DSA
DIVISION OF THE STATE ARCHITECT
DEPARTMENT OF GENERAL SERVICES

2022 Intervening Code Adoption Cycle

Pre-cycle Workshop – 8/24/2022

DSA

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DEPARTMENT OF GENERAL SERVICES

DSA HEADQUARTERS SUSTAINABILITY TEAM

DSA'S GOAL

"INCREASE SCHOOL FACILITY ENERGY EFFICIENCY AND REDUCE GREENHOUSE GAS EMISSIONS WITH EACH NEW CONSTRUCTION AND MODERNIZATION, LEADING TO A ZERO NET ENERGY AND ZERO NET CARBON FUTURE FOR SCHOOL BUILDINGS."

- Ida A. Clair AIA, LEED AP, CASp – State Architect
- Eric Driever AIA, CASp – Principal Architect
- Michelle Golden, Senior Architect
- Paul Johnson, Senior Electrical Engineer
- Tav Commins, Senior Mechanical Engineer
- Jessica Axtman, Associate Governmental Program Analyst
- Katy Iverson, Associate Governmental Program Analyst

Sustainability

KEY STAKEHOLDER REPRESENTATIVES

- A representative from each community college, school district, or school please take 1 minute to introduce yourself, and a sustainability topic that is important to your district or what about today's agenda most interest your district.
  - ✓Please raise your hand and our team will call your name.

AGENDA

- Administration of Workshop – Eric Driever
  - ✓Introductions, workshop purpose, rulemaking overview, and administration of meeting
- Part 11 California Green Building Code (Mandatory and Voluntary Measures)
  - ✓Electric Vehicle Charging – Paul Johnson
  - ✓Carbon Reduction – Michelle Golden
- Part 5 California Plumbing Code—Multi-user, All Gender Restroom Facilities – Eric Driever
- Wrap up / Next steps – Eric Driever

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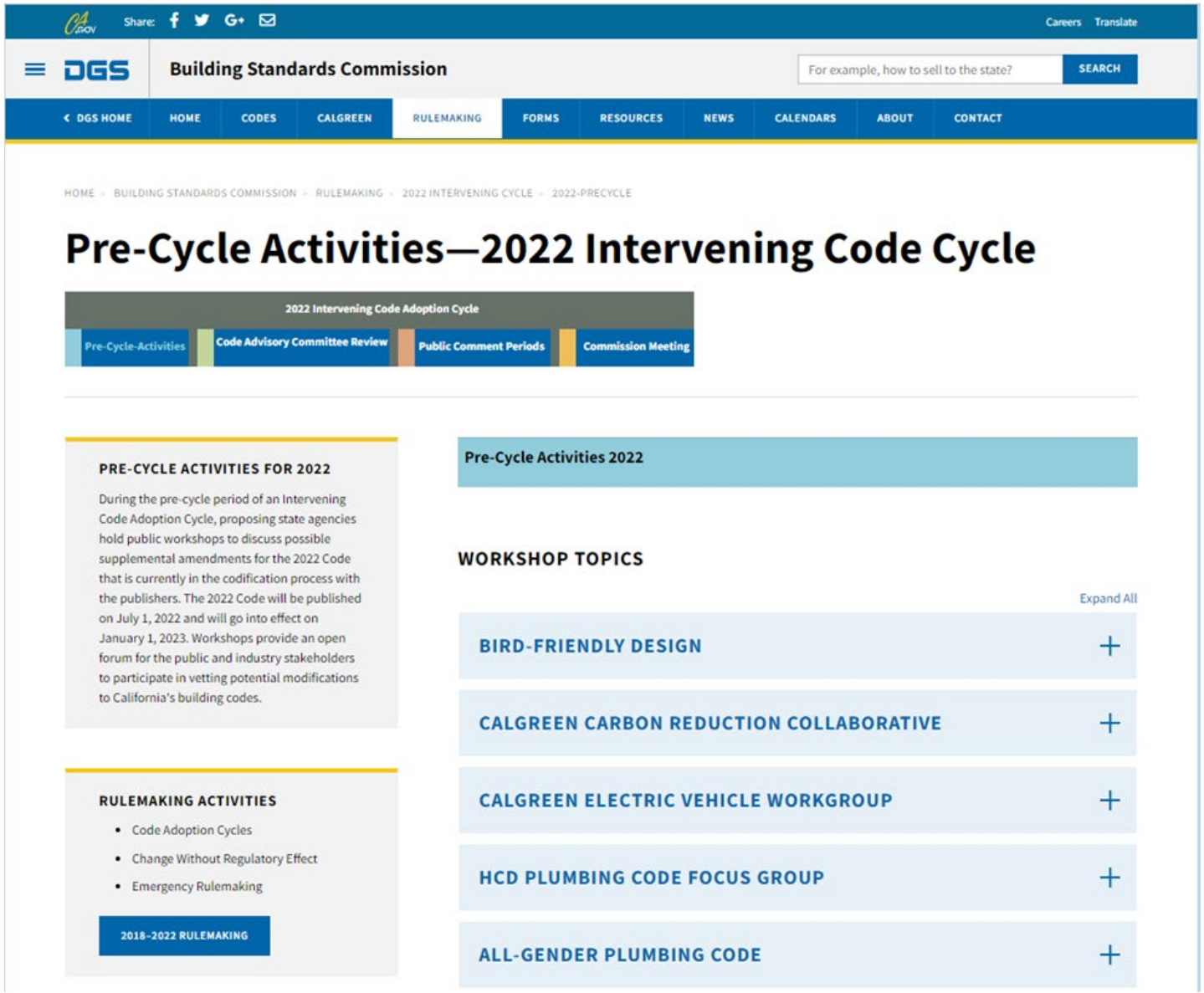
ADMINISTRATION OF WORKSHOP

Workshop Purpose

As part of BSC's pre-cycle activities for the 2022 Intervening Code Cycle, state agencies conduct various workshops to gain input form stakeholders on potential code change proposals. DSA is committed to collaborating with its stakeholders in every phase of rulemaking. This workshop is to focus on the needs of California schools as it relates to CALGreen and all-gender, multi-user restroom facilities.

Note: This workshop will not cover issues of accessibility as those topics are better served in separate workshops.



