



2025 CALGreen Nonresidential Electric Vehicle Tip Sheet

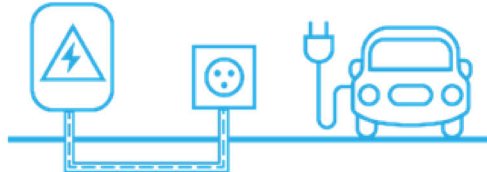
[Section 5.106.5]

Know which type of space is required



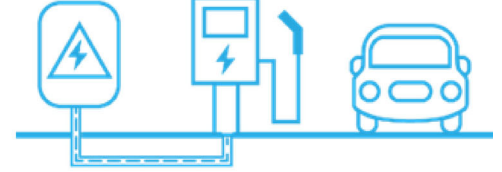
EV CAPABLE

Conduit only and space at the electrical panel for future EV



EV READY

Receptacle ready for charger to be plugged in



EV CHARGING STATION

Stand-alone Charging Station

TABLE 5.106.5.3.1—EV CAPABLE SPACES AND EVCS

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CAPABLE SPACES	OTHER THAN OFFICE AND RETAIL NUMBER OF REQUIRED EVCS ^{2, 3}	OFFICE AND RETAIL NUMBER OF REQUIRED EVCS ^{2, 3}
1–9	0	0	0
10–25	4	2	3
26–50	8	4	6
51–75	13	6	8
76–100	17	8	13
101–150	25	12	19
151–200	35	18	26
201 and over	20 percent of actual parking spaces ¹	50 percent of EV capable spaces ¹	75 percent of EV capable spaces ¹

1. Calculation for spaces shall be rounded up to the nearest whole number.
2. Each EVCS shall reduce the number of required EV capable spaces by the same number.
3. At least one Level 2 EVSE shall be provided.

Watch the Fine Print on EV Space Calcs

When the EV Charging table lists EV Capable and Electric Vehicle Charging Station (EVCS) requirements, subtract the number of EVCS from the EV Capable number to know how many spaces you really need.

i.e. 8 EV Capable with 4 EVCS really means 4 spaces are just EV Capable and 4 EVCS required

At least one of the installed EVCS must be a Level 2 Charger.

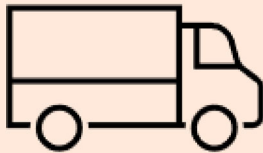
New for 2025!

Retail and Office occupancies have additional EV charging requirements



EV Truck Readiness

EV readiness infrastructure for off-street loading spaces is required for warehouses, grocery stores, office buildings, retail, and warehouses



[Section 5.106.5.5]

Alterations

With existing EV capable infrastructure -
UPGRADE EV CAPABLE SPACES TO EV CHARGING STATIONS

Without existing EV Capable infrastructure - comply with Table 5.106.5.3.1

[Section 5.106.5.4]

Alternate Approaches

Mix charger types

Standard Level 2 EV Charger
(counts as 1 charger)

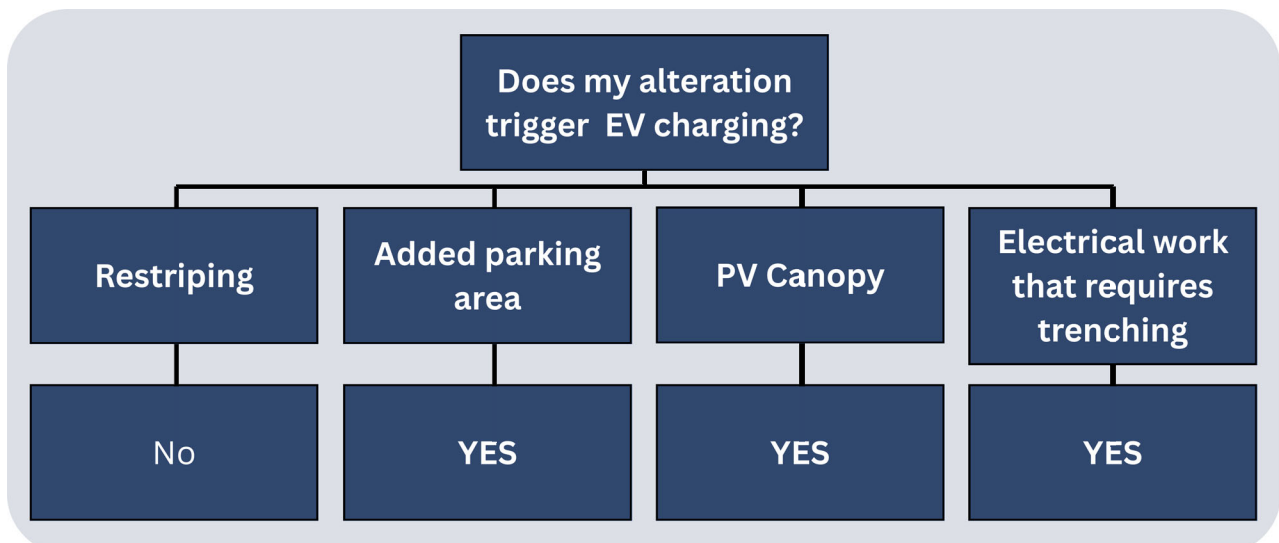
Low-Power Level 2 EV Charger
(counts as ½ charger)

Level 3 Direct Current Fast Charger
(counts as 5 chargers)

Use the Power Allocation Method

This alternative approach allows projects to use any kVA combination of EV capable spaces, low power Level 2, Level 2, or DCFC EVSE as long as it meets the minimum total kVA per Table 5.106.5.3.6

[Section 5.106.5.3.6]





TRI-COUNTY
REGIONAL ENERGY NETWORK

SAN LUIS OBISPO • SANTA BARBARA • VENTURA

August 5, 2026

2025 Nonresidential CALGreen

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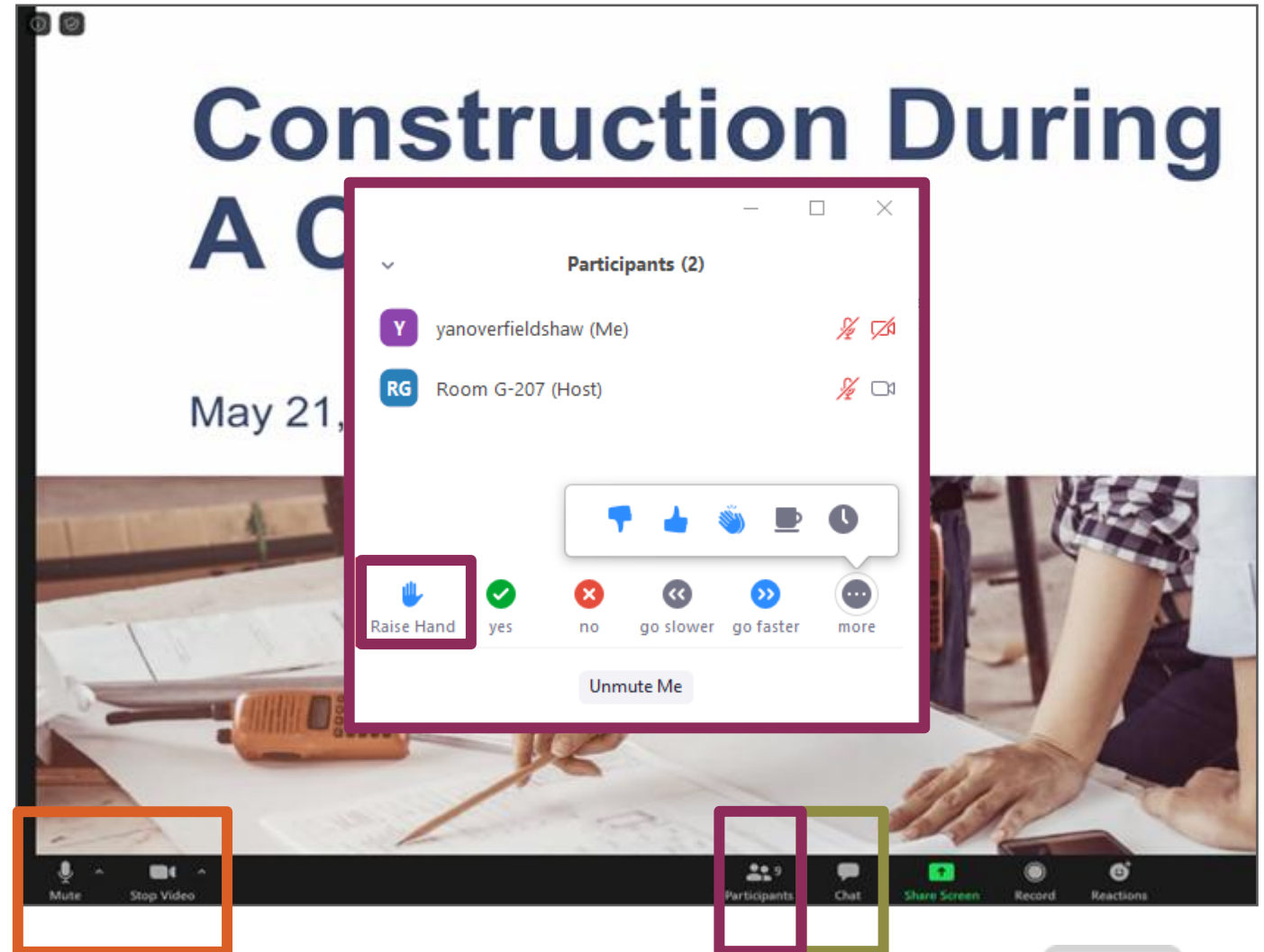
In Balance Green Consulting

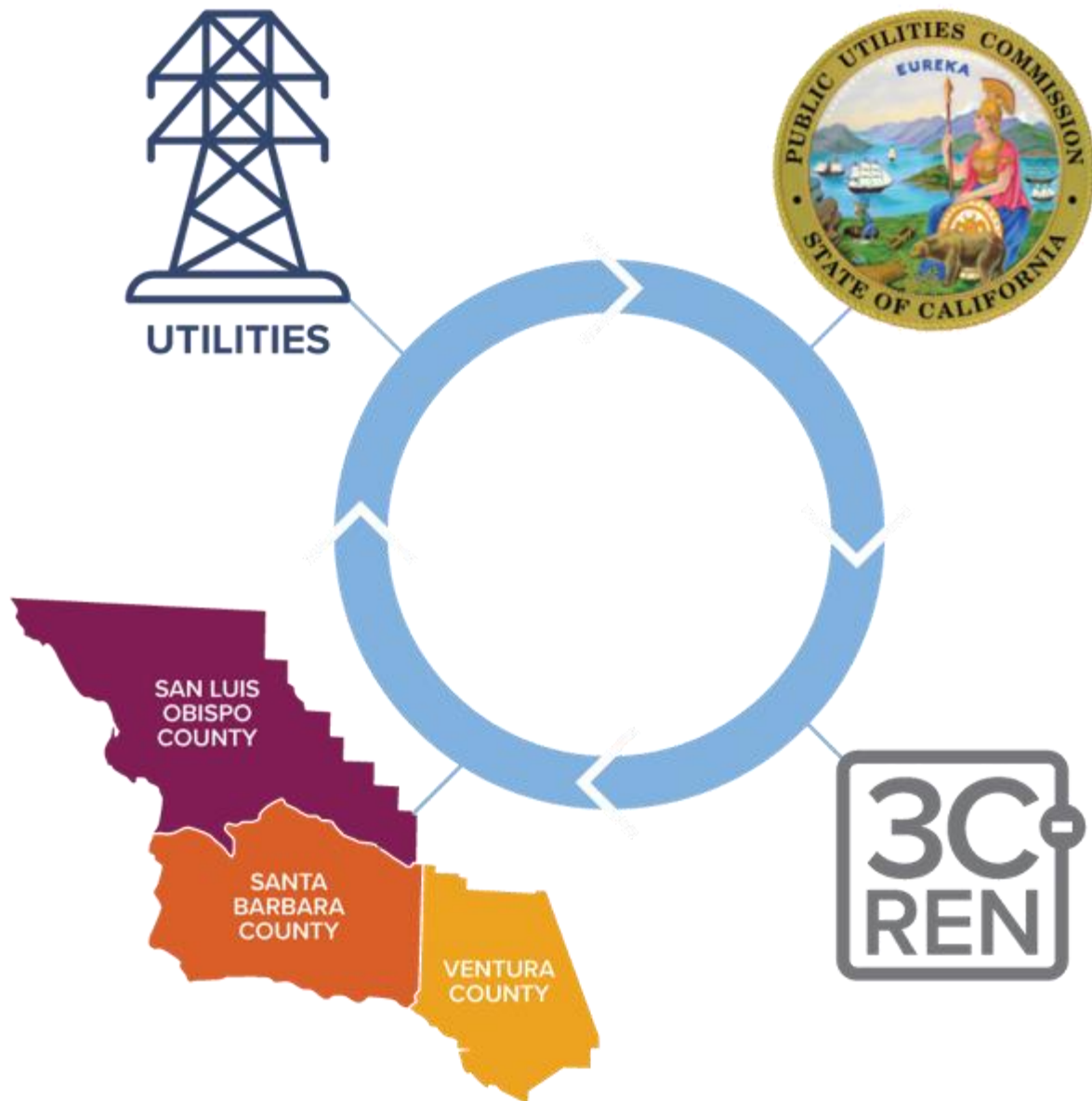


Before We Begin

Here are some quick reminders:

- Call in? Please **share** full name to confirm attendance
- To receive AIA LUs, you **must attend** at least 80% of the training. Attendance will be verified
- Use the "**Chat**" to share questions or comments
- Slides/recording are **shared** after most events and can be found on 3C-REN's on-demand page
- 3C-REN does **not** allow **AI notetakers**, unless used to accommodate a disability





Tri-County Regional Energy Network

3C-REN is a collaboration between the tri-counties

Our programs reduce energy use for a more sustainable, equitable and economically vibrant Central Coast

Our free services are funded via the CPUC, bringing ratepayer dollars back to the region



Our Services

Incentives



HOME ENERGY SAVINGS

3c-ren.org/for-residents
3c-ren.org/multifamily



COMMERCIAL ENERGY SAVINGS

3c-ren.org/commercial

Contractors can enroll at
3c-ren.org/contractors

Training



BUILDING PERFORMANCE TRAINING

3c-ren.org/events
3c-ren.org/building



ENERGY CODE CONNECT

3c-ren.org/code

View past trainings at
3c-ren.org/on-demand

Technical Assistance



AGRICULTURE ENERGY SOLUTIONS

3c-ren.org/agriculture



ENERGY ASSURANCE SERVICES

3c-ren.org/assurance



Today's Learning Objectives

- Understand CAL Green compliance process for residential and nonresidential projects, highlighting changes in the 2025 code.
- Become familiar with CAL Green mandatory measures and green building benefits of each
- Understand Tier 1 and Tier 2 options.
- Learn tools and best practices for submitting and reviewing compliance documentation.

