categories, 2 points for 4+ categories)

- Adhesives & Sealants
- Paints & Coatings
- Flooring Systems
- Composite Wood and Agrifiber Products
- Furniture & Furnishings
- Ceiling & Wall Systems

EQ C8.1 DRINKING WATER: TOXIN-FREE PLUMBING

Intent

Ensure that drinking water is lead-free and free of other potential contaminants that leach from plumbing fixtures and materials.

Children, particularly younger ones, are especially susceptible to poisoning from water-borne contaminants because of their physiology and age. The impacts of lead poisoning are acute and life-long. As a consequence, there is no safe amount of lead ingestion for children. However, EPA allows for some amount of lead in plumbing fixtures (no more than 0.25% of weighted average). Until 2014, it was optional for products to be tested to meet this standard. Since 2014, plumbing products have to be tested and labeled according to the National Sanitation Foundation (NSF) standards, known as NSF/ANSI 61 and NSF/ANSI 372. Additionally, all new plumbing installed for potable use must meet the standard.

EQ C8.1 DRINKING WATER QUALITY: TOXIN-FREE PLUMBING

CREDIT

1-3 points

APPLICABILITY: 8.1.1 applies to Renovation/Modernization projects only; 8.1.2 applies to all projects

VERIFICATION: Design and/or Construction Review

SCORING: 2 points for 8.1.1 and/or 1 point for 8.1.2

EQ C8.1 REQUIREMENTS

EQ C8.1.1 *Plumbing System Components*

2 points

In Renovation/Modernization projects with or without Additions, for the potable water system, specify and install only components that are certified to meet the NSF/ANSI 61 requirements for low-lead content and chemical extraction. If the plumbing system is not part of the scope of work, the project may alternatively apply for 1 point under 8.1.2.
The list of covered components includes but is not limited to:

- Pipes, fittings, and related products
- Drinking fountains, faucets, and other end-point devices
- Mechanical parts such as meters, valves, and filters
- Protective barriers, including paints, coatings, and cements
- Joining/sealing materials
- Process media such as sand, ion exchange resins, and filter media

AND/OR

EQ C8.1.2 *District Resolution to Test Drinking Water*

1 point

For all projects, adopt a school or district resolution to test drinking water for lead annually and publish results for the community. Commit to implement mitigation measures, if warranted, including replacement of plumbing components in compliance with 8.1.1.

Testing procedures should follow EPA's 3Ts program for lead sampling and remediation or an equivalent state or local program. [3]

EQ C8.1.2 Provide a copy of the resolution or policy identifying the responsible party and the protocol that will be followed.

EQ C9.1 LOW RADON

Intent

Build with radon-reducing features and test for radon to determine whether mitigation is necessary to reduce health effects.

This credit encourages schools to assess their radon levels and to ensure that the levels are low. Radon in schools presents a significant health risk, and thousands of schools are affected. Approximately 20% of schools have high radon, and 41% of those schools are located in known high radon areas. Radon is a human lung carcinogen and is the largest source of radiation exposure and risk to the public. Radon is the second leading cause of lung cancer; even small exposures to radon can result in lung cancer. According to the US EPA, the only way to know if elevated radon levels are present is to conduct testing. Mitigation measures should be pursued during design, construction, and renovation.

EQ C9.1 LOW RADON

CREDIT

1 point

APPLICABILITY: All projects

VERIFICATION: Design Review, Construction Review

EQ C9.1 REQUIREMENTS

1 point

For new construction, institute radon reduction measures specifically, *but not limited to*: soil gas barrier, gas permeable layer, and vent pipes for fan-activated radon removal systems (should testing warrant system activation). Designs and strategies depend on the types of building foundations and other factors. See *CC-1000 Soil Gas Control Systems in New Construction of Buildings* by ANSI/AARST for radon reduction measures that work best for different construction types and scopes

Radon reduction measures are not deemed effective until testing verifies radon levels below 4 pCi/L. Test for radon according to *MALB Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*.

For renovations/modernizations, perform post-renovation radon testing and make necessary mitigations should radon levels meet or exceed 4 pCi/L. Test for radon after HVAC systems are commissioned and performing as intended prior to occupancy. If mitigation is warranted, such as HVAC manipulations or sub-slab depressurization, procedures must follow *RMS-LB Radon Mitigation Standards for Schools and Large Buildings* as soon as possible. If radon levels are near 100 pCi/L or greater, school officials should call their State Radon Contact and consider relocating from affected rooms until the levels can be reduced. All radon testing must follow the *MALB Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings.*

EQ P10.0 THERMAL COMFORT – ASHRAE 55

Thermal comfort is controlled by six factors: air temperature, relative humidity, radiant temperature, air movement, occupant activity and clothing. Design the building envelope and mechanical systems to provide optimal comfort and energy efficiency.

Intent

To provide a high level of thermal comfort to support optimum health, productivity, and comfort.

EQ P10.0 THERMAL COMFORT – ASHRAE 55

PREREQUISITE

2 points

APPLICABILITY: All projects.

VERIFICATION: Design Review

RELATED CRITERIA: II C7.1 Design for Adaptation & Resilience, EE P1.0 Energy Efficient Design

EQ P10.0 REQUIREMENTS

2 points

Comply with the latest edition of the ASHRAE Standard 55 for thermal comfort. [1]

EQ C11.1 CONTROLLABILITY OF INDOOR ENVIRONMENT

Temperature and Ventilation Controls: A high performance school is a comfortable place to learn. Temperature and humidity are important factors in maintaining occupant comfort. A comfortable and healthy indoor environment increases productivity and learning and reduces absenteeism.

Intent

Enable teachers to have reasonable control of the thermal environment within classrooms.

Operable windows are important for personal comfort and have been shown to improve student performance.

EQ C11.1 CONTROLLABILITY OF INDOOR ENVIRONMENT

CREDIT

1 point

APPLICABILITY: All projects; in renovations, applies if new HVAC is part of scope

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: EE P1.0 Energy Efficient Design, EE P2.0 Commissioning, OM P1.0 Facility Staff & Occupant Training, OM C6.1 Indoor Environmental Management

EQ C11.1 REQUIREMENTS

1 point

Provide an individual temperature control for each classroom with an independent temperature sensor.

AND

Ninety percent (90%) for new schools and new school buildings, and seventy five percent (75%) for major renovations, of all classrooms shall have a minimum of one operable window per classroom that is reasonably accessible to the occupants. This precludes the use of ladders to adjust the window opening. If external shading devices are included, controls for their use and management must be made accessible to teachers and staff.

EQ P12.0 DAYLIGHT: GLARE PROTECTION
EQ C12.1 DAYLIGHT AVAILABILITY

Daylighting is fundamentally important to high performance design and should be the primary source of light in classrooms. Daylighting has a number of advantages, including improved occupant productivity, improved connection to the outdoors, improved health, energy savings, and quality of light.

Intent

Provide high quality daylighting in classrooms to enhance student performance, improve student productivity through quality daylighting designs that minimize glare and direct sunlight penetration, promote health and wellness, and ensure energy savings.

EQ P12.0 DAYLIGHT: GLARE PROTECTION

PREREQUISITE

4 points

APPLICABILITY: All projects.

VERIFICATION: Design Review

RELATED CRITERIA: EQ C11.1 Controllability of Indoor Environment, EQ C14.1 Electric Lighting Performance

EQ P12.0 REQUIREMENTS

4 points

Design regularly occupied spaces to optimize daylight while preventing glare by controlling direct sunlight ingress with blinds, shades, overhangs, light shelves, translucent material, or other effective means. Use either of the following two metrics to document achievement of this criterion, and refer to the implementation section for documentation requirements:

- No direct sunlight incident on teaching surfaces or workplanes at 9:00am, 12:00pm and 3:00pm on the winter and summer solstice and the equinox.

  OR

- The ratio of maximum to average illuminance measured on workplanes cannot exceed 15 at 9:00am, 12:00pm and 3:00pm on the winter and summer solstice and the equinox.

EQ C12.1 DAYLIGHT AVAILABILITY

CREDIT

1-5 points

APPLICABILITY: All projects. To earn these points for major renovations/modernizations, it may be necessary to add skylights or modify the size and location of windows.

VERIFICATION: Design Review

SCORING: 1-3 points for 12.1.1 and 1-2 points for 12.1.2

EQ C12.1 REQUIREMENTS

For **all** **regularly occupied** spaces, a daylight responsive electric lighting control system or control plan must be implemented for the daylit spaces. In renovation/modernization projects that do not modify lighting systems, this requirement does not apply.

AND

Comply with the Multiple Point in Time Approach or the Daylight Saturation (DS) Approach as shown below:

EQ C12.1.1 *All Classroom Spaces*

1-3 points *Daylight Sufficiency – Multiple Point in Time Approach*

1 Points	Achieve >20fc annual average daylight illuminance for >75% of classroom area
2 Points	Achieve >35fc annual average daylight illuminance for >75% of classroom area
3 Points	Achieve >50fc annual average daylight illuminance for >75% of classroom area

OR

Daylight Sufficiency - Daylight Saturation (DS) Approach

1 Points	Achieve >40% DS_{30} for >75% of classroom area
2 Points	Achieve >60% DS_{30} for >75% of classroom area
3 Points	Achieve >80% DS_{30} for >75% of classroom area

EQ C12.1.2 *All Support Spaces*

1-2 points *Daylight Sufficiency - Multiple Point in Time Approach*

1 point	Achieve >20fc average daylight illuminance for >75% of administration office area
1 point	Achieve >35fc average illuminance for >75% of library, cafeteria, gymnasium, and multi-purpose/commons area

OR

Daylight Sufficiency - Daylight Saturation (DS) Approach

1 Point	Achieve >40% DS_{30} for >75% of administration office area
2 Points	Achieve >40% DS_{50} for >75% of library, cafeteria, gymnasium, and multi-purpose/commons area

- Any spaces where daylight would have an adverse impact on the use of the space are excluded. Provide documentation illustrating impact.
- Spaces can use a design illuminance different than the target illuminance used in Daylight Saturation calculation (30fc for classroom/admin, 50fc for other) provided good reasoning. Provide documentation justifying variance.

EQ C13.1 VIEWS

Intent

Provide a connection between indoor spaces and the outdoor environment through the introduction of sunlight and views into the occupied areas of the building.

View windows are essential to areas where students and staff will be working for extended periods of time. Ample and interesting views have consistently been found to increase student performance. Distant views enable the room occupants to relax their eyes, which is especially beneficial to computer users and younger children who are still developing visual capabilities. Students in classrooms with access to green views through their windows have been observed to experience significantly faster recovery from stress and mental fatigue and performed significantly higher on tests of attentional functioning compared to students in classrooms with no windows or windows looking out onto other building facades.

EQ C13.1 VIEWS

CREDIT

1-3 points

APPLICABILITY: All projects.

VERIFICATION: Design Review

SCORING: 1 point for 13.1.1 or 2 or 3 points for 13.1.2

RELATED CRITERIA: EQ C12.1 Daylight Availability

EQ C13.1 REQUIREMENTS

EQ C13.1.1 Provide direct line of sight to view glazing from 70% of the combined floor area of classrooms, library reading rooms, and administration areas.

To qualify, a space shall have view glazing area equal to or greater than 7% of the floor area. View glazing shall be transparent, but not translucent, and only include window area above 2.5 ft. and below 7.5 ft. from the floor. The total width of view windows shall be greater than 1% of the floor area.

Exception: For school buildings that share at least two sides with other buildings, shared walls are exempted from this requirement. Every effort shall be made to meet the view glazing requirement on walls not shared with other buildings.

OR

EQ C13.1.2 Provide direct line of sight to view glazing from at least 80% of the combined floor area of core classrooms and administration areas.

Access to Views, 80% = 2 point

Access to Views, 90% = 3 points

To qualify, a space shall have view glazing equal to or greater than 7% of the floor area. View glazing shall be clear and only include window area above 2.5 ft. and below 7.5 ft. from the floor. The total width of view glazing shall be greater than 1% of the floor area.

This criterion applies to all classrooms and administration areas. Renovation/modernization projects that involve window replacement can earn this

criterion by modifying existing window configurations that do not conform to the requirements to configurations that do meet the requirements for this criterion.

EQ C14.1 ELECTRIC LIGHTING PERFORMANCE & CIRCADIAN LIGHTING

The classroom is one of the focal points for preparing students for today's high tech, postindustrial world. New teaching tools such as affordable A/V systems, smart boards, tablets and web-based learning tools have turned the classroom into a dynamic place of learning. As the rate of adoption of these new technologies increases, it is important to give the teacher easy-to-use control of lighting. This will enhance learning by letting the teacher tailor high quality lighting to the type of teaching taking place.

Intent

Integrate high performance electric lighting with daylighting to promote the health and well-being of the occupants while maximizing energy efficiency. Reduce hazardous substances commonly found in electric products. Provide high quality and flexible classroom lighting with teacher controls tailored to new teaching methods.

While the use of LED-based lighting systems is not required, the selection criteria included here will help progressive schools select LED-based luminaires that provide high quality, long-lasting and energy efficient lighting for the classroom

EQ C14.1 ELECTRIC LIGHTING PERFORMANCE & CIRCADIAN LIGHTING

CREDIT

1-7 points

APPLICABILITY: This criterion applies to all new classrooms and can also be earned in renovation/modernization projects when classroom lighting is included in the scope of work.

VERIFICATION: Design Review, Construction Review

SCORING: 2 points each for 14.1.1-14.1.2, 1 point each for 14.1.3-14.1.5

RELATED CRITERIA: EQ C12.1 Daylight Availability, EE P1.0 Energy Efficient Design

EQ C14.1 REQUIREMENTS

EQ C14.1.1 *High Performance Lighting*

2 points

Achieve the following:

1. *Illuminating Engineering Society (IES) TM-30-15: Method for Evaluating Light Source Color Rendition* [3]: All luminaires shall have light sources with a Fidelity (Rf) of 80 or greater and a Gamut Area (Rg) of between 80 and 100.
2. *Restriction of Hazardous Substances (RoHS) Requirements* [2, 14]: Pursuant to CA HSC Division 20 Article 10.02 Lighting Toxics Reduction, all luminaires shall be RoHS compliant following the most current European RoHS regulations, including all applicable exemptions.
3. *LED Lighting:* If an LED-based system used, all LED-based luminaires shall meet the ENERGY STAR criteria in the latest ENERGY STAR Luminaires Specification or be

listed by the Design Lights Consortium (DLC). [4] Exceptions may be accepted for specialty fixtures not listed by either source.

