

Ordinance No. 5570

Ordinance of the Council of the City of Palo Alto Repealing Chapter 16.14 of the Palo Alto Municipal Code and Adopting a New Chapter 16.14, California Green Building Code, 2022 Edition, and Local Amendments and Related Findings

The Council of the City of Palo Alto does ORDAIN as follows:

SECTION 1. Chapter 16.14 of the Palo Alto Municipal Code (PAMC) is hereby amended by repealing in its entirety 16.14 and adopting a new Chapter 16.08 to read as follows:

**CHAPTER 16.14
CALIFORNIA GREEN BUILDING STANDARDS CODE,
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11**

Sections

- 16.14.010** 2022 California Green Building Standards Code, Title 24, Part 11 adopted and amended.
- 16.14.020** Cross - References to California Green Building Standards Code.
- 16.14.030** Local Amendments.
- 16.16.040** Administration & Enforcement of 2022 California Green Building Standards Code.
- 16.16.050** Adoption of CHAPTER 1 Administration.
- 16.16.060** Section 101.4 Appendices.
- 16.16.070** Section 202 Definitions.
- 16.14.080** SECTION 301 - voluntary tiers added.
- 16.14.090** Section 4.106 SITE DEVELOPMENT
- 16.14.100** Section 4.306 SWIMMING POOL AND SPA COVERS
- 16.14.110** Section 4.509 Water heater replacement.
- 16.14.120** Section 702.2 Special inspection.
- 16.14.130** Residential Projects. Appendix A4 Preface: Green Building Measures for Project Type and Scope.
- 16.14.140** Section A4.104 SITE PRESERVATION.
- 16.14.150** Section A4.105 Deconstruction and Reuse of Existing Materials.
- 16.14.160** Section A4.106.8 Electric Vehicle (EV) Charging for New Construction.
- 16.14.170** Section A4.106.9 Bicycle Parking.
- 16.14.180** Section A4.106.10 Light Pollution Reduction.
- 16.14.190** Section A4.203.1 Performance Approach for Newly Constructed Buildings.
- 16.14.200** Section A4.304.3 Irrigation Metering Device.
- 16.14.210** Section A4.305 Water Reuse Systems.

- 16.14.220 A4.305.4 Additions and alterations.**
- 16.14.230 Section A4.403.1 Frost Protection Foundation Systems.**
- 16.14.240 Section A4.403.2 Reduction in cement use.**
- 16.14.250 Section A4.408.1 Enhanced Construction Waste Reduction.**
- 16.14.260 Section A4.504.1 Compliance with formaldehyde limits.**
- 16.14.270 Section A4.504.3 Thermal insulation.**
- 16.14.280 Non-Residential Projects: Chapter 5 Preface Green Building Requirements for Project Type and Scope.**
- 16.14.290 Section 5.106.1.1 Local storm water pollution prevention.**
- 16.14.295 Section 5.106.8 Light pollution reduction.**
- 16.14.300 Section 5.106.13 All-Electric Buildings.**
- 16.14.330 Section 5.304.2 Invasive Species Prohibited.**
- 16.14.340 Section 5.306 Non-residential enhanced water budget.**
- 16.14.350 Section 5.307 Cooling Tower Water Use.**
- 16.14.360 Section 5.410.4.6 Energy STAR portfolio manager.**
- 16.14.370 Section 5.410.4.7 Performance reviews – energy.**
- 16.14.380 Section 5.410.4.8 Performance reviews – water.**
- 16.14.390 Section 5.506 Indoor Air Quality.**
- 16.14.400 Section A5.405.5 Cement and concrete.**
- 16.14.410 Section A5.408 Construction Waste Reduction, Disposal and Recycling.**
- 16.14.420 Section A4.106.8 Electric Vehicle (EV) Charging.**
- 16.14.430 Section A5.106.5.3 Electric Vehicle (EV) Charging for Non-Residential Structures.**

- 16.14.010 2022 California Green Building Standards Code, Title 24, Part 11 adopted and amended.**

The California Green Building Standards Code, 2022 Edition, Title 24, Part 11 of the California Code of Regulations, together with those omissions, amendments, exceptions and additions thereto, is adopted and hereby incorporated in this Chapter by reference and made a part hereof the same as if fully set forth herein.

Unless superseded and expressly repealed, references in City of Palo Alto forms, documents and regulations to the chapters and sections of the former California Code of Regulations, Title 24, shall be construed to apply to the corresponding provisions contained within the California Code of Regulations, Title 24, 2022. Ordinance No. 5481 of the City of Palo Alto and all other ordinances or parts of ordinances in conflict herewith are hereby suspended and expressly repealed.

Wherever the phrases “California Green Building Standards Code” or “CALGreen” are used in this code or any ordinance of the City, such phrases shall be deemed and construed to refer and apply to the California Green Building Standards Code, 2022 Edition, as adopted and amended by this

chapter.

One copy of the California Green Building Standards Code, 2022 Edition, has been filed for use and examination of the public in the Office of the Building Official of the City of Palo Alto.

16.04.020 Cross - References to California Green Building Standards Code.

The provisions of this Chapter contain cross-references to the provisions of the California Green Building Code, 2022 Edition, in order to facilitate reference and comparison to those provisions.

16.16.030 Local Amendments.

The provisions of this Chapter shall constitute local amendments to the cross-referenced provisions of the California Green Building Standards Code, 2022 Edition, and shall be deemed to replace the cross-referenced sections of said Code with the respective provisions set forth in this Chapter.

CHAPTER 1 – ADMINISTRATION

16.16.040 Administration & Enforcement of 2022 California Green Building Standards Code.

Administration and enforcement of this code shall be governed by Chapter 1, Division II of the 2022 California Building Code as amended by Palo Alto Municipal Code Chapter 16.04.

16.16.050 Adoption of CHAPTER 1 Administration.

Chapter 1 Administration of the 2022 California Green Building Code is adopted by the City of Palo Alto to supplement, to the extent it does not conflict with, Chapter 1, Division II of the 2022 California Building Code, as amended.

16.16.060 Section 101.4 Appendices.

The following Appendix Chapters of the California Green Building Standards Code, 2022 Edition, are adopted and hereby incorporated in this Chapter by reference and made a part hereof the same as if fully set forth herein:

- A. Appendix A4 - Residential Voluntary Measures (Tier 1 and Tier 2)
- B. Appendix A5 - Non-residential Voluntary Measures (Tier 1 and Tier 2)

CHAPTER 2 – DEFINITIONS

16.16.070 Section 202 Definitions.

Section 202 of Chapter 2 of the California Green Building Standards Code is amended to include the following definitions:

ALL-ELECTRIC BUILDING / SITE. A building or parcel of land whose sole source of energy is electricity and contains no combustion equipment or plumbing for combustion equipment.

CPAU. City of Palo Alto Utilities Department.

CALGREEN MANDATORY. **Mandatory measures** are triggered for projects outlined in Section 301.1 Scope of this code, as amended.

Projects that only trigger Mandatory measures are not required to fulfill Tier 1 or Tier 2 measures in Appendix A4 and A5.

CALGREEN TIER 1. To achieve **Tier 1 status**, a project must comply with measures identified in Appendix A4, Section A4.601.4 for *residential projects* and Appendix A5, Section A5.601.2 for *non-residential projects*.

Projects subject to **Tier 1** must fulfill all mandatory measures, all Tier 1 prerequisite measures and a defined number of Tier 1 elective measures.

CALGREEN TIER 2. To achieve **Tier 2 status**, a project must comply with requirements identified in Appendix A4, Section A4.601.5 for *residential projects* and Appendix A5, Section A5.601.3 for *non-residential projects*.

Projects subject to **Tier 2** must fulfill all mandatory measures, all Tier 2 prerequisite measures and a defined number of Tier 2 elective measures.

CALGREEN TIER 1 AND TIER 2 PREREQUISITE MEASURES. Projects subject to **Tier 1** or **Tier 2** must fulfill all prerequisites as described within Appendix A4, Division A4.6 for *residential projects* and Appendix A5, Division A5.6 for *non-residential projects*.

