SECTION 01 81 13
Sustainability
Design Standard

PART 1 GENERAL

1.1 PURPOSE

Public institutions have a fiduciary responsibility to build and maintain the highest quality, healthiest and most efficient learning environments possible. In addition, public higher educational settings influence the ideals and principles of our future decision makers. Thus, San Mateo County Community College District (SMCCCD) holds an important role in practicing and promoting sustainability. SMCCCD is determined to fulfill our responsibility in meeting the highest sustainability standards to encourage positive change through example and uphold our commitments to high quality, accessible education. From a campus-wide level to individual classrooms, our aim is to use place, projects and problems as a living laboratory from which everyone can learn.

Each campus within SMCCCD has developed its own Sustainability Plan. These plans, along with the comprehensive suite of programs within the District Sustainability Initiative guide the District and the broader community college system in California. The goal of the District Sustainability Initiative is to help promote sustainability, drive positive change, and influence future generations to continue to apply sustainability concepts throughout their lives. This Sustainability Design Standards are key to the District Sustainability Initiative; helping the District and its constituents align and implement the goals of the District Sustainability Initiative that are germane to campus building projects.

SMCCCD regards capital projects as an opportunity to demonstrate through action our commitment to sustainable design and construction. SMCCD is driven to provide continued leadership in sustainability. We have received recognition for our efforts including the following:

A. 2005 Flex Your Power Award for energy efficiency

B. Recognized by Environment California in August 2006 for our commitment to energy efficiency and reduction in global warming pollution.

C. Receiving energy efficiency rebates in excess of $1 million for energy conservation measures.

D. Being cited as the model for San Mateo County schools for best construction practices by the San Mateo Grand Jury.

E. 2011 Sustainable San Mateo County Green Building Award

F. 2014 and 2017 APPA Award for Sustainability and Environmental Stewardship in Facilities Management

G. 2017 and 2018 California Community Colleges Board of Governor’s Energy and Sustainability awards

H. 2018 California Higher Education Best Practices awards in: Waste Reduction, Water Efficiency, and Energy Efficiency

PART 2 DESIGN STANDARD

To truly embrace the value of sustainability, equal consideration must be given to environmental, social, and economic costs and benefits The goals below should be taken into account when designing capital projects for SMCCCD. These goals tie directly to the matrix being provided as Appendix A.

2. 1 USE AN INTEGRATED APPROACH TO BUILDING DESIGN & CONSTRUCTION

The best buildings result from continual, organized collaboration among all players. Engage in a collaborative and integrated design process for active and continuing participation of users, designers, engineers, operators and sustainability staff from SMCCCD in all building projects.

A. In the formative design phase, identify sustainability priorities and key milestones in the project timeline.

B. Achieve LEED Gold certification for all new construction projects and major modernizations .

C. Perform Life Cycle Cost Analysis on Major Equipment systems, any fossil fuel using systems compared to their electric alternatives, and any value engineering proposals The current California indexed price for carbon (or CO_2 emissions equivalent) shall be used within the life cycle calculation for all fossil fuel using equipment.

D. Apply for all available utility incentives, assist in grant applications, and ensure follow through with all applicable programs including, but not limited to, PG&E's Savings by Design.

2.2 TAKE AN ECOLOGICAL SITE DESIGN APPROACH

Land is a crucial component of the built environment and ecological approaches to site design shall minimize negative environmental impacts and support healthy and natural ecological processes while ensuring that site and building design fit the campus aesthetic and create a unique sense of place. SMCCCD aims to integrate landscape and people with living processes naturally occurring on its campuses.

Maintain and restore regional landscaping.

A. Protect and preserve soil, water, access to daylight, and regional biodiversity.

B. Limit long term site operating impacts and costs.

2.3 REDUCE FOSSIL FUEL RELIANCE AND ENERGY COSTS

Implementing strategies to save energy and utilizing renewable energy sources will reduce operating costs and the campus' reliance on fossil fuels. SMCCCD is developing a Climate Action Plan. Climate change is a challenge of sobering magnitude and urgency, which will require society to draw on its extraordinary capacity for resilience and innovation.

A. Prioritize passive strategies.

B. Model and Achieve Energy Use Intensity (EUI) of less than 25 for offices and classrooms. Laboratories and other use types shall consult with District sustainability staff on EUI targets

C. Provide infrastructure for future renewable energy installations and design for on-site renewable energy systems.

D. Use electrical equipment only.

E. Perform ongoing energy modeling as required for LEED, Savings by Design (or other applicable utility incentive program), and Title 24 as required. Submit updated models to District staff as requested, use models to make efficiency decisions throughout the project and submit a final model no later than substantial completion. Final models will be used as a basis of comparison of observed energy actual performance one year after start of operations.

F. Provide the necessary connectivity, ratings and space allocation for each new building such that adjacent renewable energy sources or other power generation systems that SMCCCD decides to utilize in the future can be connected at the adjacent services. A spare 3-phase breaker shall be indicated at the electrical service equipment for connectivity and associated metering.

2.4 RESPONSIBLY MANAGE WATER

Water is a valuable resource fundamental to health, economy, and the environment; in California, water, especially potable water, is precious and conservation is critical. SMCCCD plans to manage water on its campuses responsibly and conserve wherever possible.

A. Meet or exceed SMCCCD's Storm Water Management Plan for reduction of discharge to net zero increase from existing conditions.

B. Take necessary measures to reduce and eliminate pollutants of concern from entering sensitive waterways.

C. Provide for "slow, sink, spread" with storm water management

D. Prioritize irrigation reduction through appropriate site strategies.

E. Reduce potable water consumption by 50% from SMCCCD consumption baseline in 2013.

F. Use reclaimed water for non-potable purposes when possible and install infrastructure for future reclaimed water uses.

G. Water projects at CSM shall measure the effects on the water conveyance system and, specifically, quantify the impacts of transporting and treating water on the District’s energy use.

2.5 RESPONSIBLY SOURCE MATERIALS

Responsible sourcing of construction materials provides a holistic approach to supply chain management, product stewardship, and carbon reduction. SMCCCD aims to increase efforts to procure goods that encompass responsible management for product’s social, economic and environmental dimensions.

A. Select materials with sustainable content (recycled, certified wood, low-emitting)

B. Responsibly source materials wherever possible (transparent information on extraction and manufacturing)

C. Refer to the District’s Environmentally Preferable Purchasing Policy (EP3) to ensure products and materials meet district standards.

2.6 MAXIMIZE OCCUPANT COMFORT AND WELL BEING

People spend a majority of their time indoors and therefore, the indoor environment has a significant influence on their health, well-being, and productivity. Student, faculty, and employee's health and comfort directly impacts ability to learn and work productively.

A. Improve occupant comfort and well-being wherever possible

B. Include measures for monitoring comfort, such as but not limited to Carbon dioxide sensors and occupant surveys.

2.7 REDUCE WASTE

Construction and demolition generate enormous quantities of solid waste and reducing waste as well as diverting waste from the landfill provides financial savings in addition to environmental benefits. SMCCCD aspires to reduce waste in all of its construction projects and ensure adequate recycling and composting facilities are designed in their new facilities.

A. Exceed statewide landfill diversion goal of 75% by 2020

B. Donate, re-use, re-furbish, and recycle materials and furniture whenever possible. Refer to SMCCCD's Zero Waste Hierarchy for prioritization.

C. Install at least 1 water bottle refilling station on every floor of a newly constructed or renovated building.

D. Refer to the District's EP3 for standards on products and materials that reduce both upstream and downstream waste and pollution.

2.8 USE THE BUILT ENVIRONMENT AS A TEACHING TOOL

Showcasing green building and site elements provides experiential learning opportunities and positively influences the campus community to champion sustainability. SMCCCD desires the campus to be a teaching tool in order to raise awareness of sustainability issues and efforts to positively influence the behaviors of all campus community members.

A. Create opportunities for learning in the built environment by giving design consideration to how building spaces and systems can be used as a real time teaching tool

B. Provide educational signage with QR codes linking back to the SMCCCD sustainability website as well as real time dashboards to highlight green building strategies

C. Provide a detailed list and user's guide to the building's green attributes

D. Consider that any data generated from the buildings operation can be used as a teaching tool and should be accessible, and easy to understand by the District's stakeholders.

2.9 FACILITATE SUSTAINABLE MANAGEMENT FOR CAMPUS OPERATIONS

Regardless of how sustainable a building may have been in its design and construction, it can only remain so if it is operated responsibly and maintained properly. SMCCCD is committed to ongoing monitoring of their facilities and operation for continuous improvement opportunities.

A. Install meters at appropriate locations to monitor ongoing operations

B. Provide on-going commissioning and operational training

C. Create policies and plans in a digital format to sustainably manage operations

D. While all elements should be considered, every project will need to prioritize its own specific sustainability goals

E. When it makes sense, the District shall direct its consultants and contractors to pursue external recognition and/or design to external criteria such as:

1. Leadership in Energy and Environmental Design (LEED) Gold Savings By Design (PG&E)

2. Energy Star Certified Building and/or Plant

3. Net Zero Energy Building Certification

4. Living Building Certification

5. WELL Building Certification

Existing infrastructure, systems, and campus or district wide strategies should be consulted during the building design phase. Achieving the aforementioned certifications may be more likely when the design/construction team are familiar with and integrating ongoing projects such as the District-Wide Facility Management System upgrade, District Wide Exterior Lighting Upgrade, District-Wide EV Charging Station Installation, Cañada Campus Solar Installation and other projects. It is incumbent upon the design team to inquire about ongoing project efforts and request additional information and guidance for integration where deemed appropriate.

PART 3 EXECUTION

San Mateo County Community College District is committed to quality, sustainable projects that are delivered on time and within budget. In order to achieve this, an integrated and iterative process is highly recommended and may be required. Planning for sustainable design and construction should be done with the team starting at the early stages of the project. Below is a list of recommendations to facilitate the sustainable design process.

3.1 DEVELOP A SUSTAINABILITY ACTION PLAN TO INCLUDE:

A. Designate a dedicated sustainability consultant for each project, and a champion from each team. These champions must be aware of and ensure the project abides by the goals in the applicable Campus Sustainability Plan. List the primary points of contact and their backups in the Sustainability Action Plan

B. Define Roles and Responsibilities within the team

C. Discuss and Define Communications strategies, protocols, and technologies

D. Conduct a Sustainable Design Charrette before or during schematic design that includes all major stakeholders; District (Users and Managers), Architect, Engineers, and Contractor. From this meeting, create the following documents listed under the Owner's Project Requirements (OPR).

3.2 CREATE DETAILED OWNER'S PROJECT REQUIREMENTS TO INCLUDE AT MINIMUM:

A. A list of sustainability goals against which design decisions can be evaluated. Reference any previous data gathered and/or lessons learned

B. Commissioning procedures, steps, and schedules

C. Any external sustainable certifications and criteria to be pursued

D. A prioritized list including required, desired, and lofty goals

E. What evaluation tools will be used for analysis

F. A schedule of deliverables and milestones to be integrated into the overall Project Timeline, which may include such items as OPR, energy model, and LEED documentation

1. Schedule regular project meetings with an interdisciplinary team and include sustainability goals on the agenda.

2. Iterative energy and cost analysis/ ROI process for major design decisions using tools such energy modeling, water calculators, and life cycle analyses. This should begin in schematic design and be used to actively inform the design, going beyond verification of anticipated performance.

3. Iterative Specification development process. Each section/material should be evaluated against the OPR and the front end sustainable design requirements specification section. Start filling in any material calculators early in the process.