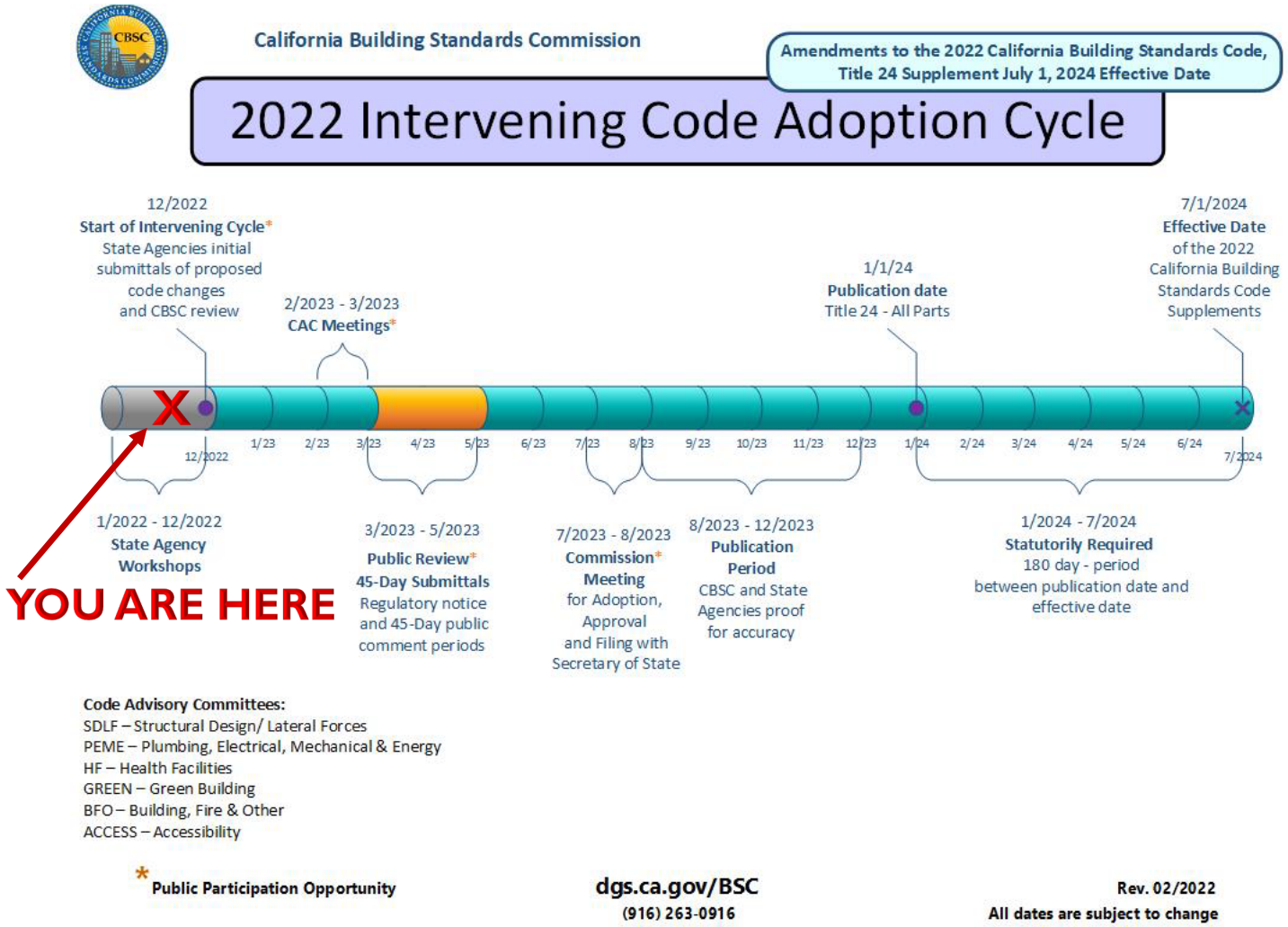
2022 CALIFORNIA BUILDING CODE

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

Title 24, Parts 2-12
    Effective date of 2022
    January 1, 2023

2022 CBC INTERVENING CODE CYCLE SCHEDULE

BSC, DSA, HCD and other state agencies are conducting workshops to consider code change proposals for the 2022 Intervening Code Cycle to become effective July 1, 2024.



MEETING ADMINISTRATION

- The meeting is scheduled to adjourn at 4 pm.
- Chat will be disabled.
- A question/comment period will be taken following each section.
  - ✓In an effort to stay on schedule please limit your comments to 3 minutes.
  - ✓Use the "Raise Hand" function.
  - ✓Wait for your name to be called.
  - ✓Call in phone in comments will be taken after the zoom participants.
  - ✓Other comments may be sent to DSASSCALGreen@dgs.ca.gov.

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PART 11
CALIFORNIA GREEN BUILDING CODE (CALGREEN) MANDATORY AND VOLUNTARY MEASURES)

ELECTRIC VEHICLE CHARGING

GOVERNOR BROWNS EXECUTIVE ORDERS

B-16-12
Set goal of 1 million ZEVs by 2020

Related carbon centric executive orders covered later
B-30-15
B-55-18

2022 CALGreen ZEV requirements effective 1.1.2023

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

GOVERNOR NEWSOM'S EXECUTIVE ORDERS

N-79-20
Sets a goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035.

Related carbon centric executive order covered later.
N-19-19

Photo by Ernest Ojeh on Unsplash

ELECTRIC VEHICLE CHARGING SURVEY

- ✓Why?
- ✓Who responded
- ✓What was learned
  - Management
  - Student vs staff

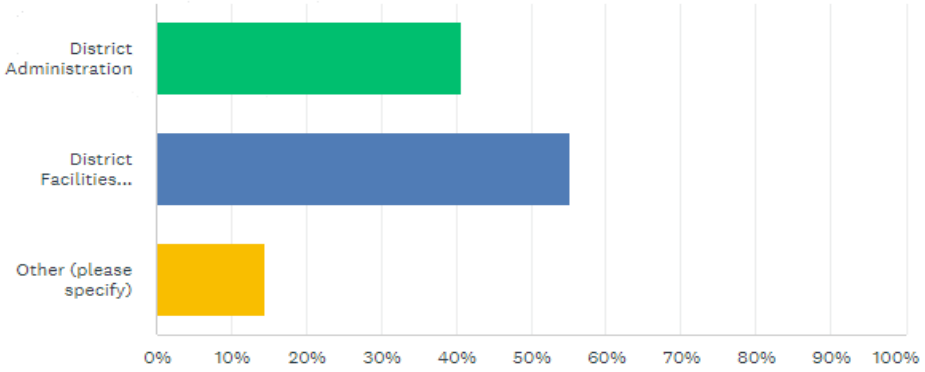
Photo by myenergi on Unsplash

WHO RESPONDED

Q1

Which of the following best represents your role in school facilities planning? Choose all that apply.