EQ C14.1.2 *Illumination Levels & Multimodal Systems*

2 points Achieve the following:

1. Provide multi-scene indirect/direct lighting systems for all classrooms, with the exception for specialty classrooms where multi-scene lighting is not required.
2. At a minimum, the lighting system shall work in at least two modes: General and Audio Visual (AV). The modes shall be recalled through a preset lighting control system via dimming the fixtures to meet required light levels for each mode. Daylight sensors shall be used to dim the lighting system in response to available daylight. A 3-minute fade shall be used to slow the daylight system to prevent distracting changes in the electric lighting. The daylighting system shall not dim the electric lighting below 10% initial output.
3. In general illumination mode, achieve the average illumination at the desk level based on the classroom type in the *IES Lighting Handbook, Tenth Edition*, or its most recent update.
4. In A/V mode the average illumination levels shall be 10 to 30-foot candles, not including contribution from the teaching wall light, for any point in the room greater than 3-feet from the side walls, or 10-feet from the front wall. Limit vertical illumination on the AV screen to no more than 7-footcandles at any point on the screen.
5. *Whiteboard Illumination:* Provide a separately switched lighting system that provides whiteboard vertical illumination of at least 30-footcandles average with a maximum-to-minimum illuminance ratio of 8:1 or better for all points on the whiteboard.

EQ C14.1.3 *Lighting Controls*

1 point Achieve the following:

1. All lighting must be dimmable by users in all regularly occupied spaces.
2. Enhanced Teacher Controls: Provide teacher control at the front of the classroom for general/AV mode and whiteboard control.
3. Advanced Classroom Controls: Link the on/off occupancy signal into a school-wide management system.

EQ C14.1.4 *Superior Performance Lighting Systems*

1 point Achieve the following:

1. All luminaires shall have light sources with Fidelity (Rf) of 85 or greater and a Gamut Area (Rg) of between 90 and 105.
2. If LED-based systems are used, they must meet the following criteria for flicker and performance:

   Flicker

   In all school classrooms and educational learning spaces, the measured Percent Amplitude Modulation (flicker percent and frequency) from LED integrated systems (include driver, LED array, dimming controls, daylight sensor) shall be less than 30% at greater than 200 Hz across the entire dimming range or meet IEEE PAR1789. (8, 9, 10)

   Performance

LED-based luminaires shall maintain at least 80% of their initial light output (L80) at 60,000 projected hours of operation. [7]

EQ C14.1.5 *Circadian Lighting*

1 point Achieve the following:

1. For **all classrooms and regularly occupied support spaces**:
    - Proposed lighting program shall account for latitude and provide adequate light in winter months.
    - Proposed lighting program shall adjust to age group category for population being served (i.e. majority of occupants in that space). A ratio of brightness based upon age where as younger than 25 years old = 0.5, 25-65 = 1, and older than 65 years = 2; meaning that children and young adults need half the brightness of middle age and elderly need 2 times that of middle age. Reference Table 3 of IES-ANSI RP-3-13.
    - Baseline light intensity and color temperature schedule must be programmed into lights.
2. For **all classroom** spaces:
    - Lighting model shall demonstrate that the appropriate EML or CS is present at 75% or more of desks (may include daylight) on a vertical plane facing the primary teaching wall 4 ft above finished floor (to simulate the view of the student). This light level to be present for at least 4 hours per day for each day of scheduled instruction.
    - Manual override or pedagogical programming for lighting fluctuations to support learning (e.g. dim after lunch to calm, increase light intensity for exams) shall be demonstrated as beneficial and not disrupt circadian entrainment by more than 1 hour per day.
3. For regularly occupied **support** spaces:

    Lighting model shall demonstrate that 75% or more of workstations and regularly utilized work surfaces receive at least 200 EML or equivalent CS measured on a vertical plane 4’ above finished floor for workstations and at 5’6” above finish floor standing access work surfaces (to simulate the view of occupants). This light level is to be present at least between the hours of 9am and 1pm for each day of regular occupancy (may include daylight).

EQ P15.0 ACOUSTICAL PERFORMANCE
EQ C15.1 ENHANCED ACOUSTICAL PERFORMANCE

Student learning and teacher health suffer in acoustically poor environments. Excessive noise and long sound reverberation negatively affect speech communication, forcing teachers to talk louder than normal thereby straining their vocal cords and forcing students to strain to hear or to try to cope with noisy distractions. Students who are hearing impaired particularly suffer.

Intent

Provide classrooms with adequate acoustical environments.

EQ P15.0 ACOUSTICAL PERFORMANCE

PREREQUISITE

5 points

APPLICABILITY: All classroom projects. Renovation/modernization projects must meet the acoustics prerequisite according to Table A: Renovation/Modernization Requirements at the front of the document.

VERIFICATION: Design Review, Construction Review

EQ P15.0 REQUIREMENTS

Note on Definitions in ANSI 12.60:

For the purpose of this criterion, general terms and definitions are the same as those found in Section 3 of ANSI/ASA Standard S12.60-2010/Part1, with the introduction of the following amendments and additional categories:

Amendments:

a. The Core Learning Spaces category does not include special education rooms, libraries, music instruction and practice rooms. For the purpose of this criterion, these spaces are re-categorized as shown below.

b. The Ancillary Learning Spaces category does not include corridors. CHPS exempts corridors from acoustical requirements.

Additional Categories:

c. Inter-Classroom Workspaces (ICWS) include: small spaces in between two or more classrooms where student groups from any of the classrooms can gather for separate activities. For the purposes of the present criteria, Inter-Classroom Workspaces shall not be treated as regular classrooms, except where the district designates the ICWS as a core learning space.

d. Special Education Rooms (SER) include classrooms for special needs students.

e. Confidential Speech Privacy Rooms (CSPR) are rooms for which confidential speech privacy, as defined by Appendix X1 of ASTM standard E1130, is required for conversations held at normal voice levels, such as educational council offices and therapy rooms.

f. Performance Arts Spaces (PAS) include: music and choir classrooms, ensemble rooms, practice rooms, dance classrooms, drama classrooms, auditoria and theaters.

g. Audio/Video Production Spaces (APS) include: audio/video recording or production studios and control rooms, and audio/video editing suites.

h. Large Assembly Spaces (LAS) include: multipurpose rooms, libraries, and gymnasia when the school program requirements include the use of any of these rooms as group instruction rooms or assembly spaces where good understanding of speech (amplified or unamplified) is important.

5 points Comply with all the following:

EQ P15.0.1 *Criteria for Sound Reverberation*

Comply with either the performance or prescriptive option listed below. The prescriptive and performance methods may be used interchangeably within a single project. While each room shall comply with one method, compliance with both methods is not required for any one space.

Performance Method:

The maximum reverberation times in the one-octave frequency bands centered at 500 Hz, 1,000 Hz and 2,000 Hz shall be:

- Core learning spaces with volume less than 10,000 ft^3: 0.60 seconds
- Core learning spaces with volume between 10,000 ft^3 and 20,000 ft^3: 0.70 seconds
- Core learning spaces with volume greater than 20,000 ft^3: 1.0 seconds

In spaces designated as ICWS and SER (see Implementation), the ideal reverberation times depend on the specific program for each space. The design team shall submit a narrative stating the Basis of Design for reverberation times for each of these spaces and calculations showing achievement of such Basis of Design.

Prescriptive Method:

Provide the following minimum finishes:

- Core learning spaces with volume less than 10,000 ft3: Ceiling finish with a minimum NRC of 0.70, covering minimum 95% of ceiling area (excluding lights, diffusers and grilles).
- Core learning spaces with volume between 10,000 ft3 and 20,000 ft3: Ceiling finish with a minimum NRC of 0.70, covering minimum 85% of ceiling area (excluding lights, diffusers and grilles).

For core learning areas greater than 20,000 ft^3 and/or spaces designated as ICWS and SER, follow the performance method.

EQ P15.0.2 *Criteria for Background Noise*

In Core Learning Spaces and in spaces designated as ICWS and SER, the total background noise from the combination of building HVAC systems and exterior noise shall not exceed 40 dBA.

- The metric for HVAC and exterior noise shall be the Equivalent Sound Level (L_{eq}).
- For exterior noise sources, the maximum hourly L_{eq} during instructional hours shall be used.

Acoustical modeling or measurement shall be conducted to determine the interior sound levels from exterior sources.

- For HVAC noise, the L_{eq} when the HVAC system is in operation continuously shall be used. Acoustical calculation or measurement shall be conducted to determine the interior sound levels from HVAC.
- The total background noise level shall be defined as the energy sum of the maximum hourly L_{eq} from exterior sources and the HVAC system noise L_{eq}.

For background noise requirements, Section 5.2.3 of ANSI/ASA Standard S12.60-2010/Part1 does not apply. Sections 5.2.2.2 and 5.2.4 of ANSI/ASA Standard S12.60-2010/Part1 apply.

EQ P15.0.3 *Criteria for Sound Isolation*

1. *Outdoor-to-Indoor Attenuation of Airborne Sound:* Refer to background noise criteria.
2. *Indoor-to-Indoor Attenuation of Airborne Sound:*
   a. Wall and floor-ceiling assemblies shall be designed to achieve the minimum STC ratings specified in Table EQ15-1.
   b. The STC rating requirements of Table 6 also shall apply to the design of temporary full-height partitions that subdivide a learning space into smaller enclosed areas. The ratings in Table 6 apply to wall construction only.
   c. Design according to Section 5.4.2.2 of ANSI/ASA Standard S12.60-2010/Part1.
   d. Table EQ15-1 requirements do not apply to toilets opening only into the receiving space and used only by occupants of the receiving space.
   e. In any wall between a classroom and a public restroom, no plumbing shall be rigidly attached to the classroom wall framing. The wall assembly shall not contain large penetrations such as for restroom supply dispensers or disposals and shall not support rigidly attached electric hand dryer devices.
   f. The isolation between mechanical equipment rooms and Core Learning Spaces, ICWSs or SERs shall have a STC rating of 60 or greater unless it is shown that the sound level in the mechanical equipment room combined with a lower STC rating can achieve the required background noise level from building services in the core learning space. In no case shall the design STC between such spaces be less than 45.
   g. Operable partitions shall have same minimum STC rating as the wall they replace.
   h. Interior glazing in walls with STC ratings of 40 or higher shall have the same minimum STC requirement as the wall.
   i. Doors shall be selected to achieve the minimum requirements specified in Table EQ15-2.
   j. A minimum sound rating is not required for doors between classrooms and corridors. The absence of such requirement assumes that noise generated by corridor traffic can be controlled administratively by school staff.
   k. Vestibules functioning as a sound lock may be provided as an alternate to sound-rated door assemblies.

Table EQ15-1 - Minimum STC Ratings for Wall and Floor-Ceiling Assemblies

Source Room	Receiving Room	Minimum STC Rating
Classroom, ICWS, SER	Classroom, ICWS, SER	43
Public Restrooms	Classroom, ICWS, SER	53
Corridor	Classroom, ICWS, SER	38
Staircase	Classroom, ICWS, SER	40
Mechanical Equipment Room	Classroom, ICWS, SER	60
Administration Office	Classroom, ICWS, SER	40
Conference Room	Classroom, ICWS, SER	50
PAS	Classroom, ICWS, SER	60
LAS	Classroom, ICWS, SER	60
CSPR	Classroom, ICWS, SER	53

Table EQ15-2 - Minimum STC Ratings for Doors

Source Room	Receiving Room	Minimum STC Rating
Classroom, SER	Classroom, SER	40
Conference Room	Classroom, ICWS, SER	45
PAC, APS	Classroom, ICWS, SER	40
CSPR	Classroom, ICWS, SER	45
ICWS	Classroom, SER	35
CSPR	Any other space	35

3. *Isolation from Structure-Borne Sound:*

   Design according to Section 5.4.3 of ANSI/ASA Standard S12.60-2010/Part1, with the exception that carpeting is allowed to contribute to the assembly IIC rating when used as a permanent finish.

EQ P15.0.4 *Criteria for Classroom Audio Distribution Systems*

Where installed, design according to Section 5.5 of ANSI/ASA Standard S12.60-2010/Part1.

EQ C15.1 ENHANCED ACOUSTICAL PERFORMANCE

CREDIT

1-5 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

SCORING: 1 point for 15.1.1 and/or 2 points for 15.1.2 and/or 2 points for 15.1.3

EQ C15.1 REQUIREMENTS

EQ C15.1.1 *Reverberation Time*

1 point

In spaces designated as PAS, APS, and LAS, the ideal reverberation times depend on the specific program for each space. The design team shall submit a narrative stating the Basis of Design for reverberation.

EQ C15.1.2 *Background Noise*

2 points

In Core Learning Spaces and in spaces designated as ICWS, SER and CSPR, the total background noise from the combination of building HVAC systems and exterior noise shall not exceed 35 dBA.

In Ancillary Learning Spaces and in spaces designated as LAS, the total background noise from the combination of building HVAC systems and exterior noise shall not exceed 40 dBA.

In spaces designated as PAS and APS, the ideal background noise levels depend on the specific program for each space. The design team shall submit a narrative stating the Basis of Design for background noise levels for each of these spaces and calculations showing achievement of such Basis of Design.

EQ C15.1.3 *Noise Isolation*

2 points

Wall and floor-ceiling assemblies shall be upgraded to achieve the minimum STC ratings specified in Table EQ15-3. Doors shall be upgraded to achieve the minimum requirements specified in Table EQ15-4.

Table EQ15-3 - Minimum STC Ratings for Wall and Floor-Ceiling Assemblies

Source Room	Receiving Room	Minimum STC Rating
Classroom, ICWS, SER	Classroom, ICWS, SER	48
CSPR	Classroom, ICWS, SER	48

Table EQ15-4 - Minimum STC Ratings for Doors

Source Room	Receiving Room	Minimum STC Rating
Classroom, SER	Classroom, SER	45
ICWS	Classroom, SER	40

ENERGY (EE)

EE P1.0 ENERGY EFFICIENT DESIGN
EE C1.1 SUPERIOR ENERGY EFFICIENT DESIGN & ZERO NET ENERGY

Intent

Minimize environmental impacts and operational costs associated with consuming energy and encourage the school to produce as much energy as it consumes on an annual basis.

Operating dollars are precious to schools. Clean air and a clean environment are precious too. High performance schools incorporate energy efficient design features, equipment, and systems to save money on operating costs and reduce the environmental impact of using fossil fuels, including the emission of atmospheric and land-based pollutants. Superior performing schools incorporate renewable energy resources and strive to become zero net energy buildings.

Extra points are available for schools that are designed to achieve zero net energy or are designed to be capable of achieving zero net energy without building modification.

EE P1.0 ENERGY EFFICIENT DESIGN

PREREQUISITE

5 points

APPLICABILITY: All Projects

VERIFICATION: Design Review

SCORING: 5 points total for either Prescriptive or Performance Compliance.

EE P1.0 REQUIREMENTS

5 points

Projects shall design for energy efficiency and greenhouse gas emissions reduction by demonstrating compliance with one of the following:

Prescriptive Compliance Options

1. Prescriptive compliance with the 2019 CA Energy Code (Title 24 Part 6).
2. The prescriptive requirements of ASHRAE Standard 90.1-2016
3. The prescriptive requirements of the 2018 edition of the *International Energy Conservation Code* (IECC)
4. The base requirements of Tier 2 of the *Advanced Buildings New Construction Guide* from the New Buildings Institute (NBI).
5. The 50% ASHRAE *Advanced Energy Design Guide* for Schools

Performance Compliance Options

1. Demonstrate the project's "above code" energy performance using the standards, procedures, and approved computer programs for compliance with the 2019 CA Energy Code (Title 24 Part 6). Performance will be evaluated using the "Above Code Qualifications" process in the reporting which includes Miscellaneous Energy consumption such as receptacle and process load.