3.3 ASSOCIATED DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS

01 81 13 Sustainable Design Requirements

3.4 OTHER REFERENCES

College of San Mateo Sustainability Plan

Canada College Sustainability Plan

Skyline College Sustainability Plan

SMCCCD Storm Water Management Plan

SMCCCD Water Efficiency Plan

SMCCCD Green Office Program Guide

SMCCCD Zero Waste Plan

SMCCCD Environmentally Preferable Purchasing Policy

SMCCCD Zero Net Energy Strategy

SMCCCD Sustainability Website

3.5 APPENDICES A.

A. Appendix A

Matrix of strategies and tools that provide guidance to the team on incorporating SMCCCD's 9 sustainable design goals listed above into each capital project.

B. Appendix B

Sample LEED scorecard for Cañada Building 23

C. Appendix C

Sample LEED scorecard for Skyline Building 12

END OF SECTION

(Appendices follow)

Appendix A

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
1	**USE AN INTEGRATED APPROACH TO BUILDING DESIGN & CONSTRUCTION**						
	DESIGN PROCESS TOOLS						
1.01	**Integrated Design Approach & Milestones**	A collaborative & integrated design process for active & continuing participation of users, design & construction members & establishing clear sustainability priorities & a milestones for collaboration to satisfy the goals of multiple stakeholders while achieving overall project objectives. Example: CSU California Martime Academy Dining Center	As early as possible, identify sustainability priorities & key milestones in order to achieve project sustainability goals.	PD	01 81 13		v3: ID v4: IPc1
1.02	**LEED Certification**	LEED-NC (New Construction) certification provides a recognized mark of achievement in green building.	Achieve LEED Gold Certification for all new construction projects. For major modernizations & renovations, identify opportunities for other LEED certification (CI or EBOM). Outline timelines & strategies for recertification.	SD	01 81 13		v3: 8 prereq's + 60 points v4: 12 prereq's 60 points
1.03	**Owner Project Requirements (OPR)**	Working with SMCCCD to create a project requirements document which outlines the ideas, concepts, & criteria that are determined to be important by the District will help ensure the success of the project, specifically for gold related to energy & water systems.	All projects shall develop an OPR. SMCCCD Priorities: 1. Safety & Security 2. Maintenance/Operations 3. Sustainable Solution	SD	01 91 00	5.410.2.1	v3: EAp1, EAc3 v4: EAp1, EAc1
1.04	**Basis of Design (BOD)**	Developing a clear & concise document that explains the Designer's response to the Owner's goals, expectations & requirements for commissioned systems, will help ensure the success of the project.	All projects shall develop a BOD for energy, water systems & sustainability systems.	SD	01 91 00	5.410.2.2	v3: EAp1, EAc3 v4: EAp1, EAc1
1.05	**Design for Maintenance**	Designing easy access to mechanical equipment will facilitate preventive maintenance programs & ensure that ongoing maintenance & repairs do not disrupt occupants.	Design for easily accessible & maintainable buildings. Meet with facilities during the design process to understand potential issues.	DD			
1.06	**Sustainability Checklist / Summary**	Providing a list of sustainable strategies reminds the team of the project priorities. It also allows provides easily accessible reference info for the Owner, Users & future project designers.	During each phase, complete and distribute the LEED scorecard and Sustainability Checklist, (See Appendix B). On the cover of the project's design documents, complete an Index of Selected Green Building Measures. The index should reference page location and call out details for green building measures within the plan set. Plans shall include necessary details and call outs.	CD	01 81 13		

Footnotes for Category Description

1 - Description of sustainability strategy to be considered in the design/construction process.

2 - Considerations established by SMCCCD to be used in developing project's sustainability goals for specific projects.

3 - Phase of project within which this strategy should first be considered at the start of; strategy should be reviewed in consecutive phases after initial consideration. PD: Pre-Design. SD: Schematic Design. DD: Design Development. CD: Construction Documentation. CA: Construction

4 - Reference to Design Standard section where related detail on strategy can be found.

5 - Reference to CalGreen section where more code requirements can be found; review CalGreen, owner, and MEP for all CalGreen code requirements. Also includes some references to several other mandates.

6 - Strategies that support LEED v3 & v4 credits for the New Construction & Major Renovations Rating System. See scorecards at end of sustainability section for title of each credit listed.

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	DESIGN ANALYSIS TOOLS						
1.07	**Site Analysis**	Assessing the site conditions before design will aid in evaluating sustainable options & inform related decisions about site design. Analysis typically includes topography, hydrology, vegetation, soils, climate/temperature, precipitation, sun/wind patterns, pollution sources, patterns of pedestrian & vehicular movement. It also includes identifying areas to locate stormwater facilities & infiltration areas.	All projects pursuing LEED certification should conduct a site analysis to understand potential for passive design strategies. Review CEQA report for additional considerations. Additional tools for site analysis include LANDMARK utility mapping & ONUMA which can be obtained from the District.	PD	01 81 13		v3: ID v4: SSc1
1.08	**BIM Modeling**	Using building information modeling (BIM) standards created by SMCCCD will help with planning, designing, & construction of facilities as well as provide project with accurate as-built information. Providing BIM models to building management will inform future projects with a reliable basis for decisions during equipment & building's life-cycle.	Identify all major equipment required for BIM modeling & create any models for systems not already provided by SMCCCD to be used on project. Use the LANDMARK utility mapping system to plan around existing site utilities.	SD	BIM Section Division 1		v3: Energy Model v4: Energy Model
1.09	**Daylight Simulation**	Using software to evaluate & improve upon the potential for optimal daylight levels for useful levels of natural illumination will reduce electric lighting needs. Analysis will also help gage performance of design strategies that address discomfort from glare & unwanted solar heat gain. Example: Energy Bioscience Building, UC Berkeley	Conduct daylight simulation on all projects with east, west or south facing facades proposing more than 40% glazing. Prioritize areas where daylight harvesting is ideal for use patterns, such as learning spaces. For these spaces, consider modeling specific rooms even if the whole building is not modeled.	DD	01 81 13		v3: EAp2, EAc1, EQc8 v4: EAp2, EAc2, EQc7
1.10.	**Building Energy Simulation**	Using approved T24 software helps evaluate the relative energy impacts of various design / systems decisions, or Energy Conservation Measures (ECMs).	For all projects which do not need to conduct a T24 model, consult SMCCCD to determine if an energy model analysis should still be provided. For all projects, provide an Energy Use Intensity (EUI) assessment (kBTU/sf).	DD	01 81 13		v3: EAp2, EAc1 v4: EAp2, EAc2
1.11	**Total Cost of Ownership**	Conducting a total cost of ownership analysis as early as possible will help determine the most cost-effective option of building systems among different competing alternatives. It may provide additional motivation to increase building efficiency overall and/or decrease infrastructural footprint / interconnection to campus systems. Total Cost of Ownership includes costs related to purchasing, owning, operating, maintaining &, disposing of an object or process.	Total cost of ownership analysis shall be evaluated over a 50 year time period for both new construction and retrofits. All new construction projects with T24 modeling shall apply to the Savings By Design program. At the earliest opportunity, submit plans. PG&E staff will analyze construction documents & recommend energy efficiency enhancements.	DD			v3: MRc1 v4: -

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	CONSTRUCTION PROCESS						
1.12	**Construction Activity Pollution Prevention Program**	Controlling soil erosion, waterway sedimentation & airborne dust generation will reduce pollution from construction activities.	Create & implement a SWMP plan for all construction activities using the District's SWMP for reference. Meet LEED credit requirements which are comparable to County's C3 code requirements. Contractor shall provide Qualified SWPP Practitioner (QSP) during construction phase to provide monitoring & rain reports. SWPPP document shall be submitted into the SMARTS system.	DD	01 57 01 31 00 00 31 10 00 31 23 33	5.106	v3: SSp1 v4: SSp1
1.13	**Construction Interior Air Quality**	By implementing SMACNCA IAQ strategies, projects will keep pollutants out of the building systems and prevent mold and other damage to building materials.	Contractor shall develop an IAQ plan for work during construction which shall require district approval before construction begins.	CA		5.504.1.3 5.504.3	v3: EQc3.1, EQc3.2 v4: EQc3
1.14	**Building Commissioning**	Implementing a commissioning process will help verify & document that a building & all is systems & assemblies are planned, designed, installed, tested, operated, & maintained to meet the owner's project requirements. Example: University Music Center, CSU Long Beach	All new construction & major modernization projects shall conduct fundamental commissioning. This process shall commence at the start of the design phase & include design reviews at a minimum at the 50% design point & a review of submittals for systems being commissioned. SMCCCD to provide guidance on any additional commissioning activities.	CD	01 91 00 22 08 00 23 05 93 25 55 00 26 08 08	5.410.2 (optional for DSA 306.1.2)	v3: EAp1, EAc3 v4: EAp1, EAc1
1.15	**Envelope Commissioning**	Including the envelope in the commissioning process. This will help to ensure a successful building enclosure meets the Owner's Project Requirements for performance objectives such as moisture, condensation, air flow, & heat flow.	SMCCCD to determine when envelope commissioning is applicable on a project by project basis.	CA			v3: EAc3 v4: EAc1
1.16	**Air Infiltration Testing**	Infiltration testing will determine where air leakages will occur. Addressing points of unwanted airflow will improve energy performance.	Consider using on renovations, net zero energy, high performance projects.	CA			v3: - v4: -
1.17	**Thermal Imaging**	Using thermographic cameras will help detect surface temperatures & determine areas of leakage.	Consider using on renovations, net zero energy, high performance projects.	CA			v3: - v4: -

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
2	**TAKE AN ECOLOGICAL SITE DESIGN APPROACH**						
	ALTERNATIVE TRANSPORTATION						
2.01	**Bicycle Parking**	Providing bicycle parking will encourage utilitarian & recreational physical activity.	Provide visitor bicycle parking for at least 2.5% of all peak visitors to the project.	DD	12 93 13	5.106.4	v3: SSc4.2 v4: LTc6
2.02	**Electric Vehicle Charging Stations**	Providing electric vehicle charging stations will reduce the carbon footprint of the campus.	Provide electric fuel charging stations (or at minimum infrastructure for future installation) 3% of the total vehicle parking capacity assigned to the project. Installations shall be coordinated with the district to ensure functional alignment with existing station infrastructure.	DD	26 27 29	5.106.5.3	v3: SSc4.3 v4: LTc8 (2%)
2.03	**Carpool Spaces**	Providing preferred parking spaces for carpool & vanpool vehicles helps reduce the impact of pollution & l& development.	Designate parking for carpool vehicles for 5% of the total parking spaces assigned to the project.	DD		5.106.5.2	v3: SSc4.4 v4: -
	LANDSCAPE SELECTION						
2.04	**Native & Drought Tolerant Planting / Xeriscaping**	Planting native species helps restore regional landscapes & provides food & shelter for native wildlife. Native & drought tolerant plants also require little to no irrigation, thus conserving water. [Example: Cal Poly Irrigation Conservation]	Give preference to native & native adapted drought tolerant plants that are sourced locally. Turf shall be used judiciously. No mow grasses to be specified at Skyline only.	DD	32 90 00	Exec. Order B-29-15	v3: SSc5.1, WEc1 v4: SSc2, WEp1/c1
2.05	**Biodiversity**	Using a variety of plants provides a more diverse habitat & more seasonal interest, & makes pest & disease damage less noticeable. Plant to imitate naturally occurring vegetation patterns will help restore regional landscapes.	Strategy is most applicable to "Undeveloped Areas"; see design standard for more information.	DD	32 90 00		v3: - v4: -
2.06	**Plant Location & Density**	Using vegetation & vegetated structures to screen building & exposed HVAC units helps reduce building heating & cooling demands. Planting vegetation closer to buildings where there is more moisture will conserve water.	Specify deciduous trees where screening for energy purposes. Consideration shall be made for root growth as not to conflict with building foundations & paving when full grown.	DD	32 90 00		v3: WEc1 v4: WEp1/c1
2.07	**Conservation & Reuse of Soils & Vegetation**	Limiting the disturbance of existing healthy plants & soils helps maintain the existing ecosystem, reduce resource use, & protect soil nutrients. Designing landscapes that require low amounts of regular fertilization also helps maintain a healthy ecosystem.	Provide assessment of healthy soils & appropriate planting within project site. Project teams to establish % to maintain. Strip & stockpile topsoil for reuse on project site. When feasible, relocate existing trees & plants within project site or elsewhere on campus.	CD	32 90 00		v3: - v4: -
2.08	**Wildfire Risk Reduction**	Developing a sustainable, low-fuel landscape in the 100 feet around the building, provides a defensible space in low-wind wildfires.	As part of site maintenance plan describe how fire risk is reduced & include maintenance recommendations including watering & clearing.	CD	32 90 00		v3: - v4: -
2.09	**Site Restoration**	Protecting ecosystem function reduces pressure on underdeveloped land, resource consumption, & helps to restore ecosystem services to damaged site.	Restore or protect 20% of the site (including the building footprint) with native or adaptive vegetation. Remove invasive plants when found.	DD	32 90 00		v3: SSc5.1 v4: SSc2 (30%)