Answered: 172 Skipped: 0

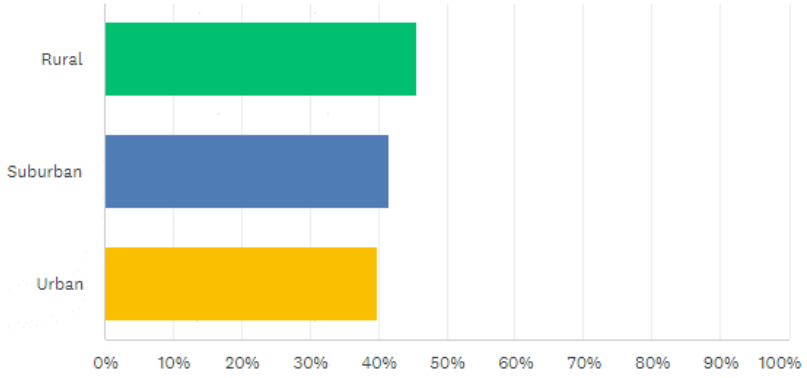


ANSWER CHOICES		RESPONSES	
District Administration		40.70%	70
District Facilities Development/Maintenance		55.23%	95
Other (please specify)	Responses	14.53%	25
Total Respondents: 172			

Q3

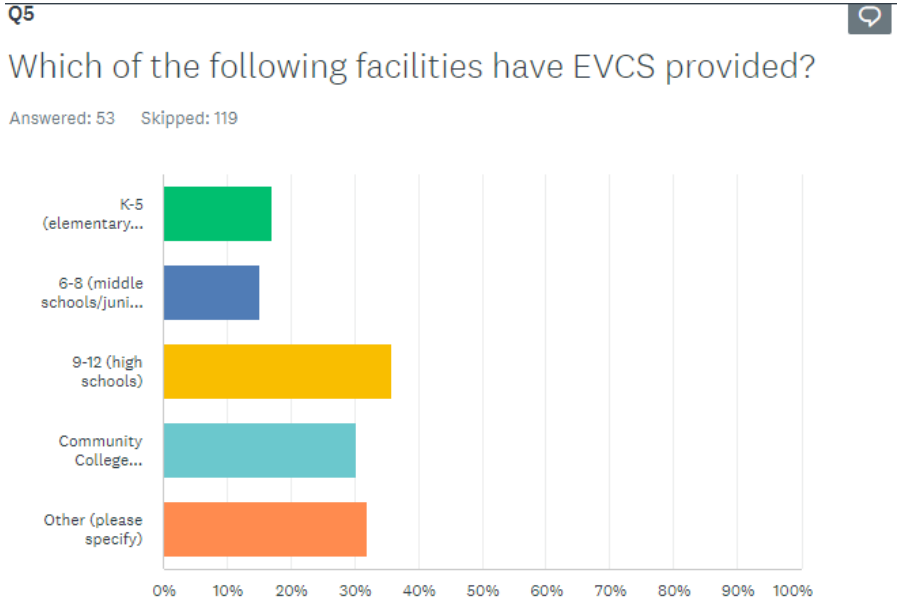
Which of the following best describes the location of schools in your district? Choose all that apply.

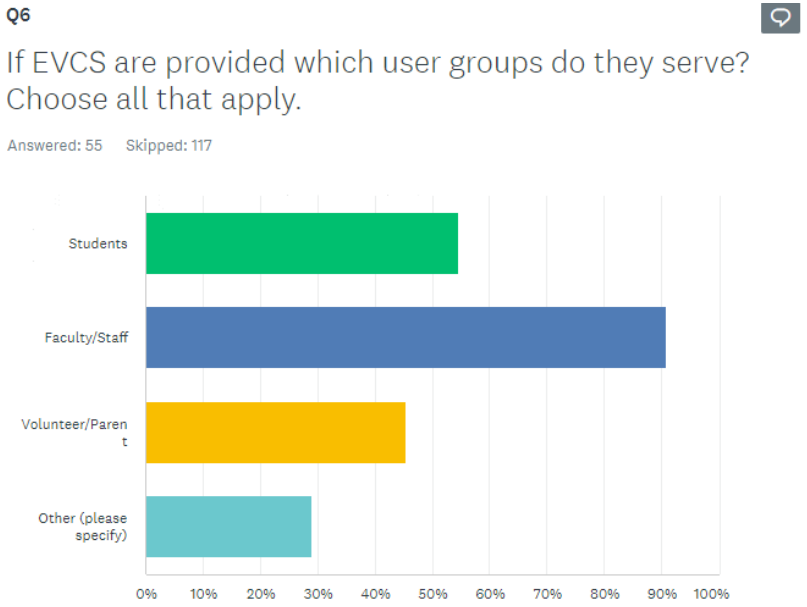
Answered: 171 Skipped: 1



ANSWER CHOICES	RESPONSES	
Rural	45.61%	78
Suburban	41.52%	71
Urban	39.77%	68
Total Respondents: 171		

WHAT WE LEARNED





HOW IS USE OF EVCS MANAGED

"level 1, subscription, or paid at point of use."

"1st come first serve."

"We don't micromanage those stations. Just like grocery stores or shopping mall, they don't monitor time or create any sharing policies."

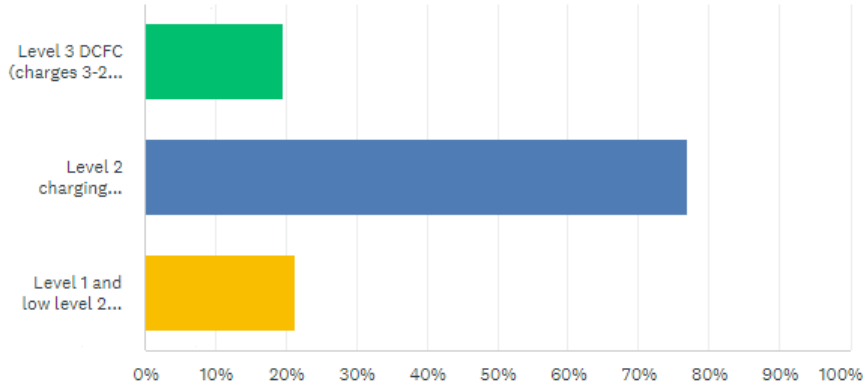
"All Level II charging; ChargePoint charging stations; 4 hour max on chargers enforced by campus safety patrol/review."