CALGREEN TIER 1 AND TIER 2 ELECTIVE MEASURES. Projects subject to **Tier 1** or **Tier 2** must fulfill a defined number of electives as described within Appendix A4, Division A4.6 for *residential projects* and Appendix A5, Division A5.6 for *non-residential projects*.

CALGREEN INSPECTOR. An individual certified as a CALGreen Inspector/Plans Examiner through the International Code Council (ICC), demonstrating knowledge and application of Green Building concepts during plan review and inspection. For projects that require a CALGreen Inspector/Plans Examiner verification, the Inspector must be contracted directly with the owner and may not be a contractor or employee of the design or construction firm.

CERTIFIED ENERGY ANALYST. A person registered as a Certified Energy Analyst with the California Association of Building Energy Consultants as of the date of submission of a Certificate of Compliance as required under Section 10-103 of the Building Energy Efficiency Standards for Residential and Non-Residential Buildings.

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE. The California Department of Water Resources Model Water Efficient Landscape Ordinance.

SALVAGE. Salvage means the controlled removal of items and material from a building, construction, or demolition site for the purpose of on- or off-site reuse, or storage for

later reuse. Examples include air conditioning and heating systems, columns, balustrades, fountains, gazebos, molding, mantels, pavers, planters, quoins, stair treads, trim, wall caps, bath tubs, bricks, cabinetry, carpet, doors, ceiling fans, lighting fixtures, electrical panel boxes, fencing, fireplaces, flooring materials of wood, marble, stone or tile, furnaces, plate glass, wall mirrors, door knobs, door brackets, door hinges, marble, iron work, metal balconies, structural steel, plumbing fixtures, refrigerators, rock, roofing materials, siding materials, sinks, stairs, stone, stoves, toilets, windows, wood fencing, lumber and plywood.

SUBSTANTIAL REMODEL (AKA 50-50-50 RULE). Any project or projects that affects the removal or replacement of 50% or more of the linear length of the existing exterior walls of the building, and/or 50% or more of the linear length of the existing exterior wall plate height is raised, and/or 50% or more of the existing roof framing area is removed or replaced, over a 3-year period.

Any permit(s) applied for will trigger a review of a 3-year history of the project. This review will result in determining if a substantial remodel has occurred.

The Chief Building Official or designee shall make the final determination regarding the application if a conflict occurs.

SQUARE FOOTAGE. For application of green building requirements, “square footage” refers to all new or altered square footage, including basement areas (7 feet or greater in height), as calculated based on outer boundary of proposed construction area, including exterior walls.

CHAPTER 3 – GREEN BUILDING

16.14.080 SECTION 301 - voluntary tiers added.

SECTION 301 of Chapter 3 of the California Green Building Standards Code is amended to read:

SECTION 301 GENERAL

301.1 Scope. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code and any applicable local amendments. In addition, the City requires the use of Voluntary Tiers, as provided in Appendices A4 and A5, for certain residential and non-residential new construction, additions, and alterations.

301.1.1 Residential additions and alterations. [HCD] The Mandatory provisions of Chapter 4 shall be applied to additions and/or alterations of existing residential buildings where the addition and/or alteration increases the building's conditioned area, volume, or size. The requirements shall apply only to and/or within the specific area of the addition or alteration.

Tier 1 adopted (Residential). All residential building additions and/or alterations exceeding 1000 square feet must meet CALGreen Mandatory plus the Tier 1 measures, as

amended by this Chapter and as applicable to the scope of work.

For Tier 1 projects, the area of alterations will include any construction or renovation to an existing structure other than repair or addition. Alterations include raising the plate height, historic restoration, changes or rearrangements of the structural parts or elements, and changes or rearrangement of bearing walls and full height partitions.

Normal maintenance, reroofing, painting or wall papering, floor finishes, replacement-in-kind of mechanical, plumbing and electrical systems, or replacing or adding new kitchen counter and similar furniture, plumbing fixture to the building are excluded for the purposes of establishing scope of Tier 1 projects.

The area of alteration should be limited to the footprint of element(s) being altered.

This does not exclude mandatory CALGreen measures. The sum of the footprint of the elements being altered with respect to Tier 1, shall be calculated using the following methodology:

1. Raising the plate height: The calculation with respect to raising of the plate height will be based on the area of the footprint in which the plate height is being increased. Plate height means the vertical distance measured from the top of the finished floor to the top of the plates.
2. Historic restoration: The calculation with respect to historic restoration will be based on the area of work covered in the California Historical Building Code (Title 24, Part 8).
3. Structural parts or elements: The calculation with respect to changes or rearrangements of the structural parts or elements will be based on the sum of the individual footprints of each structural change or rearrangement. The footprint shall be calculated based on the proposed design and inclusive of any demolished structural parts or elements.
4. Bearing walls and full height partition: The calculation with respect to changes or rearrangement of walls and full height partitions will be based on the footprint of any demolished wall or full height partition and any new wall or new full height partition.

Exception: Attached and detached Accessory Dwelling Units, ADU conversions of existing structures shall meet the California Green Building Standards Code Mandatory measures only.

301.1 Low-rise and high-rise residential buildings. [HCD] The provisions of individual sections of CALGreen may apply to either low-rise residential buildings, high-rise residential buildings, or both. Individual sections will be designated by banners to indicate where the section applies specifically to low-rise only (LR) or high-rise only (HR). When the section applies to both low-rise and high-rise buildings, no banner will be used.

301.2.1 Low-Rise residential new construction – Tier 2 adopted. All new constructed or substantial remodel projects must meet CALGreen Mandatory plus Tier 2 measures, as amended by this ordinance and as applicable to the scope of work.

301.2 Non-residential additions and alterations. [BSC] The provisions of individual sections of Chapter 5 apply to building non-residential additions of 1,000 square feet or greater, and/or building alterations with a permit valuation of \$200,000 or above (for occupancies within the authority of California Building Standards Commission). Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work.

A code section will be designated by a banner to indicate where the code section only applies to newly constructed buildings [N] or to additions and alterations [A]. When the code section applies to both, no banner will be used.

Tier 1 adopted. Non-residential alterations (including tenant improvements or renovations) of 5,000 square feet that include replacement of at least two of the following: HVAC system, building envelope, hot water system, or lighting system, must comply with CALGreen Mandatory plus Tier 1 measures, as amended by this Chapter and as applicable to the scope of work.

Tier 2 adopted. Non-residential additions of 1000 square feet or greater must comply with CALGreen Mandatory plus Tier 2 measures, as amended by this Chapter and as applicable to the scope of work.

301.3.1 - 301.3.2 Unmodified.

301.3.3 Non-residential new construction – Tier 2 adopted. All new non-residential construction must meet CALGreen Mandatory plus Tier 2 measures, as amended by this ordinance and as applicable to the scope of work.

301.6 Special inspector requirements. Residential and non-residential project owners subject to CALGreen Mandatory, CALGreen Mandatory plus Tier 1, or CALGreen Mandatory plus Tier 2 measures shall contract a Special Inspector in accordance with section 702.2 of CALGreen, as amended.

301.7 Low-carbon concrete requirements for Tier 1 and Tier 2 projects. Plain and reinforced concrete installed as part of any project subject to the application of this code shall demonstrate compliance with the requirements of **PAMC 16.14.240**.

CHAPTER 4 – RESIDENTIAL MANDATORY MEASURES

Division 4.1 – PLANNING AND DESIGN

16.14.090 Section 4.106 SITE DEVELOPMENT

Section 4.106 of Chapter 4 of the California Green Building Standards Code is amended to add

new subsections, 4.106.5 and 4.106.5.1 as follow:

4.106.5 ALL-ELECTRIC BUILDING / SITE. A building or parcel of land whose sole source of energy is electricity and contains no combustion equipment or plumbing for combustion equipment.

4.106.5.1 Full electrification. Full electrification is required for new buildings, substantial remodels, and new outdoor appliances/equipment such as grill, stove, barbeque, fireplace, firepit, heater for swimming pool/spa, and similar equipment.