SUSTAINABILITY STRATEGY MATRIX	Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
SITE DEVELOPMENT						
2.10. **Open Space**	Providing a high ratio of open space to development footprint promotes biodiversity.	Provide vegetated open space equal to 20% of the project's site area.	SD	32 90 00		v3: SSc5.2 v4: SSc3 (30%)
2.11 **Hardscape Surfaces**	Reducing heat islands minimizes the impacts on microclimates & human / wildlife habitats by reducing the heat reflectance off of hard surfaces.	Use a combination of measures such as shading, open grid paving, & hardscape with high reflectivity (target SRI of 29). District Standards may override reflectivity to meet certain colors previously identified for campus aesthetics.	CD	32 00 00		v3: SSc7.1 v4: SSc5
2.12 **Outdoor Gathering Spaces**	Designing landscapes to promote outdoor comfort increases users well being & comfort.	Design outdoor gathering spaces in a variety of climatic conditions. Beauty, connectivity, & a sense of place are all high priorities for the District.	DD			v3: - v4: -
2.13 **Living Roof**	Installing planting on a roof can help moderate heat gain/loss, increase membrane durability, manage storm water, moderate Urban Heat Island Effect, help with noise reduction, improve air quality, & provide an amenity. Example: California Academy of Science	Due to cost & maintenance concerns, consider in selective locations where aesthetics & educational opportunities are a priority.	DD			v3: SSc2, SSc5.1, SSc6, SSc7, EAp2, EAc1 v4: SSc2, SSc3, SSc4, SSc5, EAp2, EAc2
3	**REDUCE FOSSIL FUEL RELIANCE & RELATED ENERGY COSTS: Prioritize Passive Strategies**					
PASSIVE SITING / BUILDING DESIGN / VENTILATION						
3.01 **Building Orientation + Shading**	Passive cooling, daylight access, & views can be optimized through building orientation and natural vegetation. See analysis tools to inform the optimal massing & site placement. It may be difficult to orient optimally due to lot size & orientation, but the building form should respond to site conditions as much as possible to take advantage of free, natural daylight, existing/new planting, & natural grading opportunities. Example: Energy Bioscience Building, UC Berkeley	Perform a preliminary simple box energy model that explores how to reduce energy loads & identifies the best massing & orientation. As much as it is possible, orient narrow part of building within 15 degrees of east/west axis to maximize north/south exposure on longer facades. Consider shading opportunities for any new vegetation, particularly trees.	SD	32 90 00		v3: EAp2/c1 v4: IPc1, EAp2/c2
3.02 **Solar Gain / Thermal Mass**	Thermal mass can be used to absorb solar radiation & increase temperature in space. Solar gain increases as the strength of sunlight increases. The ability of intervening material to transmit or resist the radiation also influences heat storage potential.	Use natural & passive strategies wherever possible. Include passive design strategies in any/all energy modeling scenarios.	DD	23 00 00		v3: EAp2/c1, EAc2 v4: EAp2/c2
3.03 **Night-Purge**	In warm season with cool evenings & low-humidity, conducting a flush at night, either naturally or with high outside air rates, helps purge excess heat & cool the building fabric. Example: Department of Global Ecology, Stanford University	Coordinate with District's Operations for automation where feasible.	DD			v3: EAp2/c1, EQp1, EQc1, EQc2 v4: EAp2/c2, EQp1, EQc1

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	PASSIVE SITING / BUILDING DESIGN / VENTILATION (continued)						
3.04	**Natural, Cross Ventilation**	Operable windows on opposite sides of occupied spaces can be used to pull air through the space & will supplement ventilation needs passively. [Ref: Whole Building Design Guidelines] [Example: San Francisco Federal Building]	Higher windows shall be mechanically controlled for ease of use. Operable windows shall be provided with a contact switch to shut down the mechanical cooling (the fan can remain in operation).	SD	23 00 00		v3: EQp1, EQc1, EQc2, EQc6 v4: EQp1, EQc1, EQc5
3.05	**Stack Ventilation**	Atriums & tall spaces with high, operable windows can be used to move hot air up & leave cooler air around occupants. [Example: De Anza College Mediated Learning Center]	Design for stack effect, mitigating or encouraging air transfer from floor to floor. Automate any upper atrium operable windows for better efficiency.	SD	23 00 00		v3: EQp1, EQc1, EQc2, EQc6 v4: EQp1, EQc1, EQc5
	NATURAL DAYLIGHT						
3.06	**Glazing Locations**	Sufficient fenestration area can provide daylighting coverage to at least 75% of floor area, especially in spaces over 5,000sf with ceilings greater than 15ft high or spaces directly under a roof. Clerestory windows & top lighting can significantly contribute to day lighting coverage & quality throughout a day.	Perform daylighting analysis for all classroom & assembly spaces in projects over 10,000sf. Provide considerations for controlling glare. See strategy note 3.08.	SD			v3: EAp2/c1, SSc8 v4: EAp2/c2, SSc6
3.07	**Light Shelves**	Light shelves can be used to more evenly distribute & bounce daylight deeper into the building.		SD			
3.08	**Shade Control**	Daylighting can be monitored & tempered by window treatments that serve multiple functions: solar shading, black-out, glare reduction, thermal insulation, & privacy. Each orientation should be evaluated individually. Consider thermal factor of shades for added energy savings at night. Exterior mounted shades provide better thermal function but are more costly & harder to individually control. [Example: Science and Engineering Building, UC Merced]	Provide shade control for glazing, especially glazing on east & west facades. Avoid use of automated shades, both interior & exterior, for maintenance reasons.	DD	12 00 00		v3: SSc8 v4: SSc6
3	**REDUCE FOSSIL FUEL RELIANCE & RELATED ENERGY COSTS: Exceed T24 savings by 15%**						
	OPENINGS						
3.09	**Window Types**	Choosing high performance windows will minimize thermal bridging & heat gain/loss. Evaluate glazing options based on whole unit performance, thermal breaks, glazing type/performance, & orientation. See strategy note 3.04 & 3.05.	If an energy model analysis is being conducted, window performance & window options shall be part of the analysis. Give consideration to SHGC & opacity of glazing depending on orientation.	DD	23 00 00		v3: EAp2/c1, EQc8 v4: -
3.10.	**Window Size & Locations**	Sizing glazing area based on orientation will realize energy savings. The use of energy modeling tools will help determine optimal wall to glass ratio for each orientation.	Window area shall not exceed 40% of gross exterior wall area on west.	SD			v3: - v4: -
3.11	**Shaft design**	Separating shafts (elevators, atria, stairs, ducts) from the floors they serve by airtight assemblies & providing vestibules with gaskets to control transfer pressure will contribute towards energy savings.	Provide vestibules at primary building entries.	DD			v3: - v4: -

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	WALL & ROOF SYSTEMS						
3.12	**Thermal barriers**	Providing a well defined & continuous thermal barrier will help optimize energy performance.	If an energy model analysis is being conducted, insulation performance & options shall be part of the analysis.	DD	23 00 00		v3: EAp2/c1, MRc4/c5 v4: EAp2/c2, MRc2/c4
3.13	**Air Barriers**	Air barriers help control the unintended movement of air in & out of the building enclosure and are often installed as a wrap that also acts as a moisture barrier.	Consider VOC content of selected product.	DD			v3: - v4: -
3.14	**Double Envelope**	Walls with double skins allow for passive heating, cooling & ventilation in addition to added insulation, shade control & ventilation opportunities. Example: Seattle Justice Center	Consider where south and west facing glazing may increase heat gain and where the addition of a curtainwall will advantageously allow penetration of light to the interior while mitigating heat gain or loss.	DD			v3: EAp2, EAc1 v4: EAp2, EAc2
3.15	**Living Wall**	Planted walls green walls can reduce cooling requirements, as well as help to mitigate the urban heat island effect, protect the envelope by reducing temperature fluctuations of the envelope, and improve indoor air quality and occupant well being.	Due to cost & maintenance concerns, consider in selective locations where aesthetics & educational opportunities are a priority	DD			
3.16	**Living Roof**	See strategy note 2.13.	See Considerations 2.13.	DD			
3.17	**Cool Roof**	Installing a roof with a high solar reflectance will reduce energy usage & urban heat islands.	Provide for all flat, non-visible roofs. Aesthetics should be considered for visible roofs.	CD			v3: SSc7.2, EAp2/c1 v4: SSc5, EAp2/c2
	HEATING, COOLING & VENTILATION: Building Systems						
3.18	**Metering**	See strategy note 9.03.	Provide monitoring and control integration with the Facility management System. Applies to all HVAC categories.	DD	23 05 19 25 55 00	5.303.1 5.304.2	v3: EAc5 v4: EAp3, EAc3, WEp3
3.19	**Chillers**	Properly sized and scheduled chillers to decrease load & increase efficiency. Evaluate impact of refrigerant types in each system (see strategy note 3.18). Ensuring chiller & all connecting systems are well insulated will reduce energy transfer loss. Example: CSU Monterey Library Retrofit	Carefully consider the impact, cost and complexity of building level cooling compared to that of connection with the campus plant (applicable at CAN and CSM). See strategy note 1.11. See also monitoring and control note in 3.18. Thermostat integration and labelling should be discussed with the district.	DD	23 21 15 23 07 00		v3: EAp2, EAc1 v4: EAp2, EAc2
3.20.	**Refrigerant Types**	Evaluate refrigerants for ozone layer depletion effects & global warming potential (GWP) to check for low overall impact on the global environment. Also assess refrigerant for energy efficiency, cost performance, safety & other factors.	Use refrigerants that have an ozone depletion potential of 0 & global warming potential of less than 50. No CFC based refrigerants shall be used.	DD	23 21 15 23 62 00 23 74 00	5.508.1	v3: EAp3, EAc4 v4: EAp4, EAc6