WHAT WE LEARNED

Q9

In your opinion, what is the appropriate level of charging to be offered to faculty/staff? Choose all that apply.

Answered: 122 Skipped: 52



ANSWER CHOICES	RESPONSES	
Level 3 DCFC (charges 3-20 miles per minute; 50-300 kw power, per station)	19.67%	24
Level 2 charging (charges 12-80 miles per hour; 5-49 kw power, per station)	77.05%	94
Level 1 and low level 2 charging (charges 3-5 miles per hour; 1.2 kw power, per station)	21.31%	26
Total Respondents: 122		

LEVEL 1

"8 hour days provide faculty with 24-40 miles of charge. Sufficient to get home and return to work the next day."

"People are there for 8 hours and travel no more than 60 miles after disconnecting."

DCFC(LV3)

"level 3 will be ideal to allow for other vehicles to charge and individuals that commute more than 60 miles one way will be more likely to purchase an electric vehicle."

LEVEL 2

"Well some staff will stay parked stationary all day other staff needs to move from site to site therefore will need more rapid charging."

"They will be there a whole day in most cases, possibly moving their car mid-day."

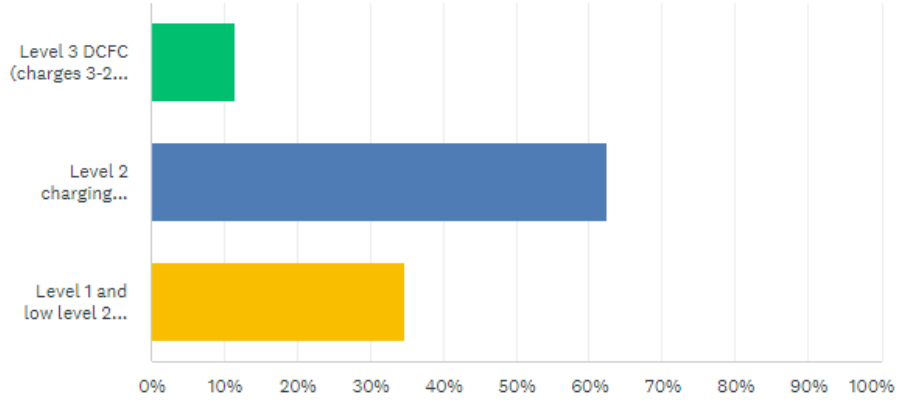
"1. Higher installation cost of DCFC infeasible 2. Most users will leave cars parked in stalls for half the day at least, DCFC is unlikely to be of benefit."

WHAT WE LEARNED

Q10

In your opinion, what is the appropriate level of charging to be offered to students? Choose all that apply.

Answered: 112 Skipped: 62



ANSWER CHOICES	RESPONSES	
Level 3 DCFC (charges 3-20 miles per minute; 50-300 kw power, per station)	11.61%	13
Level 2 charging (charges 12-80 miles per hour; 5-49 kw power, per station)	62.50%	70
Level 1 and low level 2 charging (charges 3-5 miles per hour; 1.2 kw power, per station)	34.82%	39
Total Respondents: 112		

LEVEL 1

"Our students do not drive."

"K through 12 campuses high school students will remain stationary parked all day. Slower charging units will be less of a load on over all electrical infrastructure system."

"Students have short commutes for the most part, and aren't allowed in the parking lots during the day, so they won't be able to move their cars."

LEVEL 2

"One can charge during the day and have enough power to get home. At least level 1 could be provided. Level 2 would be ideal".

"I think there should be one level of charging for all."

"Good compromise"

"Prefer a combo, level 2 and some 3s."

"Greater distances must occur for our students to travel to school."

CHARGING FACILITIES DEFINITIONS

(NEW PROPOSALS UNDERLINED)

- **ELECTRIC VEHICLE CHARGING STATION (EVCS).** One or more electric vehicle charging spaces served by electric vehicle charger(s), receptacle(s) or other charging equipment allowing charging of electric vehicles. Electric vehicle charging stations are not considered parking spaces.
- **LEVEL 1 ELECTRIC VEHICLE (EV) CHARGING RECEPTACLE [DSA].** A 120 Volt 20-ampere minimum branch circuit and a receptacle for use by an EV driver to charge their electric vehicle or hybrid electric vehicle.
- **LOW POWER LEVEL 2 ELECTRIC VEHICLE (EV) CHARGING RECEPTACLE.** A 208/240 Volt 20-ampere minimum branch circuit and a receptacle for use by an EV driver to charge their electric vehicle or hybrid electric vehicle.
- **LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).** The 208/240 Volt 40-ampere branch circuit, and the electric vehicle charging connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

DRAFT PROPOSALS – CHARGING FACILITIES NEW CONSTRUCTION EVSE TRADE OFFS

- **5.106.5.3.2 Electric vehicle charging stations (EVCS).** EV capable spaces shall be provided with electric vehicle supply equipment (EVSE) to create EVCS in the number indicated in Table 5.106.5.3.1. The EVCS required by Table 5.106.5.3.1 ~~may~~ shall be provided with Level 2 EVSE or DCFC as permitted below. ~~in any combination of Level 2 and Direct Current Fast Charging (DCFC), except that at least one Level 2 EVSE shall be provided~~.

- The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE and Level 2 EVCS by five except that at least one Level 2 EVSE shall be provided and reduce proportionally the required electrical load capacity to the service panel or subpanel.

- [DSA] The installation of four Level 1 EVCS shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by one and reduce proportionally the required electrical load capacity to the service panel or subpanel. A maximum of 10% Level 1 spaces may be provided.

- The installation of two Low Power Level 2 EVCS shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by one and reduce proportionally the required electrical load capacity to the service panel or subpanel. A maximum of 10% Low Power Level 2 spaces may be provided.

DRAFT PROPOSALS – CHARGING FACILITIES NEW CONSTRUCTION LEVEL ALTERNATIVE METHOD

- **5.106.5.3.6 Electric vehicle charging stations (EVCS) alternative compliance option.** Use Table 5.106.5.3.6 to determine the total power in KWs required based on the total number of actual parking spaces.