Division 4.3 – WATER EFFICIENCY AND CONSERVATION

16.14.100 Section 4.306 SWIMMING POOL AND SPA COVERS

Section 4.306 of Chapter 4 of the California Green Building Standards Code is added to read:

4.306 Swimming Pool and Spa Covers. Swimming pools and spas shall be provided with a vapor retardant cover.

Division 4.5 – ENVIRONMENTAL QUALITY

16.14.110 Section 4.509 Water heater replacement.

Section 4.509 of Chapter 4 of the California Green Building Standards Code is added to read:

4.509 Water heater replacement. For existing residential building remodels or additions where the gas water heater is replaced or new water heater is added, the new water heater shall be a heat pump water heater (HPWH).

CHAPTER 7 – INSTALLER AND SPECIAL INSPECTOR QUALIFICATIONS

16.14.120 Section 702.2 Special inspection.

Section 702.2 of Chapter 7 of the California Green Building Standards Code is amended to read:

702.2 Green building special inspection. When required by the enforcing agency, the owner or responsible entity acting as the owner’s agent shall employ one or more Green Building Special Inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Green Building Special Inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a Special Inspector. The City shall maintain a list of pre-approved Special Inspectors in accordance with this section. The owner shall contract a Special Inspector from the pre-approved list meeting one of the following:

1. Certification by a national or regional green building program:
ICC Certified CALGreen Inspector/Plans Examiner
2. Other programs acceptable to the enforcing agency.

Note: Special Inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

APPENDIX A4 – RESIDENTIAL VOLUNTARY MEASURES

Division A4.1 – PLANNING AND DESIGN

16.14.130 Residential Projects. Appendix A4 Preface: Green Building Measures for Project Type and Scope.

A preface is added to Chapter A4 of the California Green Building Standards Code to read:

Preface - Green Building Requirements for Project Type and Scope. For design and construction of residential projects, the City of Palo Alto requires compliance with the mandatory measures of Chapter 4, in addition to use of Tier 1 and Tier 2 as specified in Palo Alto Municipal Code Chapter 16.14. See Section 202 for definitions on CALGreen Mandatory, Tier 1 Prerequisites and Electives, and Tier 2 Prerequisites and Electives. All elective measures are adopted as written under Appendix A4 unless otherwise indicated in this Section.

16.14.140 Section A4.104 SITE PRESERVATION.

Section A4.104.1 of Appendix A4 of the California Green Building Standards Code is adopted as a Tier 1 and Tier 2 elective measure and is amended to read:

A4.104.1 Supervision and Education by a Special Inspector. Individuals with oversight authority on the project, as defined in section 16.14.090 of this code, who have been trained in areas related to environmentally friendly development, shall teach green concepts to other members of the builder’s staff and ensure training and written instruction has been provided to all parties associated with the development of the project. Prior to the beginning of the construction activities, the builder shall receive a written guideline and instruction specifying the green goals of the project.

Note: Lack of adequate supervision and dissemination of the project goals can result in negative effects on green building projects. If the theme of green building is not carried through the project, the overall benefit can be substantially reduced by the lack of knowledge and information provided to the various entities involved with the construction of the project.

16.14.150 Section A4.105 Deconstruction and Reuse of Existing Materials.

Section A4.105 of Appendix A4 of the California Green Building Standards Code is not adopted as

an elective measure and is amended to read:

Section A4.105.1 Chapter 5.24 of Title 5 of the Municipal Code. See Chapter 5.24 of the Municipal Code for the local deconstruction requirements.

Section A4.105.2 is adopted as a Tier 1 and Tier 2 elective measure.

A4.105.2 Reuse of materials. Nonhazardous materials which can be easily reused include but are not limited to the following:

1. Light fixtures
2. Plumbing fixtures
3. Doors and trim
4. Masonry
5. Electrical devices
6. Appliances
7. Foundations or portions of foundations

Note: Reused material must be installed to comply the appropriate Title 24 provisions.

16.14.160 Section A4.106.8 Electric Vehicle (EV) Charging for New Construction.

Section A4.106.8 of Appendix A4 of the California Green Building Standards Code is not adopted as a Tier 1 and Tier 2 elective measure. **Projects must comply with the Mandatory measures for electric vehicle supply equipment (EVSE) as amended in PAMC 16.14.420.**

16.14.170 Section A4.106.9 Bicycle Parking.

Section A4.106.9 of Appendix A4 of the California Green Building Standards Code is not adopted as a Tier 1 and Tier 2 elective measure. **Projects must comply with the bicycle parking requirements in the Palo Alto Municipal Code.**

16.14.180 Section A4.106.10 Light Pollution Reduction.

Section A4.106.10 is added and adopted as a Tier 1 and Tier 2 elective measure for all covered projects and is amended to read:

A4.106.10 Light pollution reduction. Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 1-4 as defined in Chapter 10 of the California Administrative Code; and
2. Backlight, Uplight and Glare (BUG) ratings as defined in IES TM-15-11; and
3. Allowable BUG ratings not exceeding those shown in Table A4.106.10; or

4. Comply with a local ordinance lawfully enacted pursuant to Section 101.7 of this code, whichever is more stringent.

Projects may use an approved equal reference standard for light fixtures where BUG ratings are unavailable.

Exceptions:

1. Luminaires that qualify as exceptions to the California Energy Code.
2. Emergency lighting.
3. One- and two-family dwellings.

Note: The International Dark-Sky Association (IDA) and the Illuminating Engineering Society of North America (IESNA) have developed a Model Lighting Ordinance (MLO). The MLO was designed to help municipalities develop outdoor lighting standards that reduce glare, light trespass, and skyglow. The model ordinance and user guides for the ordinance may be accessed at the International Dark-Sky Association web site.

Division A4.2 – ENERGY EFFICIENCY

16.14.190 Section A4.203.1 Performance Approach for Newly Constructed Buildings.

Section A4.203.1 of Appendix A4 of the California Green Building Standards Code is not adopted as a Tier 1 and Tier 2 elective measure. **Projects shall comply with Chapter 16.17 of the Palo Alto Municipal Code (Energy Code).**

Division A4.3 – WATER EFFICIENCY AND CONSERVATION

16.14.200 Section A4.304.3 Irrigation Metering Device.

Section A4.304.3 of Appendix A4 of the California Green Building Standards Code is adopted as a Tier 1 and Tier 2 elective measure and is amended to read:

A4.304.3 Irrigation Metering Device. Dedicated irrigation meters from CPAU are to be installed in all new construction and rehabilitated landscapes when the landscape is greater than 1,000 square feet.

16.14.210 Section A4.305 Water Reuse Systems.

Sections A4.305.1, A4.305.2, and A4.305.3 of Appendix A4 of the California Green Building Standards Code are adopted as Tier 1 and Tier 2 elective measures and are amended to read:

A4.305.1 Graywater. Alternative plumbing piping is installed to permit the discharge from the clothes washer and other fixtures (except toilets and kitchen sinks) to be used for an irrigation system in compliance with the California Plumbing Code. In the event that the whole house graywater system is installed in compliance with the California Plumbing Code, then this measure shall count as 3 electives.

A4.305.2 Recycled Water Piping. Based on projected availability, dual water piping is installed for future use of recycled water at the following locations:

1. Interior piping for the use of recycled water is installed to serve all water closets, urinals, and floor drains.
2. Exterior piping is installed to transport recycled water from the point of connection to the structure. Recycled water systems shall be designed and installed in accordance with the California Plumbing Code.

A4.305.3 Recycled water for landscape irrigation. Recycled water piping is used for landscape irrigation.

16.14.220 A4.305.4 Additions and alterations.

Section A4.305.4 is added as Tier 1 and Tier 2 prerequisite and amended to read:

A4.305.4 Additions and alterations. All multifamily residential additions and alterations must install recycled water infrastructure for irrigation when the landscape area exceeds 1,000 square feet.

Division A4.4 – MATERIAL CONSERVATION AND RESOUCE EFFICIENCY

16.14.230 Section A4.403.1 Frost Protection Foundation Systems.

Sections A4.403.1 is not adopted as a Tier 1 and Tier 2 elective measure.