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	HEATING, COOLING & VENTILATION: Building Systems (continued)						
3.21	**AHUs**	Designing for efficiencies in air handling units will contribute to energy savings.	Insulated casings & plenums shall be specified for all units, including those serving heat & vent applications. Provide double wall casings at all locations. Low leakage dampers (2%) shall be provided for mixing box dampers. Variable speed drives shall be installed on the air handlers in a separate conditioned vestibule.	DD	23 75 00		v3: EAp2, EAc1, EQp1, EQc1, EQc2 v4: EAp2, EAc2, EQp1, EQc1
3.22	**AHU Fan Wall Retrofit**	For retrofits of existing AHUs, installing fan walls for any type of structure that requires specific temperature & humidity conditions will provide additional efficiencies. Because of their installation flexibility, operations & maintenance efficiency, & excellent track record for maintaining specific air-quality & acoustical conditions, fan walls are a useful solution for a variety of structures.	Ensure that retrofitted energy systems include monitoring and control points. See Strategy note 9.03.	DD	23 75 00		v3: - v4: -
3.23	**Energy Recovery Systems**	Designing the HVAC system to exchange energy contained in normally exhausted building air/water & using it to precondition the incoming air/water will improve system efficiency.	Consider capturing waste not air for heating and condensate water for irrigation.	DD	23 34 00		v3: EAp2, EAc1 v4: EAp2, EAc2
3.24	**Economizers**	Designing the system to maximize economizer cycles so that when the temperature of the outside air is less than the temperature of the recirculated air will save energy.	Economizers and associated systems shall include control and monitoring points. These points shall be integrated into the Facility Management System using the proper nomenclature, graphics, and other necessary features.	DD	23 75 00 23 74 00		v3: EAp2/c1, EQp1, EQc1, EQc2 v4: EAp2/c2, EQp1, EQc1
3.25	**Variable Volume Terminal Units**	Grouping VAV zoned systems with three to five offices of similar type (floor area, building face exposure, & similar internal loads) increases efficiency. Example: Cal Poly Student Recreation Center (retrofit)	Zone spaces for each orientation separately; consider corner zones to be independently zoned. "Smart Thermostats" as required by code. See also monitoring and control note in 3.18. Thermostat integration and labeling should be discussed with the District.	DD	23 36 00 23 05 53	(CA Energy Code 110.2(c) 120.2.b4)	v3: EAp2/c1, EQp1, EQc1, EQc2 v4: EAp2/c2, EQp1, EQc1
3.26	**MEPS Motors & VFDs**	Motors meeting Motor Efficiency Performance Standards (MEPS) & ones with Variable Frequency Drives (VFD) are energy efficient, suitable for non-overloading operation, & capable of continuous operation at full nameplate rating. Example: Geisel Library, UC San Diego	Motors 1 HP & larger must meet EPA 1992 & meet or exceed T24 (goal from DS). Good to consider for retrofits.	DD	22 05 13 23 05 13 23 09 13	(CA Energy Code 140.4(c)	v3: EAp2, EAc1 v4: EAp2, EAc2

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	HEATING, COOLING & VENTILATION: Building Systems (continued)						
3.27	**Duct Insulation**	Wrapping duct work carrying conditioned air with duct liners or duct wraps minimizes heat transfer loss. Ensure ducts have been sealed to prevent leaks before insulation is applied.	Duct system shall be insulated with fiberglass blanket, unless exposed in conditioned rooms. Insulation on all cold surfaces shall be provided with a vapor barrier jacket, unless internally lined.	CD	23 07 00	CA Energy Code 120.4(b)	v3: - v4: -
3.28	**Duct Configuration**	Centralizing heating & cooling systems so that duct work is minimized & as straight as possible will reduce energy transfer loss & provide most efficient flow.	The general layout should be designed in a way that facilitates access to key mechanical components & monitoring systems.	DD			v3: - v4: -
	HEATING, COOLING & VENTILATION: Localized Systems						
3.29	**Hydronic Radiant Floor Heating & Cooling**	Conditioned water running in tubing that is embedded in the floor to provide heating & cooling uses less energy than a forced air system as water is a more efficient transporter of energy than air. Other benefits include a high level of occupant comfort & a system that is quiet & doesn't distribute dust particulates. Example: Department of Global Ecology, Stanford University	Consider radiant flooring for areas where occupant comfort & air quality are of utmost importance or where air movement should be minimized.	DD	23 83 15		v3: EAp2/c1 v4: EAp2/c2
3.30.	**Hydronic Radiant Ceiling Tiles**	Distributing heating or cooling through radiant panels mounted at the ceiling has similar benefits to radiant floor heating while also providing more even temperature & allowing for better customized controls than many other options. Example: Department of Global Ecology, Stanford University	Consider radiant ceiling panels for retrofit areas.	DD	23 21 10		v3: EAp2/c1 v4: EAp2/c2
3.31	**Chilled Beam**	Chilled beams can reduce the need to treat large amounts of outdoor air for cooling. System will require same minimum outside air as a standard system but it is provided by a dedicated outside air system (DOAS), which is the only fan powered requirement. Example: UC Davis Tahoe Center of Environmental Sciences	If using, provide commissioning guidelines and detailed specifications for humidity control and monitoring and viable condensation mitigation measures.	DD			v3: EAp2/c1 v4: EAp2/c2
3.32	**Ductless Mini-splits**	Ductless heat pumps are energy efficient heating & cooling units that allow for design flexibility, particularly for small spaces & retrofits. They also avoid energy loss associated with ducts in central air systems.	Consider using ductless mini-splits for heating & cooling needs in for retrofits or additions where extending or installing distribution ductwork is not feasible. Choose an Energy Star compliant unit.	DD			v3: EAp2/c1, EQp1, EQc1, EQc6 v4: EAp2/c2, EQp1, EQc1, EQc5
3.33	**Displacement Ventilation**	Displacement ventilation requires a low air velocity supply with limited induction either horizontal or oriented vertically below a low velocity unit. May save energy over standard mixing ventilation & provides superior indoor air quality.	Consider for areas where occupant comfort & air quality are of utmost importance; best suited for taller rooms & atrium spaces.	DD			v3: EAp2/c1, EQp1, EQc1, EQc6.1 v4: EAp2/c2, EQp1, EQc1, EQc5

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	HEATING, COOLING & VENTILATION: Controls						
3.34	**Demand Control Ventilation**	Installing CO2 control system monitors in occupied zones & connecting to AHU air flow so additional conditioned ventilation is only delivered when required helps conserve energy (See strategy note 6.08).	Provide in densely occupied areas such as conference rooms and classrooms.	DD	23 00 00	CA Energy Code 120(c)(3)	v3: EAp2, EAc1, EQc1 v4: EQp1, EQc1, EQc1
3.35	**Relaxed Programming of Temperature Ranges**	Relaxing the controls for temperature set points in transient spaces & non-regularly occupied spaces reduces the extent & quantity of conditioned air/water required.	Summer Cooling: 73°F +/- 3°F Winter Heating: 70°F +/- 3°F	DD	23 00 00		v3: EAp2, EAc1 v4: EQp1, EQc1
	ILLUMINANCE: Exterior Lighting						
3.36	**Lighting Control + Monitoring**	See strategy note 9.03.	Provide monitoring and control integration with existing lighting control infrastructure and Software. Applies to all Illuminance categories.	DD	23 05 19 25 55 00 26 09 26	5.303.1 5.304.2	v3: EAc5 v4: EAp3, EAc3, WEp3
3.37	**Light Pollution Reduction**	Minimizing light trespass & reducing sky-glow increases night sky access & improves visibility through glare reduction.	Use full-cut off fixtures. Weigh the environmental benefits against any potential safety issues. Light levels shall meet minimum ANSI standards for safety.	CD	26 00 00	5.106.8	v3: SSc8, EAp2, EAc1 v4: SSc6, EAp2, EAc2
3.38	**Site Lighting Design**	Reducing lighting power density for site lights will save energy & increase night sky access as does lighting areas only as required for safety & comfort. Example: UC Davis Adaptive Controls for Exterior Lighting	Meet uplight/light trespass requirement. Do not exceed densities from ASHRAE 90.1 & consider reducing LPD by 10%.	DD		5.106.8	v3: SSc8, EAp2, EAc1 v4: SSc6, EAp2, EAc2
3.39	**Building Facade & Entrance Lighting**	Minimizing design accent lighting for buildings, except near entries where entrance lighting is important, will reduce lighting power needed & increase night sky visibility.	Meet uplight/light trespass requirement. Do not exceed densities from ASHRAE 90.1 & consider reducing LPD by 10%.	DD	26 00 00	5.106.8	v3: SSc8, EAp2, EAc1 v4: SSc6, EAp2, EAc2
	ILLUMINANCE: Smart Lighting						
3.40.	**Daylight Sensors**	Daylight sensors can be used to detect natural daylight levels & then dim electric lighting appropriately.		DD	26 09 26 26 50 00	CA Energy Code 110.9, 130.1, 130.2, 130.3	v3: EAp2/c1 v4: EAp2/c2
3.41	**Occupancy & Vacancy Sensors**	Occupancy sensors, combined wall switches & automatic switches sense the presence of human activity within the desired space & enable or disable the manual lighting control function, thus reducing lighting power when not in use.	On off override switches & dimming for certain areas needing more specific functions.	DD	26 09 21	CA Energy Code 110.9, 130.1, 130.2, 130.3	v3: EAp2/c1 v4: EAp2/c2

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	ILLUMINANCE: Efficient Lighting						
3.42	**Power Density**	Appropriate lighting design, efficient fixtures, & task lights can reduce lighting power density targets of overhead lighting.	Include all calculations in design documents in appropriate BIM or energy modeling format.	CD	23 00 00		v3: EAp2, EAc1 v4: EAp2, EAc2
3.43	**Efficient Lamps / Fixtures**	Using fixtures with LED lighting helps eliminate mercury & increases efficiency over most other lamp types. [Example: SJSU King Library Retrofit]()	Consider LEDs for all new lighting on new construction & renovations.	DD	26 50 00		
3.44	**Task Lighting**	Using task lights will reduce overhead ambient lighting power levels. LED models and ones with vacancy sensors provide energy savings.	All individual workstations shall have a task light. Refer to Space Design Standard.	CD			v3: EAp2, EAc1, EQc6.1 v4: EAp2, EAc2, EQc6
	PROCESS LOADS						
3.45	**Power Strips**	Installing power strips that are tied to occupancy sensors & timers will automatically power down equipment when not in use.	Consider using offices, conference rooms, break rooms, & classrooms. Such systems shall be coordinated with District Information Technology Services where shutdowns may impact associated technologies.	CD	26 09 21		v3: EAp2, EAc1 v4: EAp2, EAc2
3.46	**Equip. & Appliances**	Energy Star rated products use 20-30% less energy than the federal baseline for similar products.	100% of all new equipment & appliances shall be Energy Star Rated where available.	CD			v3: - v4: -
3	**REDUCE FOSSIL FUEL RELIANCE & RELATED ENERGY COSTS: Onsite Renewable Energy**						
	RENEWABLE ENERGY SOURCES						
3.47	**Solar: Site Mounted**	Parking lots & open seating areas are optimal areas for solar energy generating pv arrays. They also double for shade & provide public visibility opportunities.	Consider shade structures and other PV installations for all new construction. Conduct shading analysis and project electricity load requirements. Provide for future installation where deemed viable and appropriate by the District.	SD			v3: EAp2/c1, EAc2 v4: EAp2/c2, EAc5
3.48	**Solar: Roof Mounted**	PV cells can be installed as a stand-alone module that is attached to the roof or on a separate system. The most common practice is to mount modules onto a south-facing roof that is not shaded by other structures or trees.	Consider roof mounted installations for all new construction. Limit shading by other rooftop systems. Provide for future installation where deemed viable and appropriate by he District. See also 3.47.	SD			
3.49	**Solar: Building Integrated PV**	Building-integrated photovoltaic (BIPV) electric power systems not only produce electricity but are integrated into part of the building's form primarily through the building's façade, roofing systems, skylights, & building canopies. [Example: San Diego City College Career Technology Center]()	Perform life cycle cost analysis to determine efficacy for the project. Evaluate efficiency rates against roof mounted. Primarily applicable to CSM & Canada.	SD			
3.50.	**Solar: Hot Water**	Installing a solar water heating system to capture & retain heat from the sun & transfer this heat to a liquid can reduce hot water heating demand. [Example: Benson Center, Santa Clara U]()	Consider installing where hot water loads are high and/or where interconnection to campus heating loop may significantly diminish capacity of the plant.	SD			v3: EAp2/c1 v4: EAp2/c2