Alternative compliance shall include the following:

1. Use any KW combination of EV capable, Level 1, Low Power Level 2, Level 2 or DCFC EVSE.
2. At least one Level 2 EVSE shall be provided.
3. A maximum of 10% Level 1 spaces each @ 2.4 Kw may be provided [DSA].

TABLE 5.106.5.3.6

TOTAL NUMBER OF ACTUAL PARKING SPACES	MINIMUM KW PER EV CAPABLE SPACES @9.6 KW	MINIMUM KW FOR LEVEL 2 EVSE @9.6 KW (1 min) [2 & 3]	TOTAL KW REQUIRED IN ANY COMBINATION OF EV CAPABLE, LEVEL 1, LOW POWER LEVEL 2, LEVEL 2, OR DCFC
0-9	0		0
10-25	38.4	1 min	38.4
26-50	76.8	1 min	76.8
51-75	124.8	1 min	124.8
76-100	163.2	1 min	163.2
101-150	240	1 min	240
151-200	336	1 min	336
201 and over	20 percent of total[1]	1 min	

1. Calculation for spaces shall be rounded up to the nearest whole number.
2. Level 2 EVSE @ 9.6 kw minimum.
3. At least one Level 2 EVSE shall be provided.

DRAFT PROPOSALS – CHARGING FACILITIES EXISTING FACILITIES

- Questions:
  - ✓ How often are parking lots upgraded?
  - ✓ Should EV charging be installed when solar is installed in parking lots?
  - ✓ What obstacles would pose a high cost to adding chargers in existing parking lots? What could mitigate this?

QUESTIONS AND COMMENTS

- Use the "Raise Hand" function
- Wait for your name to be called.
- In an effort to stay on schedule please limit your comments to 3 minutes.
- Call in phone in comments will be taken after the Zoom participants.
- Additional comments may be sent to DSASSCALGreen@dgs.ca.gov.

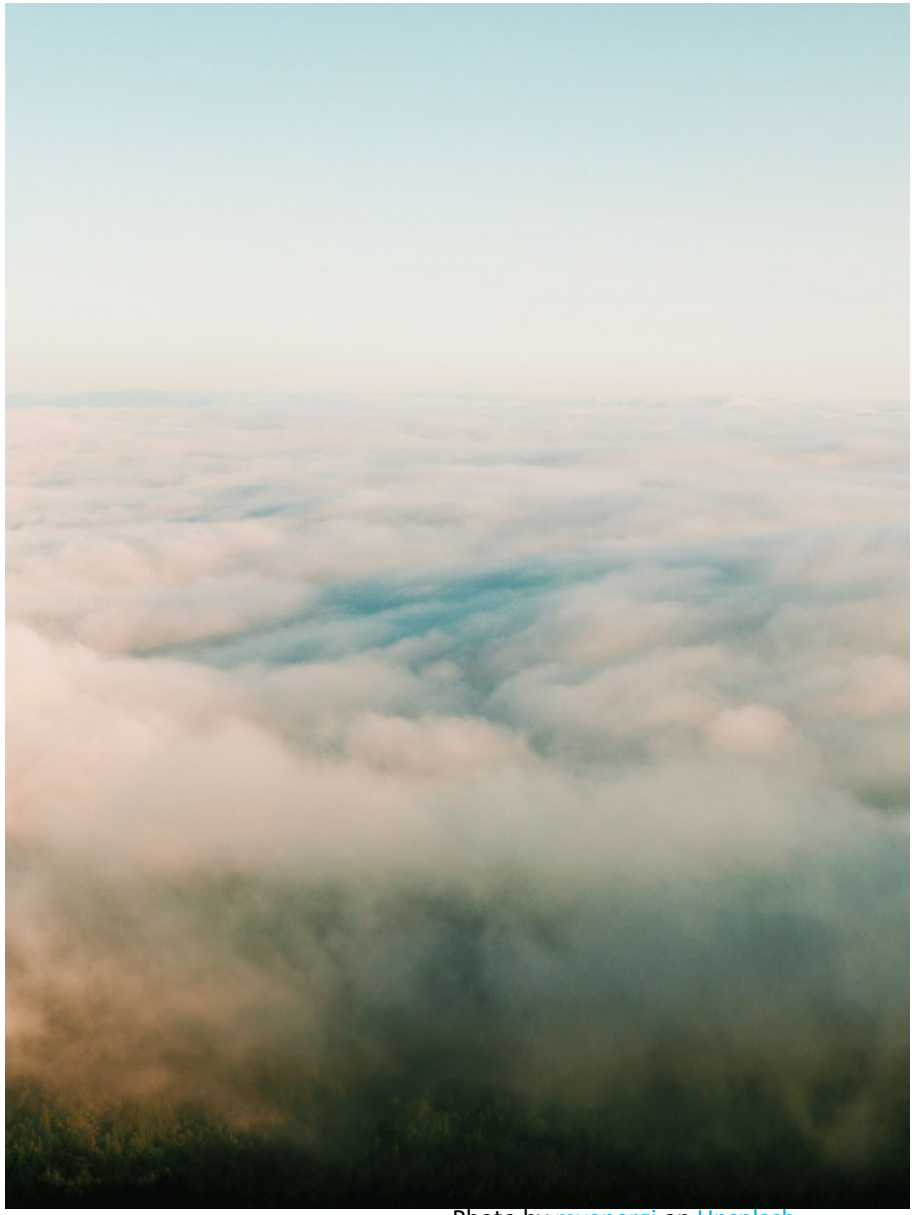


Photo by myenergi on Unsplash

CARBON REDUCTION-CALIFORNIA LEADS THE WAY

Executive Orders by Brown Administration

- B-30-15
  - Sets interim target of greenhouse gas emissions 40% less than 1990 levels by 2030
- B-55-18
  - Achieve statewide carbon neutrality by 2045

- Governor Newsom's Executive Order N-19-19

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

CARBON REDUCTION COLLABORATIVE WORKSHOPS

CALGreen Carbon Reduction Collaborative (CCRC) is a joint effort by BSC, DSA and HCD and is also comprised of state and national leaders in sustainability, professional and material industry organizations, interested public and state agencies to provide input and feedback for carbon reduction regulations in CALGreen during the 2022 Intervening Code Adoption Cycle and future code cycles.

Public participation is encouraged.