16.14.240 Section A4.403.2 Reduction in cement use.

Section A4.403.2 of Appendix A4 of the California Green Building Standards Code is adopted as a Mandatory measure for all Tier 1 and Tier 2 projects and is amended to read:

A4.403.2 Low Carbon Concrete Requirements.

A4.403.2.1 Purpose. The purpose of this chapter is to provide practical standards and requirements for the composition of concrete, as defined herein, that maintains adequate strength and durability for the intended application and at the same time reduces greenhouse gas emissions associated with concrete composition. This code includes pathways for compliance with either reduced cement levels or lower-emission supplementary cementitious materials.

A4.403.2.2 Definitions. For the application of this section the following definitions shall apply:

Concrete. Concrete is any approved combination of mineral aggregates bound together into a hardened conglomerate in accordance with the requirements of this code.

Environmental product declaration (EPD). EPDs present quantified environmental

information on the life cycle of a product to enable comparisons between products fulfilling the same function. EPDs must conform to ISO 14025, and EN 15804 or ISO 21930, and have at least a "cradle to gate" scope (which covers product life cycle from resource extraction to the factory).

Upfront embodied carbon (embodied carbon). The greenhouse gasses emitted in material extraction, transportation and manufacturing of a material corresponding to life cycle stages A1 (extraction and upstream production), A2 (transportation), and A3 (manufacturing). Definition is as noted in ISO 21930 and as defined in the Product Category Rule for *Concrete* by NSF dated February 22nd, 2019. https://www.nsf.org/newsroom_pdf/concrete_pcr_2019.pdf

A4.403.2.3. Compliance. Compliance with the requirements of this chapter shall be demonstrated through any of the compliance options in Sections 4.403.2.3.2 through 4.403.2.3.5:

Table A4.403.2.3 Cement and Embodied Carbon Limit Pathways

	Cement limits for use with any compliance method A4.403.2.3.2 to A4.403.2.3.5	Embodied Carbon limits for use with any compliance method A4.403.2.3.2 to A4.403.2.3.5
Minimum specified compressive strength f_c , psi (1)	Maximum ordinary Portland cement content, lbs/yd³ (2)	Maximum embodied carbon kg CO₂e/m³, per EPD
up to 2500	362	260
3000	410	289
4000	456	313
5000	503	338
6000	531	356
7000	594	394
7001 and higher	657	433
up to 3000 light weight	512	578
4000 light weight	571	626
5000 light weight	629	675
Notes		
(1) For concrete strengths between the stated values, use linear interpolation to determine cement and/or embodied carbon limits.		
(2) Portland cement of any type per ASTM C150.		

A4.403.2.3.1 Allowable Increases.

(1) Cement and Embodied Carbon Limit Allowances. Cement or Embodied Carbon limits shown in Table A4.403.2.3 can be increased by 30% for concretes demonstrated to the Building Official as requiring high early strength. Such concretes could include, but are not limited to, precast, prestressed *concrete*; beams and slabs above grade; and shotcrete

(2) Approved Cements. The maximum cement content may be increased proportionately above the tabulated value when using an approved cement, or blended cement, demonstrated by approved EPD to have a plant-specific EPD lower than 1040 kg

CO₂e/metric ton. The increase in allowable cement content would be (1040 / plant-specific EPD) %.

A4.403.2.3.2 Cement Limit Method — Mix. Cement content of a concrete mix using this method shall not exceed the value shown in the Table A4.403.2.3. Use of this method is limited to concrete with specified compressive strength not exceeding 5,000 psi.

A4.403.2.3.3 Cement Limit Method — Project. Total cement content shall be based on total cement usage of all concrete mix designs within the same project. Total cement content for a project shall not exceed the value calculated according to Equation A4.403.2.3.3.

Equation A4.403.2.3.3:

$$\text{Cem}_{\text{proj}} < \text{Cem}_{\text{allowed}}$$

where

$$\text{Cem}_{\text{proj}} = \sum \text{Cem}_n v_n \text{ and } \text{Cem}_{\text{allowed}} = \sum \text{Cem}_{\text{lim}} v_n$$

and

n = the total number of *concrete* mixtures for the project

Cem_n = the cement content for mixture n , kg/m³ or lb/yd³

Cem_{lim} = the maximum cement content for mixture n per Table A4.403.2.3, kg/m³ or lb/yd³

v_n = the volume of mixture n *concrete* to be placed, yd³ or m³

Applicant can use yd³ or m³ for calculation, but must keep same units throughout

A4.403.2.3.4. Embodied Carbon Method — Mix. Embodied carbon of a *concrete* mix, based on an approved environmental product declaration (EPD), shall not exceed the value given in Table A4.403.2.3.

A4.403.2.3.5. Embodied Carbon Method — Project. Total embodied carbon (EC_{proj}) of all *concrete* mix designs within the same project shall not exceed the project limit ($\text{EC}_{\text{allowed}}$) determined using Table A4.403.2.3 and Equation A4.403.2.3.5.

Equation A4.403.2.3.5:

$$\text{EC}_{\text{proj}} < \text{EC}_{\text{allowed}}$$

where

$$\text{EC}_{\text{proj}} = \sum \text{EC}_n v_n \text{ and } \text{EC}_{\text{allowed}} = \sum \text{EC}_{\text{lim}} v_n$$

and

n = the total number of *concrete* mixtures for the project

EC_n = the embodied carbon potential for mixture n per mixture EPD, kg/m³

EC_{lim} = the embodied carbon potential limit for mixture n per Table A4.403.2.3, kg/m³

v_n = the volume of mixture n concrete to be placed, yd^3 or m^3

Applicant can use yd^3 or m^3 for calculation, but must keep same units throughout.

A4.403.2.3.6. Enforcement.

As a condition prior to the issuance of every building permit involving placement of concrete, the permit applicant shall be required to submit a completed low-carbon concrete compliance form that shall be provided by and reviewed for compliance by the building department prior to issuing the permit.

As a condition of such building permits, and prior to approving construction inspections following placement of concrete, the permit applicant shall be required to submit batch certificates and/or EPDs provided by the concrete provider that demonstrate compliance with the low-carbon concrete compliance form on file with the building permit. The batch certificates and/or EPDs shall be reviewed for compliance by the building department prior to approving any further inspections.

When deviations from compliance with this section occur, the chief building official or his designee is authorized to require evidence of equivalent carbon reductions from the portions of remaining construction of the project to demonstrate alternative compliance with the intent of this chapter.

For projects involving placement of concrete by, or on behalf of, a public works, parks, or similar department the director of such department, or his/her assignee, shall maintain accurate records of the total volume (in cubic yards) of all concrete placed, as well as the total compliant volume (in cubic yards) of all concrete placed, and shall report this data annually to the governing body in a form expressing an annual compliance percentage derived from the quotient of total compliant concrete volume placed divided by total concrete volume placed.

A4.403.2.3.7. Exemptions.

(a) Hardship or infeasibility exemption. If an applicant for a project subject to this chapter believes that circumstances exist that make it a hardship or infeasible to meet the requirements of this chapter, the applicant may request an exemption as set forth below. In applying for an exemption, the burden is on the applicant to show hardship or infeasibility. The applicant shall identify in writing the specific requirements of the standards for compliance that the project is unable to achieve and the circumstances that make it a hardship or infeasible for the project to comply with this chapter. Circumstances that constitute hardship or infeasibility may include, but are not limited to the following:

- (1) There is a lack of commercially available material necessary to comply with this chapter;
- (2) The cost of achieving compliance is disproportionate to the overall cost of the project;
- (3) Compliance with certain requirements would impair the historic integrity of buildings listed on a local, state or federal list or register of historic structures as regulated by the California Historic Building Code (Title 24, Part 8).

(b) Granting of exemption. If the chief building official determines that it is a hardship or

infeasible for the applicant to fully meet the requirements of this chapter and that granting the requested exemption will not cause the building to fail to comply with the California Building Standards Code, the chief building official shall determine the maximum feasible threshold of compliance reasonably achievable for the project. In making this determination, the chief building official shall consider whether alternate, practical means of achieving the objectives of this chapter can be satisfied. If an exemption is granted, the applicant shall be required to comply with this chapter in all other respects and shall be required to achieve the threshold of compliance determined to be achievable by the chief building official.

