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.

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	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: -

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	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: -

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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%)

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	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

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	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: -

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	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

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	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

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	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

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	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

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	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			

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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

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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: -