2. Demonstrate the project's energy performance is more efficient on a source energy basis than the Budget Building Design, using the procedures in ASHRAE Standard 90.1-2016, Appendix G.
3. Achieve an ENERGY STAR score of at least 75 using Target Finder or Portfolio Manager. This option may be used with any baseline, but additional points in C1.1 are not available without modeling against ASHRAE 90.1-2016 or following zEPI.

EE C1.1 SUPERIOR ENERGY EFFICIENT DESIGN & ZERO NET ENERGY

CREDIT

1-36 points

APPLICABILITY: All projects.

VERIFICATION: Design Review

SCORING: 1-30 points for 1.1.1 (see tables below) and 1-6 points for 1.1.2

RELATED CRITERIA: all of EE, OM C7.1 Green Power, II C8.1 Innovation, II C6.1 and C7.1 for low GHG and climate resiliency

EE C1.1 REQUIREMENTS

EE C1.1.1 *Superior Energy Efficient Design*

For overall energy performance, achieve energy reductions beyond the energy pre-requisite. Additional requirements are listed below.

1-30 points *Performance Compliance Option*

Energy reductions shall be calculated utilizing the protocol from EE P1.0 and this section. Points are awarded as shown in the table in accordance with the following equation for percentage improvement or a zEPI score.

$$\text{Percentage Improvement} = \frac{\sum \text{Baseline Buildings Source Energy} - \sum \text{Proposed Buildings Source Energy}}{\sum \text{Baseline Buildings Source Energy}}$$

Points	Percentage Improvement	Optional zEPI Equivalent [9]
1	2%	51
2	4%	50
3	6%	49

10	20%	42
15	30%	37
20	40%	31
25	50%	26
30	60%	21

Interpolation between the values in the above table is permitted.

1-7 points *Prescriptive Compliance Options*

Projects may demonstrate energy reductions by complying with the requirements of the *Advanced Buildings New Construction Guide* from the New Buildings Institute (NBI). Points shall be awarded according to the following table:

Points	Requirement	Optional zEPI Equivalent
1	Base requirements of Tier 2	51
2	Tier 2 + Criterion 2.18: Enhanced Envelope	50
3	Tier 2 + Criteria 3.2: Advanced Envelope	49
7	Tier 2 + Criteria 3.6: Variable Capacity Heat Pump (VRF)	46

EE C1.1.2 For 1-6 additional points, design the building to produce as much renewable energy as it consumes per year. There are two options:

1 point *Zero Net Energy Capable*

For schools that aspire to achieve zero net energy at a future date, design the building with a low enough energy usage metric that it could be 100% powered by on-site renewable systems and include features that make it ready to add the renewable systems without modification.

6 points *Zero Net Energy*

For schools that will install renewable systems as part of the project scope, show through the energy modeling required for EE P1.0 that on-site renewable energy systems produce as much energy on an annual basis as is used by the sum of all the building systems. Alternatives to on-site systems, such as renewable district energy or microgrid, will be considered case-by-case. Purchase of green power from the grid does not count as zero net energy.

EE P2.0 COMMISSIONING
EE C2.1 ENHANCED COMMISSIONING

Commissioning is vitally important to the performance of the school and is the key to achieving and maintaining energy efficiency. Commissioning involves a rigorous quality assurance program that ensures the building and its systems are built and operated as designed and that the school district receives the proper training and documentation needed to operate and maintain the building. No building can perform optimally without adequate maintenance.

Intent

Verify that building elements and systems are designed, installed, and calibrated to operate as intended, and provide for the ongoing accountability and optimization of building energy performance over time.

Buildings, even simple structures, are complex systems of electrical, mechanical, and structural components. High performance buildings are healthy, efficient, environmentally sensitive structures whose performance can be significantly affected if the building has not been designed following the owner's project requirements or constructed according to the designers' specifications.

Commissioning is a rigorous quality assurance program administered by a knowledgeable third party that ensures the building performs as expected.

EE P2.0 COMMISSIONING

PREREQUISITE

4 points

APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: OM P1.0 Occupant Training, WE C3.1 Irrigation Systems Commissioning

EE P2.0 REQUIREMENTS

4 points

This prerequisite requires a commissioning process to be in place early in the design process and carries through to the post-occupancy 10-month warranty review and subsequent completion of a commissioning report.

For all new buildings, comply with Title 24 section 120.8 and comply with Title 24, Part 1, Chapter 10, Section 10-103(a)4 for acceptance testing.

ALL of the fundamental best practice commissioning procedures must be implemented:

Engage an independent, third-party commissioning agent (CxA). The commissioning agent will be responsible for commissioning the following critical building systems [1]:

1. Electrical Systems
   - Lighting systems and lighting controls (daylight, occupancy, timing switches, etc.)
   - On-site renewable solar electric or wind systems
2. Mechanical Systems [2]

- HVAC systems (such as hot water systems, chilled water systems, central air systems, ventilation systems)
- Domestic hot water systems
- Energy management system
- Renewable energy heating systems

3. Plumbing Systems
   - Flow control devices
   - Pumping systems
   - Special hazardous waste treatment systems (e.g. for lab wastes)
   - Domestic hot water systems
   - Graywater systems (if applicable)

EE P2.0 The commissioning scope of services shall include:

- Review Owners Project Requirements (OPR) (formerly known as Design Intent documentation) and Basis of Design (BOD) documentation.
- Conduct a focused review of the design prior to the Construction Documents (CDs) phase.
- Issue Design Review Comments and conduct one back check review prior to submitting Permit Set to the Building Department / AHJ.
- Review commissioning requirements for inclusion in the specifications / CDs.
- Develop and utilize a commissioning plan.
- Conduct a selective review of contractor submittals of commissioned equipment.
- Review the Operations & Maintenance manual.
- Verify installation, functional performance testing (including off-season testing), training, and operations and maintenance documentation. A minimum 20% sampling strategy for testing terminal units and repetitive units is permissible. All major systems must be tested.
- Participate in training of facility staff in accordance with the training plan (OM P1.0).
- Complete a commissioning report.
- Conduct a 10-month, post occupancy warranty review.

EE C2.1 ENHANCED COMMISSIONING

CREDIT

1-2 points APPLICABILITY: All projects.

VERIFICATION: Design Review, Construction Review

SCORING: 1 point each for 2.1.1 and 2.1.2

EE.C2.1 REQUIREMENTS

This criterion is intended to allow project managers to think beyond the typical scope of a commissioning authority into other useful system testing, including building envelope commissioning, and to seek out a highly skilled professional commissioning agent.

EE C2.1.1 *Certified Commissioning Professional*

1 point The commissioning authority responsible for commissioning is a third party ANSI certified commissioning professional with at least five years' experience in the state where s/he practices.

EE C2.1.2 *Building Envelope Commissioning*

1 point Commission the building envelope using ASTM E2813, the National Institute of Building Sciences (NIBS) Guideline 3 or an equivalent approach. The commissioning authority shall be a third party ANSI certified commissioning professional with at least five years of building envelope commissioning experience in the state where s/he practices

EE P3.0 MANDATORY CONTROLS
EE C3.1 ENERGY MANAGEMENT SYSTEM & SUBMETERING

Energy Management Systems (EMS) are important systems for controlling, monitoring and understanding patterns of energy use in schools. Nowadays, an EMS or any number of equivalent systems are standard practice, and schools have choices among proprietary systems developed by the HVAC manufacturer or off-the-shelf products.

Intent

Provide a mechanism to assist school operators to monitor and control the building's energy systems remotely, make adjustments quickly and easily, and control costs.

EE P3.0 MANDATORY CONTROLS

PREREQUISITE

2 points APPLICABILITY: All Projects

VERIFICATION: Design Review

RELATED CRITERIA: OM P1.0 Training, OM C4.1 Systems Maintenance Plan, EE P2.0 Commissioning, OM P3.0 Benchmarking

EE P3.0 REQUIREMENTS

2 points Comply with Title 24 requirements in Section 120.2 for space-conditioning system controls and all applicable sections of 130 for lighting and distribution controls.

EE C3.1 ENERGY MANAGEMENT SYSTEM & SUBMETERING

CREDIT

7 points

APPLICABILITY: All Projects

VERIFICATION: Design Review

SCORING: 3 points for 3.1.1 and 2 points for each of 3.1.2 and 3.1.3

RELATED CRITERIA: OM P1.0 Training, OM C4.1 Systems Maintenance Plan, EE P2.0 Commissioning, OM P3.0 Benchmarking

EE C3.1 REQUIREMENTS

EE C3.1.1 *HVAC Systems Control*

3 points

Install a base level Energy Management System (EMS) or equivalent Building Automation System (BAS) or Building Management System (BMS) to control the operating schedule of HVAC systems throughout the building including terminal units, packaged units, air handling units, make-up air units, centralized hydronic heating and cooling systems, pumps, and fans including fume hoods. Fractional horsepower fans, fractional horsepower pumps and units providing air conditioning to spaces requiring continuous 24/7 cooling such as computer server rooms, network equipment rooms, or walk-in refrigerators and freezers are excluded. The base level EMS shall provide the following energy saving features:

- Schedule unoccupied setback temperature control so that units can heat during unoccupied modes should the space temperature fall below the setback temperature. Setback temperature settings shall be no higher than 60 degrees F.
- Scheduled control of all ventilation outdoor air fans, exhaust fans and outdoor air dampers so that fans are turned off and dampers are closed during unoccupied periods.
- Zoning of systems so that major building areas (i.e. gymnasium, cafeteria, library, classrooms, and administrative offices) can be independently scheduled during non-school hours.
- An override system to temporarily change a unit or zone from unoccupied to occupied mode locally is permitted provided that it is timed and will automatically revert back to the normal operating schedule after no more than four hours. A local override switch that is not on a timer is not permitted. Ventilation outdoor air shall be set to occupied mode if the local override is used.

A centrally located scheduling interface shall be provided so that the operator can schedule the EMS operating mode for weekdays, weekends, and holidays. The scheduler shall be capable of independently scheduling each major building area or zone. If the facility management staff that sets the operating schedule is located at another site, the EMS shall have a web-based interface so that the schedule can be set remotely. Any system – including but not limited to Building Automation System or Building Management System – that includes the above features shall meet this requirement.

EE C3.1.2 *Automated Demand Management.*

2 points

Install an advanced energy management system (EMS) capable of supporting Automated Demand Management functions. System shall be capable of:

- Storing pre-programmed demand management control strategies for specific controlled equipment and/or systems that will, in a safe and controlled manner, increase or decrease electrical demand, (e. g., change cooling setpoints, turn equipment on or off, rotate loads to avoid simultaneous/stacked demand) when triggered.
- Store pre-conditions for triggering and releasing discrete demand control strategies, such as approaching user defined demand thresholds, applicable electricity pricing points, etc.
- Respond to external signals as triggers for implementing and releasing demand management control strategies such as a contracted demand response event. The facility shall either demonstrate compliance with Open ADR 2.0 or demonstrate similar functionality via automated triggers using other communications protocols.
- Support automated notification of a demand response event scheduled, threshold met, strategies scheduled for triggering, strategies executed and strategies released to normal control.
- Allow for remote access opt out or cancellation of any demand control strategy scheduled or currently in force.
- Allow for remote access user triggering of any demand control strategy not currently in force as well as scheduling triggering any demand control strategy for future triggering and release.
- Energy models should be used to determine appropriate setback temperatures during unoccupied hours.

EE C3.1.3 *Submetering/Data Acquisition and Storage*

2 points

Install a meter data acquisition and storage system for all electrical power used within the building. The system can use the main utility meter as a data source or an owner-supplied submeter provided that all electrical power used in the building is recorded. Data from the system shall at a minimum record and store every 1 minute and shall be available to the operator with no less than 1 hour of the time the energy was consumed. The system shall include a user interface to trend and analyze stored data. Using the EMS, a separate stand-alone system, or a system provided by the local utility company are all acceptable provided that the system meets the requirements described herein. Provide metering at all panelboards.

If both the advanced EMS and data acquisition/submetering options are achieved, the project is eligible for one innovation point from II C8.1.

EE C4.1 ADVANCED VENTILATION STRATEGIES

Natural ventilation is an effective energy design strategy for schools in many climates. This credit offers a bonus for natural ventilation above what is credited in EE C1.1 Superior Energy Efficient Design.

Intent

Provide a bonus for school designs that incorporate natural ventilation, mixed mode, or demand control ventilation. Provide an incentive to install interlocks on doors and windows.

EE C4.1 ADVANCED VENTILATION STRATEGIES

CREDIT

1 point

APPLICABILITY: New schools, a new building on an existing campus, additions and to major renovations/modernizations based on the scope of the project.

VERIFICATION: Design Review

SCORING: 1 point for 4.1.1 or 1 point for 4.1.2

RELATED CRITERIA: EE C1.1 Superior Energy Design, II C7.1 Design for Adaptation & Resilience

EE C4.1 REQUIREMENTS

EE C4.1.1 *Natural Ventilation*

1 point

Design schools such that at least 75% of the classrooms are designed to provide comfort conditions with no mechanical cooling according to the comfort conditions defined in ASHRAE Standard 55-2017 [3].

Naturally ventilated classrooms (with no mechanical cooling) shall meet the classroom ventilation requirements of ASHRAE Standard 62.1-2016 §5.1 or demonstrate that engineered natural ventilation systems satisfy the requirements [2].

EE C4.1.2 *Energy Conservation Interlocks*

1 point

For hybrid systems that use natural ventilation in combination with mechanical cooling, install interlocks or an equivalent mechanism, to prevent heating and cooling equipment from operating when exterior windows or doors are open.

EE C5.1 ELECTRIC VEHICLE CHARGING

Intent

Exceed code by providing electric vehicle supply equipment (EVSE) to support electric vehicle charging.

California has a long and successful history of adopting technology-advancing vehicle emission programs to protect public health. The California Air Resources Board is implementing a Zero Emission Vehicle (ZEV) program in order to improve air quality and reducing climate change emissions. By 2025, one in eight new car sales in California is expected to be battery vehicle, fuel cell, or plug-in hybrid. The cumulative volume of on-road plug-in electric vehicles in California is expected to reach over 1.4 million by 2025. This increase in electric vehicles on-road puts California on track to achieve greenhouse gas (GHG) emission reduction goals and will require widespread infrastructure to support charging needs. The California Green Building Standards (CALGreen) Code includes voluntary EV charging standards to provide infrastructure to support future EV charging. This credit provides points for installation of wiring and the electric vehicle supply equipment (EVSE).