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	OTHER ONSITE ENERGY SOURCES						
3.51	**Geo-Exchange/ Geo-Thermal**	Using the earth (or pond/lake) for both a heat source & a heat sink for building's with higher heating loads is an efficient option for heating & cooling. It has an added benefit of reducing water demand for cooling systems. Payback is usually within 5-10 years with a 50 year life cycle. Example: Lane Community College Building 61a	Consider installing where using water based heating and cooling and/or where interconnection to campus heating loop may significantly diminish capacity of the plant.	SD			v3: EAp2/c1 v4: EAp2/c2
3.52	**Cogeneration System**	Tri-generation or combined cooling, heat & power (CCHP) from a solar heat collector, biomass, or fuel cells provides simultaneous generation of electricity & useful heating & cooling.	Investigate utility rebate opportunities.	SD			v3: EAp2/c1 v4: EAp2/c2
4	**RESPONSIBLY MANAGE WATER: Reduce quantity & improve quality of stormwater**						
	INFILTRATION STRATEGIES						
4.01	**Pervious Pavement**	Providing pervious pavement with infiltration beds will help minimize stormwater run off & need for additional infrastructure. Options include porous asphalt, concrete, & paver blocks; reinforced turf. Due to maintenance needs, accessibility requirements & costs, selectively use this approach.	Best uses are for surfaces without high traffic use: walking paths, sidewalks, playgrounds, plazas, tennis courts, & other similar uses.	DD	32 00 00		v3: SSc6, SSc7.1 v4: SSc4, SSc5
4.02	**Infiltration Basins**	Infiltration basins are shallow, impounded areas that provide for temporarily storage & infiltration of stormwater runoff. Avoid disturbance of existing vegetation & add layers of sand to improve performance at poor soil conditions. Providing vegetation over the basin will also help promote infiltration & evapotranspiration.	Provide vegetation over basin which improves the aesthetics & allows for options for other uses.	DD			v3: SSc6, SSc7.1 v4: SSc4, SSc5
4.03	**Infiltration Trench**	Installing a continuously perforated pipe at a minimum slope in a stone-filled trench will allow for large storm events to be conveyed through the pipe with some runoff volume reduction.	Use where appropriate soil conditions occur. Much of campus areas have high levels of impervious soils. Infiltration trenches shall be installed down grade from any foundations.	DD			v3: SSc6, SSc7.1 v4: SSc4, SSc5
4.04	**Subsurface Infiltration Bed**	Vegetated, highly pervious soil media underlain by a uniformly graded aggregate (or alternative) bed can be used for temporary storage & infiltration of stormwater runoff. Perforated subdrain pipe should be used if subsurface is impervious.	Consider this in natural turf areas where evapotranspiration rates are especially high due to exposure to prevailing wind or sun.	SD	33 40 00		v3: SSc6, SSc7.1 v4: SSc4, SSc5
4.05	**Rain gardens / Bioretention beds**	Pooling water in bioretntion areas can slowly settle suspended solids & sediment at the mulch layer, prior to natural or mechanical infiltration & pollutant removal. This process mimics nature & is low impact to construct.	Use where natural aesthetics are important. Consider stormwater strategies during the construction phase that can remain and be used permanently.	SD	32 91 40		v3: SSc6, SSc7.1 v4: SSc4, SSc5

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	INFILTRATION STRATEGIES (continued)						
4.06	**Bioswales, Vegetated Swale & Filter Strips**	Bioswales remove silt & pollution from surface runoff water. They consist of a swaled drainage course with gently sloped sides (less than six percent) & filled with vegetation, compost &/or riprap. Example: Patagonia Headquarters	Use in parking lots & vegetated areas between sidewalks & streets. Provide curb cuts & transitions at storms drains to drain.	SD	32 90 00 32 91 14		v3: SSc6, SSc7.1 v4: SSc4, SSc5
4.07	**Constructed Wetlands**	Designing wetlands to work as natural treatment systems can improve water quality at minimal cost.	Consider when looking for opportunities to treat & reuse grey water. Provide control measures to allow easy response to changes & regular maintenance.	SD			v3: SSc6, SSc7.1 v4: SSc4, SSc5
	STRUCTURAL STRATEGIES						
4.08	**Living Roof**	Living roofs can be used to mitigate excess storm water from the building site and can also providing insulation & creating a habitat for wildlife (See strategy note 2.13) while increasing the life time of the roofing membrane.	Reserve for unique, specialty situations (aesthetics & demonstrations) due to cost premiums & maintenance requirements.	SD			v3: SSc5, SSc6, SSc7.2, WEc1 v4: SSc2, SSc3, SSc4, SSc5, WEp1/c1
4.09	**Retention & Detention Basin**	Creating man-made water bodies with vegetation around the perimeter & underground basins with filters, temporarily stores water after a storm, but eventually empties out cleaner at a controlled rate to a downstream water body.	Retention basins shall be used when soil conditions allow for infiltration, & detention basins with metered outlets shall be used when soil conditions are impervious.	SD			v3: SSc6, SSc7.1 v4: SSc4, SSc5
4	**RESPONSIBLY MANAGE WATER: Reduce potable water consumption**						
	WATER SOURCES						
4.10.	**Rainwater Reuse**	Using collected rainwater for non-potable uses such as re-use in process equipment & toilet flushing conserves potable water when not used in drinkable applications.	Due to scarcity of rain & cost of implementation, prioritize other water saving options first.	SD			v3: WEp1/c3 v4: WEp2/c2
4.11	**Reclaimed Water**	Using waste water from process equipment (eg cooling towers, refrigeration units) for non-potable uses (ie reuse in process equipment, toilet flushing, irrigation) conserves potable water. Packaged systems are available for on-site tertiary treatment of grey water.	Any reclaimed nonpotable water shall be distributed in purple piping.	SD			v3: WEp1/c3 v4: WEp2/c2, WEc3
4.12	**Waste Water**	Separating greywater from blackwater allows for greywater to be minimally treated & re-used for non potable purposes. Packaged systems are available for on-site tertiary treatment of grey water.	Condensate and waste water from pools or other water features may require only minimal treatment. Consider capturing and reuse of this water where applicable.	DD			v3: WEc2 v4: -
	WATER SYSTEMS						
4.13	**Pressure Balancing Valve**	Pressure balancing valves reduce temperature fluctuations between hot & cold water supplies.		CD	22 00 00		v3: - v4: -
4.14	**Pipe & Equipment Insulation**	For pipes & equipment exposed to unconditioned air, applying continuous insulation with unbroken vapor seals can reduce heat loss.		CD	22 00 00 22 07 00 23 05 10	CA Energy Code 120.3-A	v3: - v4: -

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	WATER SYSTEMS (continued)						
4.15	**Water Heating**	Condensing water heaters & tankless water heaters help save water & energy by delivering the desired temperature of water to the source more quickly & efficiently.		DD	23 21 10		v3: EAp2/c1 v4: EAp2/c2
4.16	**Solar Hot Water**	See strategy note 3.50.	See strategy considerations for item 3.50.	SD			
	WATER USES						
4.17	**Irrigation Design**	Prioritizing opportunities to reduce irrigation needs, like native plants, then optimizing system design will contribute to reduction of water consumption. Bubblers & local drip irrigation use less water than conventional spray systems. Example: UCSC Water Efficiency Improve.	Meet LEED requirements for 50% design reduction. Use drip for smaller plant species & bubblers for larger plant species. Give preference to gravity fed systems due to low maintenance.	DD	32 00 00 32 84 00	5.304 (Exec. Order B-29-15)	v3: WEc1 v4: WEp1/c1
4.18	**Irrigation Sensors & Controls**	Installing weather based controllers with rain sensors, implementing night time irrigation schedules, & reducing irrigation volumes will contribute towards water savings.	Weather based irrigation control systems shall be integrated into existing WBIC systems administered by campus and district staff. Additional irrigation points and systems programming shall be provided by the Contractor prior to project close out.	DD	32 84 00	5.304	v3: WEc1/p1 v4: WEc1
4.19	**Process Equipment**	Providing supply water from recycled water sources for process equipment reduces the use of potable water in this non-potable application.		DD			v3: ID v4: WEp2
4.20.	**Automated Fixtures**	Using sensored or metered fixtures can reduce potable water waste. Options include ones with regenerative energy sources (ie pv integrated).	If sensored fixtures are used rather than metered, all lavatories and water closets to be sensored in the project.	DD	22 40 00		v3: WEp1/c3 v4: -
4.21	**Low Flow Fixtures**	Using low flow fixtures is the most basic bit effective way to conserving potable water. Waterless urinals are not an option for the District.	Use fixtures with these rates: lavatories: 0.5gpm showers: 1.5 gpm (recomm) kitchen sink - 1.8 gpm urinals: 0.125 gpf toilets: 1.6/1.1 gpf or 1.28	DD	22 40 00	5.303.2 5.303.3 5.303.4	v3: WEp1/c3 v4: WEp2/c2
5	**RESPONSIBLY SOURCE MATERIALS**						
	MATERIAL SOURCING						
5.01	**Manufacturer Transparency**	Specifying materials from manufacturers that are willing to disclose 100% of the material's content, sourcing info, & labor practices provides design more comprehensive assessment of a building's overall impacts. It also encourages market demands for this information.	Access databases, like Pharos Project & Declare, to sort though material choices.	DD			v3: - v4: MRc2, MRc3, MRc4
5.02	**Manufacturer Location + Material Extraction**	Researching manufacturing location & raw material extraction for products will promote regional architecture & local economy while lessening carbon impact.	Identify the top 10 materials likely to be have raw materials locally & identify manufacturers in specifications.	DD			v3: MRc5 v4: MRc3
5.03	**Life Cycle Impact Reduction**	Specifying durable materials conserves natural resources & helps reduce the carbon impact of a project. Consideration should also be given to material's end of life, deconstruct ability & whether it can it be reused or recycled.		DD			v3: - v4: MRc1