Learning Units:

- 1.5 AIA HSW LU approved for this course
- 0.15 ICC CEU's approved for this course

Video Recording and Slides
will be provided





Overview of CALGreen

Intent of CALGreen

- Provide a **baseline green building code** that raises the bar for the state, yet remains feasible to the building community
- Provide a higher voluntary tier that establishes a 'reach code' standard

Mandatory

- All projects

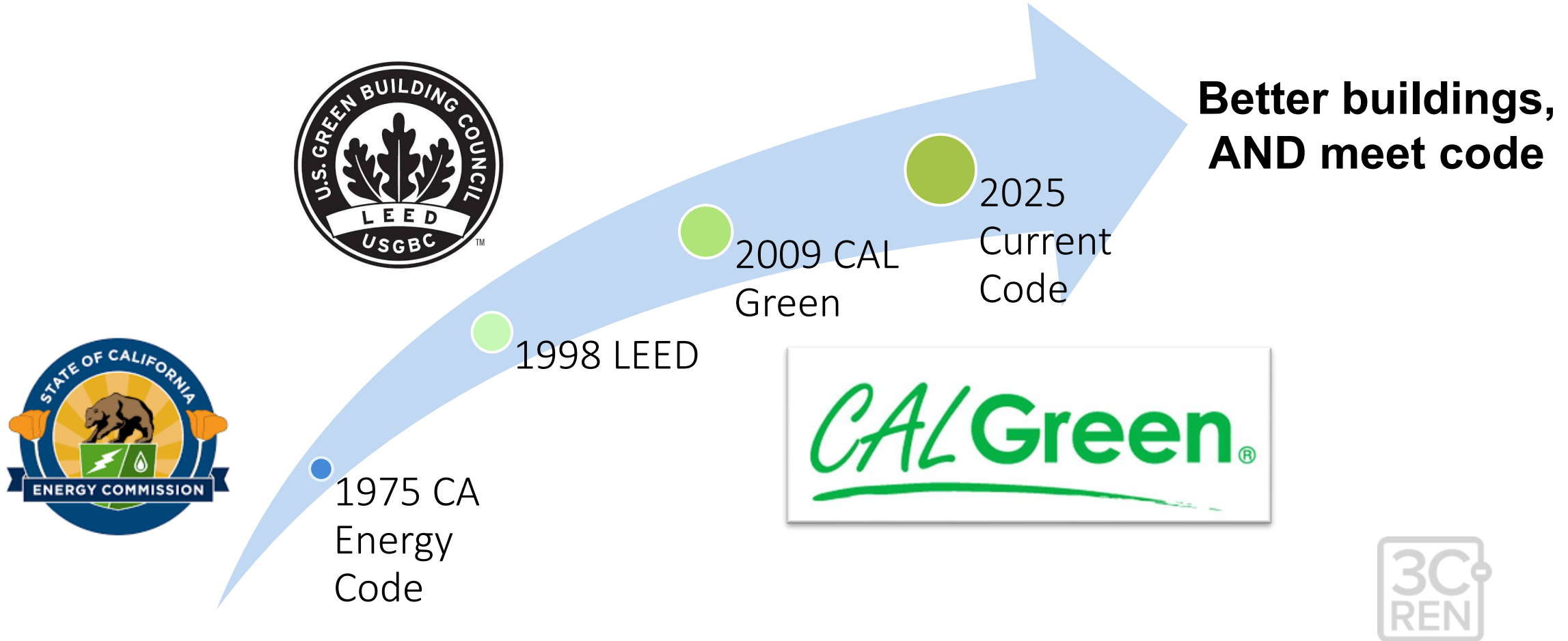
Voluntary/Reach

- Tier 1
- Tier 2

“... to improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a **reduced negative impact or positive environmental impact** and encouraging sustainable construction practices...”



Code Evolution of Green Building



California Building Standards – Title 24

- Part 1 - CA Administrative Code
- Part 2 - CA Building Code
- Part 3 - CA Electrical Code
- Part 4 - CA Mechanical Code
- Part 5 - CA Plumbing Code
- Part 6 - CA Energy Code
- Part 7 - Wildland Urban Interface
- Part 8 - CA Historical Building Code
- Part 9 - CA Fire Code
- Part 10 - CA Existing Building Code
- Part 11 - CA Green Building Standards Code
- Part 12 - CA Referenced Standards Code

Not to be
confused with



Reading the Code- Adopting Agencies

- Housing and Community Development ([HCD](#)) – Residential, including hotels/motels
- Building Standards Commission ([BSC](#)) – Nonresidential
- Division of the State Architect ([DSA](#)) – State and Schools – some sections
- OSHPD – Hospitals, nursing facilities – some sections

CALIFORNIA GREEN BUILDING STANDARDS CODE – MATRIX ADOPTION TABLE
CHAPTER 5 – NONRESIDENTIAL MANDATORY MEASURES
DIVISION 5.1 – PLANNING AND DESIGN

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC- CG	SFM	HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt entire CA chapter		X																				
Adopt entire chapter as amended (amended sections listed below)																						
Adopt only those sections that are listed below								X														
Chapter/Section																						
5.101								X														
5.102 Definitions								X														
5.106.4.2 and subsections								X														



Chapters of CALGreen

- Chapter 1: Administration
- Chapter 2: Definitions
- Chapter 3: Green Building (scope)
- Chapter 4: Residential Mandatory Measures
- Chapter 5: Nonresidential Mandatory Measures
- Chapter 6: Reference Organizations & Standards
- Chapter 7: Installer & Special Inspector Qualifications
- Chapter 8: Compliance Forms and Worksheets
- Appendix A4 – HCD voluntary measures
- Appendix A5 – BSC voluntary measures
- Appendix A6.1 – OSHPD voluntary measures



Chapter 3 – CALGreen Scope

Non-Res

New Construction

Adds over 1,000 SF

Alteration >\$200,000*

Parking Lot Alt./Add.

Residential

New Construction

Alt/Add that adds area or volume*

*CALGreen applies ONLY to new work in an alteration.
Exceptions when triggered, e.g., upgrade all old plumbing fixtures



Chapter 3 – CALGreen Scope

- Mixed occupancy shall comply with appropriate requirements for each separate occupancy type.
 - Hotels or mid-rise/high-rise multifamily: residential checklist
 - Ground-floor commercial: AND non-res checklist
- Phased projects
 - For shell buildings & initial Tenant Improvements (TI), code measures relevant to the new construction building components & systems shall apply.
 - Subsequent TI's are considered alterations



Century Towers, San Jose. Credit: Swenson Builders



- Yes or Not applicable
- Detail/Sheet Reference





Chapter 5 – Mandatory Measures

Chapter Divisions

- Division 5.1 - Planning and Design
- Division 5.2 - Energy Efficiency
- Division 5.3 - Water Efficiency & Conservation
- Division 5.4 - Material Conservation and Resource Efficiency
- Division 5.5 - Environmental Quality

Notes on Documentation:
Provided in orange boxes



5.1 Planning and Design



Storm Water Pollution Prevention During Construction

<1 acre

Measures must:

- Prevent flooding and dust to adjacent property
- Prevent erosion & retain soil on site
- Prevent run-off from construction activity

SLO Co. Probation Building



Contain runoff to washout



Burlap mat & straw wattles at catch basin



Prevent runoff from construction activity



5.106.1

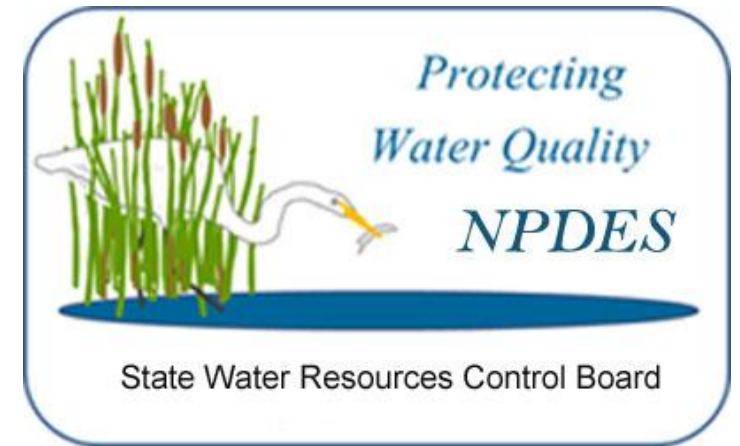
Storm Water Pollution Prevention

≥1 acre

Comply with stormwater discharge regulations and postconstruction requirements from **National Pollution Discharge Elimination System (NPDES)**

- Postconst. runoff must match preconst. Runoff

Prevent erosion & retain soil runoff on site



Documentation:

Site or Civil Drawings demonstrate compliance with either local ordinance, best management practices listed here, or NPDES requirements

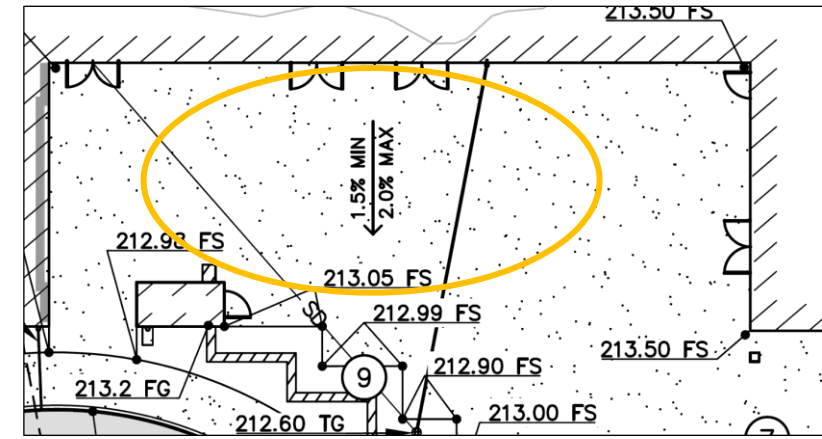


5.106.2



Grading and Paving

- Managed to prevent water from entering building
- Swales and other strategies to recharge groundwater
- Exception – additions/alterations not altering drainage path



Flatwork should bring water away from building and possibly to landscaping

Documentation:
Site Plan & Landscape Plans
show required slope on flatwork



5.106.10

Bicycle Parking – Non-Residential

Short term bike parking – permanent racks within 200 ft of visitor's entrance

- Easily visible, 2 bike minimum
- **20% of peak daily visitors**

Long Term bike parking – easily accessible from street

- New buildings with over tenant spaces – **10% of tenant-occupants**
- Additions or alterations – **10% of tenant-occupants being added**
- New shell in phased project – **10% of anticipated tenant-occupants**
- **Minimum of 1 for each building type**



2022 Code

% of VEHICLE PARKING

2025 Code

Based on VISITORS & OCCUPANTS



5.106.4

Bicycle Parking

Public schools and community colleges

- Student parking- permanently anchored, 4 two-bike capacity rack per new building
- Staff parking- 2 staff long-term parking spaces per new building

Documentation:

Bike rack type and location on Site Plans,
with details and specifications;
Parking/bike calculations on Cover Sheet
with car-parking calcs.



Bicycle Parking: Longer-Term Parking

Yes

No

Acceptable Long-Term Parking Facilities:

- Covered, lockable enclosure w/permanently anchored racks
- Lockable Bicycle Rooms w/permanently anchored racks
- Lockable, permanently anchored bike lockers





Electric Vehicle Charging Topics

1. EV charging Definitions
2. Non-Res Requirements
3. Medium- & Heavy-Duty Charging
4. Parking Facility Additions/Alterations

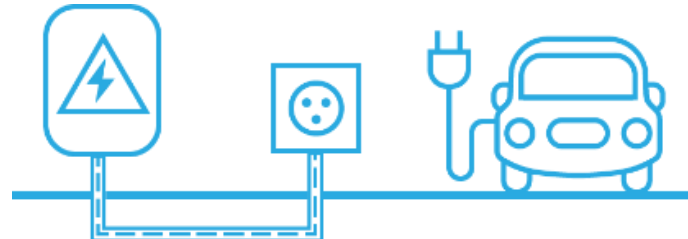


EV Charging – 3 Types



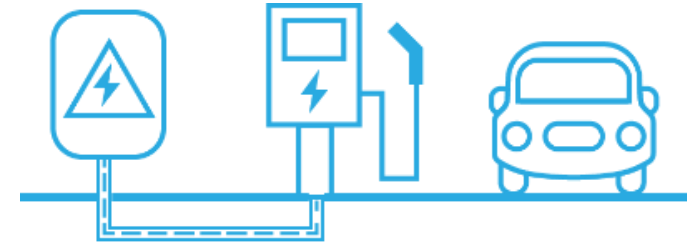
EV CAPABLE

Provide electrical panel space, conduit (no wire), and a termination box for a future 208/240--volt, 40-amp circuit



EV READY

Provide a space that is fully wired for 208/240 volt and has a receptacle so it's "ready" for someone with their own plug-in cord



EV CHARGING STATION

Provide Level 2 EV Charging Stations (EVCS). These should be stand-alone chargers in common-use parking areas

Types of Chargers



Level 1

120-volt, 16-amp
commercial cable



Level 2 Charger

208/240-volt 40-amp
charge station

**This is what is required
of EVCS**



Level 3 & DCFC (Direct current Fast Charger)

480-volt, 80-amp
charging station

**Allowed but not
required by code**



Two types of “Level 2”



Level 2

208/240-volt, 40-amp charge station, Used for EVCS



Low Power Level 2

208/240-volt, **20-amp** receptacle, Used for EV Ready



*Market options for
Receptacle Use*



Clear Labeling for Future & Installed EV

For EV Capable (future) Spaces

- Label on Breaker for EV Space
- Stub Up Labeled for EV Space
- **No** Label/Paint Marking on Stall