EE C5.1 ELECTRIC VEHICLE CHARGING

CREDIT

2 points

APPLICABILITY: New schools, a new building on an existing campus, additions and to major renovations/modernizations based on the scope of the project.

VERIFICATION: Design Review and Construction Review

RELATED CRITERIA: SS C3.1 Minimize Site Disturbance

EE C5.1 REQUIREMENTS

2 points

Install electrical vehicle supply equipment (EVSE) in 2% of all parking spaces included in the project. Clearly identify and reserve these spaces for sole use by plug-in electric vehicles. Parking spaces that include EVSE must be provided separate from, and in addition to, preferred parking spaces for green vehicles.

The EVSE must:

- Provide a Level 2 charging capacity (208 – 240 volts) or greater.
- Comply with the relevant regional or local standard for electrical connectors, such as SAE Surface Vehicle Recommended Practice J1772, SAE Electric Vehicle Conductive Charge Coupler or IEC 62196 of the International Electrotechnical Commission for projects outside the U.S.
- Be networked or Internet addressable and be capable of participating in a demand-response program or time-of-use pricing to encourage off-peak charging.

WATER (WE)

WE P1.0 INDOOR POTABLE WATER USE REDUCTION
WE C1.1 ENHANCED INDOOR WATER USE REDUCTION

The growing value of potable water in the United States underscores the importance of lowering demand. Efficient water consumption naturally reduces the amount of water pumped from the ground or transported from reservoirs to cities and towns. In addition, water efficiency reduces the cost and amount of sewage needing treatment after use. Because water-efficient devices can vary in quality and performance, specify only durable, high performance fixtures.

Intent

Maximize water efficiency within buildings to reduce the burden on municipal water supply, aquifers, and wastewater treatment systems.

There is opportunity to achieve additional potable water savings through selection of fixtures with higher efficiency than required in WE P1.0 and/or efficient appliances. Additionally, for flushing, there may also be opportunity to use rainwater, reclaimed water (tertiary treated wastewater) from the municipality, or graywater, among others. These options are subject to what local code allows and what may be available through municipal water treatment, Note that manufacturers may have minimum water quality requirements and that fixture warranties may be voided if water quality fails to meet their specifications.

WE P1.0 INDOOR POTABLE WATER USE REDUCTION

PREREQUISITE

4 points

APPLICABILITY: All Projects

VERIFICATION: Design and Construction Review

WE P1.0 REQUIREMENTS

4 points

Comply with CALGreen, Section 5.303.3 and if applicable 5.303.4.

This prerequisite is prescriptive; no calculations are needed. All indoor water fixtures listed in Table WE 1-1: Fixture Performance Requirements must comply with the listed maximum water consumption figures. These requirements are not averages–every fixture must comply.

Table WE 1-1: Fixture Performance Requirements from CALGreen

Fixture/Fitting Type	Maximum Water Consumption	Other Requirements & Notes	CALGreen Reference
Water closets	1.28 gallons/flush	Tank-type water closets must be WaterSense labeled.	5.303.3.1
Showerheads	1.8 gpm @ 80 psi	Must be WaterSense labeled.	5.303.3.3
Nonresidential lavatory faucets	0.5 gpm @ 60 psi		5.303.3.4
Metering faucets (self-closing)	0.20 gallons/cycle @ 60 psi	There is no WaterSense standard.	5.303.3.4
Kitchen faucets	1.8 gpm @ 60 psi	Must be WaterSense labeled.	5.303.3.4
Urinals	Floor mounted: 0.5 gallons/flush Wall mounted: 0.125 gallons/flush	Flushing urinals must be WaterSense labeled.	5.303.3.2
Food waste disposer	no more than 8gpm per use with auto shut off or modulated to 1gpm when not in use	No WaterSense standard.	5.303.4.1

WE C1.1 ENHANCED INDOOR POTABLE WATER USE REDUCTION

CREDIT

1-5 points APPLICABILITY: All Projects, see Implementation for specifics.

VERIFICATION: Design and Construction Review

SCORING: 1-4 points for 1.1.1 and/or 1 point for 1.1.2

WE C1.1 REQUIREMENTS

WE C1.1.1 *Calculated Water Savings*

1-4 points Reduce potable water consumption beyond the savings achieved in WE P1.0 per the following chart. Calculate the baseline and design water consumption using the methodology in Implementation. Use any combination of high efficiency fixtures and appliances in Table WE 1-2, water shut-off, or site-collected water. Points will be awarded based on total calculation of percentage reduced. Percentages between thresholds are implied.

- 20% (1 point)
- 25% (2 points)
- 30% (3 points)
- 35% (4 points)

Table WE 1-2: Enhanced Fixture Performance Targets*

Fixture/Fitting Type	Target Maximum Water Consumption
Showerheads	1.5 gpm @ 80 psi
Water closets – flush valve	1.1 gallons/flush
Commercial pre-rinse spray valves	1.15 gpm @ 60 psi
Commercial washing machines	Must meet ENERGY STAR (<=4.0 gpc/ft3)

*Not exclusive. Any fixture with a higher efficiency than in WE P1.0 is acceptable. Note that faucets lower than .5 gpm, while available on the market, have not been proven viable for handwashing.

AND/OR

WE C1.1.2 *Efficient Appliances*

1 point Specify and install ENERGY STAR or Consortium for Energy Efficiency (CEE) labeled appliances per Table WE 1-3.

This space left blank intentionally.

Table WE 1-3: Water-Efficient Appliance Standards*

Appliance	Standard
Dishwashers	ENERGY STAR [6]
Food Steamers	CEE [7]
Ice Machines	ENERGY STAR or CEE

* Other efficient appliances, such as combination ovens, may be available and are strongly encouraged but are not required for this point.

WE P2.0 OUTDOOR WATER USE BUDGET
WE C2.1 OUTDOOR WATER USE REDUCTION

Intent

Reduce and optimize potable water use for irrigating recreational and non-recreational landscaping areas.

The use of potable water for irrigation of landscaped areas and playing fields can be an expensive undertaking and can cause significant stress on water bodies, potentially leading to water shortages. A typical natural turf recreation field needs up to 5,000 gallons of water/acre/day during the peak of the irrigation season and in many locations exceeds 7,000 to 8,000 gallons/acre/day. Irrigation systems should only be provided if necessary and should be designed with efficiency in mind.

Irrigation--when necessary--should be limited to early morning hours to minimize evaporation. Potable water use can also be minimized by specifying drought tolerant plants and considering the soil composition to support the plants. New technologies to measure the amount of moisture in soil can be used to alert grounds staff to provide only the quantity of water, and only at the time it is necessary to sustain species life on recreational fields. The US Environmental Protection Agency claims that water savings of 10-20% can be achieved through such technologies. A water budget is a reasonable estimate of the amount of irrigation water required for a specific landscape over a given time interval. Local governments may have a different ordinance from the state model for calculating a water budget.

WE P2.0 OUTDOOR WATER USE BUDGET

PREREQUISITE

3 points

APPLICABILITY: All Projects with irrigation systems, including Major Modernizations based on scope

SCORING: 3 points for either 2.0.1 or 2.0.2

VERIFICATION: Design and Construction Review

WE P2.0 REQUIREMENTS

WE P2.0.1 *Water Use Budget & Irrigation Controls*

3 points

Newly constructed landscape areas equal to or greater than 500 square feet and rehabilitated landscape areas equal to or greater than 1,200 square feet shall comply with CALGreen Section 5.304.6. The team must develop a water budget for landscape (both recreational and non-recreational) and ornamental water use to conform to the California Department of Water Resources Model Water Efficient Landscape Ordinance.

Irrigation systems used for campus landscape, gardens, or recreational areas must have sensors (soil moisture and/or rain sensors) and weather-based irrigation controllers (WBIC) meeting or exceeding WaterSense criteria to manage operation of irrigation systems when there is adequate ambient moisture.

OR

WE P2.0.2 *No Permanent Landscape Irrigation*

3 points

Claim the points if no permanent irrigation system is installed.

WE C2.1 OUTDOOR WATER USE REDUCTION

CREDIT

2-10 points

APPLICABILITY: All Projects

VERIFICATION: Design and Construction Review

SCORING: 2-6 points for 2.2.1 as indicated and/or 2-4 points for 2.2.2

WE C2.1 REQUIREMENTS

WE C2.1.1 *Non-Recreational Irrigation*

2-6 points

Reduce water consumption (potable water, natural surface water, groundwater, captured rain, or reclaimed water) for irrigation of non-recreational areas by the following amounts over landscape budget baselines using best science-based practices to conserve or restore biodiverse ecosystem function with the use of native seeds or plants (or locally adapted native seeds or plants). Note: The landscape budget baseline is calculated based on current best practices and/or standards from the California Department of Water Resources.

- 20% (2 point)
- 35% (4 points)
- 50% (6 points)

No Non-Recreational Irrigation

Claim the 3 points if no permanent irrigation is installed for non-recreational landscaped areas; school gardens are optional. Project must specify drought resistant plants or grasses in these areas so that irrigation is not needed beyond plant establishment.

AND/OR

WE C2.1.2 *Recreational Irrigation*

2-4 points As in 2.2.1, reduce water consumption by the following amounts for recreational fields.

- 20% (2 point)
- 50% (4 points)

No Recreational Irrigation

Claim 2 points if no permanent irrigation is installed for recreational landscaped areas. Project must specify drought resistant plants or grasses in these areas so that irrigation is not needed beyond plant establishment.

WE C3.1 IRRIGATION SYSTEMS COMMISSIONING

Irrigation system testing and training is a rigorous quality assurance program administered by a knowledgeable party that ensures the irrigation systems perform as expected. Irrigation system testing can help to ensure that water efficiency measures are working properly, and design water savings are achieved.

Intent

Verify that the site's irrigation systems and controls are operating as intended and that effective training has been provided.

WE C3.1 IRRIGATION SYSTEMS COMMISSIONING

CREDIT

1 point

APPLICABILITY: All projects that include irrigation systems.

VERIFICATION: Design and Construction Review

WE C3.1 REQUIREMENTS

1 point

Create an irrigation systems commissioning plan to manage operation and maintenance of irrigation systems. Complete irrigation systems commissioning review during construction and performance testing after installation. Provide documentation for ongoing operations and maintenance. Post the irrigation schedules for each station for each month at the irrigation controller. Based on best science-based practices to conserve or restore biodiverse ecosystem function, adaptively update the operations and maintenance plan, as needed.

SITE (SS)

SS P1.0 ENVIRONMENTAL SITE ASSESSMENT

Intent

Select sites that are a safe and healthy environment for students and staff and that protect topsoil.

Federal guidelines and some state laws and regulations for school siting were created to prevent schools from being constructed on sites containing pollutants known to be hazardous to student and staff health. The primary tool for reviewing the quality of the site is an Environmental Site Assessment (ESA), following EPA guidelines; however, a state or locality may have additional rules or guidance. A variety of factors, from hazardous materials in the soil to airborne pollutants from nearby sources, are included in the site review process. At existing facilities, an assessment should be undertaken to determine whether there are legacy environmental and health problems on site or in the building prior to modernization.

SS P1.0 ENVIRONMENTAL SITE ASSESSMENT

PREREQUISITE

2 points

APPLICABILITY: All projects.

VERIFICATION: Design Review

RELATED CRITERIA: II C7.1 Design for Adaptation & Resilience

SS P1.0 REQUIREMENTS

SS P1.0 *New Buildings on New Sites*

2 points

Comply with one of the following options, as applicable based on state funding for the school.

Option 1

All siting and environmental impact study requirements of the California Department of Education School Facilities and Transportation Services Division as defined in Title 5, Division 1, Chapter 13 of the California Code of Regulations and Education Code & Public Resources Code [8]. including:

- The air pollution control district, or air quality management district or other agency having jurisdiction in the area must identify facilities which might reasonably be anticipated to emit hazardous air emissions, or to handle hazardous or acutely hazardous material, substances or waste, and a determination is made by the governing board that such facilities will not adversely affect the health of students, staff or teachers.
- A risk assessment and implementation of appropriate mitigation measures, or the establishment of appropriate “buffer zones”, to ensure that the proposed school site would not expose school occupants to significant health or safety risks from rail lines, hazardous material pipelines, high power transmission lines, toxic air emissions or other sources of pollution.

Option 2

Complete a Phase I Environmental Site Assessment (ESA) in accordance with ASTM E1527-13. If a Phase II ESA is necessary based on the results of Phase I, follow ASTM E1903-11. The ESA must include:

- Identification of facilities within ¼ mile that might reasonably be anticipated to emit hazardous air emissions, or handle hazardous or acutely hazardous material, substances or waste. A determination shall be made (following ASTM 1527-13) that such facilities will not adversely affect the health of students, staff or teachers.
- A risk assessment and implementation of appropriate mitigation measures or the establishment of appropriate "buffer zones" to ensure that the proposed school site would not expose school occupants to significant health or safety risks from rail lines, hazardous material pipelines, high power transmission lines, toxic air emissions from stationary sources, or other sources of pollution including those identified under ASTM 1527-13.
- Written findings verifying that the site is not currently or formerly a hazardous, acutely hazardous substance release, or solid waste disposal site or, if so, that the wastes have been removed in a manner that meets the referenced standard. Also, the written findings must state that the site does not contain pipelines, which carry hazardous wastes or substances other than a natural gas supply line to the school or neighborhood. If hazardous air emissions are identified, the written findings must state that the health risks do not, and will not, constitute an actual or potential danger of public health of students or staff. If corrective measures of chronic or accidental hazardous air emissions are required under an existing order by another jurisdiction, the governing board shall make a finding that the emissions have been mitigated prior to occupancy of the school.
- Identification of train tracks, freeways, or traffic corridors within 500 feet of the site and analyses that neither short-term nor long-term exposure to air pollutants poses significant health risks to students.

The ESA must also include all of the following:

- Site the school with at least the following distances from the edge of respective power easements above ground; 100 feet for 50-133 kV lines, 150 feet for 220-230 kV lines, and 350 feet for 500-550 kV lines.
- The site shall be self-draining, including detention ponds or other engineered systems (lakes) to control and direct water, and free from depressions in which water may stand and be allowed to stagnate. The site shall be kept free from refuse, weed overgrowth, and other hazards. Livestock or poultry shall be located more than fifty (50) feet from food service areas, offices, or classrooms except those offices and classrooms associated with animal husbandry activities.
- The site shall not be located near an above-ground water or fuel storage tank or within 1500 feet of the easement of an above ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional, which may include certification from a local public utility commission.
- If the site is located in an agricultural area, identify drift problems throughout the year from highly toxic and volatile pesticides. Pesticides under concern are listed as "Restricted Use Products" by the US EPA. If highly toxic and volatile pesticides are identified and not mitigated, the school will not meet this prerequisite.

- If the school drinking water source is an on-site private well, the well water must be tested by the local health department or authority having jurisdiction to ensure the water is free of harmful contaminants prior to occupancy. The local jurisdiction may require further testing during occupancy.
- The site must not be within 1,000 feet of an active landfill or distance established by local regulation if more stringent.