Photo by Scott Webb on Unsplash

CCRC Workshop – April 4, 2022

CCRC Workshop – May 10, 2022

CCRC Workshop – June 30, 2022

Upcoming CCRC Workshop – Scheduled September 8, 2022

CARBON REDUCTION: DEFINITIONS

- **Whole building life cycle assessment (WBLCA)**: A cradle-to-grave analysis of an entire building's components with respect to materials and finishes, excluding operating costs.
- **Cradle-to-Gate**: Activities associated with a product or building's life cycle from extraction through production stages.
- **Cradle-to-Grave**: Activities associated with a product or building's life cycle from extraction through disposal stages.
- **Global Warming Potential (GWP)**: A measure of a given greenhouse gas relative to an equivalent unit of CO2 over a given time period.
- **Environmental Product Declaration (EPD)**: A third party verified report that summarizes how a product impacts the environment. Three types of values are used; Industry wide (IW) product specific (specific mix/manufacturer over multiple facilities) and factory specific (single manufacturer/facility).

CARBON REDUCTION: PROPOSAL

Choose one of three options for compliance:

1. Building Reuse: Maintain a minimum of 45% combined of primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes).
2. Whole Building Life Cycle Assessment (WBLCA): Projects shall conduct a cradle-to-grave whole building life cycle assessment performed in accordance with ISO 14044, excluding operating energy, and demonstrating a minimum 10 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and location that meets the requirements of the *California Energy Code* currently in effect. Provide software report to demonstrate compliance.
3. Prescriptive Product GWP Compliance: Products shall comply with the requirements for prescriptive product GWP performance for steel, rebar, flat glass, insulation, and concrete. Provide environmental product declarations (EPD) to demonstrate compliance.

5.506.3 CARBON DIOXIDE (CO2) MONITORING IN CLASSROOMS (EFFECTIVE JANUARY 1, 2023)

Each public K-12 school classroom shall be equipped with a carbon dioxide monitor or sensor that meets the following requirements:

1. The monitor or sensor shall be permanently affixed in a tamper-proof manner in each classroom between 3 and 6 feet above the floor and at least 5 feet away from doors and operable windows.
2. When the monitor or sensor is not integral to an Energy Management Control System (EMCS), the monitor or sensor shall display the carbon dioxide readings on the device. When the sensor is integral to an EMCS, the carbon dioxide readings shall be available to and regularly monitored by facility personnel.
3. A monitor shall provide notification through a visual indicator on the monitor when the carbon dioxide levels in the classroom have exceeded 1.100 ppm. A sensor integral to an EMCS shall provide notification to facility personnel through a visual and/or audible indicator when the carbon dioxide when the carbon dioxide levels in the classroom have exceeded 1.100 ppm.
4. The monitor or sensor shall measure carbon dioxide levels at minimum 15-minute intervals and shall maintain a record of previous carbon dioxide measurements of not less than 30 days duration.
5. The monitor or sensor used to measure carbon dioxide levels shall have the capacity to measure carbon dioxide levels with a range of 400 ppm to 2,000 ppm or greater.
6. The monitor or sensor shall be certified by the manufacturer to be accurate within 75 ppm at 1,000 ppm carbon dioxide concentration and shall be certified by the manufacturer to require calibration no more frequently than once every 5 years.

CARBON DIOXIDE (CO2) MONITORING PROPOSED REQUIREMENTS TO APPLY TO ADDITIONS AND ALTERATIONS

Carbon dioxide (CO2) monitoring in K-12 classrooms.

- Would require additions and alterations to classroom to provide CO2 monitors accessible and visible to the teacher.
- Systems with demand control ventilation tied to an Energy Management Control System can have monitors that are regularly monitored by facility personnel.

QUESTIONS AND COMMENTS

- Use the "Raise Hand" function
- Wait for your name to be called.
- In an effort to stay on schedule please limit your comments to 3 minutes.
- Call in phone in comments will be taken after the Zoom participants.

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PART 5 CALIFORNIA PLUMBING CODE— MULTI-USER ALL GENDER RESTROOM FACILITIES

ALL-GENDER, MULTI-USER RESTROOM OUTREACH

"We All Gotta Go – Restrooms for All"

April 6, 2022

AIA Central Valley's Equity Diversity and Inclusion (EDI) Committee and Committee on Architecture for Education (CAE) are partnering with the Division of the State Architect (DSA), the California Department of Education (CDE) and the California Building Standards Commission (CBSC) for a collaborative panel discussion exploring the evolving and relevant topic of the all-inclusive restroom.

We All Gotta Go- Restrooms for All on Vimeo

ALL-GENDER PLUMBING CODE

California Plumbing Code All Gender Workshop — July 19, 2022

- Agenda
- Powerpoint Presentation — **REVISED**

Joint BSC/DSA - Public Workshop July 19, 2022

KEY ISSUES TO RESOLVE

- California Plumbing Code (Model Code UPC):
  - ✓ Currently requires separate facilities
  - ✓ Tabulates total fixture counts 50% Female / 50% Male

- SB 1194 (Allen): Would permit local jurisdictions to permit via ordinance all-gender, multi-user facilities until Building Standards Commission passes regulations

- California Building Code Chapter 11B – Accessibility
  - ✓ Resolve clarity issues resulting from single user unisex restrooms and multi-user restrooms

PROPOSALS TO INCLUDE:

- California Plumbing Code (Model Code UPC):
  - ✓ Permit use of all-gender multi-user restrooms in lieu and/or in addition to separate facilities for males and females
  - ✓ Total combined fixture counts based on total occupancy
- SB 1194 (Allen): Would be repealed after BSC adopts regulations
- California Building Code Chapter 11B – Accessibility:
  - ✓ Clarify size of compartments when full height
  - ✓ Specify requirements for urinal compartments
  - ✓ Specify requirements for signs to distinguish urinal compartments from toilet compartments