For Installed EV Spaces

- Label on Breaker for EV Space
- Clear Paint Marking for EV Stall



Electric Vehicle Charging - Non-Res

Total Spaces	2022 Code		2025 Code		
	EV Capable	EVCS	EV Capable	EVCS	EVCS Office/Retail
0-9	0	0	0	0	0
10-25	4	0	4	2	3
26-50	8	2	8	4	6
51-75	13	3	13	6	8
76-100	17	4	17	8	13
101-150	25	6	25	12	19
151-200	35	9	35	18	26
201+	20%	25% of EV Capable	50% of EV Capable	50% of EV Capable	75% of EV Capable



Note that the EVCS count towards the total number of EV Capable Spaces

Alternative Approaches to EVCS



PARKING SPACES	6.6 kVA	LOW POWER LEVEL 2, LEVEL 2, OR DCFC
0-9	0	0
10-25	26.4	26.4
26-50	52.8	52.8
51-75	85.8	85.8
76-100	112.2	112.2
101-150	165	165
151-200	231	231
20 percent of		Total required kVA = $P \times 20 \times 6.6$

DC Fast
Charger =
five (5) Level 2

Low-Power
Level 2 EVSE =
Half ($\frac{1}{2}$)
regular Level 2

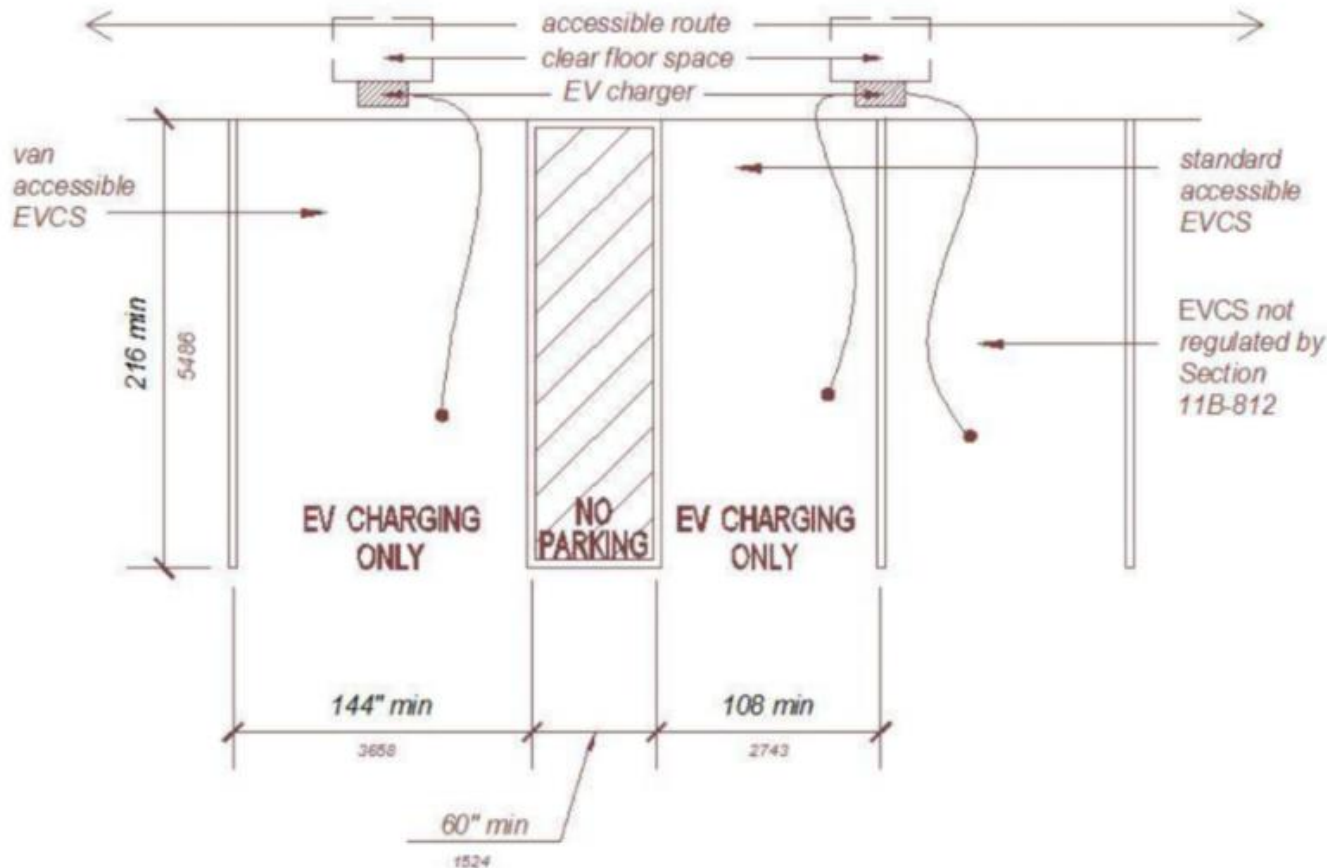
Power
Allocation
Method

Note: If using DCFC, at least one charger must be regular Level 2



Electric Vehicle Charging- Accessibility

- All of the EVCS that are built for Non-residential uses, or hotels, motels and public housing, must comply with California Building Code, Chapter 11B-228.3.



Medium- and Heavy-Duty Charging

BUILDING TYPE	BUILDING SIZE (SQ. FT.)	NUMBER OF OFF-STREET LOADING SPACES	ADDITIONAL CAPACITY REQUIRED (KVA) FOR RACEWAY & BUSWAY AND TRANSFORMER & PANEL
Grocery	10,000 to 90,000	1 or 2	200
		3 or Greater	400
	Greater than 90,000	1 or Greater	
Manufacturing Facilities	10,000 to 50,000	1 or 2	
	10,000 to 50,000	3 or Greater	
	Greater than 50,000	1 or Greater	
Office Buildings	10,000 to 135,000	1 or 2	
	10,000 to 135,000	3 or Greater	
	Greater than 135,000	1 or Greater	
Retail	10,000 to 135,000	1 or 2	
		3 or Greater	400
	Greater than 135,000	1 or Greater	400
Warehouse	20,000 to 256,000	1 or 2	200
		3 or Greater	400
	Greater than 256,000	1 or Greater	400

Select commercial uses shall add additional capacity in their raceways, transformers, and panels. This is so that off-street loading can become charging for electric hauling vehicles



EV charging at public schools and community colleges.

New table, similar approach

TABLE 5.106.5.6.1

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED EV CAPABLE SPACES	NUMBER OF REQUIRED EVCS ²
0–9	0	0
10–25	4	1
26–50	8	2
51–75	13	3
76–100	17	4
101–150	25	6
151–200	35	9
201 and over	20 percent of total ¹	25 percent of EV capable spaces ¹

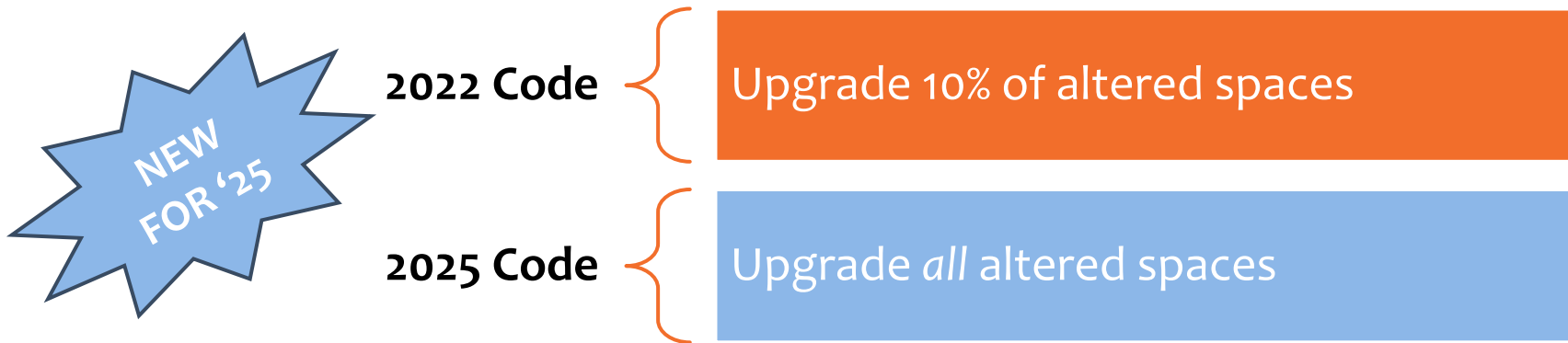
1. Calculation for spaces shall be rounded up to the nearest whole number.
2. Each EVCS shall reduce the number of required EV capable spaces by the same number.

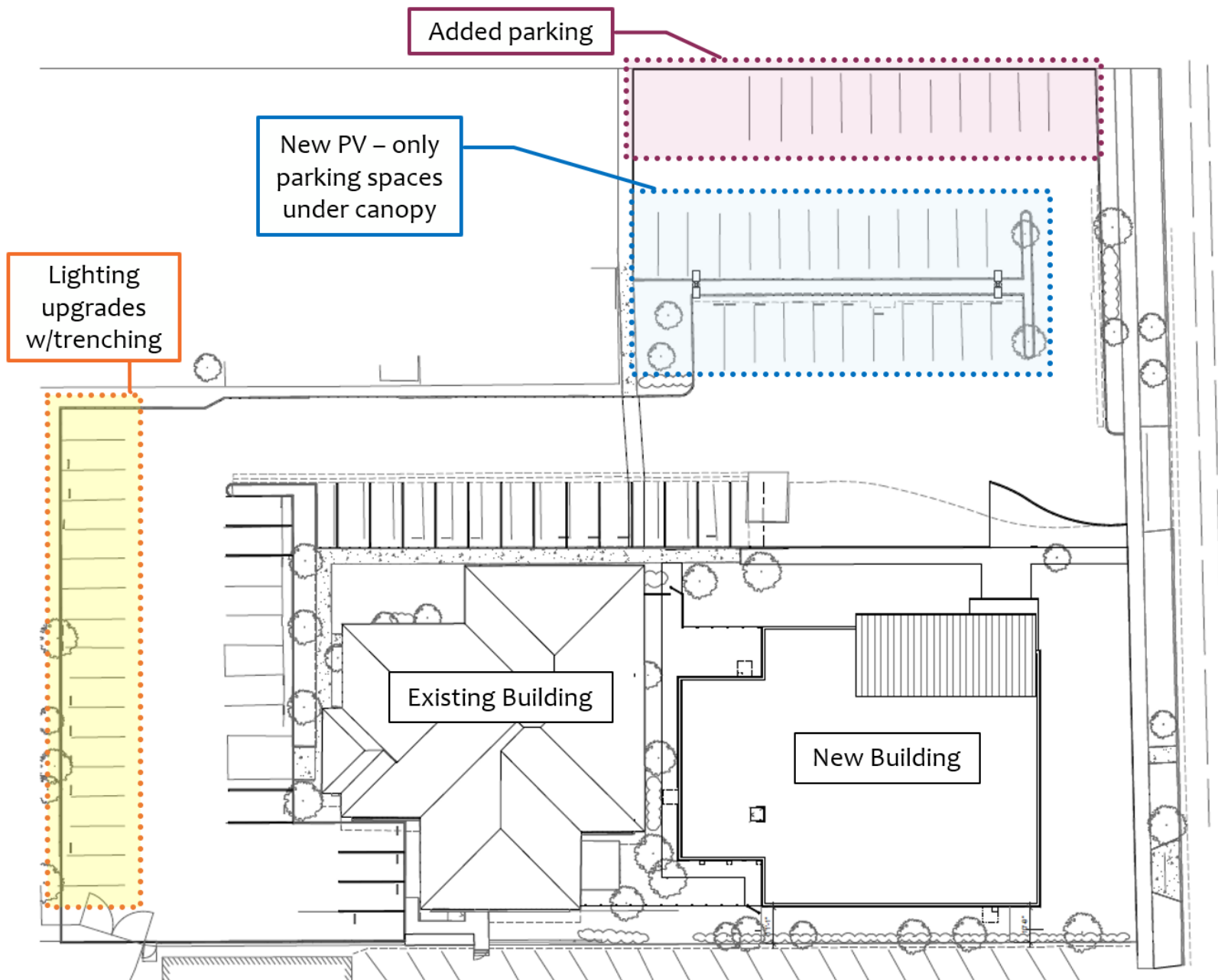


Parking Lot Addition/Alterations

Non-Res projects:

- When parking area is added, or electrical work is done
- Upgrade *all* existing EV Capable with EVCS





Parking Alterations and Additions

Note:

A building addition does not trigger EV charging on its own, only additional parking does.

Alterations – Adding PVs

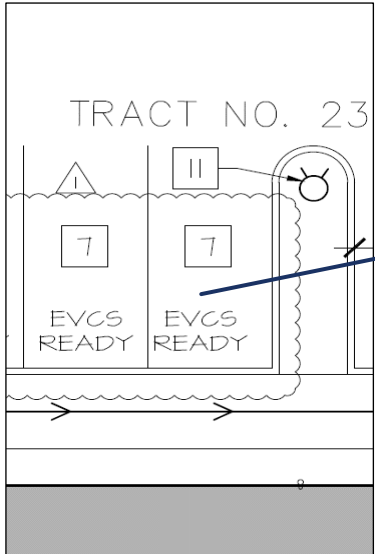


Intervening Code Cycle
Clarification:

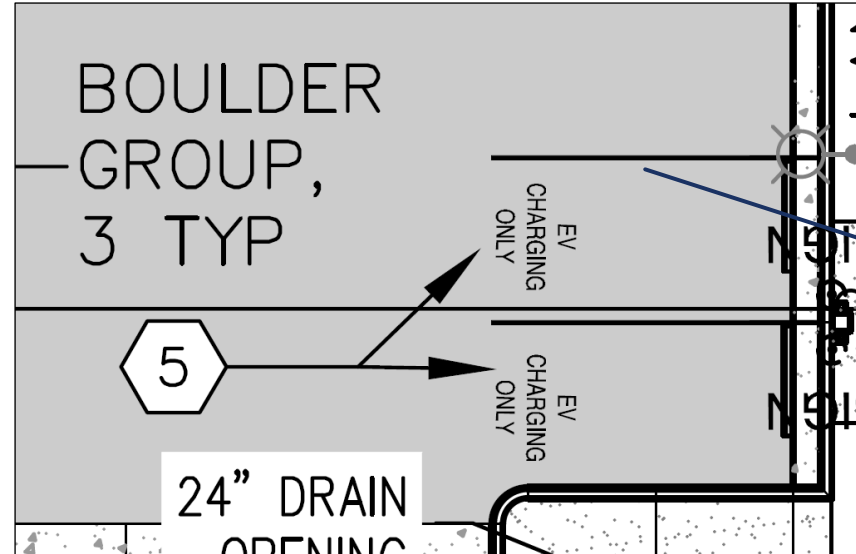
Only spaces *under* a new
solar canopy trigger EV
Charging upgrades; *not* the
entire parking lot



Documentation for EV



Shows Builder (and plans examiner) location of EV ready spaces



Shows Builder *striping* for stall of EVCS space

Documentation:

- Calculations on Cover Sheet for number and type of spaces
 - Spaces labeled on Site Plans, with Details
 - Sufficient capacity in panels on Electrical Sheets



Remember “Designated Parking”?