(c) Denial of exception. If the chief building official determines that it is reasonably possible for the applicant to fully meet the requirements of this chapter, the request shall be denied and the applicant shall be notified of the decision in writing. The project and compliance documentation shall be modified to comply with the standards for compliance.

16.14.250 Section A4.408.1 Enhanced Construction Waste Reduction.

Section A4.408.1 of Appendix A4 of the California Green Building Standards Code is adopted as a mandatory measure and is amended to read:

A4.408.1 Enhanced Construction Waste Reduction. Nonhazardous construction and demolition debris generated at the site is diverted to recycle or salvage in compliance with the following:

Projects with a given valuation of \$25,000 or more must have at least an 80-percent reduction. Any mixed recyclables that are sent to mixed-waste recycling facilities shall include a qualified third party verified facility average diversion rate. Verification of diversion rates shall meet minimum certification eligibility guidelines, acceptable to the local enforcing agency.

Exceptions:

1. Residential stand-alone mechanical, electrical or plumbing permits.
2. Commercial stand-alone mechanical, electrical or plumbing permits.

A4.408.1.1 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with all construction and demolition waste reduction requirements.

Division A4.5 – ENVIRONMENTAL QUALITY

16.14.260 Section A4.504.1 Compliance with formaldehyde limits.

Section A4.504.1 of Appendix A5 of the California Green Building Standards Code is adopted as a Tier 1 and Tier 2 elective measure.

16.14.270 Section A4.504.3 Thermal insulation.

Section A4.504.3 of Appendix A5 of the California Green Building Standards Code is not adopted as a Tier 1 and Tier 2 prerequisite. Section A4.504.3 is adopted as a Tier 1 and Tier 2 elective measure.

CHAPTER 5 – NONRESIDENTIAL MANDATORY MEASURES

Division 5.1 – PLANNING AND DESIGN

16.14.280 Non-Residential Projects: Chapter 5 Preface Green Building Requirements for Project Type and Scope.

A Preface is added to Chapter 5 of the California Green Building Standards Code to read:

Preface – Green Building Requirements for Project Type and Scope. For design and construction of non-residential projects, the City requires compliance with the mandatory measures of Chapter 5, in addition to use of Tier 1 and Tier 2 as specified in Palo Alto Municipal Code Chapter 16.14. See Section 202 for definitions on CALGreen MANDATORY, Tier 1 prerequisites and electives, and Tier 2 prerequisites and electives. All elective measures are adopted as written under Appendix A5 unless otherwise indicated in this Section.

16.14.290 Section 5.106.1.1 Local storm water pollution prevention.

Section 5.106.1.1 of Chapter 5 of the California Green Building Standards Code is amended to read:

5.106.1.1 Local ordinance. Newly constructed projects and additions shall comply with additional storm water pollution prevention measures as applicable. **(See Chapter 16.11, Storm Water Pollution Prevention, of the Palo Alto Municipal Code.)**

16.14.295 Section 5.106.8 Light pollution reduction.

Section 5.106.8 of Chapter 5 of the California Green Building Standards Code is amended to read:

5.106.8 Light pollution reduction. Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the California Administrative Code; and
2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8);
3. Uplight and Glare ratings as defined in California Energy Code (shown in Tables 130.2-A and 130.2-B in Chapter 8); and
4. Allowable BUG ratings not exceeding those shown in Table 5.106.8 [N]; or

5. Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Projects may use an approved equal reference standard for light fixtures where BUG ratings are unavailable.

Exceptions:

1. Luminaires that qualify as exceptions in Section 103.2(b) and 140.7 of the California Energy Code.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.

16.14.300 Section 5.106.13 All-Electric Buildings.

Section 5.106.13 5 of Chapter 5 of the California Green Building Standards Code is as a mandatory measure added to read:

5.106.13 ALL-ELECTRIC BUILDING / SITE. A building or parcel of land whose sole source of energy is electricity and contains no combustion equipment or plumbing for combustion equipment.

5.106.13.1 Full electrification. Full electrification is required for new buildings substantial remodels, and new outdoor appliances/equipment such as grill, stove, barbeque, fireplace, firepit, heater for swimming pool/spa, and similar equipment.

Division 5.3 – WATER EFFICIENCY AND CONSERVATION

16.14.330 Section 5.304.2 Invasive Species Prohibited.

Section 5.304.2 of Chapter 5 of the California Green Building Standards Code is added as mandatory measure to read:

5.304.2 Invasive species prohibited. All non-residential new construction, additions, and alterations shall not install invasive species in a landscape area of any size.

16.14.340 Section 5.306 Non-residential enhanced water budget.

Section 5.306 of Chapter 5 of the California Green Building Standards Code is added as mandatory measure to read:

5.306 Non-residential enhanced water budget. Non-residential buildings anticipated to use more than 1,000 gallons of water a day shall complete an Enhanced Water Budget

Calculator as established by the Chief Building Official or designee.

16.14.350 Section 5.307 Cooling Tower Water Use.

Section 5.307 Cooling Tower Water Use is added as mandatory to read:

5.307 COOLING TOWER WATER USE

5.307.1. Cooling Tower Water Use in Highrise Residential or Non-Residential Buildings.

Cooling tower water use must meet the conditions as follows and as outlined in Palo Alto Municipal Code Section 16.08.100. Projects are required to perform a potable water analysis at the site to meet the maximum concentration of parameters noted in Table 5.307.1

Table 5.307.1

Ca (as CaCO ₃)	600 ppm
Total alkalinity	500 ppm
SiO ₂	150 ppm
Cr	300 ppm
Conductivity	3300 Us/cm

Calculate maximum number of cycles that can be achieved with these levels of concentration shall be included in the plumbing design plans.

Division 5.4 – MATERIAL CONSERVATION AND RESOUCCE EFFICIENCY

16.14.360 Section 5.410.4.6 Energy STAR portfolio manager.

Section 5.410.4.6 of Chapter 5 of the California Green Building Standards is added as mandatory measure to read:

5.410.4.6 Energy STAR portfolio manager. All non-residential projects exceeding \$100,000 valuation must provide evidence of an Energy STAR Portfolio Manager project profile for both water and energy use prior to Permit Issuance, acquire an Energy STAR Portfolio Manager Rating, and submit the rating to the City of Palo Alto once the project has been occupied after 12 months.

16.14.370 Section 5.410.4.7 Performance reviews – energy.

Section 5.410.4.7 of Chapter 5 of the California Green Building Standards is added to read:

5.410.4.7 Performance reviews – energy. All projects over 10,000 square feet. The City reserves the right to conduct a performance review, no more frequently than once every five years unless a project fails review, to evaluate the building's energy use to ensure

that resources used at the building and/or site do not exceed the maximum allowance set forth in the rehabilitation or new construction design. Following the findings and recommendations of the review, the City may require adjustments to the energy usage or energy-using equipment or systems if the building is no longer compliant with the original design. Renovation or rehabilitation resulting from such audit activity shall be considered a project and shall be subject to applicable documentation submittal requirements of the City. This section is effective only for those projects for which a building permit was issued after January 1, 2009.

16.14.380 Section 5.410.4.8 Performance reviews – water.

Section 5.410.4.8 of Chapter 5 of the California Green Building Standards is added to read:

5.410.4.8 Performance reviews – water. All sites greater than one acre: The City reserves the right to conduct performance reviews, no more frequently than once every five years unless a project fails review, to evaluate water use to ensure that resources used at the building and/or site do not exceed a maximum allowance set forth in the rehabilitation or new construction design. Water use reviews may be initiated by CPAU, or as a coordinated effort between the CPAU and the Santa Clara Valley Water District (SCVWD), or as part of SCVWD's established water conservation programs. Following the findings and recommendations of the review, the City may require adjustments to irrigation usage, irrigation hardware, and/or landscape materials to reduce consumption and improve efficiency. Renovation or rehabilitation resulting from such audit activity shall be considered a project and shall be subject to applicable documentation submittal requirements of the City.