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	MATERIAL CONTENT						
5.04	**Recycled Content**	Specifying products with high recycled content will conserve natural resources & reduce the carbon footprint of a project.	Identify top 10 materials likely to have high recycled content, specify recycled content % to target.	CD			v3: MRc4 v4: MRc3
5.05	**Certified Wood**	Selecting FSC & SFI wood certified products helps support responsible forestry.	Include as alternate to provide FSC or SFI certified wood products, particularly for highest use/cost items.	CD			v3: MRc7 v4: MRc3
5.06	**Low Emitting Materials**	Specifying materials with low indoor air contaminants improves well-being for both installers & occupants.	Meet all related LEED VOC targets.	CD	09 65 00 09 68 00 09 91 23 12 30 00	5.504.4	v3: EQc4 v4: EQc2
5.07	**Toxicity Reduction**	Minimizing or eliminating top ingredients (eg. formaldehyde, lead, phthalates, mercury) will help protect health of users, builders & manufacturers. Example: Hawaii Preparatory Academy Energy Lab	Identifying & prioritizing a list of top ingredients (eg. formaldehyde, lead, phthalates, mercury) that should be eliminated or limited.	DD			v3: EQc4.4 v4: MRc4
6	**MAXIMIZE OCCUPANT COMFORT & WELL-BEING**						
	OCCUPANT CONTROLS						
6.01	**Lighting controls**	Individually controlled lights for specific tasks provide occupants with better personal control. See strategy note 3.41.	All individual work stations shall have a task light provided.	CD			v3: EQc6.1 v4: EQc6
6.02	**Thermal Controls**	Access to individual thermal controls such as operable windows, fans & localized diffusers provides occupants with better personal thermal control.	Consider optimizing number of zones. Evaluate occupant load and appropriate sizing of controls to provide access to controls.	DD			v3: EQc6.2 v4: EQc5
	ACCOUSTICAL PERFORMANCE						
6.03	**Noise Control**	Locating noisy equipment away from occupied areas, installing elements to separate or absorb vibration from equipment, & minimizing noise levels of equipment within spaces will help control noise experienced by users.	Identify noisy equipment and evaluate impact on adjacent spaces. Refer to Acoustical Design Standard.	DD	23 05 48	5.507.4	v3: - v4: EQc9
6.04	**Sound Isolation**	Designing for sound isolation in each area to achieve privacy, acoustical comfort from noise producing sources will increase occupant comfort.	Refer to Acoustical Design Standard.	DD	Division 1	5.507.4	v3: - v4: EQc9
6.05	**Absorptive Materials**	Specifying sound absorbing materials & systems for sound dampening will increase occupant comfort.	Coordinate selection with material sourcing & air quality requirements. Refer to Acoustical Design Standard.	CD	Division 1	5.507.4	v3: - v4: EQc9
	AIR QUALITY						
6.06	**Air Filtration**	Installing Marv 13 or higher filters at air supply & return will increase filtration and minimize exposure to harmful particulates & pollutants.	Evaluate potential energy use impact.	CA		5.504.5.3	v3: EQc5 v4: EQc1
6.07	**Increased Ventilation**	Increasing ventilation is particularly beneficial where high air quality is of upmost importance or space contains high particulates.	Consider increasing ventilation rates to 30% above code minimum but evaluate impact to energy use.	DD			v3: EQc2 v4: EQc1

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
	AIR QUALITY (continued)						
6.08	**CO2 Monitoring**	CO2 sensors provide monitoring of air quality to help sustain occupant comfort.	Provide in densely occupied areas such as conference rooms and classrooms.	DD	23 00 00	5.506.2 (CEC 120(c)(4)	v3: EQc1 v4: EQc1
6.09	**Ultraviolet lamps**	Ultraviolet lamps at AHU outside air coils may be used to kill bacterial & mold that may grow in air handling units.		CD	23 00 00		v3: - v4: -
6.10.	**Air Quality Testing**	Air testing before occupancy provides verification that air contaminants are below prescribed levels & allows for time to address if air fails test. Flushouts can be preformed as an alternative but are time consuming & don't provide data on contaminant levels.	Evaluate construction schedule and determine if flush-out can be accommodated.	CA			v3: EQc3.2 v4: EQc4
	LIGHTING QUALITY						
6.11	**Lighting Quality**	Color Rendering Index (CRI) is the ability of a light source to highlight the colors of an object in a manner close to idealized natural lighting conditions. CRI is an important metric to consider when measuring the quality of artificial light. Temperature range (Kelvins) should be considered as well.	Use light sources with a CRI of 80 or higher for all lighting fixtures. For LED's specify lamp temperature range as 3500K-4100K.	CD			v3: - v4: EQc6
7	**REDUCE WASTE**						
7.01	**Construction Waste Diversion**	Recycling & salvaging construction & demolition debris saves cost on hauling fees & diverts waste from the landfill.	Divert 75% of all construction waste from the landfill. Provide a Construction Waste Management Plan. Spot checks by IOR & district representatives may be conducted at any time.	CA		5.408	v3: MRc2 v4: MRp2, MRc5
7.02	**Recycling & Composting**	Designing for areas for recycling & composting collection containers facilitates waste reduction once the building is being used. Consider what materials / waste may be generated by space use type.	Include a narrative about sources of recycling / debris & how it will be managed.	DD		5.401.1	v3: MRp1 v4: MRp1
7.03	**Lighting Longevity**	Using lights with a long life-span, such as solid state lighting fixtures, helps reduce the amount of electronic waste.	Use fixtures with a rated life of at least 24,000 hours for 75% of load.	CD			v3: - v4: -
7.04	**End of Life Phase**	Planning & designing for end of building life will help divert materials from the waste stream in the future. Providing a narrative about this at the end of construction, informs owners about future deconstruction. Example: Chartwell School	Design team shall provide information to be added to the CWMP about consideration for end of life of primary materials specified.	DD			

SUSTAINABILITY STRATEGY MATRIX		Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
8	**USE THE BUILT ENVIRONMENT AS A TEACHING TOOL**						
8.01	**Physical Dashboards**	Permanent monitors in building foyers or other public spaces may display real time information on energy & water use in the building for learning opportunities.	Provide in public space for all projects over 10,000sf and ensure building is metered as needed for detailed inputs.	CD			v3: ID v4: ID
8.02	**Web-based Dashboards**	Remotely accessible web-based dashboards display real time information on energy & water use in the building.	Consider integrating into existing campus website interface.	CD			v3: ID v4: ID
8.03	**Truth Windows**	Areas with innovative construction can be exposed & displayed in a way that allow viewers to see & learn from a portion of the exposed system.	Project team to provide District with list of possible interesting options per project.	CA			v3: ID v4: ID
8.04	**Sustainability Signage**	Signage can be added to highlight green features & public awareness, including such items as stormwater protection, native planting zones, waste reduction, & innovative materials.	Consider naming individual strategies. Ensure all storm drains shall be labeled appropriately.	CA			v3: ID v4: ID
8.05	**Interactive Education**	Where sustainable building & site systems are installed, space design to allow for real time, interactive educational opportunities promotes the building as a living laboratory. Example: New Stanford Hospital Example: Cal Poly Sustainable Energy & Infrastructure Initiative	Coordinate with faculty for each project to identify local learning opportunities. Consider prioritizing visibility of stairways to encourage pedestrian use over elevators.	SD			v3: ID v4: ID

SUSTAINABILITY STRATEGY MATRIX	Strategy Description & Benefits[1]	SMCCCD Recommended Actions & Considerations[2]	Ph[3]	Design Stand.[4]	Cal Green[5]	LEED Impact[6]
9	**FACILITATE SUSTAINABLE MANAGEMENT OF CAMPUS OPERATIONS**					
ON-GOING OPERATIONS						
9.01 **Operational Training**	Developing system manuals & requirements for training operations personal & building occupants ensures more effective system operation.	Include stormwater training	CA			v3: EAc3 v4: EAc1
9.02 **Integrated Pest Management**	Minimizing the exposure of building occupants & maintenance personnel to potentially hazardous chemical, biological & particulate contaminants will reduce adverse affects to air quality, human health, building finishes, building systems & the environment.	Develop, implement & maintain an indoor integrated pest management (IPM) plan to achieve the following objectives: minimizing the use of chemicals, ensure the least-toxic chemical pesticides are used, & target locations & species.	CD	31 00 00		v3: ID v4: ID
ON-GOING VERIFICATION						
9.03 **Sub Metering**	Incorporating meters into a design for the monitoring of the utility & water usage for the building helps projects understand consumption, identify problems & better plan for future installations. Example: CSU San Marcos Water Conservation Program	Control points, energy and water monitoring, and other variables shall be prop0sed by the contractor or designer and approved prior to construction by the District. All new buildings & completely retrofitted buildings, as defined by the District, shall incorporate Utility Vision Panels & meters into their design. Install separate submeters for outdoor potable & irrigation systems.	DD	23 05 19 25 55 00	5.303.1 5.304.2	v3: EAc5 v4: EAp3, EAc3, WEp3
9.04 **BMS/BAS**	Design systems such that District's Management System can control all heating, ventilating & air conditioning system components, exterior lighting systems & building interior circulation area lighting as needed.	HVAC, override sensors, lighting, systems shall be connected to BMS. Review system points with facilities.	DD	25 55 00		v3: EAc5 v4: EAp3, EAc3
9.05 **Demand Response**	Planning for demand response program requirements such as load shedding or shifting at peak energy use times will help reduce load at times of peak energy costs.	Evaluate requirements for both semiautomatic & fully automated systems.	DD			v3: - v4: EAc4
9.06 **Programming & Scheduling**	Developing a more robust scheduling system for energy systems helps optimize the use of systems & reduce loads when not in use.	Consider changing temperature programs for evening, weekends, & non-use times.	CD			v3: EAp2, EAc1, EAc5 v4: EAp2, EAc2, EAp3, EAc3
9.07 **Stormwater Management Tracking**	Inspecting all construction sites an maintaining a construction database of stormwater strategies helps verify what was designed was installed & provides measurable information for future projects	SMCCCD is developing a District wide storm water policy.	CD			v3: - v4: -

SAN MATEO COUNTY COMMUNITY COLLEGE DISTRICT SUSTAINABILITY STRATEGY CHECKLIST

May 8, 2015 Checklist Draft		Ph[1]	Status[2]	Action Items / Notes
1	**USE AN INTEGRATED APPROACH TO BUILDING DESIGN & CONSTRUCTION**			
	DESIGN PROCESS TOOLS			
1.01	**Integrated Design Approach & Milestones**	PD		
1.02	**LEED Certification**	SD		
1.03	**Owner Project Requirements (OPR)**	SD		
1.04	**Basis of Design (BOD)**	SD		
1.05	**Design for Maintenance**	DD		
1.06	**Sustainability Checklist / Summary**	CD		
	DESIGN ANALYSIS TOOLS			
1.07	**Site Analysis**	PD		
1.08	**BIM Modeling**	SD		
1.09	**Daylight Simulation**	DD		
1.10.	**Building Energy Simulation**	DD		
1.11	**Total Cost of Ownership**	DD		
	CONSTRUCTION PROCESS			
1.12	**Construction Activity Pollution Prevention Program**	DD		
1.13	**Construction Interior Air Quality**	CA		
1.14	**Building Commissioning**	CD		
1.15	**Envelope Commissioning**	CA		
1.16	**Air Infiltration Testing**	CA		
1.17	**Thermal Imaging**	CA		
2	**TAKE AN ECOLOGICAL SITE DESIGN APPROACH**			
	ALTERNATIVE TRANSPORTATION			
2.01	**Bicycle Parking**	DD		
2.02	**Electric Vehicle Charging Stations**	DD		
2.03	**Carpool Spaces**	DD		
	LANDSCAPE SELECTION			
2.04	**Native & Drought Tolerant Planting / Xeriscaping**	DD		
2.05	**Biodiversity**	DD		
2.06	**Plant Location & Density**	DD		
2.07	**Conservation & Reuse of Soils & Vegetation**	CD		
2.08	**Wildfire Risk Reduction**	CD		
2.09	**Site Restoration**	DD		
	SITE DEVELOPMENT			
2.10.	**Open Space**	SD		
2.11	**Hardscape Surfaces**	CD		
2.12	**Outdoor Gathering Spaces**	DD		
2.13	**Living Roof**	DD		
3	**REDUCE FOSSIL FUEL RELIANCE & RELATED ENERGY COSTS: Prioritize Passive Strategies**			
	SITING			
3.01	**Building Orientation**	SD		
	PASSIVE VENTILATION			
3.02	**Solar Gain / Thermal Mass**	DD		
3.03	**Night-Purge**	DD		
3.04	**Natural, Cross Ventilation**	SD		
3.05	**Stack Ventilation**	SD		

Footnotes for Category Description

1 - Phase of project within which this strategy should first be considered at the start of; strategy should be reviewed in consecutive phases after initial consideration. PD: Pre-Design. SD: Schematic Design. DD:Design Development. CD: Construction Documentation. CA: Construction

2 - Status of strategy: In Progress, N/A, Completed, Not Pursued. If not pursued, provide information in the notes as to why the strategy is not pursued.