SS P1.0 *New Buildings on Existing Sites and Major Renovations/Modernizations*

Comply with one of the following options, as applicable.

Option 1

Evaluate site for all siting and environmental impact study requirements of the School Facilities and Transportation Services Division as defined in Title 5, Division 1, Chapter 13 of the California Code of Regulations and Education Code and Public Resources Code, or provide an equivalent environmental assessment including:

- Department of Toxic Substance Control (DTSC), or Phase I site assessment, review for hazardous materials including industrial, agricultural, and naturally occurring pollutants such as asbestos and heavy metals.

Option 2

If a prior ESA was completed when the site was first developed, that ESA should be reviewed for any relevant changes and for completeness of all of the above requirements. If the ESA did not address all of the above requirements, the missing ones must be completed, and mitigation may be necessary. The requirement to be at least 1,000 feet from an active landfill does not apply to existing sites; however, if the new building is proximate to an active landfill, mitigation may be necessary. If no prior ESA was performed, a Phase I ESA should be done meeting all of the above requirements, and a Phase II ESA completed if any hazards are found.

Identify facilities within ¼ mile that might reasonably be anticipated to emit hazardous air emissions or handle hazardous or acutely hazardous material, substances, or waste, including:

- Existing or former hazardous waste disposal sites.
- Existing hazardous materials pipelines (other than natural gas supplied to school).
- Freeways and other busy traffic corridors, large agricultural operations, or rail yards within ¼ mile.
- Other operations that might reasonably be anticipated to emit hazardous air emissions, or to handle hazardous, or extremely hazardous materials, substances or waste.

A determination shall be made (following ASTM 1527-13) that such facilities will not adversely affect the health of students, staff, or teachers. If any of the listed hazards are identified, the project shall provide mitigating measures to reduce the hazards as feasible.

SS C2.1 SUSTAINABLE SITE USE & SENSITIVE LANDS CONSERVATION

The availability of open areas with natural ecosystems preserves species and habitat and can help keep the environment cleaner. It also offers opportunities for teaching biological and natural sciences and recreation outside of defined play spaces.

Intent

Preserve as much open space as possible to save existing ecosystems and provide natural learning and recreation spaces.

This criterion is intended to mitigate negative impacts on existing ecosystems. Reducing a building footprint, reducing parking and prioritizing emissions-free vehicles, and maximizing open space can reduce disturbance to these systems. Multi-story schools decrease the amount of land used in construction and help preserve existing open space. Reduced parking spaces discourages automobile use, reduces urban heat island effects, and can reduce pollution from stormwater runoff. Prioritizing parking for shared rides and Zero Emissions Vehicles (ZEV) lowers the impact of air pollution on people and wildlife. Combined, these strategies for reducing the footprint of buildings and limiting parking and paving while encouraging alternate means of transportation can minimize the effects on existing ecosystems.

SS C2.1 SUSTAINABLE SITE USE & SENSITIVE LANDS CONSERVATION

CREDIT

1-3 points

APPLICABILITY: All projects

VERIFICATION: Design Review

SCORING: 1 point each for 3.1.1-3.1.3

RELATED CRITERIA: SS C4.1 Central Location & Near Public Transit

SS C2.1 REQUIREMENTS

SS C2.1.1 *Sustainable Site Use*

1 point

Do any two of the following:

- Building Footprint: Design the building to minimize the footprint by having a ratio of gross square footage to footprint square footage of at least 1.4.
- Parking: Do not exceed minimum local parking requirements. Comply with the following, unless they result in more parking than local minimums:

  New Construction and Additions:

  - Size parking capacity not to exceed 2.25 spaces per classroom for elementary and middle schools and 2.25 spaces per classroom plus spaces for 30% of students for high schools.
  - If event parking is provided, it must be permeable.

- Provide preferred parking spaces and signage for 10% of total parking spaces for carpools, vanpools, and Zero Emission Vehicles (ZEVs).

Major Renovations/Modernizations:

- Add no new parking compared to existing conditions.
- Provide preferred parking spaces and signage totaling 10% of total parking spaces for carpools or vanpools and for Zero Emission Vehicles (ZEVs).

- Open Space: Limit total site development so that open space is 25% more than zoning open space requirements. If no zoning ordinances apply to open space, provide a minimum of 50% vegetated open space. If a school is located in a densely populated area (SS 6.1: Central Location), provide a minimum of 25% vegetated open space.

SS C2.1.2 *Sensitive Lands Conservation*

1 point

Do not develop buildings or impervious surfaces on portions of sites that meet any one of the following classifications:

- Land which prior to acquisition for the project was public parkland, conservation land, or land acquired for water supply protection.
- Greenfields, which for the purposes of this criterion, are defined as undeveloped land or lands that are used for agriculture, forestry, or park purposes. Undeveloped lands are defined as lands that have not been in use for a period of 50 years or more and cannot be identified, by visual inspection, as having been developed.
- Land specifically identified as habitat for any species on the federal or state threatened or endangered list.
- Land that is prime farmland, unique farmland, or farmland of statewide importance as defined by the US Department of Agriculture (USDA) Natural Resources Conservation Services NRCS.

SS C2.1.3 *Additional Sensitive Lands Conservation*

1 point

Do not develop buildings or impervious surfaces on portions of sites that meet any one of the following classifications:

- Land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by FEMA and as shown on the FEMA Flood Insurance Rate Map (FIRM) for the site.
- Land that is within 100 ft. of any wetland as defined by 40 CFR (Code of Federal Regulations) Part 230.3, or within setback distances from wetlands prescribed in state or local regulations, whichever is more stringent.
- Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers, streams and tributaries that support or could support aquatic life, recreation or industrial use, consistent with the terminology of the Clean Water Act.

SS P3.0 EROSION & POLLUTANT CONTROL DURING CONSTRUCTION
SS C3.1 STORMWATER & SEDIMENTATION MANAGEMENT

Intent

Reduce erosion and negative impacts on water and air quality during construction.

Erosion results when wind and precipitation carry away soil that has not been protected during site clearing and earth moving operations. This leads to degradation of property and sedimentation of local waterways. Mitigation measures to protect soil during construction reduce negative impacts to water and air quality. Best management practices (BMPs) are an established means for reducing runoff and preventing pollution both during construction and during building operation. [1]

SS P3.0 EROSION & POLLUTANT CONTROL DURING CONSTRUCTION

PREREQUISITE

1 point

APPLICABILITY: All projects on sites located near water bodies; additional applicability is contained under Implementation

VERIFICATION: Design and Construction Review

SS P3.0 REQUIREMENTS

SS P3.0 *Erosion & Pollutant Control During Construction*

1 point

On sites of 1 acre or larger, control erosion and the transport of soil and other pollutants off the site during construction. Design and implement a site-specific plan that incorporates the use of best management practices (BMPs) consistent with part 2.2 of the US EPA's National Pollutant Discharge Elimination System (NPDES) 2017 Construction General Permit (CA Construction General Permit 2009-0009-DWQ as amended). [8]

The plan shall meet the following objectives:

- Prevent soil loss by wind and water erosion, including protecting topsoil by stockpiling for reuse.
- Prevent transport of sediment and particulate matter to storm sewers or receiving waters and/or to air.
- Eliminate or reduce off-site discharge of construction waste.
- Establish maintenance commitments on post-construction pollution control measures.

For new construction or additions on sites of less than 1 acre, comply with CALGreen 5.106.2.

SS C3.1 STORMWATER & SEDIMENTATION MANAGEMENT

SS C3.1 REQUIREMENTS

1 point

Do all of the following:

Stormwater Runoff Rate:

For sites with an existing imperviousness of less than or equal to 50%, limit the post-development peak stormwater runoff discharge rate so that it does not exceed the estimated pre-development rate.

For sites with an existing imperviousness of more than 50%, implement a stormwater management plan that results in a 25% reduction in the rate and quantity of stormwater runoff.

Drainage at Trash Storage Areas:

For all sites, design trash storage areas to provide appropriate drainage from adjoining roofs and pavement to divert stormwater runoff around the trash storage areas. The trash container areas must be screened or walled to prevent off-site transport of trash.

Stormwater Management:

Provide post-construction treatment control best management practices (BMPs). Incorporate either a volumetric or flow-based treatment control design standard, or in combination, as identified below to mitigate (infiltrate, filter or treat) stormwater runoff:

Volumetric Treatment Control BMP

One of the following:

- The 95th percentile 24-hour runoff event determined as the maximized capture stormwater volume for the area, using procedures recommended in https://owl.cwp.org/mdocs-posts/post-construction-manual-managing-stormwater-in-your-community/.
- The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for “treatment” that achieves approximately the same reduction in pollutant loads achieved by the 95th percentile 24-hour runoff event.

OR

Flow Based Treatment Control BMP

The flow of runoff produced from a rain event:

- equal to at least two times the 95th percentile hourly rainfall intensity for the area; or
- that will result in treatment of the same portion of runoff as treated using volumetric standards above; or
- the intensity-duration-frequency method, with a hydrograph corresponding to a 50-year storm; or
- 0.2 inches per hour.

SS C4.1 CENTRAL LOCATION & NEAR PUBLIC TRANSIT

Over the lifetime of the building, schools and parents invest significant amounts of time, energy, and money transporting students to and from school. Cars driven by parents, guardians, or the students themselves are one of the largest resource users and sources of pollution. Centrally located sites allow more students to walk or bike to school or take public transportation, while reducing the distance cars must travel.

Intent

To make the school more accessible to its occupants and to promote smart growth through centrally locating new schools close to dense, mixed-use areas to encourage alternatives to automobile use.

SS C4.1 CENTRAL LOCATION & NEAR PUBLIC TRANSIT

CREDIT

2-3 points

APPLICABILITY: All projects

VERIFICATION: Design Review

SCORING: 2 points for 4.1.1 and/or 1 point for 4.1.2

RELATED CRITERIA: SS C5.1 Joint Use of Facilities, SS C6.1 Human-Powered Transportation

SS C4.1 REQUIREMENTS

SS C4.1.1 *Proximity to Students & Community Services*

2 points

Comply with any of the following 4 options:

1. Site is centrally located in which 50% of students are within the following distances: 1 mile for elementary schools, 2 miles for middle and high schools.
2. The school's location is within ½ mile of at least eight basic resident services, such as: supermarket, commercial office building, convenience grocery with fresh food, day care, fitness center, hardware store, pharmacy, laundry or dry cleaner, public library, medical/dental services, senior care facility, public park, post office, bank, community center (for recreation or community education), place of worship, fire station, police station, beauty salon, restaurant, and theater.
3. If the project is in a rural school district as defined by the National Rural and Small Schools Consortium (the district inhabitants number is fewer than 150 per square mile or if the district is located in a county where 60% or more of the population lives in communities of 5,000 or fewer), the school's location meets at least one of the following criteria:
    - Located within ¼ mile of the historic central main street business district. Provide a direct pedestrian connection between the school and the business district that includes walking paths and bicycle paths; or
    - Located on the grounds of a historic schools: one that is or has been the site of the school building(s) constructed before 1940.

4. If there are long-term energy use or transportation circumstances that make it more efficient to site the school in a centralized location to serve multiple districts, or between schools, submit your own proposal showing why it is more transportation and/or energy efficient.

SS C4.1.2 *Availability of Public Transit System*

1 point Locate building within ¼ mile of a commuter rail, light rail or subway station, or within ⅛ mile of one bus line.

SS C5.1 JOINT USE OF FACILITIES

Intent

Allow for more community and neighborhood integration within the school facility and grounds.

Community common-pool resources such as school facilities and grounds, park and recreation space (for example, habitat areas, playgrounds and athletic fields), parking lots, gardens and libraries are shared with the community. Joint-use of school facilities is a growing trend. Increasingly, schools are making their facilities available to community groups during and/or outside school hours, providing mutual benefits to both the school and the community. [1, 2]

The benefits of sharing community common-pool resources have been well documented (Elinor Ostrom, et al), and include social benefits such as communication, trust, cooperation, security, ecological benefits and cost sharing (resource costs such as energy and water use, capital and operating costs).

In planning for shared community common-pool resources, care must be taken to provide for programmatic and operational needs. For example, a school campus shared with joint-use programs must be able to maintain separate access and security between the main campus student areas and the after-hours community joint-access areas. Another example would be a parking lot that could well serve multiple community needs on a 24/7 basis. Similarly, a school garden could be made accessible to qualified community members.

Joint-use facilities may be owned and/or maintained by other organizations or agencies, but be available for school use. If so, the contractual agreement(s) must clearly provide for the long-term benefit to the school community.

SS C5.1 JOINT USE OF FACILITIES

CREDIT

1 point

APPLICABILITY: All projects

VERIFICATION: Design Review

SCORING: 1 point for either 5.1.1 or 5.1.2

SS C5.1 REQUIREMENTS

SS C5.1.1 *Interior Joint Use*

1 point

With community involvement, design one or more interior spaces totaling at least 2,500 ft^2 for use by the community-at-large or appropriate organizations but still owned and maintained by the school. The plans shall designate this area as the "Joint Use Area." Design of the Joint Use Area must include features to keep the rest of the building and occupants separated and secure and must provide access to toilet facilities without compromising security of the non-public portions.

AND do any of the following:

- Provide a separate, independently secured entrance for the Joint Use Area.
- If the Joint Use Area is operated by a non-school entity, provide a separate entrance and bathroom facilities independent of the school use portions of the

facility. To qualify, the third party must use the facility on a regular (at least weekly) basis.

- Share at least 75% of library space, based on total availability, with the community as a community library. There are no additional security requirements for this option. The 75% of library space may count towards the 2,500 sf.

OR

SS C5.1.2 *School Grounds Joint Use*

1 point

Do any two of the following:

- Share at least 75% of school grounds based on total square feet of availability with the community.
- Share at least 50% of parking spaces, based on total availability, with the community and make those spaces available outside school hours.
- Share at least 75% of garden space, based on total availability, with the community and make that space available to community members.

SS P6.0 BICYCLE PARKING
SS C6.1 HUMAN-POWERED TRANSPORTATION

Walking, biking, and using scooters and skateboards are a popular and pollution-free form of transportation. When encouraging the use of bicycles, it is important to encourage the safety of pedestrians and bicyclists by providing bike lanes and sidewalks.

Intent

Encourage alternative transportation methods to and from school that increase physical activity, improve health, and reduce dependence on fossil fuels.

SS P6.0 BICYCLE PARKING

PREREQUISITE

0 points

APPLICABILITY: All projects

VERIFICATION: Design and Construction Review

RELATED CRITERIA: SS C4.1 Central Location

SS P6.0 REQUIREMENTS

SS P6.0 Comply with CALGreen Section 5.106.4.2.

SS C6.1 HUMAN-POWERED TRANSPORTATION

CREDIT

1-2 points

APPLICABILITY: All projects

VERIFICATION: Design and Construction Review

SCORING: 1 point for 6.1.1, an additional point for 6.1.2 or 6.1.3

RELATED CRITERIA: SS C4.1 Central Location

SS C6.1 REQUIREMENTS

SS C6.1.1 *Bicycle Accommodation*

1 point

Provide sidewalks or walkways, and bike lanes that extend at least from the school entrance to the end of the school property.