16.14.390 Section 5.506 Indoor Air Quality.

Section 5.506.4 of Chapter 5 of the California Green Building Standards is added as mandatory measure to read:

Section 5.506.4 Indoor Air Quality Management Plan. All commercial and multi- family projects must submit an Indoor Air Quality Management Plan (IAQ) with building permit application in accordance with the Sheet Metal and Air Conditioning Contractors National Association (SMACNA IAQ) Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008-2008.

APPENDIX A5 – NONRESIDENTIAL VOLUNTARY MEASURES

Division A5.4 – MATERIAL CONSERVATION AND RESOUCE EFFICIENCY

16.14.400 Section A5.405.5 Cement and concrete.

Section A5.405.5 of Appendix A5 of the California Green Building Standards Code is adopted as a Mandatory measure for Tier 1 and Tier 2 projects and is amended to read:

A5.405.5 Cement and Concrete. Use cement and concrete made with recycled products and complying with the following sections and requirements per **PAMC Chapter 16.14.240**.

16.14.410 Section A5.408 Construction Waste Reduction, Disposal and Recycling.

Section A5.408 of Appendix A5 of the California Green Building Standards Code is adopted as a Mandatory measure for Tier 2 projects and is amended to read:

A5.408.3.1 Waste enhanced construction waste reduction. (80% construction waste reduction) as a mandatory requirement for all non-residential construction, including new construction, additions, and alterations, as long as the construction has a valuation of \$25,000 or more. Non-residential projects with a lower valuation shall remain subject to California Green Building Standards Code Chapter 5 mandatory measures.

Exceptions:

1. Residential stand-alone mechanical, electrical or plumbing permits.
2. Commercial stand-alone mechanical, electrical or plumbing permits.

A5408.3.1.1 - Deleted

A4.408.1.2 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with all construction and demolition waste reduction requirements.

APPENDIX A4 – RESIDENTIAL VOLUNTARY MEASURES - EVSE

Division A4.1 – PLANNING AND DESIGN

16.14.420 Section A4.106.8 Electric Vehicle (EV) Charging.

Section A4.106.8 of the California Green Building Standards Code is deleted in its entirety and adopted as a mandatory measure to read:

A4.106.8 Electric Vehicle (EV) Charging for Residential Structures. Newly constructed single family and multifamily residential structures, including residential structures constructed as part of a mixed-use development, shall comply with the following requirements for electric vehicle supply equipment (EVSE). All parking space calculations under this section shall be rounded up to the next full space. The requirements stated in this section are in addition to those contained in Section 4.106.4 of the California Green Building Standards Code. In the event of a conflict between this section and Section 4.106.4 of the California Green Building Standards Code, the more robust EV Charging requirements shall prevail.

A4.106.8.1 New one-family, two-family and townhouse dwellings. The following standards apply to newly constructed detached and attached single family, two-family and townhouse residences.

- (a) In general. The property owner shall provide One (1) Level 2 electrical vehicle supply equipment (EVSE) or one (1) EV ready space (Low Power Level 2 EV Charging Receptacle is acceptable provided that the infrastructure comply with section 4.106.4.1) for each residence (except for accessory dwelling unit (ADU)).
- (b) Location. The proposed location of a charging station may be internal or external to the dwelling and shall be in close proximity to an on-site parking space consistent with city regulations.

A4.106.8.2 New Multi-Family Dwellings. The following standards apply to newly constructed residences in a multi-family residential structure.

- (a) **Resident parking.** The property owner shall provide at least one (1) Level 2 electrical vehicle supply equipment (EVSE) or one (1) Level 2 EV Ready space for each residential unit in the structure (Low Power Level 2 EV Charging Receptacle is acceptable for 60% of the total EV parking spaces) .
- (b) **Guest parking.** The property owner shall provide EV Capable Space, EV-Ready Space, or EVSE Installed, for at least 25% of guest parking spaces, among which at least 5% (and no fewer than one) shall be EVSE Installed.
- (c) **Accessible spaces.** Projects shall comply with the 2022 California Building Code requirements for accessible electric vehicle parking.
- (d) **Minimum total circuit capacity.** The property owner shall ensure sufficient circuit capacity, as determined by the Chief Building Official or designee, to support the EV requirements specified in (a) and (b) above.
- (e) **Location.** The EVSE, receptacles, and/or raceway required by this section shall be placed in locations allowing convenient installation of and access to EVSE. In addition, if parking is deed-restricted to individual residential units, the EVSE or receptacles required by subsection (a) shall be located such that each unit has access to its own EVSE or receptacle. Location of EVSE or receptacles shall be consistent with all city regulations.

A4.106.8.3 New Hotels and Motels. The following standards apply to newly constructed hotels.

- (a) **In general.** The property owner shall provide at least 30% EV Ready Space and at least 10% Level 2 EVSE installed for of the total parking spaces.
- (b) **Accessible spaces.** Projects shall (b) comply with the 2022 California Building Code requirements for accessible electric vehicle parking.
- (c) **Minimum total circuit capacity.** The property owner shall ensure sufficient circuit

capacity, as determined by the Chief Building Official or designee , to support a Level 2 EVSE in every location where EV-Ready space or EVSE Installed is required.

- (d) **Location.** The EVSE and/or receptacles, required by this section shall be placed in locations allowing convenient installation of and access to EVSE. Location of EVSE or receptacles shall be consistent with all City guidelines, rules, and regulations.

APPENDIX A5 – NONRESIDENTIAL VOLUNTARY MEASURES

Division A5.1 – PLANNING AND DESIGN

16.14.430 Section A5.106.5.3 Electric Vehicle (EV) Charging for Non-Residential Structures.

Section A5.106.5.3 of the California Green Building Standards Code is adopted as a mandatory measure and amended to read:

A5.106.5.3 Electric Vehicle (EV) Charging for Non-Residential Structures. New non-residential structures shall comply with the following requirements for electric vehicle supply equipment (EVSE). All parking space calculations under this section shall be rounded up to the next full space. The requirements stated in this section are in addition to those contained in Section 5.106.5.3 of the California Green Building Standards Code. In the event of a conflict between this section and Section 5.106.5.3, the more robust EV Charging requirements shall prevail.

A5.106.5.3.5 Non-Residential Structures Other than Hotels. The following standards apply to newly constructed non-residential structures other than hotels.

In general. For building with 10 to 20 parking spaces, the property owner shall provide at least 20% EV Capable or EVSE-Ready space, and at least 20% Level 2 EVSE installed of the total parking spaces.

For building with over 20 parking spaces, the property owner shall provide at least 15% EV Capable or EVSE-Ready space, and at least 15% EVSE installed for of the total parking spaces

Accessible spaces. Projects shall comply with the 2022 California Building Code requirements for accessible electric vehicle parking.

Minimum total circuit capacity. The property owner shall ensure sufficient circuit capacity, as determined by the Chief Building Official or designee , to support a Level 2 EVSE in every location where EVSE Capable space, EVSE-Ready space or EVSE Installed is required.

Location. The EVSE, receptacles, and/or raceway required by this section shall be placed in locations allowing convenient installation of and access to EVSE. Location of EVSE or receptacles shall be consistent with all city regulations.

SECTION 2. The Council adopts the findings for local amendments to the California Green Building Standards Code, 2022 Edition, attached hereto as Exhibit “A” and incorporated herein by reference.

SECTION 3. If any section, subsection, clause or phrase of this Ordinance is for any reason held to be invalid, such decision shall not affect the validity of the remaining portion or sections of the Ordinance. The Council hereby declares that it should have adopted the Ordinance and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid.

SECTION 4. The Council finds that this project is exempt from the provisions of the California Environmental Quality Act (“CEQA”), pursuant to Section 15061 of the CEQA Guidelines, because it can be seen with certainty that there is no possibility that the amendments herein adopted will have a significant effect on the environment.