QUESTIONS AND COMMENTS

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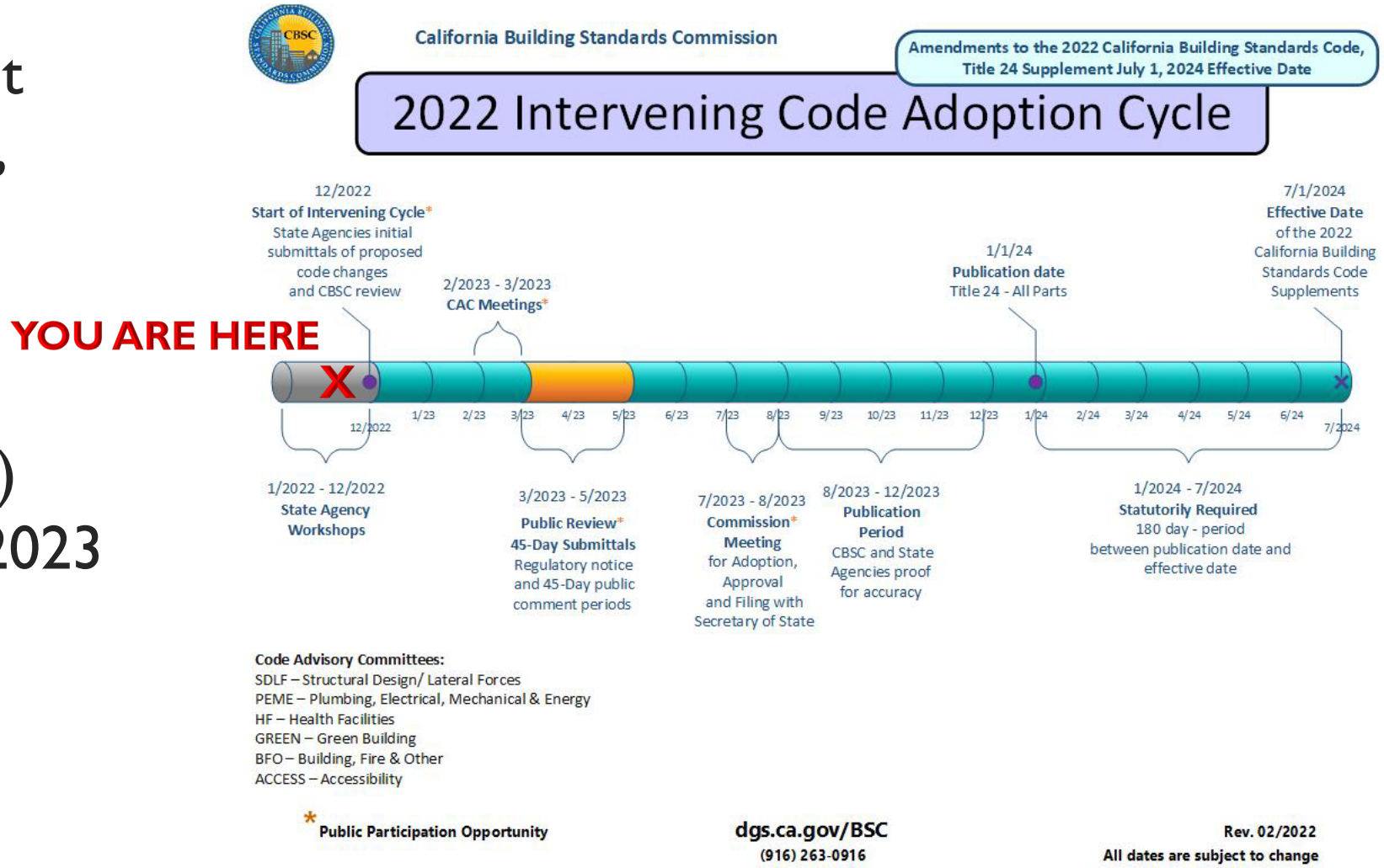
WRAP-UP / NEXT STEPS

NEXT STEPS

- Agencies to submit proposals to DGS, Finance and BSC December 2022
- Code Advisory Committee (CAC) February- March 2023
- Public comments welcome at CAC

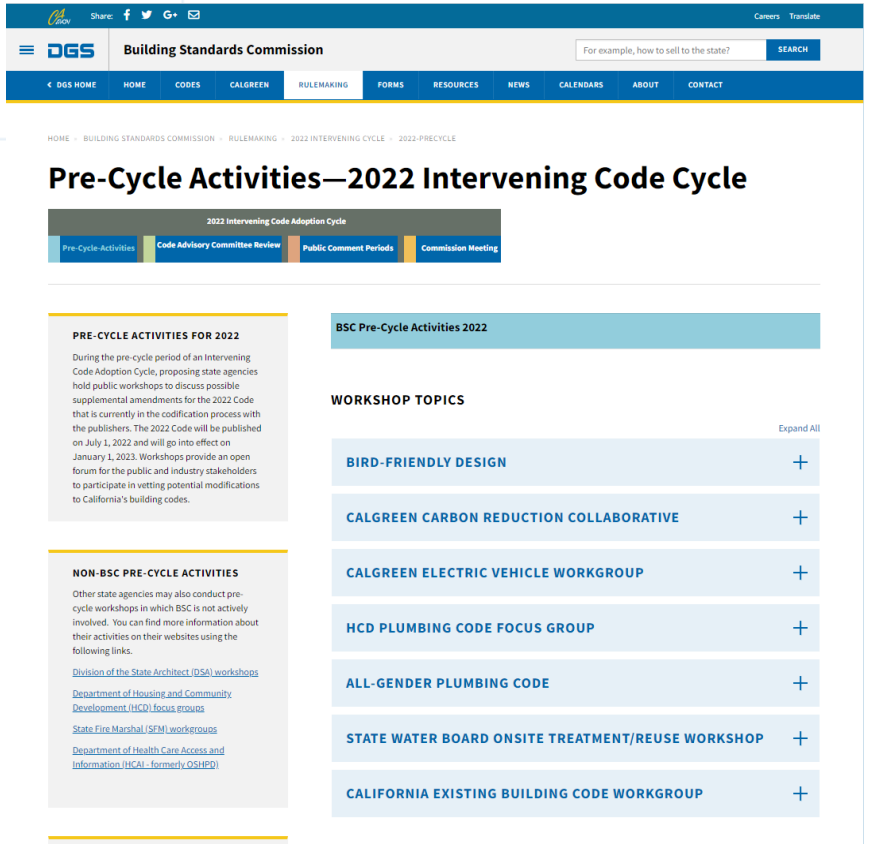


UP-COMING WORKSHOPS

Rescheduled to September 8, 2022, 9 am-noon

CALGreen Carbon Reduction Collaborative Workshop — August 4, 2022 (postponed, new date to be determined)

BSC, DSA, and HCD are assessing the information and recommendations received during the June 30 CCRC meeting and need more time to prepare for a fourth CCRC meeting. The state agencies will notify interested parties of the rescheduled meeting date at least 10-15 days prior to the meeting. If you have questions, please email cbsc@dgs.ca.gov.