Provide suitable means for the short-term securing of bicycles and scooters outside the school and for skates, skateboards and helmets indoors (including lockers and/or cabinets). The storage must be safe, convenient, and at accessible locations at the following ratio:

- Grades 4-12: 1.5 spaces for every 10 students planned capacity (2 spaces minimum)

For an additional point, do either 9.1.2 or 9.1.3:

SS C6.1.2 *Community Bike Lanes*

1 point In addition to requirements of 9.1.1, collaborate with local organizations and the municipality to provide safe bike lanes that extend appropriately from the school site at least one mile into neighboring communities or access ways.

OR

SS C6.1.3 *Walking School Bus/Safe Routes to School*

1 point Walking School Bus/Safe Routes to School: for elementary schools that also comply with SS C5.1 Central Location, provide an active Safe Routes to School Program involving parents, students, school and city traffic officers and transportation planners. Program can include walking school buses, bike trains, bike and walk skills training, bike helmet promotion and other active transportation encouragement events.

SS C7.1 REDUCE HEAT ISLANDS

Intent

Reduce heat islands to minimize impact on microclimate and human and wildlife habitat.

Heat islands raise temperatures and can impact school communities by increasing peak energy demand, air pollution levels, air conditioning costs, and heat-related illness. Note that the "heat island effect" is largely an urban phenomenon. Dark surfaces, such as pavement, cladding, and roofing absorb heat and radiate it back to surrounding areas. In a city, where there are many dark, heat absorbing surfaces, infrared radiation can easily boost temperatures by 10˚F or more. The heat island effect increases the need for air conditioning (and therefore electricity consumption) and is detrimental to site plantings, local wildlife, and maintaining comfortable temperatures.

Cool roofs and cool walls can significantly reduce school cooling loads and urban heat island effects by reflecting the sun's energy, instead of absorbing, retaining, and radiating it into the occupied spaces below. This criterion is most beneficial for schools with significant cooling loads.

SS C7.1 REDUCE HEAT ISLANDS

CREDIT

1-4 points

APPLICABILITY: All projects

VERIFICATION: Design Review

SCORING: 4 points for any of 7.1.1 or 1 point for any of 7.1.2

SS C7.1 REQUIREMENTS

SS C7.1.1 *Non-Roof & Impervious Surfaces*

4 points

Provide shade (within five years) on at least 50% of non-roof, impervious surfaces on the site, including parking lots, walkways, plazas, etc.

OR

Use light-colored/ high-albedo materials (a Solar Reflectance Index* (SRI) of at least 29) for 50% of the site's non-roof, impervious surfaces.

OR

Use a combination of shading and high-albedo materials for 50% of the site's non-roof surfaces.

*SRI or Solar Reflectance Index is calculated according to ASTM E 1980. Reflectance is calculated according to ASTM E 903, ASTM E 1918 or ASTM C 1549. Emittance is calculated according to ASTME E 408 or ASTM C 1372.

SS C7.1.2 *Cool Roof*

1 point

Use roofing materials that have a Solar Reflectance Index (SRI) as listed below for roof type for a minimum of 75% of the roof surface. See Resources for an SRI calculator. [4]

Roof Type	Slope	SRI
Low-Sloped Roof	≤2:12	78
Steep-Sloped Roof	>2:12	29

OR

Vegetable Roof

Install a green or vegetated roof equal to at least 25% of the roof surface. Develop a guide and maintenance plan for the green roof. Vegetated Roofs using potable water or reclaimed water or using an in-ground irrigation system shall not be eligible for any points.

OR

Vegetated Wall/Trellis

Provide vegetated wall surface, shading from trees or other landscaping (within 5 years) or exterior shading device shading 30% or more of glazed surfaces that are not north facing, at 9:00am and 3:00pm at the equinox. Vegetated wall/trellis using potable water or reclaimed water for an irrigation system shall not be eligible for any points.

SS P8.0 LIGHT POLLUTION PREVENTION
SS C8.1 ENHANCED LIGHT POLLUTION PREVENTION

Intent

Reduce or eliminate uses of artificial night lighting that are not needed or contribute to light pollution.

Night lighting represents a significant source of energy use on campuses and can adversely affect the nighttime environment, while well-designed lighting can ensure safety, security, and beneficial use of properties. Avoidance of unnecessary lighting reduces resource use and minimizes the potential adverse environmental effects on the nighttime environment. Approaches may range from “dark campus” programs to careful controls on direction, intensity, duration, and spectrum of lighting.

SS P8.0 LIGHT POLLUTION PREVENTION

PREREQUISITE

0 points

APPLICABILITY: All projects.

VERIFICATION: Design and Construction Review

RELATED CRITERIA: EE P1.0 Energy Efficient Design

SS P8.0 REQUIREMENTS

0 points

Comply with CALGreen Section 5.106.8, which addresses lighting zones, backlight, uplight, and glare ratings.

SS C8.1 ENHANCED LIGHT POLLUTION PREVENTION

CREDIT

1-2 points

APPLICABILITY: All projects.

VERIFICATION: Design and Construction Review

SCORING: 1 point each for 12.1.1 and 12.1.2

RELATED CRITERIA: EE P1.0 Energy Efficient Design

SS C8.1 REQUIREMENTS

SS C8.1.1 *Auto-Controlled Outdoor Lighting*

1 point

All outdoor non-emergency lighting will be automatically controlled to turn off after hours. Provide manual override capability for after-hours use with timed automatic shut-off (dark campus scenario).

AND/OR

SS C8.1.2 *Fully Shielded Outdoor Lighting*

1 point

All outdoor lighting for general illumination and color rendition shall be fully shielded, except decorative lamps, which may be partially shielded if less than 2000 fixture lumens or unshielded if less than 20 fixture lumens.

Total outdoor light output per acre shall not exceed 50,000 lumens per acre, of which only 5,000 lumens may be partially shielded or unshielded in rural or park settings or 100,000 lumens per acre of which only 10,000 lumens may be partially shielded or unshielded in all other settings. Sports fields are considered separately. See below.

Sports fields shall be considered Sports Class IV as defined by the illuminating Engineering Society of North America (IESNA) [1] and lighting of them considered Class 1 (Color Rendition) lighting. Illumination of sports fields is exempt from the lumens per acre limits, but shall be designed to achieve no more than the minimum illumination levels defined for Sports Class IV by the IESNA and use only fully shielded fixtures that permit no light to be emitted above the horizontal and be extinguished within 30 minutes of the end of play.

Except for areas requiring color rendition (e.g., sports fields), outdoor lighting for general illumination shall not have a color temperature exceeding 3200 K.

SS C9.1 LIVING SCHOOLYARDS, OUTDOOR CLASSROOMS & GREENERY ***NEW***

Greenery and usable green spaces have many benefits. They have been shown to improve physical and mental health of children and adults. They have also been shown to increase students' attention in class. Green spaces also promote carbon sequestration, enhance biodiversity around the development, increase stormwater retention, and improve the microclimate. In urban areas, green spaces reduce the heat island effect and provide much needed respite from the built environment.

Intent

To provide living, natural, green schoolyards that connect children and adults to nature, promote carbon sequestration, enhance biodiversity of the site, improve rainfall interception, improve the microclimate, reduce heat islands, increase attention in class, and promote better health for students and staff.

Green Schoolyards is a practice in which "Living school grounds are richly layered outdoor environments that strengthen local ecological systems while providing place-based, hands-on learning resources for children and youth of all ages," per Sharon Danks, CEO, Green Schoolyards America. CHPS has adopted the principles of green schoolyards promoted by Green Schoolyards America, in particular the essential elements of immersive, place-based, community-building natural areas where students can explore freely.

Outdoor Classrooms have been part of the CHPS framework since 2009 within the School Gardens credit and became a distinct credit in the Hawaii CHPS Criteria in 2011. With the SARS-CoV-2 pandemic, outdoor classrooms took prominence as an essential consideration. CHPS allows high flexibility in the design and use of outdoor learning spaces while ensuring that fundamentals of a high performance learning area are provided.

Green Plot Ratio (GnPR) is a measure of how much greenery is present on a site, providing an indicator of how well the landscape promotes the values listed above. Green Plot Ratio was developed for urban areas but is useful on any type of site and can be used in conjunction with overall landscape design, green schoolyards planning, and outdoor classroom design. Green Plot Ratio is an alternative option for

establishing sufficient greenery on tight sites lacking space for a distinct natural schoolyard or an outdoor classroom.

In conjunction with II C2.1.3 School Gardens, II C2.1.1 Demonstration Areas, II C8.1 Biophilic & Responsive Design, and SS C5.1 Joint Use of Facilities, living schoolyards, outdoor classrooms, and substantial greenery contribute to a high performance campus.

SS C9.1 LIVING SCHOOLYARDS, OUTDOOR CLASSROOMS & GREENERY

CREDIT

1-3 points

PROJECT TYPE: All projects, Modernizations must have sufficient site work in the scope

VERIFICATION: Design Review, Construction Review

SCORING: 2 points for 9.1.1 or 9.1.2, 1 point for 9.1.3

RELATED CRITERIA: II C2.1.1 Demonstration Areas and 2.1.3 School Gardens, II C6.1 Low/Zero Carbon School, II C8.1 Biophilic & Responsive Design, EQ C13.1 Views, WE P1.0 Outdoor Water Use Budget, WE C2.1 Outdoor Water Use Reduction, SS C2.1 Sustainable Site Use & Sensitive Lands Conservation, SS C5.1 Joint Use of Facilities

SS C9.1 REQUIREMENTS

SS C9.1.1 *Green Schoolyards*

2 points

Green Schoolyards are living outdoor spaces where children interact with and learn from nature. Green Schoolyards integrate play structures, seating, and other structures with nature in order to improve the ecosystem and provide a creative, nature-based activity space. Design and install a green schoolyard that meets the requirements and at least two of the optional features listed below. Green schoolyards can be much more than listed here. Refer to Green Schoolyards America https://www.greenschoolyards.org/ for information and inspiration.

Requirements:

- Contiguous gross square footage shall be large enough for at least 36 students to move freely, and the greater of:
  - 1500 sf minimum, or
  - For new construction, at least equal to 50% of planned hard-surface schoolyard, or
  - For modernizations and additions, converts at least 30% of the existing hard-surface schoolyard.
- No asphalt and other impermeable hard surfaces and no lawn requiring maintenance.
- Provide a variety of places to sit, rest, recreate, observe, and experience the outdoors and that support flexible gathering sizes.
- For existing school sites, the soil must be tested as in II C2.1.3 School Gardens or new soil must be installed.

- Include diverse plantings. Incorporate at least 3 native tree and plant varieties, selecting species that are hardy enough for a schoolyard and that provide seasonal shade. Monocultures are not allowed.
- Be accessible and usable by students of all abilities. [1]

Optional Features:

- For playgrounds, use natural fall zone materials, such as sand or deep mulch, to soften the feel and improve permeability. Crumb rubber does not qualify.
- Create focus around an existing natural feature, such as a stand of trees, a creek, a large rocky area, etc.
- Make the green schoolyard accessible to the community for use during non-school hours.
- Create a physical connection to the school garden, to a Demonstration Area or to another high performance feature of the school, such as Low Impact Development stormwater capture system, renewable energy system, or drought tolerant landscaping. Provide ways for students to move freely between the areas if they are not the same.
- Incorporate low impact development stormwater retention features, such as bioswales or rain gardens.

SS C9.1.2 *Outdoor Classroom*

2 points

Provide at least one outdoor classroom on the school site with the following features:

- Permanently accessible seating for a minimum capacity of 25-32 students for elementary and middle Schools, and a minimum of 25-35 for high schools. The seating should be durable, using natural materials where possible (i.e. tree stumps, wooden benches) and minimize the potential for abuse and damage from vandalism such as skateboarding, yet be flexible enough to accommodate public safety measures, such as distancing and capacity reductions. Outdoor classrooms shall meet CDC and/or local county and district public health best practices, whichever is adopted by the school district. Other furnishings are optional based on curriculum.
- An easily viewable instructional area, free from direct glare from all student seats. Four (4) linear feet of instructional surface is desirable, but not required.
- Provide protection from weather (i.e. direct sunlight, rain, traffic or fumes, and harsh winds).
- The space shall be accessible, or on an accessible route, and signage designating the Outdoor Classroom is highly encouraged, but not mandatory if only 1 classroom is provided.
- Include strategies to mitigate acoustical and visual distractions such as traffic (both major paths of travel within the school and vehicular), parking or recreational spaces, using natural or living materials for screening or sound barriers and much as possible.
- Provide access to utilities (outdoor power, wifi, water) and some means of securable storage for educational support.

SS C9.1.3 *Green Plot Ratio*

1 point

The quantity of greenery in the project can be measured using Green Plot Ratio (GnPR). Achieve a GnPR of at least 1.2 using the calculation shown in Implementation. Only exterior spaces accessible to students are used in calculating the GnPR. If the project scope includes 50% or more of campus, then the calculations must be based on the entire site. If the scope includes less than 50% of campus, then only the scope area must be included.

- The exterior site area shall include:
  - Vertical gardens if visible to students.
  - Swimming pools.
  - Green roofs, roof gardens, and balcony gardens should be included if accessible to the students. The building footprint is not included in the green plot ratio, unless there is an accessible fully planted green roof.
- It shall not include:
  - Year-round bodies of water such as permanent retention ponds and lakes.
  - Easements across campus on which the school has no control.
  - Covered, paved exterior spaces such as covered walkways.
- The school must have a minimum of 50 sf of exterior site area per student.

Note: Owners wishing to pursue a climate-positive landscaping design approach, such as promoted by https://climatepositivedesign.com/challenge, may pursue an Innovation point in II C9.1 by proposing a methodology and a design.

MATERIALS & WASTE (MW).

MW P1.0 STORAGE & COLLECTION OF RECYCLABLES AND ORGANIC WASTE

Providing easily accessible recycling and composting to students, teachers and staff ensures a significant portion of solid waste can be diverted from landfills and incineration/transformation facilities. Diverting paper, cardboard, metals, plastics and organics diminishes the need to extract virgin materials and reduces the generation of greenhouse gases (GHG).

Intent

Facilitate the separation and collection of materials for recycling and composting.

MW P1.0 STORAGE & COLLECTION OF RECYCLABLES AND ORGANIC WASTE

PREREQUISITE

2 points

APPLICABILITY: All Projects

VERIFICATION: Design and Construction Review

MW P1.0 REQUIREMENTS

MW P1.0 *All New Buildings*

2 points

Comply with CALGreen Section 5.410.1 or local recycling or composting ordinance if more restrictive. Additionally, provide easily accessible areas serving the entire school that are dedicated to the collection and storage of materials for recycling. There must be at least one centralized collection point (e.g. loading dock or other common area where waste is typically collected), and ability for separation of recyclables and organic waste where waste is disposed of for classrooms and common areas such as cafeterias, landscaped areas, gyms or multi-purpose rooms.