	NATURAL DAYLIGHT			
3.06	**Glazing Locations**	SD		

SAN MATEO COUNTY COMMUNITY COLLEGE DISTRICT SUSTAINABILITY STRATEGY CHECKLIST

May 8, 2015 Checklist Draft		Ph[1]	Status[2]	Action Items / Notes
3.07	**Light Shelves**			
3.08	**Shade Control**	DD		
3	**REDUCE FOSSIL FUEL RELIANCE & RELATED ENERGY COSTS: Exceed T24 savings by 15%**			
	OPENINGS			
3.09	**Window Types**	DD		
3.10.	**Window Size & Locations**	SD		
3.11	**Shaft design**	DD		
	WALLS & ROOF			
3.12	**Thermal barrier**	DD		
3.13	**Air Barriers**	DD		
3.14	**Double Envelope**	DD		
3.15	**Living Wall**	DD		
3.16	**Living Roof**	DD		
3.17	**Cool Roof**	CD		
	HEATING, COOLING & VENTILATION: Building Systems			
3.18	**Metering**	DD		
3.19	**Chillers**	DD		
3.20.	**Refrigerant Types**	DD		
3.21	**AHUs**	DD		
3.22	**AHU Fan Wall Retrofit**	DD		
3.23	**Energy Recovery Systems**	DD		
3.24	**Economizers**	DD		
3.25	**Variable Volume Terminal Units**	DD		
3.26	**MEPS Motors & VFDs**	DD		
3.27	**Duct Insulation**	CD		
3.28	**Duct Configuration**	DD		
	HEATING, COOLING & VENTILATION: Localized Systems			
3.29	**Hydronic Radiant Floor Heating & Cooling**	DD		
3.30.	**Hydronic Radiant Ceiling Tiles**	DD		
3.31	**Chilled Beam**	DD		
3.32	**Ductless Mini-splits**	DD		
3.33	**Displacement Ventilation**	DD		
	HEATING, COOLING & VENTILATION: Controls			
3.34	**Demand Control Ventilation**	DD		
3.35	**Relaxed Programming of Temperature Ranges**	DD		
	ILLUMINANCE: Exterior Lighting			
3.36	**Lighting Control + Monitoring**	DD		
3.37	**Light Pollution Reduction**	CD		
3.38	**Site Lighting Design**	DD		
3.39	**Building Facade & Entrance Lighting**	DD		
	ILLUMINANCE: Smart Lighting			
3.40.	**Daylight Sensors**	DD		
3.41	**Occupancy & Vacancy Sensors**	DD		
	ILLUMINANCE: Efficient Lighting			
3.42	**Power Density**	CD		
3.43	**Efficient Lamps / Fixtures**	DD		
3.44	**Task Lighting**	CD		
	PROCESS LOADS			
3.45	**Power Strips**	CD		
3.46	**Equip. & Appliances**	CD		

SAN MATEO COUNTY COMMUNITY COLLEGE DISTRICT SUSTAINABILITY STRATEGY CHECKLIST

May 8, 2015 Checklist Draft		Ph[1]	Status[2]	Action Items / Notes
3	REDUCE FOSSIL FUEL RELIANCE & RELATED ENERGY COSTS: Onsite Renewable Energy			
	RENEWABLE ENERGY SOURCES			
3.47	Solar: Site Mounted	SD		
3.48	Solar: Roof Mounted	SD		
3.49	Solar: Building Integrated PV	SD		
3.50.	Solar: Hot Water	SD		
	OTHER ONSITE ENERGY SOURCES			
3.51	Geo-Exchange/ Geo-Thermal	SD		
3.52	Cogeneration System	SD		
4	RESPONSIBLY MANAGE WATER: Reduce quantity & improve quality of stormwater			
	INFILTRATION STRATEGIES			
4.01	Pervious Pavement	DD		
4.02	Infiltration Basins	DD		
4.03	Infiltration Trench	DD		
4.04	Subsurface Infiltration Bed	SD		
4.05	Rain gardens / Bioretention beds	SD		
4.06	Bioswales, Vegetated Swale & Filter Strips	SD		
4.07	Constructed Wetlands	SD		
	STRUCTURAL STRATEGIES			
4.08	Vegetated Roof	SD		
4.09	Retention & Detention Basin	SD		
4	RESPONSIBLY MANAGE WATER: Reduce potable water consumption			
	WATER SOURCES			
4.10.	Rainwater Reuse	SD		
4.11	Reclaimed Water	DD		
4.12	Waste Water	DD		
	WATER SYSTEMS			
4.13	Pressure Balancing Valve	CD		
4.14	Pipe & Equipment Insulation	CD		
4.15	Water Heating	DD		
4.16	Solar Hot Water	SD		
	WATER USES			
4.17	Irrigation Design	DD		
4.18	Irrigation Sensors & Controls	DD		
4.19	Process Equipment	DD		
4.20.	Metered Fixtures	DD		
4.21	Low Flow Fixtures	DD		
5	RESPONSIBLY SOURCE MATERIALS			
	MATERIAL SOURCING			
5.01	Manufacturer Transparency	DD		
5.02	Manufacturer Location + Material Extraction	DD		
5.03	Life Cycle Impact Reduction	DD		
	MATERIAL CONTENT			
5.04	Recycled Content	CD		
5.05	Certified Wood	CD		
5.06	Low Emitting Materials	CD		
5.07	Toxicity Reduction	DD		

SAN MATEO COUNTY COMMUNITY COLLEGE DISTRICT SUSTAINABILITY STRATEGY CHECKLIST

May 8, 2015 Checklist Draft		Ph[1]	Status[2]	Action Items / Notes
6	**MAXIMIZE OCCUPANT COMFORT & WELL-BEING**			
	OCCUPANT CONTROLS			
6.01	**Lighting**	CD		
6.02	**Thermal Controls**	DD		
	ACCOUSTICAL PERFORMANCE			
6.03	**Noise Control**	DD		
6.04	**Sound Isolation**	DD		
6.05	**Absorptive Materials**	CD		
	AIR QUALITY			
6.06	**Air Filtration**	CA		
6.07	**Increased Ventilation**	DD		
6.08	**CO2 Monitoring**	DD		
6.09	**Ultravilolet lamps**	CD		
6.10.	**Air Quality Testing**	CA		
	LIGHTING QUALITY			
6.11	**Lighting Quality**	CD		
7	**REDUCE WASTE**			
7.01	**Construction Waste Diversion**	CA		
7.02	**Recycling & Composting**	DD		
7.03	**Lighting Longevity**	CD		
7.04	**End of Life Phase**	DD		
8	**USE THE BUILT ENVIRONMENT AS A TEACHING TOOL**			
8.01	**Physical Dashboards**	CD		
8.02	**Web-based Dashboards**	CD		
8.03	**Truth Windows**	CA		
8.04	**Sustainability Signage**	CA		
8.05	**Lesson Plan Integration**	SD		
9	**FACILITATE SUSTAINABLE MANAGEMENT OF CAMPUS OPERATIONS**			
	ON-GOING OPERATIONS			
9.01	**Operational Training**	CA		
9.02	**Integrated Pest Management**	CD		
	ON-GOING VERIFICATION			
9.03	**Sub Metering**	DD		
9.04	**BMS/BAS**	DD		
9.05	**Demand Response**	DD		
9.06	**Programming & Scheduling**	CD		
9.07	**Stormwater Management Tracking**	CD		

Appendix B

LEED ONLINE

Projects CAN B23 Math Science Technology BLDG

CAN B23 Math Science Technology BLDG

1000080814

SUBMIT FOR REVIEW

Details | Credits | Uploads | Team | Timeline | Interpretations | Clarifications | Payments

Design Preliminary Application

All | All

Attempt All Credits | All selected

PROJECT INFORMATION FORMS

PIf1	Minimum Program Requirements	NC v2009	READY FOR REVIEW	REQUIRED	
PIf2	Project Summary Details	NC v2009	ATTEMPTED	REQUIRED	
PIf3	Occupant and Usage Data	NC v2009	ATTEMPTED	REQUIRED	
PIf4	Schedule and Overview Documents	NC v2009	ATTEMPTED	REQUIRED	

SUSTAINABLE SITES

15 OF 26 AWARDED 0

SSp1	Construction Activity Pollution Prevention	NC v2009	ATTEMPTED	REQUIRED	
SSc1	Site Selection	NC v2009	ATTEMPTED	ATTEMPTED	0-1
SSc2	Development Density and Community Connectivity	NC v2009	READY FOR REVIEW	ATTEMPTED	5-5
SSc3	Brownfield Redevelopment		NOT ATTEMPTED	ATTEMPTED	0-1
SSc4.1	Alternative Transportation-Public Transportation Acc...	NC v2009	READY FOR REVIEW	ATTEMPTED	6-6
SSc4.2	Alternative Transportation-Bicycle Storage and Chang...		WITHDRAWN	ATTEMPTED	0-1
SSc4.3	Alternative Transportation-Low-Emitting and Fuel-Eff...	NC v2009	ATTEMPTED	ATTEMPTED	0-3
SSc4.4	Alternative Transportation-Parking Capacity	NC v2009	READY FOR REVIEW	ATTEMPTED	2-2
SSc5.1	Site Development-Protect or Restore Habitat		NOT ATTEMPTED	ATTEMPTED	0-1
SSc5.2	Site Development-Maximize Open Space	NC v2009	READY FOR REVIEW	ATTEMPTED	2-1
SSc6.1	Stormwater Design-Quantity Control	NC v2009	ATTEMPTED	ATTEMPTED	0-1
SSc6.2	Stormwater Design-Quality Control	NC v2009	ATTEMPTED	ATTEMPTED	0-1
SSc7.1	Heat Island Effect, Non-Roof		NOT ATTEMPTED	ATTEMPTED	0-1
SSc7.2	Heat Island Effect-Roof	NC v2009	ATTEMPTED	ATTEMPTED	0-1
SSc8	Light Pollution Reduction	NC v2009	ATTEMPTED	ATTEMPTED	0-1

WATER EFFICIENCY

2 OF 10 AWARDED 0

WEp1	Water Use Reduction-20% Reduction	NC v2009	ATTEMPTED	REQUIRED	
WEc1	Water Efficient Landscaping	NC v2009	ATTEMPTED	ATTEMPTED	2-4
WEc2	Innovative Wastewater Technologies		NOT ATTEMPTED	ATTEMPTED	0-2
WEc3	Water Use Reduction	NC v2009	ATTEMPTED	ATTEMPTED	0-4