- 5.106.5.2 ~~Designated parking for clean air vehicles.~~

~~CLEAN AIR/
VANPOOL/EV~~

Eliminated, with new the emphasis
on EV charging

(but may be included as a
voluntary measure)



Light Pollution



- Outdoor Lighting Design
- Backlight, Uplight, and Glare (BUG) Ratings as defined by IESNA TM-15-11; and per light zone.
- Or, Compliance with a stricter local ordinance
- Exceptions (Align with Energy Code)
- Does not apply to lighting for the public right of way and Emergency Lighting
- Luminaires with less than 6,200 initial lumens

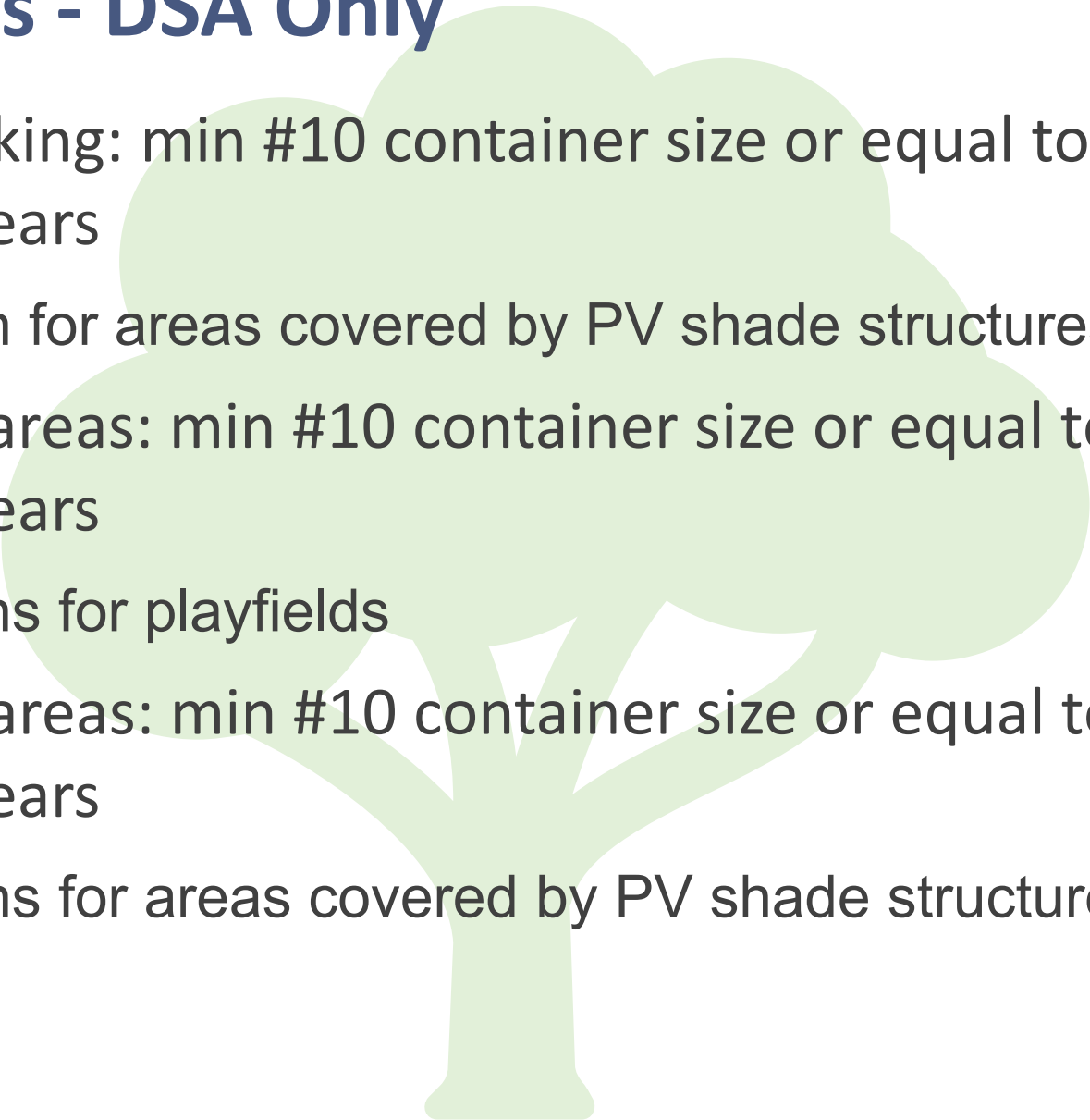
Documentation:

Lighting schedule provided on Site Plan or Electrical Sheets



5.106.8

Shade Trees - DSA Only



- Surface Parking: min #10 container size or equal to shade 50% of area within 15 years
 - Exception for areas covered by PV shade structures
- Landscape areas: min #10 container size or equal to shade 20% of area within 15 years
 - Exceptions for playfields
- Hardscape areas: min #10 container size or equal to shade 20% of area within 15 years
 - Exceptions for areas covered by PV shade structures



5.2 Energy Efficiency

Chapter 5.2 – Energy Efficiency

- Must comply with Title 24, Part 6 (Energy Code).

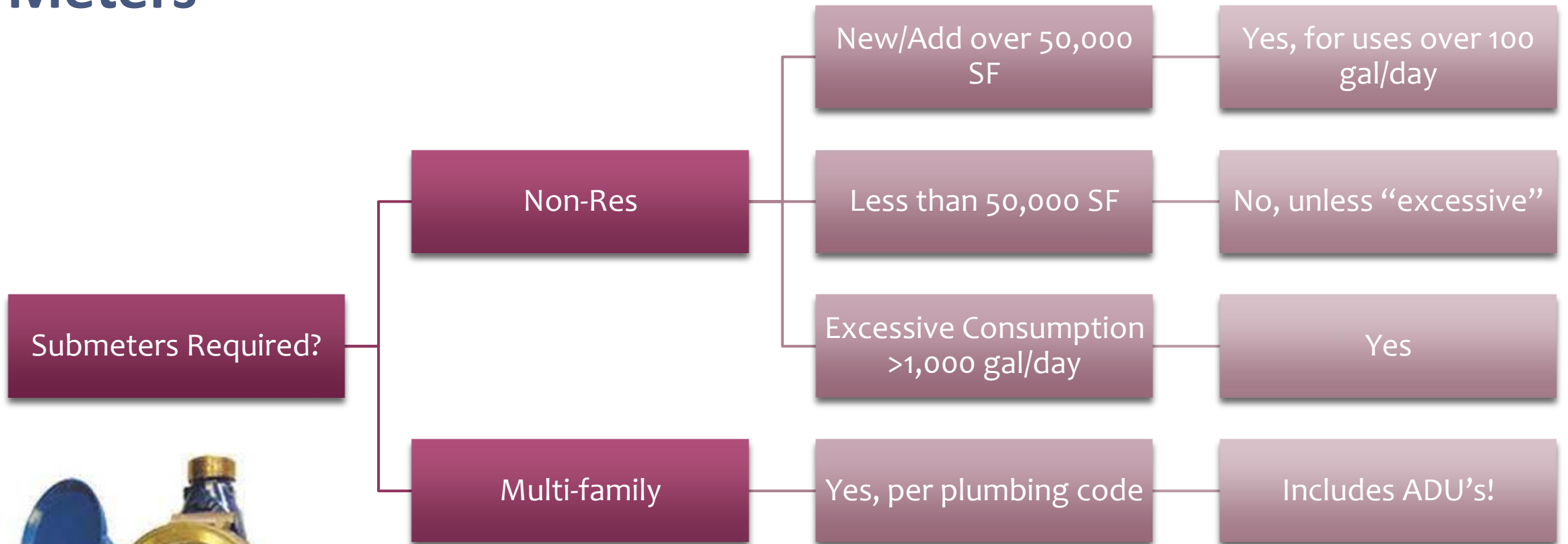
That's it.





5.3 Water Efficiency and Conservation

Meters



Water Conserving Plumbing Fixtures & Fittings

Fixture Type		
Residential Bathroom	> 0.8 gpm	≤ 1.2 gpm
Public Bathrooms	≤ 0.5 gpm	
Metering Faucets	≤ 0.2 gallons/cycle	
Kitchen Faucets	≤ 1.8 gpm	
Wash Fountains	≤ 1.8 gpm	
Metering Faucets for Wash Fountains	≤ 0.2 gallons/cycle	
WaterSense Toilet	≤ 1.28gpf	
Wall Mounted Urinal	≤ 0.125gpf	
Other Urinals	≤ 0.5gpf	
WaterSense Showerheads	≤ 1.8 gpm	
Multiple Showerheads	Total flow ≤ 1.8 gpm	
Pre-rinse Spray Valve	≤ 0.5gpf	



Commercial Kitchen Equipment

- Food waste disposers
 - ≤ 1 gpm when not in use or auto shutoff after 10 minutes,
 - ≤ 8 gpm when in use



Documentation:
Requirements in Fixture
Schedule in Plumbing
Drawings



5.303.4

Model Water Efficient Landscape Ordinance

- Local water efficient landscape ordinance or DWR Model Water Efficient Landscape Ordinance
- All non-res developments, including schools and healthcare facilities

AB 1881 MODEL - WELO (WATER EFFICIENT LANDSCAPE ORDINANCE)							
WATER EFFICIENT LANDSCAPE WORKSHEET							
ETO FOR, S.L.O., CA	43.8						
REGULAR LANDSCAPE AREAS							
HYDROZONE# PLANTING DESCRIPTION	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	ETAF (PF/IE)	Hydrozone Landscape Area (SF)	ETAF x AREA	ESTIMATED Total H2O Use (Gallons / Year)
DROUGHT TOLERANT PLTGS. - Agave Clusters in Decorative Gravel (WUCOLS - VERY LOW)	0.2	DRIP	0.81	0.25	5,640.00	1,392.59	37,817.24
DROUGHT TOL. PLTGS. - Agave Mass'g / Dec. Rock (WUCOLS - LOW)	0.3	DRIP	0.81	0.37	4,655.00	1,724.07	46,818.96
DROUGHT TOLERANT PLNT'G. - Sun Exposure (WUCOLS - LOW / MED)	0.5	DRIP	0.81	0.62	8,075.00	4,984.57	135,360.93
ENTRY / CTYARD PLTG AREAS - Succulent Mix (WUCOLS - MED)	0.6	DRIP	0.81	0.74	1,015.00	751.85	19,849.87
TOTALS				1.98	19,385.00	8,853.09	239,847.00
SPECIAL LANDSCAPE AREAS							
Retent'n. Basin / Dri-Creek (WUCOLS - SPEC'L USE)	1.0	COBBLE	0.75	1.33	1150.00	1,533.33	1,533.33
TOTALS				3.31	20,535.00	10,386.42	241,380.33
ETAF CALCULATIONS						MAWA =	325,444.29
TOTAL ETAF	10,386.42						
TOTAL AREA	20,535.00						
AVERAGE ETAF	0.51						
						** THIS PLAN COMPLIES WITH AB 1881 **	
						WATER WISE PLANTS (SF)	18,370.00
						NON-WATER WISE PLANTS (SF)	2,285.19
						% OF WATER WISE PLANTS	89.46
MAWA = (Eto)/(0.62)/[(0.55 x LA) + (0.45 x SLA)]							
ETO	43.80						
LA	20,535	SQ FT					
SLA	1,533						
MAWA	325,444	GALLONS					
DAILY WATER	892	GALLONS					



5.4 Material Conservation and Resource Efficiency



Weather Protection & Moisture Protection

- Provide a weather-resistant exterior wall and foundation envelope as required by CBC.
- Sprinklers: irrigation systems do not spray buildings



Entries and Openings



- Exterior entries/openings “subject to foot traffic or wind-driven rain” to prevent water intrusion
 - All Exterior Entries
 - Install flashings integrated with a drainage plane
 - Primary Doors
 - nonabsorbent flooring within 2 feet around opening
 - Awning/overhang 4 feet deep OR Door recessed 4 feet



Construction Waste Reduction at least 65%



- Recycle and/or salvage a min of 65% of construction waste
 - Excludes hazardous waste
- Requires **Waste Management Plan** & statement of results (must meet local ordinance if higher than 65%)
- *Optional pathway is proving “reduced generation” to a max of 3.4 lbs/sf (res) or 2 lbs/sf (nonres)*



Construction Waste

Universal Waste

- Additions/alterations must verify universal waste items (fluorescent lamps, ballasts, mercury containing thermostats, etc.) are diverted from waste streams

Excavated Soil & Land Clearing Debris

100% vegetation, rocks, etc. from land clearing must be reused or recycled (mulch)

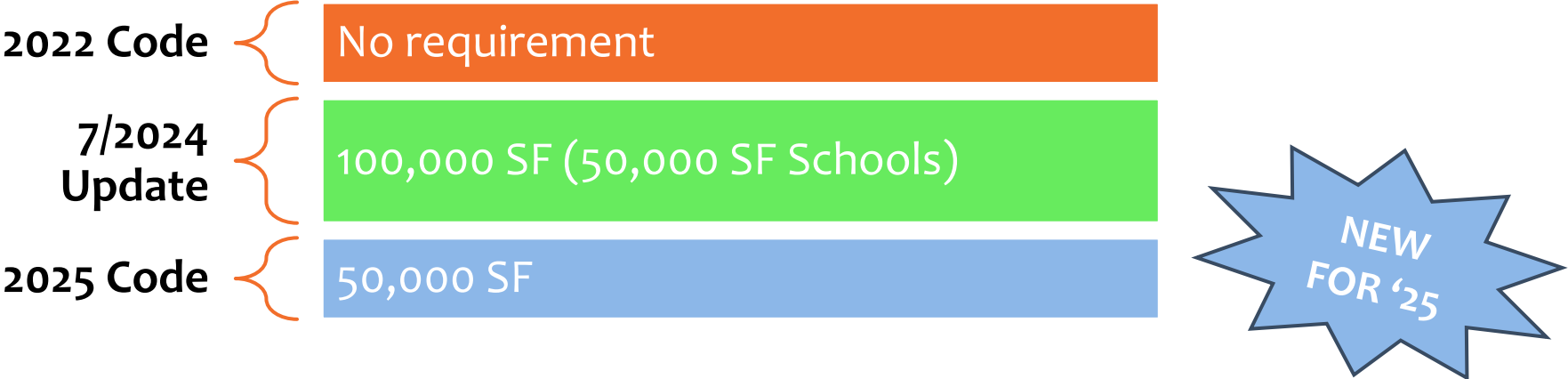
Documentation:
Add requirements to Notes on plan set.