Provide means for recycling inside each classroom. Administration areas must have one central recycling station set up per 20 employees.

When local waste service providers have ability to divert food waste, provide means for collection of organic waste in food preparation and dining areas. Credit for food waste composting onsite or offsite is given in MW C1.1.

Schools in rural areas are exempt from organic waste recycling as allowed under CALGreen 5.410.1.

For this section, recycling also includes the composting, anaerobic digestion, chipping, grinding, etc. of organic waste. “Organic waste” means green waste, landscape and pruning waste, and nonhazardous wood waste. For the purpose of the criterion, food waste is not included in the definition of organics. Food waste is covered in MW C1.1.

MW C1.1 FOOD WASTE REDUCTION AND PREVENTION

Food waste is the single largest component of waste disposed in landfills, where it generates methane--a greenhouse gas that is 72 times more potent than CO_2. [1] Preventing food waste is not only the best way to keep edible food from being thrown away but it is also the best way to reduce the damaging environmental impacts food waste has on our world.

Intent

Reduce the amount of edible and non-edible food waste going to the landfill.

MW C1.1 FOOD WASTE REDUCTION AND PREVENTION

CREDIT

3 points

APPLICABILITY: All Projects

VERIFICATION: Construction Review

SCORING: 1 point each for 1.1.1-1.1.3

MW C1.1 REQUIREMENTS

MW C1.1.1 *Share Table*

1 point

Reduce the amount of edible food wasted by providing a space within the eating area for a "share table" or other space for students to place and remove unwanted packaged or pre-portioned food. This area may include both refrigerated and non-refrigerated space where the contents are visible from the outside and readily accessible to students. (1, 2)

MW C1.1.2 *Storage & Donation*

1 point

Provide adequate space for the collection and storage of uneaten, edible food for recovery and donation to charitable organizations such as food banks, pantries, or other food recovery organizations, either on-site or to be backhauled to a central kitchen for consolidated collection. For schools serving food prepared at a central location, space should be large enough to hold several collection bins. Refrigerated space should be included to maintain freshness until collection.

MW C1.1.3 *Composting*

1 point

Provide adequate interior and exterior space for the collection and processing of food waste through an on-site or off-site composting system. Collection and processing systems should be sized to divert all food waste from the landfill by composting all scraps from food preparation and uneaten plated food.

MW P2.0 CONSTRUCTION SITE WASTE MANAGEMENT
MW C2.1 CONSTRUCTION SITE WASTE MANAGEMENT

Intent

Divert construction and demolition waste from landfills.

This criterion is very feasible in many parts of the United States. Even if there are limited recycling facilities or waste management recycling companies in the project area, construction waste management can still take place through a sub-contractor sorting the waste into multiple dumpsters. The cost is then associated with the dumpster costs and hauling charges. Recycling construction and demolition (C&D) materials reduces demand for virgin resources and diminishes the need for landfill space. Meet local ordinance requirements concerning C&D materials at construction sites, if applicable; and develop and implement a C&D waste management plan, quantifying material diversion by weight.

MW P2.0 CONSTRUCTION SITE WASTE MANAGEMENT

PREREQUISITE

0 points

APPLICABILITY: All Projects

VERIFICATION: Design and Construction Review

MW P2.0 REQUIREMENTS

MW P2.0

Comply with CALGreen Section 5.408.1, which requires at least 65% (by weight) of non-hazardous construction and demolition waste to be recycled or salvaged.

MW C2.1 CONSTRUCTION SITE WASTE MANAGEMENT

CREDIT

2-4 points

APPLICABILITY: All Projects

VERIFICATION: Design and Construction Review

SCORING: 2-4 points for 2.1.1 or 3 points for 2.1.2

MW C2.1 REQUIREMENTS

MW C2.1.1 *Recycle, Reuse, Salvage*

2-4 points

Recycle, reuse, and/or salvage at least 50% (by weight) of non-hazardous construction and demolition waste, not including land clearing and associated debris. Points awarded per the thresholds below.

- 50% (2 points)
- 75% (3 points)
- 90% (4 points)

OR

MW C2.1.2 *Waste Recovery Plan*

3 points Develop a comprehensive Waste Recovery Plan such that a minimum of 50% (by weight) of non-hazardous construction and demolition waste, not including land clearing and associated debris is reused or salvaged by donating or selling to a reuse organization within 1000 miles.

MW C3.1 CERTIFIED WOOD & RECYCLED CONTENT MATERIALS

Sustainably sourcing materials is an important component of healthy, green schools. Wood grown and harvested in an ecological manner is a truly sustainable material that is renewable, biodegradable, energy efficient and recyclable. The Forest Stewardship Council (FSC) guidelines help to ensure wood is grown and harvested with responsible forest management practices. [5]

Intent

Reduce the environmental impacts associated with harvesting or extraction and processing of wood and virgin materials.

The number and variety of products using recycled-content materials expands every year. Using these materials closes the recycling loop by creating markets for materials collected through recycling programs across the country. It also reduces the use of virgin materials and landfill waste. Recycled-content alternatives exist for all major building materials and surfaces. Recycled content may contain hazardous materials, however. Products with recycled content, including crumb rubber, must not contain lead, other heavy metals, or other contaminants.

MW C3.1 CERTIFIED WOOD & RECYCLED CONTENT MATERIALS

CREDIT

1-3 points

APPLICABILITY: All Projects

VERIFICATION: Construction Review

SCORING: 1 point for 3.1.1 and/or 1-2 points for 3.1.2

MW C3.1 REQUIREMENTS

MW C3.1.1 *Certified Wood*

1 point

Use a minimum of 50% of wood-based materials, by cost, certified in accordance with one of the following programs. This includes, but is not limited to, framing, flooring, finishes and built in cabinetry.

- Forest Stewardship Council (FSC) [5]
- NWFA Responsible Procurement Program (RPP) for flooring products only [6]

MW C3.1.2 *Recycled Content*

1-2 points

Select one of the following approaches to identify materials specified with recycled content:

Prescriptive Approach:

For 1 point, specify and install at least four major materials from Table MW3-1, Minimum Recycled Content Levels. For 2 points, specify and install at least eight major materials.

OR

Performance Approach:

The weighted average recycled-content value by cost is at least 10% (post-consumer + ½ pre-consumer) for 1 point or at least 20% for 2 points.

MW C4.1 BUILDING REUSE

Some states have banned the disposal of construction materials from landfills, which forces schools to consider other ways of dealing with demolition waste, including whether to reuse any elements. [1] Reusing parts of the building can save significant money and resources while greatly reducing the amount of construction waste.

Intent

Reduce waste and costs by reusing the building envelope and/or interior materials, either from on site or off site.

Care must be taken to ensure that any environmental hazards such as toxins, lead, and asbestos have been identified and addressed. The impact of the existing building envelope on many important high-performance areas such as space programming, energy performance, opportunities for daylighting, and indoor air quality must be considered too. Develop a list of benefits and tradeoffs, and make the decision to reuse exterior elements, interior materials, or salvaged materials based upon the overall, integrated design tradeoffs.

MW C4.1 BUILDING REUSE

CREDIT

1-2 points

APPLICABILITY: All projects that reuse the building shell.

VERIFICATION: Design and Construction Review

SCORING: 1-2 points for percentage reused

MW C4.1 REQUIREMENTS

Building Shell Reuse

Reuse large portions of existing structures during renovation or redevelopment projects. Maintain at least 25% of existing building structure and shell (exterior skin and framing, excluding window assemblies). Hazardous materials that are remediated as part of the project scope AND elements requiring replacement due to unsound material condition must be excluded from the calculation of the percent maintained. Points are allocated by threshold as follows:

- Maintain 25% of existing structure and shell (1 point)
- Maintain 50% of existing structure and shell (2 points)

MW C5.1 ENVIRONMENTAL PRODUCT DECLARATIONS

Environmental product declarations (EPDs) help manufacturers and specifiers make better decisions when selecting materials so that the materials used provide minimal impact on the environment and human health throughout their lifecycles.

Intent

Specify materials that have been evaluated for their lifecycle impacts on the environment.

Manufacturers and specifiers that are committed to understanding their products' impact on the environment and on human health should be recognized for their efforts.

MW C5.1 ENVIRONMENTAL PRODUCT DECLARATIONS

CREDIT

2 points

APPLICABILITY: All projects

VERIFICATION: Construction Review

MW C5.1 REQUIREMENTS

Select 10 products that contain a third party certified Environmental Product Declaration conforming to the requirements of ISO 14025 on Type III environmental declarations and/or ISO 21930 on environmental declarations of building products. The EPD must justify the omission of any impact category in narrative form within the document. Products may have an EPD to the European standard EN 15804 or an equivalent LCA for embodied carbon.

OPERATIONS (OM)

OM P1.0 FACILITY STAFF & OCCUPANT TRAINING

The design and construction of the school may incorporate all the latest high performance features, yet problems after occupancy can occur simply because important information is not transferred from the design and construction teams to the school facilities and maintenance staff or to the building occupants. Training for facilities and maintenance staff is essential to the performance of the building but is often not performed or is hastily completed.

Intent

Training is the foundation of effective maintenance programs and is an essential tool to maintain and receive the high performance benefits such as protecting indoor air quality, thermal and visual comfort and maintaining superior energy performance.

Training the teachers and administration staff in how they can control their room environments provides them with an important understanding that will also help the facilities staff keep the building performing optimally and help maintain good air quality and comfort in the classrooms.

OM P1.0 FACILITY STAFF & OCCUPANT TRAINING

PREREQUISITE

2 points

APPLICABILITY: All Projects

VERIFICATION: Construction Review

RELATED CRITERIA: EE P2.0 Commissioning, EQ C11.1 Controllability of Indoor Environment, WE P2.0 Outdoor Water Use Reduction, OM C5.1 Indoor Environmental Management

OM P1.0 REQUIREMENTS

2 points

Do all of the following:

Facility Staff Training and Operations & Maintenance Manual

Facility staff must receive training and operation & maintenance (O&M) documentation on all building systems included in the commissioning scope of work under the EE P3.0 Commissioning Prerequisite as well as systems related to high performance – lighting and shading controls, maintenance of finishes, green cleaning, etc., depending on the scope of the project.

Teacher & Administrative Staff Training and User's Guide

Teachers, administrators, and support staff must be provided with training on operations of lighting, heating, and cooling systems in classrooms, offices, gymnasiums, auditoriums etc. When the school opens, or the modernization is completed, provide training and a brief and easy to understand manual, kiosks, educational display, or demonstration area for school occupants on the high performance aspects of the school. A User's Guide, explaining basic systems operations, shall be developed and available either electronically for download or in a central school location.

OM C2.1 POST-OCCUPANCY TRANSITION

Numerous post occupancy studies over the past decade have shown that a key cause of underperforming buildings is a lack of communication. Post-Occupancy Transition requirements aim to address this weakness by capturing feedback from users and operators and using that feedback to better communicate design intent and operation in a three-part process.

Intent

To ensure that facilities actually perform to design expectations and meet the Owner's operations requirements, by both obtaining user feedback and transferring design knowledge during the critical handoff phase after construction.

Reach Out – with a brief Post Occupancy Survey to obtain feedback shortly after training is complete.

Engage – in an integrated post-occupancy transition meeting 3 months after substantial completion. Review the results of the survey and ensure that the occupants understand how to control and best use their buildings, are comfortable, can work effectively, and have realistic expectations. The goal is to confirm that operators are efficiently running systems and meeting the needs of the users and that the entire group balances saving energy and staying comfortable, noise versus ventilation, daylight and shading devices versus the impact on energy use and technology systems, plug load and energy conservation.

Enhance - the feedback gained through this interaction helps the design team, school, and district facilities staff better understand users' needs and experience of the building to fine tune, de-bug, and correct systems and record lessons learned. This is an opportunity to create a virtuous circle to encourage the development of a body of knowledge and a process that helps the users into the future maintain a high performance environment and institutional knowledge, in spite of the usual obstacles of change of personnel, change of programs and the like.

OM C2.1 POST OCCUPANCY TRANSITION

CREDIT

2 points APPLICABILITY: All Projects

VERIFICATION: Construction Review

OM C2.1 REQUIREMENTS

2 points Do all the following:

Post-Occupancy Survey (POS)

Conduct a brief Post Occupancy survey for the project after the prerequisite (Facility Staff and Occupant Training) process is complete but within 3 months of occupancy. Survey must be given to all staff and faculty. Prepare the results for distribution at the Post-Occupancy Transition meeting.

Post-Occupancy Transition Meeting & Action Items

Conduct an integrated design and operations meeting 3 months after occupancy. Ensure the required representatives attend. Distribute the results of the POS for discussion; determine action items for adjustments to building systems and/or further education for occupants. The school or district must commit to complete the action items as determined

the Post-Occupancy Transition Meeting within 9 months of occupancy to fine tune and correct systems.

OM P3.0 ENERGY & GHG PERFORMANCE BENCHMARKING

Intent

Track energy and water use and GHG emissions over time to ensure continued high performance, maximize savings, and monitor the climate impact of the building.

Benchmarking school energy use can be one of the most straightforward and simple methods available to help keep a school operating efficiently. Energy benchmarking typically shows how a school is operating compared to its peers or to itself—with multiple years of utility data—and shows how well a school operates from year to year. Good benchmarking systems account for yearly changes in weather and track energy use per square foot per year. Tracking water use is a companion to tracking energy use because of the inherent energy savings from water efficiency. GHG emissions are also easy to piggyback on energy tracking using standard multipliers. Some benchmarking tools calculate GHG emissions automatically.

OM P3.0 ENERGY & GHG PERFORMANCE BENCHMARKING

PREREQUISITE

2 points

APPLICABILITY: All Projects

VERIFICATION: Design Review

RELATED CRITERIA: EE P1.0/C1.1 Energy Efficient Design

OM P3.0 REQUIREMENTS

2 points

The school must 1) adopt a policy of benchmarking to track its energy and water use and GHG emissions over time and 2) commit to conducting a post-occupancy analysis of the school's energy performance and water use after 1-2 years or perform recommissioning after 2-5 years.

OM C4.1 HIGH PERFORMANCE OPERATIONS & SYSTEM MAINTENANCE PLAN

One of the prime methods to maintain, enhance or promote high performance operation is to monitor and benchmark the ongoing performance of schools once occupied. There are seven key metrics that should be tracked: energy efficiency, thermal comfort, visual comfort, indoor air quality, acoustics, water efficiency, waste reduction, and greenhouse gas emissions.

Intent

Ensure that the school project meets its design intent in providing a healthy, efficient, and environmentally responsive place to learn and work. Keep key building systems properly maintained over time and ensure on-going performance and system life.

Other highly effective techniques to sustain high performance is by designation of key positions in a school system: A district wide manager to oversee energy and water usage, performance targets and coordinate efficiency policies and foster behavioral change; and, at the school site level, the designation of an advocate to promote these policies.