BSC Rulemaking, Pre-cycle 2022
DSA CALGreen Rulemaking

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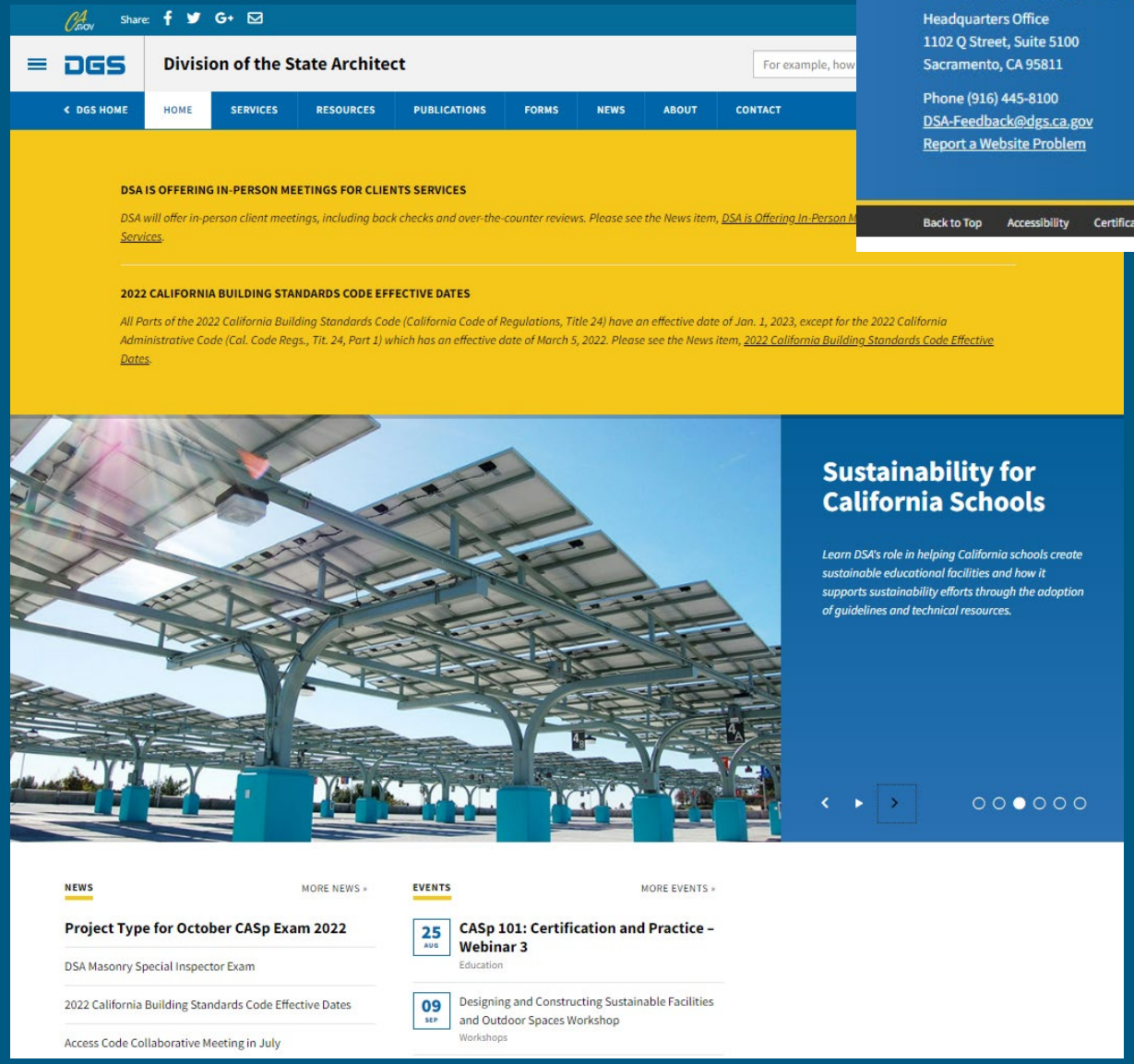

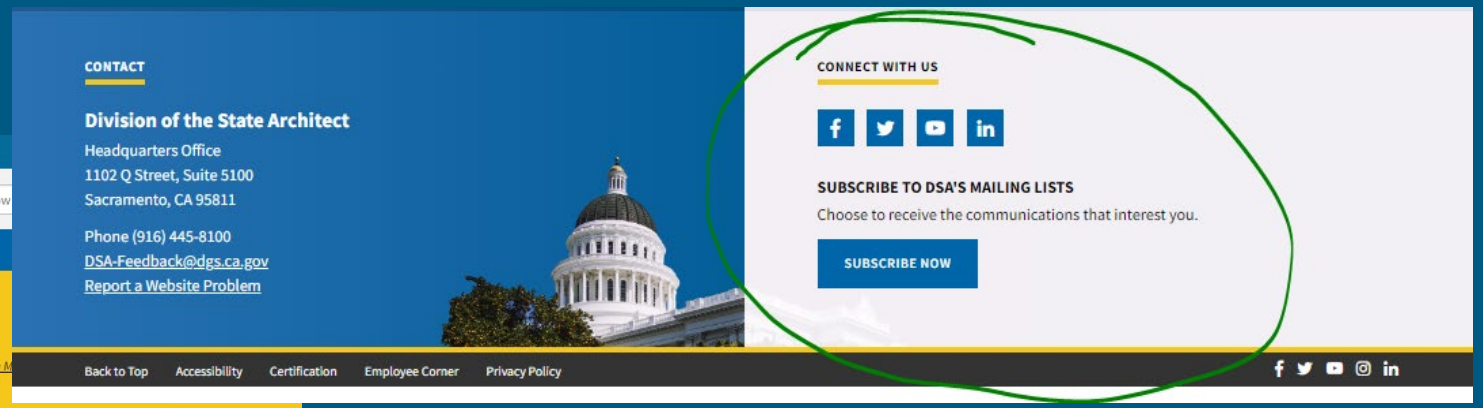

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THANK YOU FROM THE SUSTAINABILITY TEAM!

Ida A. Clair AIA, LEED AP, CASp – State Architect

Eric Driever AIA, CASp – Principal Architect

Tav Commins, Senior Mechanical Engineer

Michelle Golden, Senior Architect

Paul Johnson, Senior Electrical Engineer

Jessica Axtman, Associate Governmental Program Analyst

Katy Iverson, Associate Governmental Program Analyst

COMMENTS TO: DSASSCALGreen@dgs.ca.gov