INTRODUCED: October 17, 2022

PASSED: November 14, 2022

AYES: BURT, CORMACK, DUBOIS, FILSETH, KOU, STONE, TANAKA

NOES:

ABSENT:

ABSTENTIONS:

ATTEST:

DocuSigned by:
Lesley Milton
E504916F00B34FA...

City Clerk

DocuSigned by:
Patrick Burt
ED9E90FB09E04FF...

Mayor

APPROVED AS TO FORM:

DocuSigned by:
Albert Yang
15B0C49220134DC...

Assistant City Attorney

APPROVED:

DocuSigned by:
Ed Shibada
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City Manager

DocuSigned by:
[Signature]
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Director of Planning and
Development Services

DocuSigned by:
Kelly S. Nose
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Director of Administrative Services

Exhibit A
FINDINGS FOR LOCAL AMENDMENTS TO CALIFORNIA GREEN BUILDING STANDARD CODE
TITLE 24, PART 11

Section 17958 of the California Health and Safety Code provides that the City may make changes to the provisions of the California Building Standards Code. Sections 17958.5 and 17958.7 of the Health and Safety Code require that for each proposed local change to those provisions of the California Building Standards Code which regulate buildings used for human habitation, the City Council must make findings supporting its determination that each such local change is reasonably necessary because of local climatic, geological, or topographical conditions.

Local building regulations having the effect of amending the uniform codes, which were adopted by the City prior to November 23, 1970, were unaffected by the regulations of Sections 17958, 17958.5 and 17958.7 of the Health and Safety Code. Therefore, amendments to the uniform codes which were adopted by the City Council prior to November 23, 1970 and have been carried through from year to year without significant change, need no required findings. Also, amendments to provisions not regulating buildings used for human habitation do not require findings.

Code: California Green Building Standard Code, Title 24, Part 11					
Chapter(s), Sections(s), Appendices	Title	Add	Deleted	Amended	Justification (See below of keys)
Ch. 1	ADMINISTRATION	✓			A
101.4	Appendices	✓			A
	Administration and Enforcement	✓			A
202	Definition	✓			A
301	Voluntary tiers added			✓	C, E
301.1	Scope			✓	C, E
301.1.1	Residential additions and alterations			✓	C, E
301.2	Low-rise and high-rise residential buildings			✓	C, E
301.2.1	Low-Rise residential new construction – Tier 2 adopted			✓	C, E
301.3	Non-residential additions and alterations			✓	C, E
301.3.3	Non-residential new construction – Tier 2			✓	C, E
301.6	Special inspector requirements			✓	C, E
301.7	Low-carbon concrete requirements for all projects			✓	C, E
4.106	Site Development	✓			C, E
4.306	Swimming pool and spa covers	✓			C, E
4.509	Heat pump water heater	✓			C, E
702.2	Special Inspection	✓			C, E
A4.104	Site preservation			✓	C, E

A4.105	Deconstruction and reuse of existing materials			✓	C, E
A4.106.8	Electric Vehicle (EV) Charging for New Construction	✓			C, E
A4.106.9	Bicycle parking			✓	C, E
A4.106.10	Light pollution reduction			✓	C, E
A4.203.1	Performance Approach for Newly Constructed Buildings			✓	C, E
A4.304.3	Irrigation Metering Device			✓	C, E
A4.305	Water reuse systems			✓	C, E
A4.403.1	Frost protection foundation systems			✓	C, E
A4.403.2	Reduction in cement use			✓	C, E
A4.408.1	Enhanced Construction Waste Reduction	✓			C, E
A4.504.1	Compliance with formaldehyde limits			✓	C, E
A4.504.3	Thermal insulation			✓	C, E
5.106.1.1	Local stormwater pollution prevention			✓	C, E
5.106.8	Light pollution reduction			✓	C
5.106.13	All-electric buildings			✓	E
5.304.2	Invasive Species	✓			C, E
5.306	Non-residential enhanced water budget	✓			E
5.307	Cooling tower water use	✓			C
A5.405.5	Cement and Concrete	✓			C, E
A5.408	Construction Waste Reduction, Disposal and Recycling	✓			C, E
5.410.4.6	Energy STAR portfolio manager				C, E
5.410.4.7	Performance reviews – energy	✓			C, E
5.410.4.8	Performance reviews – water	✓		✓	C, E
5.506.4	Indoor Air Quality Management Plan	✓			C, E
A4.106.8	Electrical Vehicle (EV) Charging for Residential Structures	✓			C, E
A4.106.8.1	New One-family, two-family and townhouse dwellings	✓			C, E
A4.106.8.2	New Multi-family Dwellings	✓			C, E
A4.106.8.3	New hotels	✓			C, E
A5.106.5.3	Electric Vehicle (EV) Charging for non-residential structures	✓			C, E
A5.106.5.3.5	Non-Residential Structures other than hotels	✓			C, E
Appendix A4	Residential Voluntary Measures	✓		✓	C, E
Appendix A5	Non-Residential Voluntary Measures	✓		✓	C, E

Key to Justification for Amendments to Title 24 of the California Code of Regulations

- A** This is an **administrative** amendment to clarify and establish civil and administrative procedures, regulations, or rules to enforce and administer the activities by the Palo Alto Building Inspection Department. These administrative amendments do not need to meet HSC 18941.5/17958/13869 per HSC 18909(c).
- C** This amendment is justified on the basis of a local climatic condition. The seasonal climatic conditions during the late summer and fall create severe fire hazards to the public health and welfare in the City. The hot, dry weather frequently results in wild land fires on the brush covered slopes west of Interstate 280. The aforementioned conditions combined with the geological characteristics of the hills within the City create hazardous conditions for which departure from California Building Standards Code is required. Natural gas combustion and gas appliances emit a wide range of air pollutants, such as carbon monoxide (CO), nitrogen oxides (NOx, including nitrogen dioxide (NO2)), particulate matter (PM), and formaldehyde, which according to a UCLA Study, have been linked to various acute and chronic health effects, and additionally exceed levels set by national and California-based ambient air quality standards. The burning of fossil fuels used in the generation of electric power and heating of buildings contributes to climate change, which could result in rises in sea level, including in San Francisco Bay, that could put at risk Palo Alto homes and businesses, public facilities, and Highway 101 (Bayshore Freeway), particularly the mapped Flood Hazard areas of the City. Energy efficiency is a key component in reducing GHG emissions, and construction of more energy efficient buildings can help Palo Alto reduce its share of the GHG emissions that contribute to climate change. All-electric new buildings benefit the health, safety, and welfare, of Palo Alto and its residents. Requiring all-electric construction, without gas infrastructure will reduce the amount of greenhouse gas produced in Palo Alto and will contribute to reducing the impact of climate change and the associated risks. Due to decrease in annual rain fall, Palo Alto experiences the effect of drought and water saving more than some other communities in California. Embodied carbon of concrete is a significant contributor to greenhouse gas emissions and climate change, and this amendment includes a requirement to use low-carbon concrete. Providing additional capacity for electric vehicle use reduces use of gasoline which is a major contributor to climate change.
- E** Green building enhances the public health and welfare by promoting the environmental and economic health of the City through the design, construction, maintenance, operation and deconstruction of buildings and sites by incorporating green practices into all development. The green provisions in this Chapter are designed to achieve the following goals:
- (a) Increase energy efficiency in buildings;
 - (b) Reduce the use of natural gas in buildings which improves indoor environmental quality and health;
 - (c) Reduce the use of natural gas which will reduce the natural gas infrastructure and

fire risk over time;

(d) Reduce the embodied carbon of concrete which reduces greenhouse gas emissions;

(e) Increase water and resource conservation;

(f) Reduce waste generated by construction and demolition projects;

(g) Provide durable buildings that are efficient and economical to own and operate;

(h) Promote the health and productivity of residents, workers, and visitors to the city;

(i) Recognize and conserve the energy embodied in existing buildings;

(j) Increase capacity for use of electric vehicles which reduces greenhouse gas emissions and improves air quality;

(k) Encourage alternative transportation; and

(l) Reduce disturbance of natural ecosystems.