The Systems Maintenance Plan is one of the most important features of a high performance school since it establishes the practices that will continue to ensure the school is operated according to its high performance intent. The Systems Maintenance Plan is a key part of commissioning and has a strong connection to other energy efficiency performance items such as energy benchmarking.

OM C4.1 HIGH PERFORMANCE OPERATIONS & SYSTEM MAINTENANCE PLAN

1-5 points

APPLICABILITY: All Projects

VERIFICATION: Construction Review

SCORING: 1 point each for 4.1.1-4.1.3, 2 points for 4.1.4

RELATED CRITERIA: EE P2.0 Commissioning, OM P3.0 Energy Benchmarking, OM C5.1 Indoor Air Quality Management

OM C4.1 REQUIREMENTS

OM C4.1.1 *Monitoring and Benchmarking*

1 point Commit to monitor any three metrics beyond energy efficiency and GHG (OM P1.0) for a minimum of 3 years post-occupancy. See Implementation for guidance.

AND/OR

OM C4.1.2 *Designated Resource Manager*

1 point The school administration must designate a permanent energy and water manager(s) to set performance targets, monitor usage, and coordinate and support school level advocates.

AND/OR

OM C4.1.3 *Designated Advocate*

1 point Designate a school-based advocate to provide education and awareness on energy and

water reduction programs and targets to promote behavioral change.

OM C4.1.4 *Systems Maintenance Plan*

2 points

The administration must create a school Systems Maintenance Plan that includes an inventory of all equipment in the new or renovated school with a schedule of all preventative and routine maintenance needed. The plan should clearly define who is responsible for performing the task, as well as the overall management of maintenance activities. The inventory and plan should cover the following systems:

1. Electrical Systems
   - Lighting fixtures and controls (daylight, occupancy, timing switches, etc.)
   - On-site renewable solar electric or wind systems
   - Telecommunication systems
   - Electrical distribution systems
   - Life and safety systems
2. HVAC Systems
   - HVAC systems (such as hot water systems, chilled water systems, central air systems, ventilation systems)
   - Domestic hot water systems
   - Energy Management system
   - Renewable energy heating systems (if applicable)
3. Plumbing Systems
   - Flow control devices
   - Pumping systems
   - Special hazardous waste treatment systems (e.g. for lab wastes)
   - Domestic hot water systems
   - Graywater systems (if applicable)
4. Building Envelope and Roofing Systems (particularly acid management)
5. Significant Plug Loads
6. Other High Performance systems as applicable.

OM C5.1 INDOOR ENVIRONMENTAL MANAGEMENT

According to the US Environmental Protection Agency (US EPA), the indoor environment may contain levels of air pollutants that are 2-5 times higher, and occasionally 100 times higher, than outdoor levels. Poor indoor air quality (IAQ) can cause headaches, fatigue, asthma attacks, and ultimately absenteeism. Asthma can be a leading cause of school absenteeism due to chronic illness (US EPA).

Intent

Protect student and staff health and the environment by monitoring and correcting indoor air quality problems, reducing the risk of exposure to hazardous cleaning products and practices, and reduce the risk of pesticide exposure.

Cleaning practices, response protocols when a problem is reported, and pest management all contribute to good indoor air and environmental quality. An Indoor Environmental Management Plan guides staff in preventing and addressing issues. The use of green cleaning products and practices supports the goal of maintaining a healthy,

safe, and clean environment for students, faculty, and staff. Integrated pest management focuses on using effective, least-toxic methods to prevent pests and the health hazards they may bring with them as well as reduces the potential exposure of occupants to pesticides.

OM C5.1 INDOOR ENVIRONMENTAL MANAGEMENT

CREDIT

1-3 points

APPLICABILITY: All Projects

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: All of EQ

SCORING: 1 point for each of 5.1.1-5.1.3

OM C5.1 REQUIREMENTS

OM C5.1.1 *Indoor Environmental Management Plan*

1 point

Develop and adopt an indoor environmental management plan using the US EPA's Tools for Schools Program [1] or equivalent indoor health & safety program at the school district level. [4] Assign staff to the program and commit to take significant action within a two-year period, such as staff training, policy implementation, development of personnel infrastructure for problem solving and reporting issues, or IAQ assessment activities such as school walk-throughs, data collection, mapping, and/or action plans.

OM C5.1.2 *Green Cleaning*

1 point

For schools that do their own cleaning:

At the district or governing body level, establish a resolution or policy including the following green cleaning and maintenance requirements:

- Purchase of only environmentally preferable and safer cleaning products that are certified by Green Seal or EcoLogo programs. If no third party certification is available for a specialty product, then EPA's Safer Choice (formerly Design for the Environment) label may be used. [5,6,7]
- Prohibition of aerosol and plug-in air fresheners.
- Use of only CRI certified vacuums or other HEPA vacuums. [8]
- Prohibition of teachers and staff bringing in their own products.

As applicable, create an audit of current product inventory (if any) and purchasing practices to identify where green items or approaches can be used as replacements. If a green product policy already exists, review it and update it for references to current or new product certifications.

For schools that use a cleaning service:

Ensure that the contract requires the use of green cleaning supplies meeting nationally recognized standards and requires training for custodial staff. Alternatively, the vendor can be certified by the International Janitorial Cleaning Services Association (IJCSA) (11).

OM C5.1.3 *Integrated Pest Management*

Develop and support an Integrated Pest Management (IPM) Plan (12) that emphasizes a least-toxic approach to IPM.

AND

Design the project's exterior walls, foundation, attics, roofs, interior partitions and ceilings in food storage areas, food preparation and disposal areas, utility chases and penetrations, for integrated pest management by making it difficult for pests to enter the building including, as applicable (13):

- Blocking openings in the enclosure larger than 1/4" by 3/8".
- Use mesh or screens on openings required for airflow.
- Caulk all cracks larger than 1/16".
- Any landscape planting must be located at least two feet from buildings.
- Facades should be designed to discourage birds from roosting.
- Select dumpsters that seal tightly and are easy for people to open and close, and enclosure designed to discourage pest infestation in buildings.
- Make all kitchen surfaces easy to degrease.

OM P6.0 ANTI-IDLING MEASURES
OM C6.1 ADDITIONAL ANTI-IDLING MEASURES

According to the US Environmental Protection Agency (US EPA) [1] and others, exposure to vehicle exhaust, even at low levels, is a serious health hazard and can cause respiratory problems such as asthma and bronchitis. Diesel emissions are well-documented asthma triggers and may increase the severity of asthma attacks. Other types of air pollution, including ultrafine particles, can impact heart and brain health [2,3]. Such particles can make their way indoors in buildings near busy roadways.

Intent

Reduce the health and environmental effects of vehicle exhaust and decrease use of fuel by preventing unnecessary vehicle idling.

OM P6.0 ANTI-IDLING MEASURES

PREREQUISITE

point

APPLICABILITY: All Projects

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: SS C2.1 Sustainable Site Use

OM P6.0 REQUIREMENTS

Comply with 13 CCR 2480, which states that any driver of a school bus, school pupil activity bus, youth bus, general public paratransit vehicle, transit bus or of a commercial motor vehicle:

- Must turn off the bus or vehicle engine upon stopping at a school or within 100 feet of a school, and must not turn the bus or vehicle engine on more than 30 seconds before beginning to depart from a school or from within 100 feet of a school; and
- Must not cause or allow a bus or vehicle to idle at any location greater than 100 feet from a school for more than five consecutive minutes or a period or periods aggregating more than five minutes in any one hour.

OM C6.1 ADDITIONAL ANTI-IDLING MEASURES

CREDIT

1 point

APPLICABILITY: All Projects

VERIFICATION: Design Review, Construction Review

RELATED CRITERIA: SS C2.1 Sustainable Site Use

OM C6.1 REQUIREMENTS

- Adopt a no idling policy that applies to all school buses operating in the school district and all vehicles operating in the school grounds. The policy must include the following provisions: School bus drivers will shut off bus engines upon reaching destination, and buses will not idle for more than five minutes while waiting for passengers. This rule applies to all bus use including daily route travel, field trips, and transportation to and from athletic events. School buses should not be restarted until they are ready to depart and there is a clear path to exit the pick-up area.
- Post signage expressly prohibiting the idling of all vehicles for more than five minutes in the school zone.
- Transportation operations staff will evaluate and shorten bus routes whenever possible, particularly for older buses with the least effective emissions control.
- All school district bus drivers will complete a “no idling” training session at least once. All bus drivers will receive a copy of the school district’s No Idling Policy at the beginning of every school year.

OM C7.1 GREEN POWER

School districts and municipalities have the opportunity to purchase green power in multiple forms, including Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs). These mechanisms allow schools to use green power without constructing an on-site renewable power system. CHPS has adopted the Zero-Code approach for quantifying off-site generation and applying it toward school usage. [2]

Intent

Reduce the use of fossil fuel energy sources.

OM C7.1 GREEN POWER

CREDIT

1-2 points

APPLICABILITY: All Projects

VERIFICATION: Design Review

RELATED CRITERIA: EE P1.0/C1.1 Energy Efficient Design, II C4.1 School Master Plan, II C6.1 Low/Zero GHG School

OM C7.1 REQUIREMENTS

1-2 points

Contract for (or commit to) off-site renewables, green power and/or RECs for 15 years, at an adjusted annual quantity of at lesat 75% of estimated building energy consumption. Purchased energy quantities shall be adjusted by weighting factors derived from the "Zero Code Off-site Procurement of Renewable Energy Technical Support Document" (April 2018), as follows:

Class 1 (Self Owned Off-Site, Community Solar, Virtual PPA, REIFs) = 0.75

Class 2 (Direct Access, Green Retail Tariffs) = 0.55

Class 3 (Unbundled RECs) = 0.20

Alternative approaches are allowed with CHPS approval.

Calculation:

$$\text{Purchased Renewables} \times \text{Adjustment Factor} = \text{Adjusted Purchased Renewables}$$

$$\text{Adjusted Purchased Renewables} / \text{Total Building Energy Usage} = \%\ \text{off} - \text{site renewables}$$

Purchased Renewables must meet all other requirements of Zero Code.

If green power is purchased at the district level, it must be allocated to the project to achieve the point. If the electricity utility provides green power at no additional cost, school can claim this credit.

Points are awarded per the following thresholds:

- 75% of estimated building consumption (1 point)
- 100% of estimated building consumption (2 points)

TABLE A: MAJOR MODERNIZATION REQUIREMENTS – *UNDER DEVELOPMENT*

Prerequisite	Systems and Surfaces Substantially Improved	Requirement
II P1.0 Integrated Design		Always Required; flexibility in timing of meetings allowed
II P2.0 Central Educational Display		Required only in gut rehab or building conversion
EQ P1.0 Ventilation & IAQ	HVAC	Required, some exceptions may apply
EQ P2.0 Off-Gassing	Interior Surfaces	Always Required
EQ P3.0 Outdoor Moisture Management	Envelope, Site	Required based on scope
EQ P6.0 Low Emitting Materials	Paints & Coatings Flooring Composite Wood	Required for each category substantially improved
EQ P10.0 Thermal Comfort	HVAC, Envelope, Interior	Required based on scope
EQ P12.0 Glare Protection	Envelope	Required only if impacts at least 70% of classrooms, libraries & administrative spaces. Exceptions: Structural constraints, physical constraints, i.e., HVAC or electrical conduit systems, rooms without exterior access or site obstructions, but must still meet 50% threshold.
EQ P15.0 Acoustical Performance	Interior	Reverberation time; if includes windows/doors/walls then noise transmission within scope
	HVAC	Background noise
	Envelope	Background noise and exterior noise if includes windows/doors/walls
EE P1.0 Energy Efficient Design	HVAC, Envelope, Lighting	Performance or prescriptive parts of Title 24 are triggered by specific scope; always required for additions
EE P2.0 Commissioning		Always Required
EE P3.0 Mandatory Controls	Lighting, HVAC	Required based on scope
WE P1.0 Indoor Potable Water Use Reduction	Interior Systems	Required if plumbing fixtures are in scope
WE P2.0 Outdoor Water Use Budget	Site	Required only if irrigation is in scope
SS P1.0 Environmental Site Assessment		Always Required
SS P3.0 Erosion & Pollutant Control During Construction	Site, Envelope, HVAC	Required based on scope
SS P6.0 Bicycle Parking	Site, Envelope	Required if addition is in scope
SS P8.0 Outdoor Light Pollution Prevention	Outdoor Lighting	Required if outdoor lighting in scope

TABLE A Continued

Prerequisite	Systems and Surfaces Substantially Improved	Requirement
MW P1.0 Storage & Collection of Recyclables and Organic Waste	Envelope, Interior	Always Required
MW P2.0 Construction Waste Management	All	Always Required
OM P1.0 Facility Staff & Occupant Training	All	Required for facility staff on systems in scope
	HVAC, Lighting, Interior	Required for teachers & staff on systems they use
OM P3.0 Energy & GHG Performance Benchmarking	HVAC, Lighting, Envelope	Required when more than 50% of school is within pertinent scope of work
OM P6.0 ATCM to Limit Idling at Schools		Not Required

TABLE B: NON-CLASSROOM REQUIREMENTS[12]

Prerequisite	Requirement
II P1.0 Integrated Design	Always Required
II P2.0 Central Educational Display	Required for buildings with student use
EQ P1.0 Ventilation & IAQ	Required based on scope
EQ P2.0 Off-Gassing	Required based on scope
EQ P3.0 Outdoor Moisture Management	Required based on scope
EQ P6.0 Low Emitting Materials	Required based on scope
EQ P10.0 Thermal Comfort	Required if classroom, library, or admin spaces in scope
EQ P12.0 Glare Protection	Required if admin spaces or libraries are part of scope
EQ P15.0 Acoustical Performance	Not required unless there is a core learning classroom
EE P1.0 Energy Efficient Design	Required based on scope
EE P2.0 Commissioning	Always Required
EE P3.0 Mandatory Controls	Required based on scope
WE P1.0 Indoor Potable Water Use Reduction	Required if plumbing fixtures are in scope
WE P2.0 Outdoor Water Use Budget	Required if irrigation is in scope
SS P1.0 Environmental Site Assessment	Always Required
SS P3.0 Erosion & Pollutant Control During Construction	Required based on site size
SS P6.0 Bicycle Parking	Required based on code
SS P8.0 Light Pollution Reduction	Required based on scope
MW P1.0 Storage & Collection of Recyclables and Organic Waste	Required based on scope
MW P2.0 Construction Waste Management	Always Required
OM P1.0 Facility Staff & Occupant Training	Required based on scope
OM P3.0 Energy & GHG Performance Benchmarking	Required based on scope
OM P6.0 ATCM to Limit Idling at Schools	Required if drop off area is in scope

1. Non-classroom is defined as having up to 1 core learning classroom. Ancillary learning spaces, such as practice rooms, do not count as classrooms for the purpose of prerequisites.
2. For non-classroom modernization scopes, refer to Table A as well.