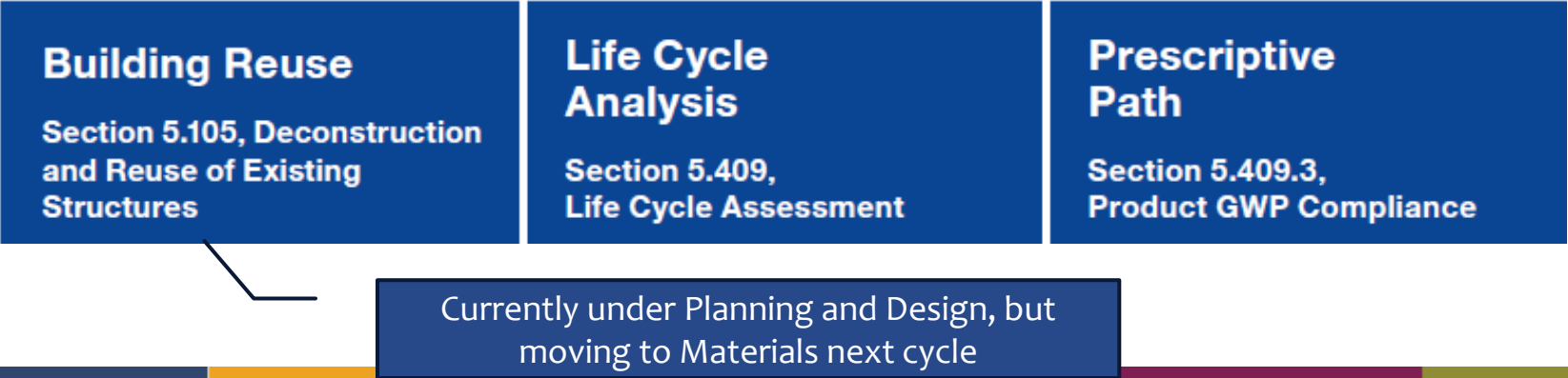
5.408.2

Embodied Carbon Compliance Pathways

Required for NON-RESIDENTIAL projects

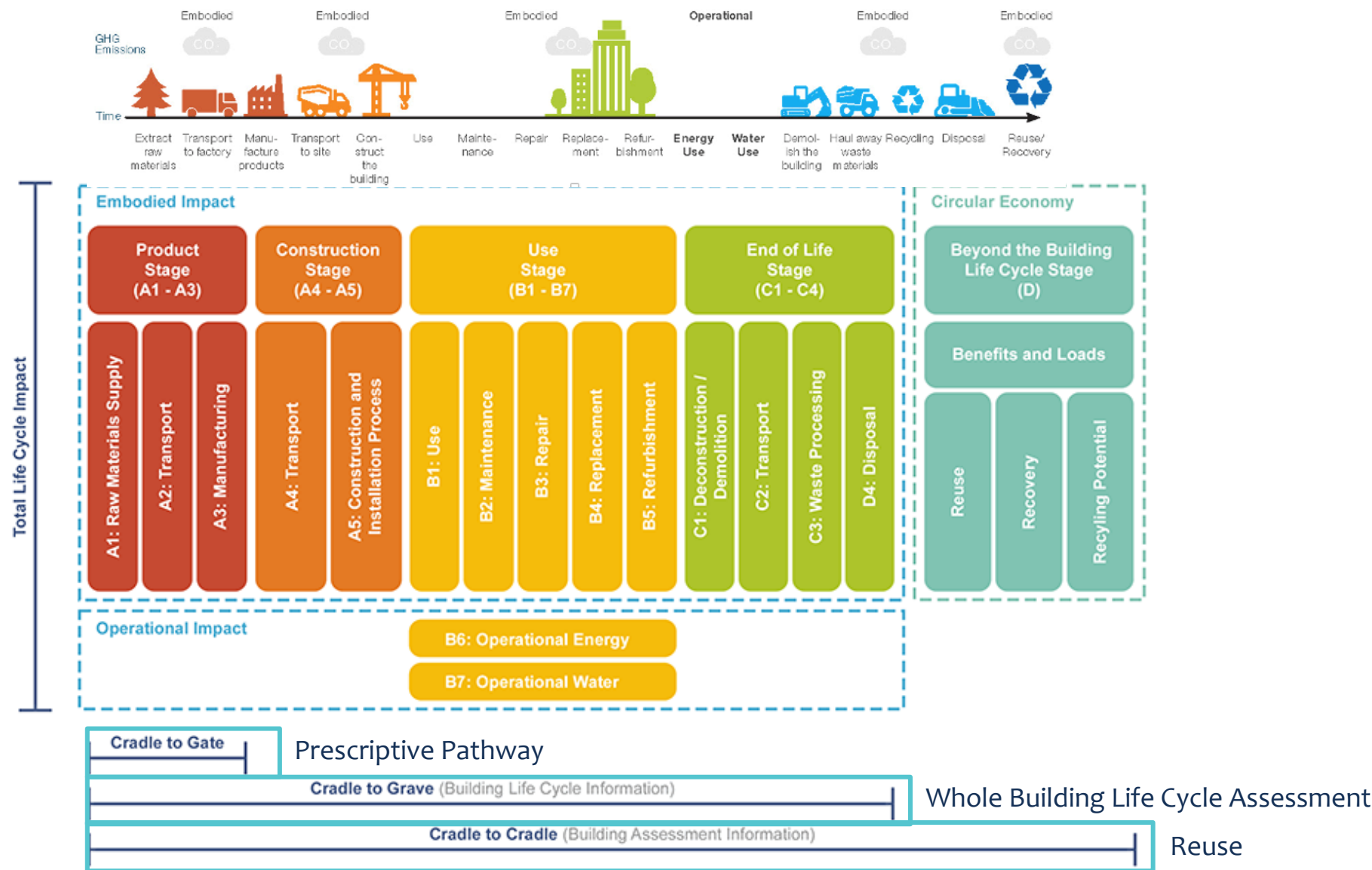


- 3 pathways for compliance



5.105/5.409

Embodied Carbon Scope for CALGreen



Building Reuse

Section 5.105, Deconstruction and Reuse of Existing Structures

Components: Existing primary structural elements, enclosure, (roof framing, wall framing, and exterior finishes).

Exceptions: Additions 2x the area or more of the existing building.

Exclude: Window assemblies, insulation, portions structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.

Mandatory

45% of the structure and enclosure to be reused

Tier 1

75% of the structure and enclosure to be reused

Tier 2

75% of the structure and enclosure to be reused AND 30% of interior non-structural elements to be reused

Life Cycle Analysis

Section 5.409, Life Cycle Assessment

Scope: 60-year cradle-to-grave WB LCA (ISO 14044), excluding operating energy. Show GWP analysis.

Components: Primary and secondary structural members, glazing, insulation, exterior finishes.

Mandatory

10% reduction from baseline

Tier 1

15% reduction from baseline

Tier 2

20% reduction from baseline

Prescriptive Path

Section 5.409.3, Product GWP Compliance

Components: Structural steel, rebar, flat glass, light and heavy-duty mineral wool insulation, and ready mix concrete.

Exception: Concrete mixes can use a weighted average for all mixes.

Mandatory

175% of IW-EPD GWP Limits

Tier 1

150% of IW-EPD GWP Limits

Tier 2

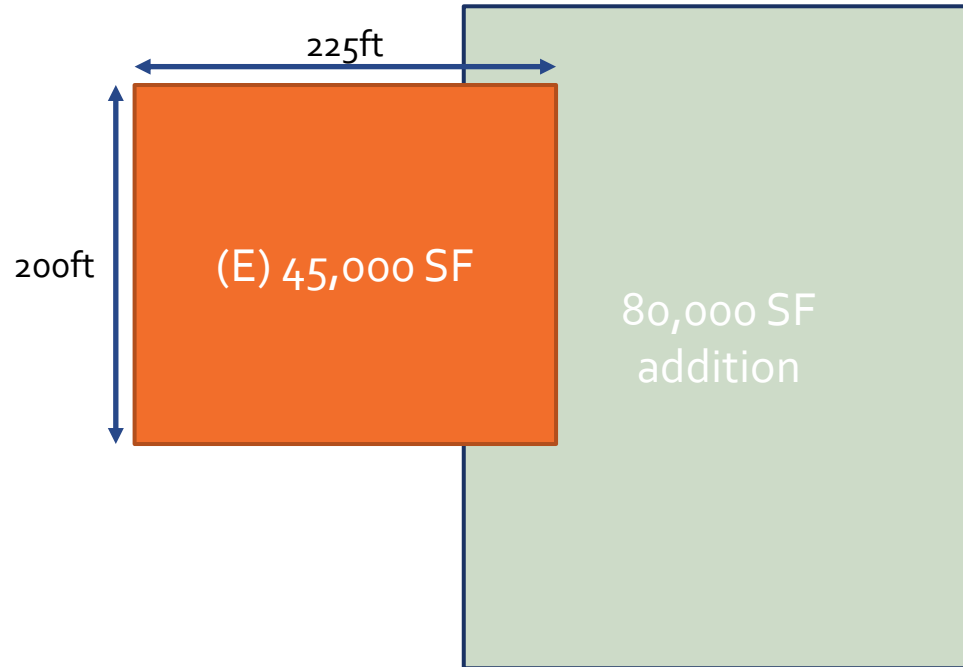
IW-EPD GWP Limits

Compliance Pathways



5.105/5.409

Reuse of Existing Building



- For additions or alterations, where addition is $< 2x$ the area of existing building

Primary Structure		Existing SF	Retained SF	
	perimeter foundation	2550	2550	
	concrete floor	45,000	45,000	
	CMU walls	8500	4250	
	<i>excl windows</i>	50	0	
	lateral beams	900	0	
	subtotal	56950	51800	90.96 %
Existing enclosure				
	roof framing	45000	0	
	wall framing	n/a	n/a	
	exterior finishes	8450	8450	
	subtotal	53450	8450	15.81 %
Total		110,400	60,250	54.57 %

- Primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements)
- Existing building enclosure (roof framing, wall framing and exterior finishes)
- Exclude windows, insulation, hazardous

WORKSHEET (WS-3)
5.105.2 BUILDING REUSE

DOCUMENTATION OF COMPLIANCE OF EXISTING BUILDING REUSE

Area of Existing Building(s) 45,000 SF

Area of Aggregate Addition(s) (if applicable) 80,000 SF

	EXISTING TOTAL AREA (A)	RETAINED TOTAL AREA (B)	% OF RETAINED STRUCTURE (B)/(A)
Primary Structural Elements of Existing Building(s) (foundations; columns, beams, walls, and floors; and lateral elements)	56,950 SF	51,800 SF	90.96 % SF
Building Enclosure of Existing Building(s) (roof framing, wall framing and exterior finishes only)	53,450 SF	8,450 SF	15.81 % SF

Total % Reuse of Required Elements $\geq 45\%$ 54.57 %



5.105.2

Whole Building Life Cycle Assessment

- Cradle-to-grave scope
- Reference study period of 60 years
- Building enclosure components and primary and secondary structural members – plus glazing and insulation
- Reference building – same location, orientation, size, function, space conditioning

Free software:



Paid software:



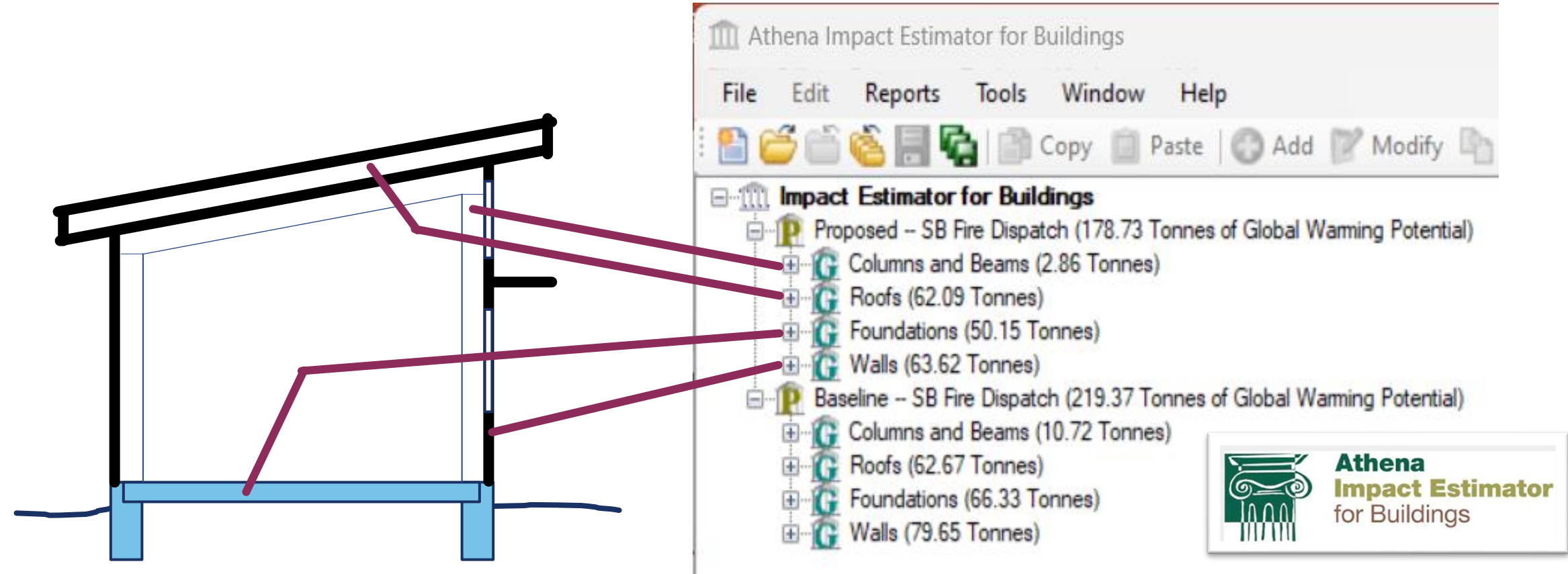
(fka GaBi)