G This amendment is justified on the basis of a local geological condition. The City of Palo Alto is subject to earthquake hazard caused by its proximity to San Andreas fault. This fault runs from Hollister, through the Santa Cruz Mountains, epicenter of the 1989 Loma Prieta earthquake, then on up the San Francisco Peninsula, then offshore at Daly City near Mussel Rock. This is the approximate location of the epicenter of the 1906 San Francisco earthquake. The other fault is Hayward Fault. This fault is about 74 mi long, situated mainly along the western base of the hills on the east side of San Francisco Bay. Both of these faults are considered major Northern California earthquake faults which may experience rupture at any time. Thus, because the City is within a seismic area which includes these earthquake faults, the modifications and changes cited herein are designed to better limit property damage as a result of seismic activity and to establish criteria for repair of damaged properties following a local emergency. Reduction or eliminating of natural gas infrastructure over time will reduce maintenance costs and fire risk in difficult geological conditions.

T The City of Palo Alto topography includes hillsides with narrow and winding access, which makes timely response by fire suppression vehicles difficult. Palo Alto is contiguous with the San Francisco Bay, resulting in a natural receptor for storm and waste water run-off. Also, the City of Palo Alto is located in an area that is potentially susceptible to liquefaction during a major earthquake. The surface condition consists mostly of stiff to dense sandy clay, which is highly plastic and expansive in nature. The aforementioned conditions within the City create hazardous conditions for which departure from California Building Standards Code is warranted. In addition, the reduction or elimination of natural gas infrastructure reduces the likelihood of fire or environmental damage should they become disrupted due to challenging topographic conditions during construction or repair.

Certificate Of Completion

Envelope Id: D7A3D7A742E54B7B93989ECE93D9649F	Status: Completed
Subject: DocuSign: Adoption of 9 Ordinances Related to the 2022 CA Building Codes	
Source Envelope:	
Document Pages: 173	Signatures: 55
Certificate Pages: 3	Initials: 0
AutoNav: Enabled	Envelope Originator:
Envelopeld Stamping: Enabled	Vinhloc Nguyen
Time Zone: (UTC-08:00) Pacific Time (US & Canada)	250 Hamilton Ave
	Palo Alto , CA 94301
	Vinhloc.Nguyen@CityofPaloAlto.org
	IP Address: 199.33.32.254

Record Tracking

Status: Original	Holder: Vinhloc Nguyen	Location: DocuSign
11/21/2022 11:02:42 AM	Vinhloc.Nguyen@CityofPaloAlto.org	
Security Appliance Status: Connected	Pool: StateLocal	
Storage Appliance Status: Connected	Pool: City of Palo Alto	Location: DocuSign

Signer Events

Signer Events	Signature	Timestamp
Albert Yang Albert.Yang@CityofPaloAlto.org Assistant City Attorney City of Palo Alto Security Level: Email, Account Authentication (None)	 <p>DocuSigned by: Albert Yang 15B6C45220134DC...</p> <p>Signature Adoption: Pre-selected Style Using IP Address: 97.126.59.62</p>	<p>Sent: 11/21/2022 11:11:03 AM Viewed: 11/21/2022 2:49:57 PM Signed: 11/21/2022 2:51:09 PM</p>


Electronic Record and Signature Disclosure:
Not Offered via DocuSign

Geoffrey Blackshire Geoffrey.Blackshire@CityofPaloAlto.org Fire Chief Fire Services Security Level: Email, Account Authentication (None)	 <p>DocuSigned by: Geoffrey Blackshire 0FF7BFD93914C6...</p> <p>Signature Adoption: Pre-selected Style Using IP Address: 199.33.32.254</p>	<p>Sent: 11/21/2022 2:51:19 PM Resent: 11/29/2022 3:43:47 PM Viewed: 11/29/2022 3:54:58 PM Signed: 11/29/2022 3:56:24 PM</p>
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Electronic Record and Signature Disclosure:
Not Offered via DocuSign

Brad Eggleston Brad.Eggleston@CityofPaloAlto.org Director of Public Works City of Palo Alto Security Level: Email, Account Authentication (None)	 <p>DocuSigned by: Brad Eggleston DF8505A6373A4DF...</p> <p>Signature Adoption: Pre-selected Style Using IP Address: 199.33.32.254</p>	<p>Sent: 11/29/2022 3:56:35 PM Viewed: 11/29/2022 5:45:39 PM Signed: 11/29/2022 5:46:20 PM</p>
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Electronic Record and Signature Disclosure:
Not Offered via DocuSign

Kiely Nose Kiely.Nose@CityofPaloAlto.org Director, Administrative Services/CFO City of Palo Alto Security Level: Email, Account Authentication (None)	 <p>DocuSigned by: Kiely S. Nose 0513042E38B4409...</p> <p>Signature Adoption: Uploaded Signature Image Using IP Address: 73.162.77.140</p>	<p>Sent: 11/29/2022 5:46:29 PM Viewed: 12/1/2022 7:25:34 AM Signed: 12/1/2022 7:26:13 AM</p>
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Electronic Record and Signature Disclosure:
Not Offered via DocuSign

Signer Events	Signature	Timestamp
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Jonathan Lait
 Jonathan.Lait@CityofPaloAlto.org
 Interim Director Planning and Community Environment
 City of Palo Alto
 Security Level: Email, Account Authentication (None)
Electronic Record and Signature Disclosure:
 Not Offered via DocuSign

DocuSigned by:

 293CF322E1294F6...
 Signature Adoption: Uploaded Signature Image
 Using IP Address: 99.88.42.180

Sent: 12/1/2022 7:26:27 AM
 Viewed: 12/1/2022 11:12:56 AM
 Signed: 12/1/2022 11:16:47 AM


Ed Shikada
 Ed.Shikada@CityofPaloAlto.org
 Ed Shikada, City Manager
 City of Palo Alto
 Security Level: Email, Account Authentication (None)
Electronic Record and Signature Disclosure:
 Not Offered via DocuSign

DocuSigned by:

 F2DCA19CCC8D4F9...
 Signature Adoption: Pre-selected Style
 Using IP Address: 199.33.32.254

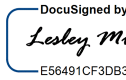
Sent: 12/1/2022 11:16:58 AM
 Viewed: 12/1/2022 1:50:09 PM
 Signed: 12/1/2022 1:50:45 PM

Patrick Burt
 pat@patburt.org
 Mr
 Security Level: Email, Account Authentication (None)
Electronic Record and Signature Disclosure:
 Not Offered via DocuSign

DocuSigned by:

 ED9E9CFB89E64FF...
 Signature Adoption: Pre-selected Style
 Using IP Address: 98.37.159.0

Sent: 12/1/2022 1:50:55 PM
 Resent: 12/2/2022 10:23:28 AM
 Viewed: 12/2/2022 11:49:03 AM
 Signed: 12/2/2022 11:49:57 AM

Lesley Milton
 Lesley.Milton@CityofPaloAlto.org
 City Clerk
 City Clerk
 Security Level: Email, Account Authentication (None)
Electronic Record and Signature Disclosure:
 Not Offered via DocuSign

DocuSigned by:

 E56491CF3DB34FA...
 Signature Adoption: Pre-selected Style
 Using IP Address: 199.33.32.254

Sent: 12/2/2022 11:50:10 AM
 Viewed: 12/2/2022 11:55:06 AM
 Signed: 12/2/2022 11:55:38 AM

In Person Signer Events	Signature	Timestamp
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Editor Delivery Events	Status	Timestamp
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Agent Delivery Events	Status	Timestamp
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Intermediary Delivery Events	Status	Timestamp
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Certified Delivery Events	Status	Timestamp
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Carbon Copy Events	Status	Timestamp
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Witness Events	Signature	Timestamp
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Notary Events	Signature	Timestamp
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Envelope Summary Events	Status	Timestamps
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Envelope Sent	Hashed/Encrypted	11/21/2022 11:11:03 AM
Certified Delivered	Security Checked	12/2/2022 11:55:06 AM

Envelope Summary Events	Status	Timestamps
Signing Complete	Security Checked	12/2/2022 11:55:38 AM
Completed	Security Checked	12/2/2022 11:55:38 AM

Payment Events	Status	Timestamps
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