ENERGY AND ATMOSPHERE

0 OF 35 AWARDED 0

EAp1	Fundamental Commissioning of the Building Energy Sys...	NC v2009	ATTEMPTED	REQUIRED	
EAp2	Minimum Energy Performance	NC v2009	ATTEMPTED	REQUIRED	
EAp3	Fundamental Refrigerant Management	NC v2009	ATTEMPTED	REQUIRED	
EAc1	Optimize Energy Performance	NC v2009	ATTEMPTED	ATTEMPTED	0-19
EAc2	On-Site Renewable Energy		NOT ATTEMPTED	ATTEMPTED	0-7
EAc3	Enhanced Commissioning	NC v2009	ATTEMPTED	ATTEMPTED	0-2
EAc4	Enhanced Refrigerant Management	NC v2009	ATTEMPTED	ATTEMPTED	0-2
EAc5	Measurement and Verification	NC v2009	ATTEMPTED	ATTEMPTED	0-3
EAc6	Green Power		NOT ATTEMPTED	ATTEMPTED	0-2

MATERIALS AND RESOURCES

0 OF 14 AWARDED 0

MRp1	Storage and Collection of Recyclables	NC v2009	READY FOR REVIEW	REQUIRED	
MRc1.1	Building Reuse-Maintain Existing Walls, Floors and R...		NOT ATTEMPTED	ATTEMPTED	0-3
MRc1.2	Building Reuse - Maintain 50% of Interior Non-Struct...		NOT ATTEMPTED	ATTEMPTED	0-1
MRc2	Construction Waste Management	NC v2009	ATTEMPTED	ATTEMPTED	0-2
MRc3	Materials Reuse		NOT ATTEMPTED	ATTEMPTED	0-2
MRc4	Recycled Content	NC v2009	ATTEMPTED	ATTEMPTED	0-2
MRc5	Regional Materials	NC v2009	ATTEMPTED	ATTEMPTED	0-2
MRc6	Rapidly Renewable Materials		NOT ATTEMPTED	ATTEMPTED	0-1
MRc7	Certified Wood	NC v2009	ATTEMPTED	ATTEMPTED	0-1

INDOOR ENVIRONMENTAL QUALITY

2 OF 15 AWARDED 0

IEQp1	Minimum Indoor Air Quality Performance	NC v2009	ATTEMPTED	REQUIRED	
IEQp2	Environmental Tobacco Smoke (ETS) Control	NC v2009	READY FOR REVIEW	REQUIRED	
IEQc1	Outdoor Air Delivery Monitoring		NOT ATTEMPTED	ATTEMPTED	0-1
IEQc2	Increased Ventilation	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc3.1	Construction IAQ Management Plan-During Construction	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc3.2	Construction IAQ Management Plan-Before Occupancy	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc4.1	Low-Emitting Materials-Adhesives and Sealants	NC v2009	READY FOR REVIEW	ATTEMPTED	1-1
IEQc4.2	Low-Emitting Materials-Paints and Coatings	NC v2009	READY FOR REVIEW	ATTEMPTED	1-1
IEQc4.3	Low-Emitting Materials-Flooring Systems	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc4.4	Low-Emitting Materials-Composite Wood and Agrifiber ...	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc5	Indoor Chemical and Pollutant Source Control		NOT ATTEMPTED	ATTEMPTED	0-1
IEQc6.1	Controllability of Systems-Lighting	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc6.2	Controllability of Systems-Thermal Comfort	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc7.1	Thermal Comfort-Design	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc7.2	Thermal Comfort-Verification	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc8.1	Daylight and Views-Daylight		WITHDRAWN	ATTEMPTED	0-1
IEQc8.2	Daylight and Views-Views	NC v2009	ATTEMPTED	ATTEMPTED	0-1

INNOVATION IN DESIGN

2 OF 6 AWARDED 0

IDc1.1	Innovation: High Priority Site	NC v2009	READY FOR REVIEW	ATTEMPTED	1-1
IDc1.1	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.2	Innovation in Design	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.2	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.3	Innovation in Design	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.3	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.4	Innovation in Design	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.4	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.5	Innovation in Design	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.5	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc2	LEED® Accredited Professional	NC v2009	READY FOR REVIEW	ATTEMPTED	1-1

ATTEMPTED 21 of 106 ANTICIPATED 0 PENDING 0 DENIED 0

Appendix C

LEED ONLINE

Projects SKY B12 Environmental Science

SKY B12 Environmental Science

1000080813

SUBMIT FOR REVIEW

Details | Credits | Uploads | Team | Timeline | Interpretations | Clarifications | Payments

Construction Preliminary Application

All | All | Attempt All Credits | All selected

PROJECT INFORMATION FORMS

PIf1	Minimum Program Requirements	NC v2009	APPROVED	REQUIRED	
PIf2	Project Summary Details	NC v2009	APPROVED	REQUIRED	
PIf3	Occupant and Usage Data	NC v2009	APPROVED	REQUIRED	
PIf4	Schedule and Overview Documents	NC v2009	APPROVED	REQUIRED	

SUSTAINABLE SITES

21 OF 26 AWARDED 20

SSp1	Construction Activity Pollution Prevention	NC v2009	ATTEMPTED	REQUIRED	
SSc1	Site Selection	NC v2009	AWARDED	AWARDED	1
SSc2	Development Density and Community Connectivity	NC v2009	AWARDED	AWARDED	5
SSc3	Brownfield Redevelopment		NOT ATTEMPTED	ATTEMPTED	0-1
SSc4.1	Alternative Transportation-Public Transportation Acc...	NC v2009	AWARDED	AWARDED	6
SSc4.2	Alternative Transportation-Bicycle Storage and Chang...		WITHDRAWN	ATTEMPTED	0-1
SSc4.3	Alternative Transportation-Low-Emitting and Fuel-Eff...	NC v2009	AWARDED	AWARDED	3
SSc4.4	Alternative Transportation-Parking Capacity	NC v2009	AWARDED	AWARDED	2
SSc5.1	Site Development-Protect or Restore Habitat	NC v2009	READY FOR REVIEW	ATTEMPTED	1-1
SSc5.2	Site Development-Maximize Open Space	NC v2009	AWARDED	AWARDED	2
SSc6.1	Stormwater Design-Quantity Control		NOT ATTEMPTED	ATTEMPTED	0-1
SSc6.2	Stormwater Design-Quality Control		NOT ATTEMPTED	ATTEMPTED	0-1
SSc7.1	Heat Island Effect, Non-Roof		NOT ATTEMPTED	ATTEMPTED	0-1
SSc7.2	Heat Island Effect-Roof	NC v2009	AWARDED	AWARDED	1
SSc8	Light Pollution Reduction		WITHDRAWN	ATTEMPTED	0-1

WATER EFFICIENCY

7 OF 10 AWARDED 7

WEp1	Water Use Reduction-20% Reduction	NC v2009	AWARDED	REQUIRED	
WEc1	Water Efficient Landscaping	NC v2009	AWARDED	AWARDED	2
WEc2	Innovative Wastewater Technologies		NOT ATTEMPTED	ATTEMPTED	0-2
WEc3	Water Use Reduction	NC v2009	AWARDED	AWARDED	5

ENERGY AND ATMOSPHERE

15 OF 35 AWARDED 12

EAp1	Fundamental Commissioning of the Building Energy Sys...	NC v2009	ATTEMPTED	REQUIRED	
EAp2	Minimum Energy Performance	NC v2009	AWARDED	REQUIRED	
EAp3	Fundamental Refrigerant Management	NC v2009	AWARDED	REQUIRED	
EAc1	Optimize Energy Performance	NC v2009	AWARDED	AWARDED	10
EAc2	On-Site Renewable Energy		WITHDRAWN	ATTEMPTED	0-7
EAc3	Enhanced Commissioning	NC v2009	ATTEMPTED	ATTEMPTED	0-2
EAc4	Enhanced Refrigerant Management	NC v2009	AWARDED	AWARDED	2
EAc5	Measurement and Verification	NC v2009	ATTEMPTED	ATTEMPTED	3-3
EAc6	Green Power	NC v2009	ATTEMPTED	ATTEMPTED	0-2

MATERIALS AND RESOURCES

0 OF 14 AWARDED 0

MRp1	Storage and Collection of Recyclables	NC v2009	AWARDED	REQUIRED	
MRc1.1	Building Reuse-Maintain Existing Walls, Floors and R...		NOT ATTEMPTED	ATTEMPTED	0-3
MRc1.2	Building Reuse - Maintain 50% of Interior Non-Struct...		NOT ATTEMPTED	ATTEMPTED	0-1
MRc2	Construction Waste Management	NC v2009	ATTEMPTED	ATTEMPTED	0-2
MRc3	Materials Reuse		NOT ATTEMPTED	ATTEMPTED	0-2
MRc4	Recycled Content	NC v2009	ATTEMPTED	ATTEMPTED	0-2
MRc5	Regional Materials	NC v2009	ATTEMPTED	ATTEMPTED	0-2
MRc6	Rapidly Renewable Materials		NOT ATTEMPTED	ATTEMPTED	0-1
MRc7	Certified Wood	NC v2009	ATTEMPTED	ATTEMPTED	0-1

INDOOR ENVIRONMENTAL QUALITY

3 OF 15 AWARDED 3

IEQp1	Minimum Indoor Air Quality Performance	NC v2009	AWARDED	REQUIRED	
IEQp2	Environmental Tobacco Smoke (ETS) Control	NC v2009	AWARDED	REQUIRED	
IEQc1	Outdoor Air Delivery Monitoring	NC v2009	AWARDED	AWARDED	1
IEQc2	Increased Ventilation	NC v2009	AWARDED	AWARDED	1
IEQc3.1	Construction IAQ Management Plan-During Construction	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc3.2	Construction IAQ Management Plan-Before Occupancy	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc4.1	Low-Emitting Materials-Adhesives and Sealants	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc4.2	Low-Emitting Materials-Paints and Coatings	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc4.3	Low-Emitting Materials-Flooring Systems	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc4.4	Low-Emitting Materials-Composite Wood and Agrifiber ...	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IEQc5	Indoor Chemical and Pollutant Source Control		WITHDRAWN	ATTEMPTED	0-1
IEQc6.1	Controllability of Systems-Lighting	NC v2009	AWARDED	AWARDED	1
IEQc6.2	Controllability of Systems-Thermal Comfort		NOT ATTEMPTED	ATTEMPTED	0-1
IEQc7.1	Thermal Comfort-Design		NOT ATTEMPTED	ATTEMPTED	0-1
IEQc7.2	Thermal Comfort-Verification		NOT ATTEMPTED	ATTEMPTED	0-1
IEQc8.1	Daylight and Views-Daylight		NOT ATTEMPTED	ATTEMPTED	0-1
IEQc8.2	Daylight and Views-Views		NOT ATTEMPTED	ATTEMPTED	0-1

INNOVATION IN DESIGN

1 OF 6 AWARDED 0

IDc1.1	Innovation in Design	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.1	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.2	Innovation in Design	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.2	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.3	Green Cleaning Policy	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.3	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.4	WE c3	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.4	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc1.5	WE	NC v2009	ATTEMPTED	ATTEMPTED	0-1
IDc1.5	Innovation in Design		NOT ATTEMPTED	ATTEMPTED	0-1
IDc2	LEED® Accredited Professional	NC v2009	READY FOR REVIEW	ATTEMPTED	1-1

ATTEMPTED 47 of 106 AWARDED 42 PENDING 0 DENIED 1