(Revit plug-in)



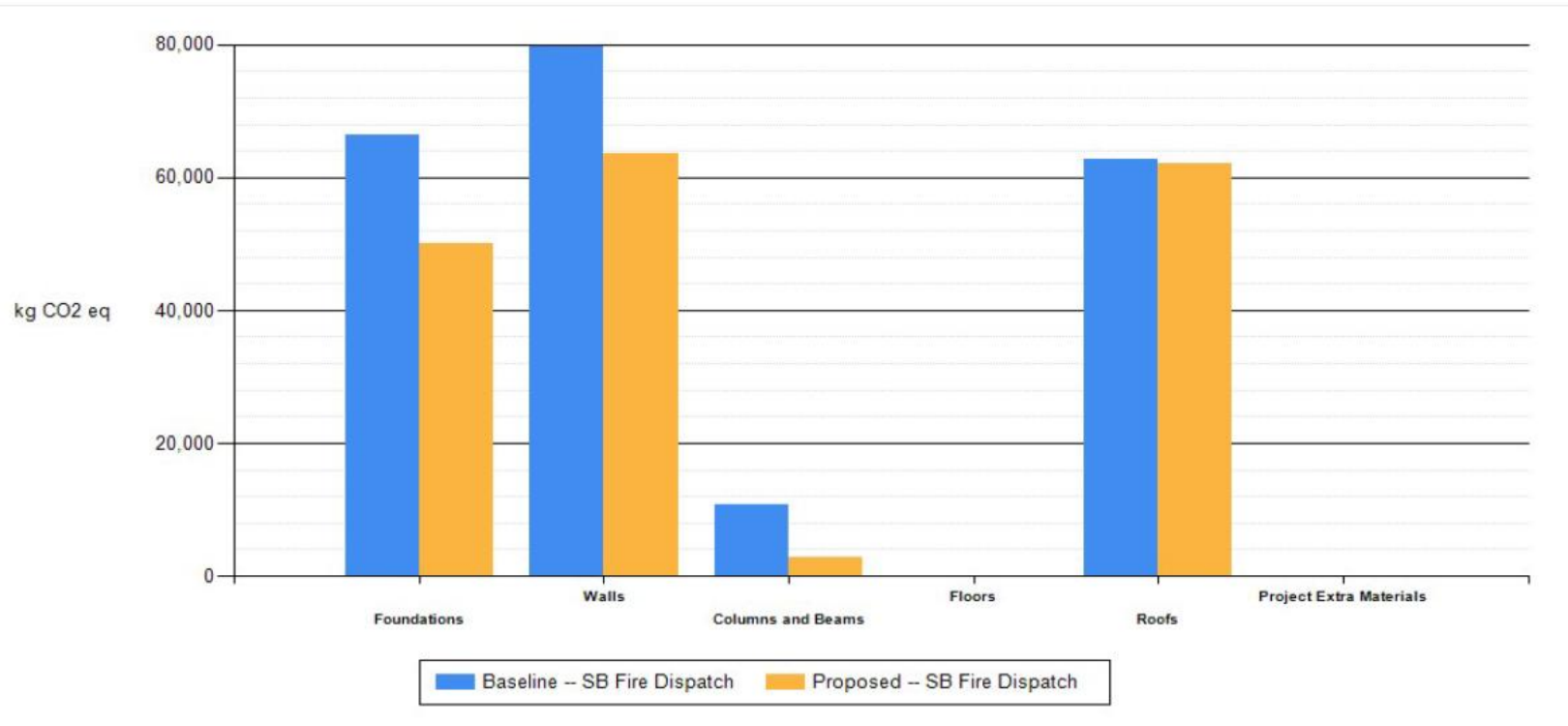
Athena – Building Tree Organization



The user can build a **Baseline** model and a **Proposed** model for comparison.
The user can define the wall and roof assemblies.
The wall assemblies include “openings” for basic window inputs.
The foundation can include slab, footings, grade beams, pad footings and rebar.

Example Report from Athena

Comparison of Global Warming Potential By Assembly Group (A to C)



Project Name	Unit	Foundations	Walls	Columns and Beams	Floors	Roofs	Project Extra Materials	Total
Baseline -- SB Fire Dispatch	kg CO2 eq	6.63E+04	7.97E+04	1.07E+04	0.00E+00	6.27E+04	0.00E+00	2.19E+05
Proposed -- SB Fire Dispatch	kg CO2 eq	5.02E+04	6.36E+04	2.86E+03	0.00E+00	6.21E+04	0.00E+00	1.79E+05
Change (- reduction, + increase)		-2.44E-01	-2.01E-01	-7.33E-01	n/a	-9.25E-03	n/a	-1.85E-01
% Change (- reduction, + increase)		-24%	-20%	-73%	n/a	-1%	n/a	-19%

- 19% reduction from baseline
 - Low-carbon concrete mix
 - Mass timber instead of steel
 - Stone wool insulation instead of foam



Product GWP Compliance – Prescriptive Path

Only certain steel, glass and insulation...

.... and concrete.
Allowed GWP keyed to strength and type of ready-mix

TABLE 5.409.3
PRODUCT GWP LIMITS

BUY CLEAN CALIFORNIA MATERIALS PRODUCT CATEGORY ¹	MAXIMUM ACCEPTABLE GWP VALUE (unfabricated) (GWP _{allowed})	UNIT OF MEASUREMENT
Hot-rolled structural steel sections	1.77	MT CO ₂ e/MT
Hollow structural sections	3.00	MT CO ₂ e/MT
Steel plate	2.61	MT CO ₂ e/MT
Concrete reinforcing steel	1.56	MT CO ₂ e/MT
Flat glass	2.50	kg CO ₂ e/MT
Light-density mineral wool board insulation	5.83	kg CO ₂ e/1 m ²
Heavy-density mineral wool board insulation	14.28	kg CO ₂ e/1 m ²
Concrete, Ready-Mixed ^{2,3}		
CONCRETE PRODUCT CATEGORY	MAXIMUM GWP ALLOWED VALUE (GWP _{allowed})	UNIT OF MEASUREMENT
up to 2499 psi	450	kg CO ₂ e/m ³
2500–3499 psi	489	kg CO ₂ e/m ³
3500–4499 psi	566	kg CO ₂ e/m ³
4500–5499 psi	661	kg CO ₂ e/m ³
5500–6499 psi	701	kg CO ₂ e/m ³
6500 psi and greater	799	kg CO ₂ e/m ³
Concrete, Lightweight Ready-Mixed ²		
CONCRETE PRODUCT CATEGORY	MAXIMUM GWP ALLOWED VALUE (GWP _{allowed})	UNIT OF MEASUREMENT
up to 2499 psi	875	kg CO ₂ e/m ³
2500–3499 psi	956	kg CO ₂ e/m ³
3500–4499 psi	1039	kg CO ₂ e/m ³

Note: Units for steel are MT or metric tonne. Often noted in EPDs as t.

GWP_n < GWP_{allowed}

Where $GWP_n = \sum (GWP_n)(v_n)$ and $GWP_{allowed} = \sum (GWP_{allowed})(v_n)$

- n = each concrete mix installed in the project
- GWP_n = the GWP for concrete mix n per concrete mix EPD
- GWP_{allowed} = the GWP potential allowed for concrete mix n per Table 5.409.3
- v_n = the volume of concrete mix n installed in the project, in m3

ENVIRONMENTAL PRODUCT DECLARATION

NUCOR®

Fabricated Hot-Rolled Structural Steel Sections
Designated Steel Construction Product



According to ISO 14025,
EN 15804 and ISO 21930:2017

Table 2. LCIA results, per 1 metric ton

PARAMETER	UNIT	A1	A2	A3	TOTAL
GWP 100	kg CO ₂ eq.	1.10E+03	1.07E+01	1.10E+02	1.22E+03
ODP	kg CFC 11 eq.	4.67E-10	1.00E-09	3.38E-08	3.53E-08
AP	kg SO ₂ eq.	2.80E+00	4.96E-02	2.98E-01	3.15E+00
acid eq.		1.32E-01	4.20E-03	1.51E-02	1.51E-01
base eq.		4.49E+01	1.43E+00	2.92E+00	4.92E+01
surplus		1.27E+03	1.72E+01	8.52E+01	1.37E+03

Table 3. LCIA results, per 1 short ton

	A1	A2	A3	TOTAL
CO ₂ eq.	9.96E+02	9.70E+00	9.97E+01	1.10E+03
CFC 11 eq.	4.24E-10	9.08E-10	3.07E-08	3.20E-08
SO ₂ eq.	2.54E+00	4.50E-02	2.70E-01	2.86E+00

GWP data will be found on EPDs



5.409.3

Cost-effective, Low-Carbon Product Selection



Source: <https://rmi.org/embodied-carbon-101/>

Concrete	Structural Steel	Rebar	Insulation	Glazing	Finish Materials
Actions to Reduce Carbon Substitute cement with alternative cementitious materials (ACMs). Choose recycled aggregate. Select structural shapes and sizes that use less material while keeping the same structural integrity.	Actions to Reduce Carbon Specify CA or U.S.-made steel and steel with high recycled content. Prioritize electric arc furnace (EAF) production over basic oxygen furnace (BOF) production.	Actions to Reduce Carbon Use 97% or higher recycled content rebar. Select a structural concrete design that uses less material while keeping the same structural integrity.	Actions to Reduce Carbon Replace foam (especially XPS) with lower-carbon materials, like cellulose and mineral wool batt.	Actions to Reduce Carbon Select low-carbon window frame materials. Specify no more than two panes of glazing.	Actions to Reduce Carbon Select low-carbon and durable finish materials. Reuse materials and design for deconstruction and reuse for future tenant improvements.



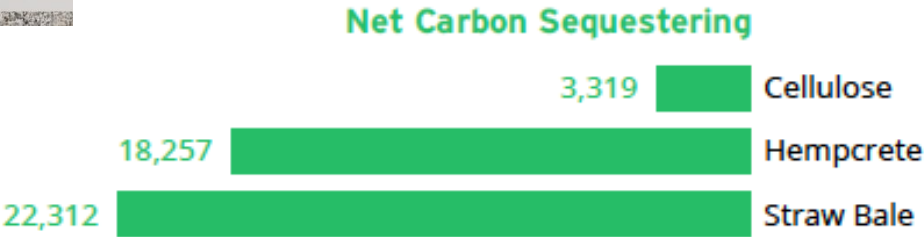
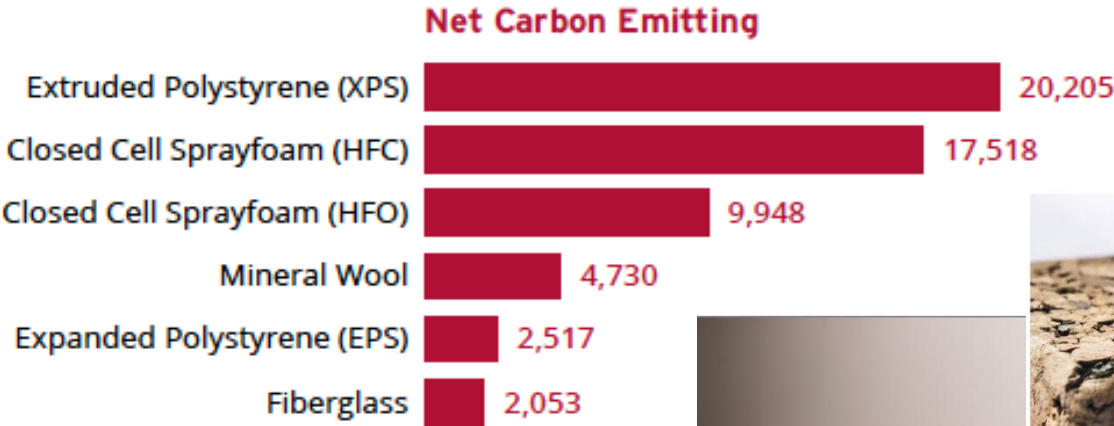
Source: Embodied Carbon and CALGreen Embodied Carbon Requirements, California Energy Codes & Standards, 2024

Insulation: Carbon Sequestration Opportunities

Exhibit 3 Embodied carbon of insulation materials (kg CO₂e)



Hempitecture.com



Mycelium board: Greensulate



Image courtesy of Corklink



Wood fiber board: Gutex

Insulation

Select low- or no-embodied-carbon insulation products

16% reduction

Expanded Cork: Corklink

Note: The amount of CO₂e is based on R-20 at 234 m².

Source: Chris Magwood, *Opportunities for CO₂ Capture and Storage in Building Materials*, 10.13140/RG.2.2.32171.39208, 2019.

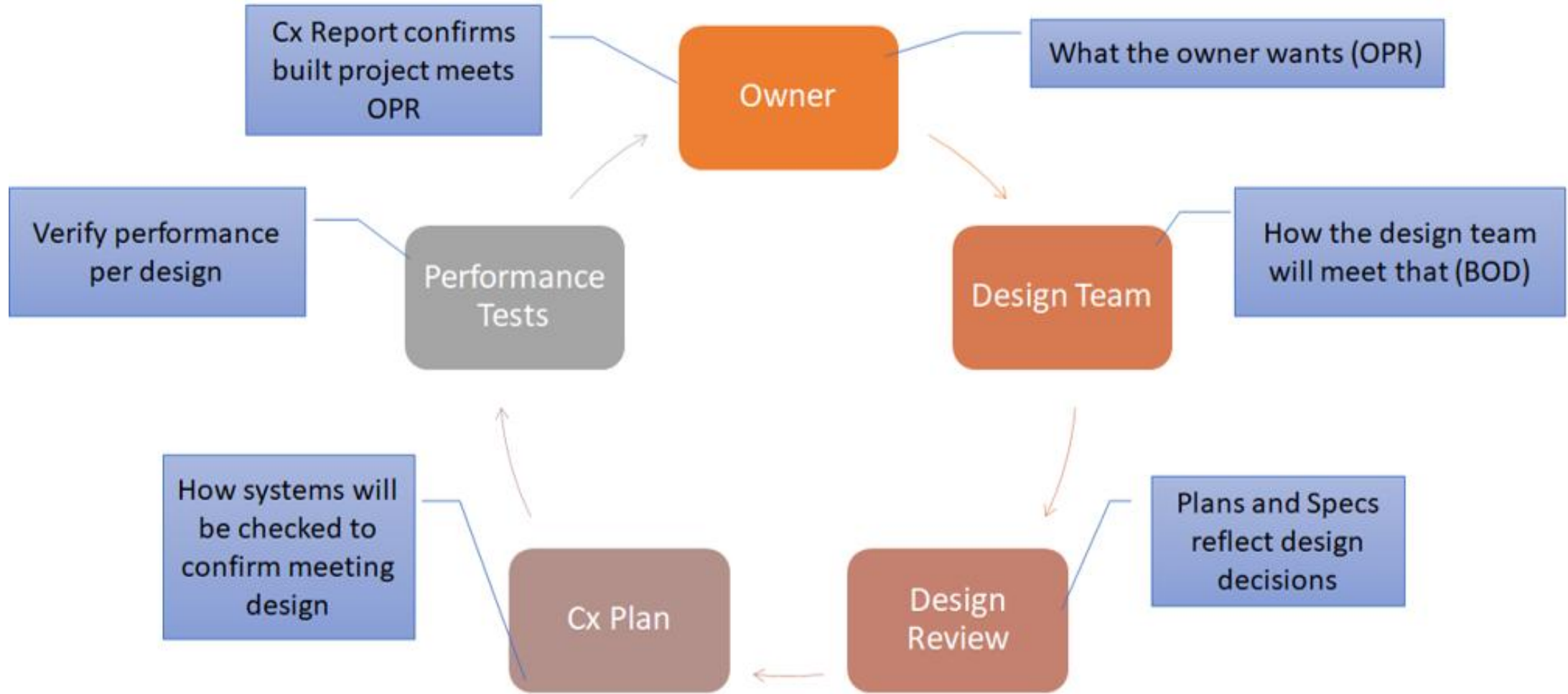


Recycling by Occupants

- Readily accessible areas for recycling
- Non-Res additions adding $\geq 30\%$ floor area must comply.
- Consideration for restaurant food waste under other state laws.



Commissioning – Circle of Accountability



Commissioning

- **New buildings $\geq 10,000$ ft**
- Submitted for permit
 - ✓ Owner's or owner representative's project requirements
 - ✓ Basis of design
 - ✓ Commissioning measures shown in the construction documents
 - ✓ Commissioning plan
- During construction
 - ✓ Functional performance testing
 - ✓ Documentation and training with Systems Manual
 - ✓ Commissioning report



Commissioning – Energy Code

STATE OF CALIFORNIA
Nonresidential Building Commissioning
 NRCC-CXR-E (Created 12/19)

CERTIFICATE OF COMPLIANCE

California Energy Commission

NRCC-CXR-E

This document is used to demonstrate compliance with mandatory commissioning requirements in §120.8 for nonresidential buildings and hotel/motel or high-rise residential buildings with nonresidential spaces. This document does not demonstrate compliance with commissioning requirements within Title 24, Part 11, which need to be documented separately if they apply.

Project Name: Report Page: Page 1 of 6
 Project Address: Date Prepared:

A. GENERAL INFORMATION

01	Project Location (city)	04	Building Size (ft²)	
02	Occupancy Type	05	Nonresidential Conditioned Floor Area (ft²)	10,000 - 49,999 ft²
03	Project Type	06	HVAC System Type	

B. PROJECT SCOPE

Table Instructions: Based on project information provided in Table A, Table B indicates which commissioning related requirements apply per §120.8. Table B is not editable by the user.

Commissioning Requirements per §120.8

01	Table F: Design Review Kickoff	§120.8(d)(1) and §120.8(d)(2)	The design review kickoff meeting establishes who will play the role of the design reviewer, the project schedule and identify owner's requirements. This meeting should be conducted during schematic design.
02	Table G: Owner's Project Requirements (OPR)	§120.8(b)	The owner's project requirements establish the owner's goals, requirements, and expectations for everything related to energy consumption and operation. This should be completed during schematic design.
03	Table H: Basis of Design (BOD)	§120.8(c)	The basis of design documents the design elements such as calculations and product selections that meet the owner's project requirements and applicable regulatory requirements. This should be completed during schematic design.
04	Table I: Design Review	§120.8(d) and §120.8(e)	The design reviewer(s) reviews the construction documents for clarity, completeness, and adherence to the owner's goals. Commissioning measures must be included in the construction documents to facilitate the design review and commissioning process. For projects with ≥ 10,000 ft² of nonresidential conditioned floor area, or with complex mechanical systems, the design review is for adherence with the Owner's Project Requirements (OPR) and Basis of Design (BOD). This should be conducted during design.
05	Table J: Commissioning Plan	§120.8(f)	The commissioning plan is developed by the commissioning provider with input from the designer and defines the scope of commissioning the project. This should be drafted during design and completed during early construction.
06	Table K: Functional Performance Testing	§120.8(g)	Functional performance testing is conducted on building systems to demonstrate correct installation and operation.
07	Table L: Documentation and Training	§120.8(h)	Documentation of the operational aspects of the building shall be completed within the Systems Manual and delivered to the building owner or representative and facilities operator.
08	Table M: Commissioning Report	§120.8(i)	A complete report of commissioning process activities undertaken through the design, construction and reporting recommendations for post-construction phases of the building project shall be completed and provided to the owner or representative.

Note:
 Commissioning ALSO required in Title 24 Part 6!

- Part 6 Requires Design Review for projects <10,000 SF!
- ONLY CAL Green adds irrigation and PV's!



Testing and Adjusting

Testing and adjusting of systems required for new buildings < 10,000 SF. Or new systems to serve an addition or alteration subject to Section 303.1.

- Systems (HVAC, lighting, water heating, renewable, landscape, water reuse)
- Plan for system testing
- Procedures according to manufacturer's specs
- HVAC Balancing
- Reporting

Documentation:
Engineer include in notes or
specifications



5.410.4



5.5 Environmental Quality

Fireplaces

- Gas units: Direct-vent sealed-combustion type
- US EPA New Source Performance Standards (NSPS)
- Meet local ordinance



Direct Vent



Sealed glass front



5.503.1

Temporary Ventilation

- HVAC system return air filters use MERV 13
- Replace all filters immediately prior to occupancy

Permanent Ventilation

- Permanent HVAC system supply and return must use MERV 13
- MERV rating must be stated on filter



5.504.1/5.504.5



2022 Code

MERV 8 Allowed for temporary filters

2025 Code

MERV 13 required throughout

Covering of Duct Openings and Protection of Mechanical Equipment During Construction

Cypress & 7th, Lompoc

- Covered with tape, plastic, sheet metal, etc. during construction
- Arrives at jobsite covered



Yes: air tight, stays for the whole process, and won't need cleaning



None of these are good enough and will require cleaning or replacement



5.504.3

Pollutant Control: Low Emitting Materials

- Requires demonstrating compliance with maximum limits. See CALGreen Tables.
- Demonstrated on product or on cutsheet.
- Adhesives, Sealants, & Caulks (5.504.1&2)
- Carpet and Carpet Adhesives (5.504.1)
- Resilient Flooring (5.503.4)
- Paints & Coatings (5.503.3)
- Composite Wood Products (5.504.5)

TABLE 4.504.1 ADHESIVE VOC LIMIT^{1, 2}

Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Other adhesives not specifically listed	50

SPECIAL APPLICATIONS



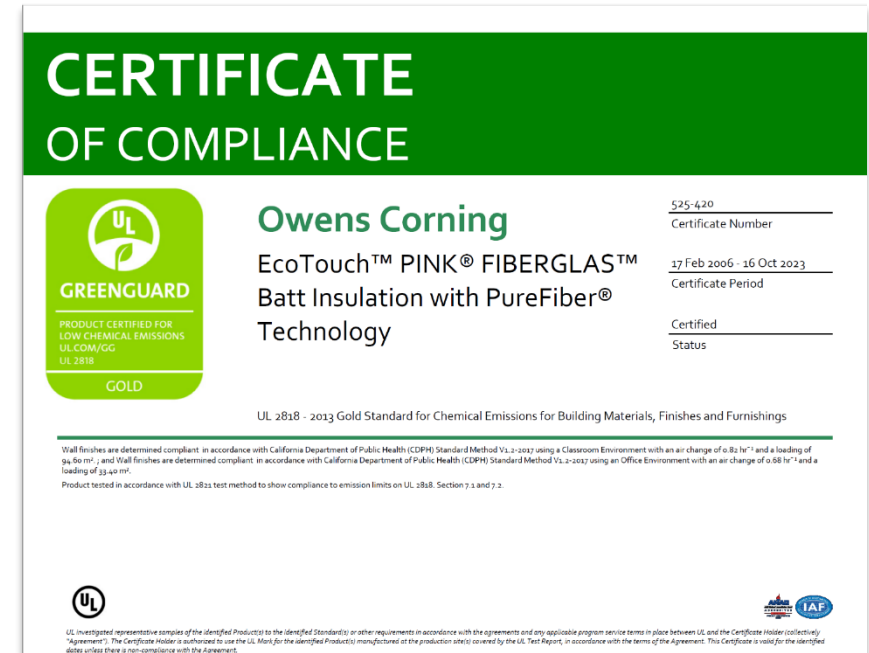
5.504.4

Pollutant Control: Low Emitting Materials

Added in 2022:

- Insulation
- Ceiling Tiles
- Wall Panels

Documentation:
Notes on plan set.
Cutsheets available, if requested



- *Can also demonstrate compliance with Certificate Programs*



5.504.4

Environmental Tobacco Smoke Controls (ETS)

- Prohibit smoking within 25 feet of building entries, outdoor air intakes, operable windows and in buildings.
- Post signage to inform building occupants

NOT QUITE..



YES! BUT...



Yes!



No Smoking
within **25 feet** of
doorways,
operable windows
or vents

City of Berkeley BMC 12.70
Quit Smoking Information: 510-981-5330



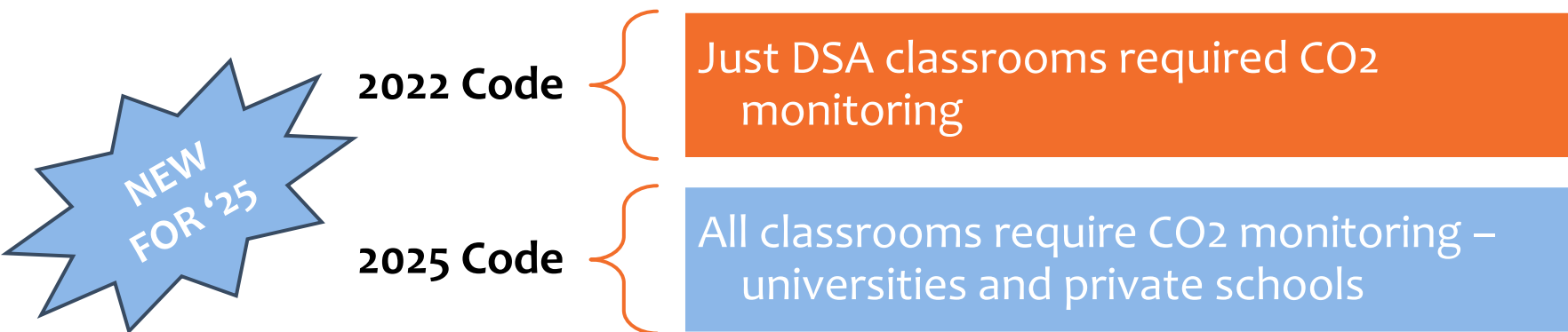
Indoor Moisture Control & Indoor Air Quality

- Meet or Exceed CBC Title 24 Part 2 – Ventilation and Exterior Walls
- 5.506.1- Outdoor Air Delivery – Meet Energy Code and CCR



Carbon Dioxide Measuring

- 5.506.2- Carbon Dioxide Monitoring- For buildings equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with requirements of the Energy Code, Section 120.1 (c)(4).
- 5.506.3 Carbon dioxide (CO₂) monitoring in all classrooms.

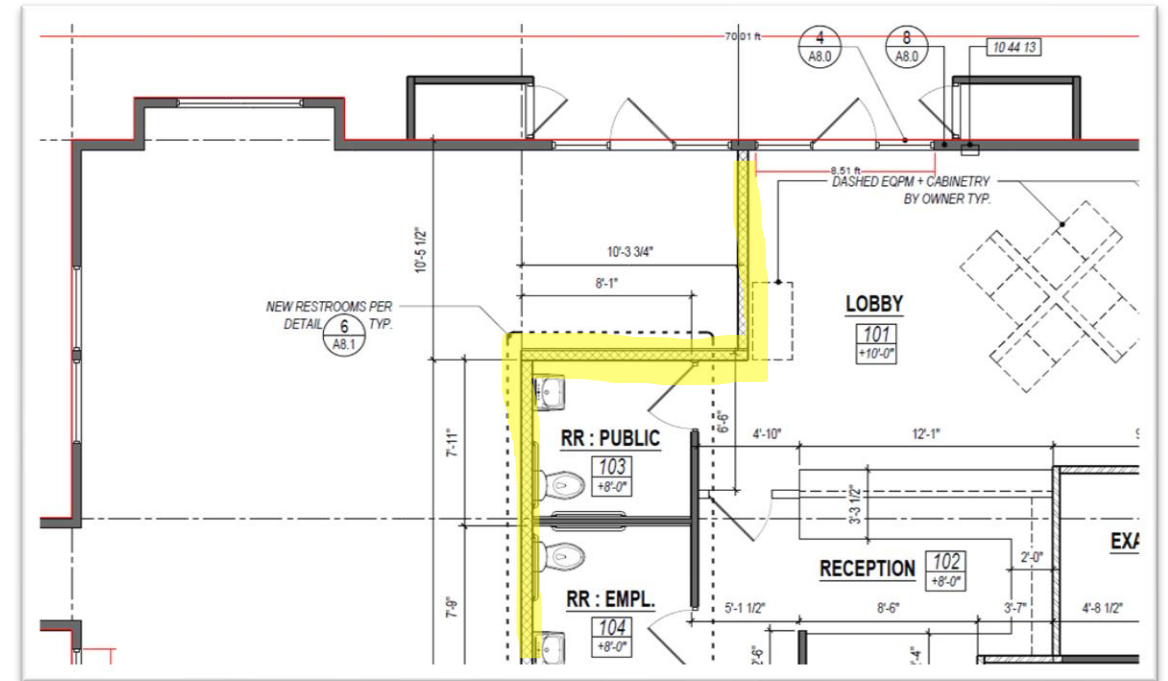


Acoustic Control

- Multi-tenant spaces require min. of STC 40 for:
 - Wall and floor/ceiling assemblies separating tenant spaces
 - And separating tenant spaces and public places

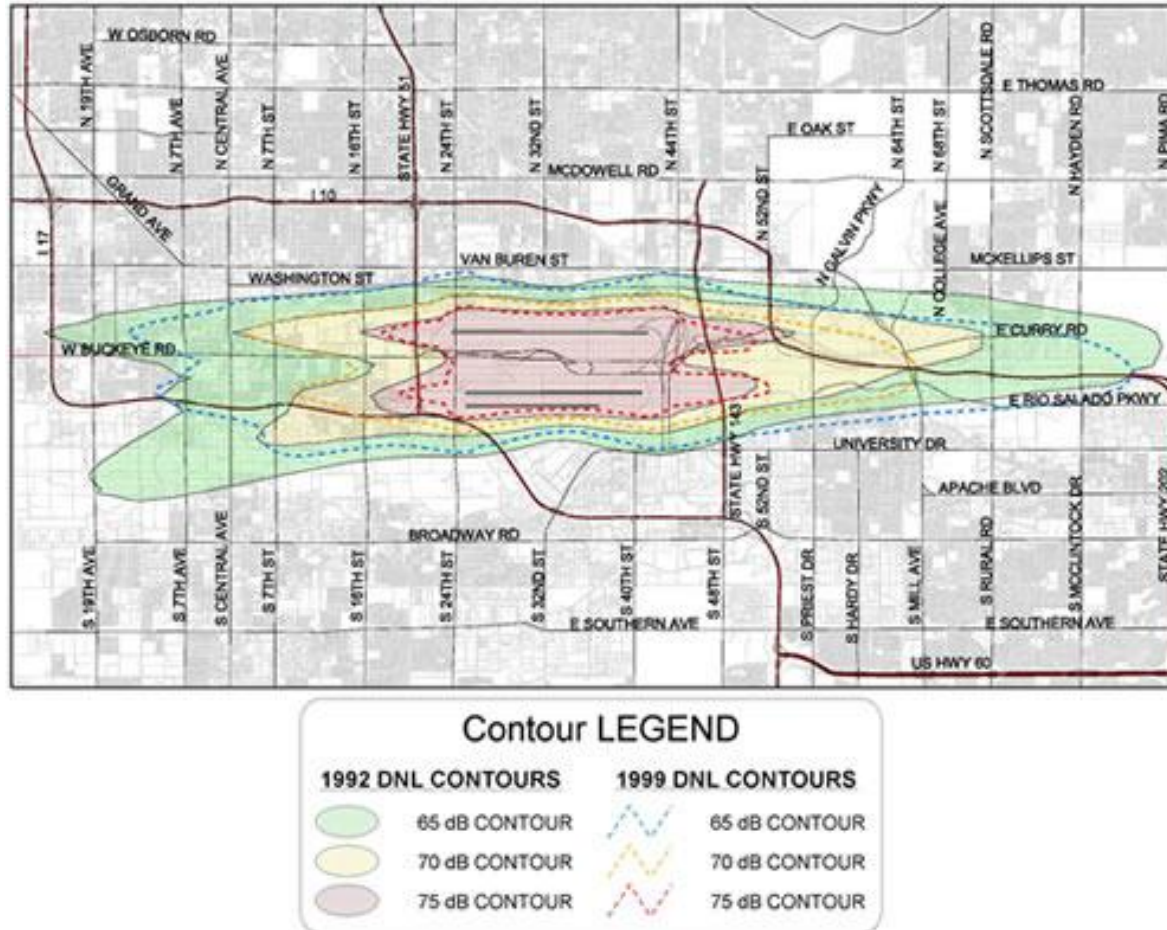


Can be accomplished through framing method and/or wall assembly layer



5.507.4

Exterior Noise - Prescriptive



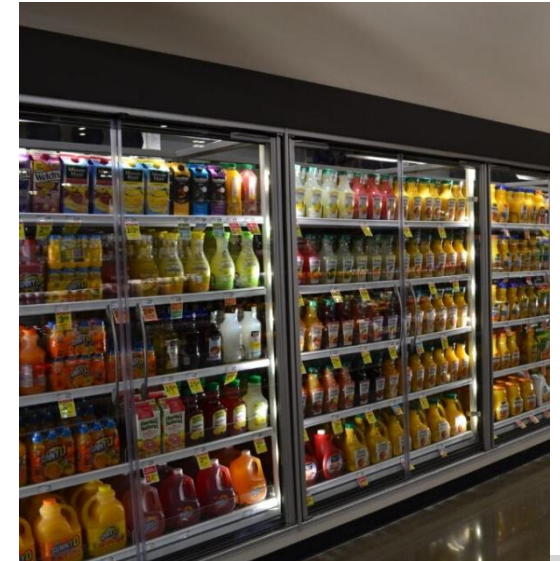
IF within 65 CNEL Noise Contour of Airport, freeway, train, etc.:

- Walls and roof: STC 50
- Windows: STC 40 (or OITC 30)



Ozone Depletion & GHG Reductions

- **5.508.1 Ozone depletion and greenhouse gas reductions:**
 - No Chlorofluorocarbons (CFCs) and no Halons
- **5.508.2 Supermarket refrigerant leak reduction:**
 - Retail food stores $\geq 8,000$ ft of conditioned area with refrigerated displays or coolers/freezers connected to compressor/condenser units
 - Leak reduction measures for refrigeration systems with a GWP ≥ 150
 - New systems include new facilities and replacement systems in existing facilities





Other Stuff and A5 - Voluntary Tiers



Chapters 6, 7 & 8

- Chapter 6: Current links to all References
- Chapter 7: Special Inspections, with 2025 Code clean up for consistency
- Chapter 8: Handy-dandy forms for water budget, Construction Waste Management (CWM), LCA, Commissioning (Cx) and more



Voluntary Tiers - Nonresidential

<u>Category</u>	<u>Tier 1 = Mandatory +</u>	<u>Tier 2 = Tier 1 +</u>
Planning & Design	<u>2 additional mandatory</u> <u>1 elective</u>	<u>2 additional mandatory</u> <u>3 elective</u>
Energy Efficiency	<u>2 elective</u>	<u>1 elective</u>
Water Efficiency and Conservation	<u>1 additional mandatory</u> <u>1 elective</u>	<u>1 additional mandatory</u> <u>3 elective</u>
Material Conservation and Resource Efficiency	<u>2 additional mandatory</u> <u>1 elective</u>	<u>2 additional mandatory</u> <u>3 elective</u>
Environmental Quality	<u>2 additional mandatory</u> <u>1 elective + 1 more</u>	<u>2 additional mandatory</u> <u>3 elective + 3 more</u>



“Exemplary Performance”

Similar to a Mandatory Measure, but more:

- EV Charging stations
- Energy efficiency, better than Title 24 energy calcs
- Low-flow fixtures
- Construction waste diversion
- Life cycle assessment, embodied carbon reduction



Bird-friendly Building Design

- 90% of building elevation to incorporate bird-friendly mitigation strategies, plus atriums, glass rails, etc.
- Glazing with visual markers (etched or fritted)
- Glazing films / laminated glass with patterns
- Glass block or channel glass
- “Glazing technologies”
- Slats, screens, netting and/or louvers

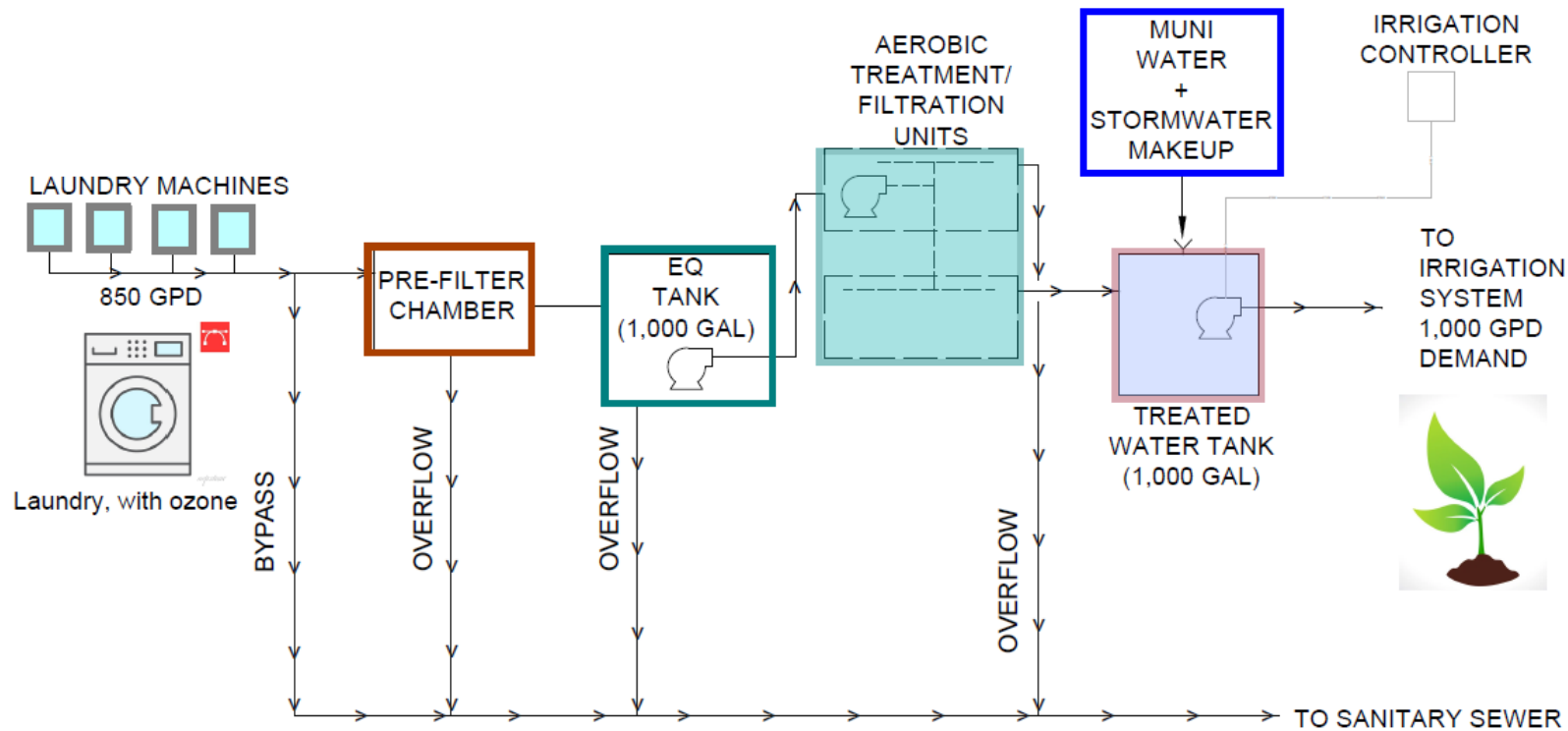


NuVision Window Film



Graywater Irrigation System

- SB Humane – Laundry water treatment



System Design: Wallace Group



A5.304.8

Cement and concrete



- Supplementary cementitious materials (SCM)
 - Fly ash, silica fume, ground-glass pozzolan, etc.
- Recycled aggregates
- Recycled mixing water
- Later ages of maturity
 - Shifting from 28 days to 42 or 56 days

Who Has Reach Codes?

Different Categories

- Energy Efficiency, All-electric
- EV Charging, Water Efficiency
- Embodied Carbon, Operational Emissions

Energy Code Ace

- <https://localenergycodes.com/content/adopted-ordinances>

2025 CODE CYCLE - ENERGY EFFICIENCY					
JURISDICTION	MUNICIPAL CODE	ADOPTED DATE	SINGLE FAMILY	MULTIFAMILY	NONRESIDENTIAL
Marin County	19.04.130	11/18/2025	<u>Additions/Alterations:</u> For buildings constructed before 1992, a project greater than 500 square feet must achieve a target score with energy efficiency and electrification measures. All newly constructed buildings and alterations less than 500 square feet must include CALGreen Tier 1 measures (except energy efficiency).	include CALGreen Tier 1 measures (except energy efficiency). <u>Additions/Alterations:</u> Projects greater than 500 square feet must include CALGreen Tier 1 measures (except energy efficiency).	All newly constructed buildings must include CALGreen Tier 1 measures (except energy efficiency). <u>Additions/Alterations:</u> Projects must include CALGreen Tier 1 measures (except energy efficiency).





Wrap up

Questions about Title 24?

3C-REN offers a *free* Code Coach Service



Online:
3c-ren.org/code

Call:
805.781.1201

Energy Code Coaches are local experts who can help answer your Title 24 Part 6 or Part 11 questions.

They can provide code citations and offer advice for your res or non-res projects.



Español

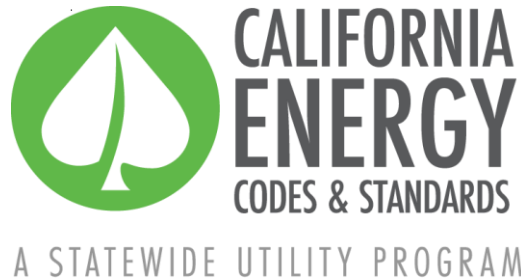
CONEXIÓN A CÓDIGOS TÉCNICOS

¿Preguntas sobre el Título 24?

Other CALGreen Resources



CALGreen Checklists (AIA California) 
Checklist / Worksheet, Link



- Guides and other resources
- Local Reach Codes
- Links to codes online



Closing



Continuing Education Units Available

- Contact dresurreccion@co.slo.ca.us for AIA and ICC LUs

Coming to Your Inbox Soon!

- Slides & Recording

Other Upcoming Courses:

- [8/13 HPWH Installation Training in Oxnard \(in-person\)](#)
- [8/19 Ask the Experts: Energy Compliance & Modeling](#)
- [8/20 Introduction to Residential HVAC Design](#)
- [9/1 2025 Energy Code: Multifamily Ventilation](#)

Any phone numbers who joined? Please share your name!

