

City of Palo Alto

Utilities Department

March 29, 2011

Mr. Simon Eching
California Department of Water Resources
Water Use and Efficiency Branch
P.O. Box 942836
Sacramento, CA 94236-0001

Subject: Update on the City of Palo Alto's Implementation of the State Water Efficient Landscape Ordinance

Divisions

Administration

Director's Office
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Public Relations
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Customer Support Services

Customer Service Center
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Credit and Collection
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Utility Marketing Services
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Fiber Optics
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Engineering

Electric
650.566.4500
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Water-Gas-Wastewater
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Resource Management

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Operations

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Dear Mr. Eching,

This letter is to inform the California Department of Water Resources (DWR) that the City of Palo Alto (City) has adopted an ordinance, which meets or exceeds the requirements of the DWR Model Water Efficient Landscape Ordinance (DWR Model Ordinance). Pursuant to the Water Conservation in Landscaping Act of 2006, AB 1881, each City and County within California was required to notify DWR on or before January 31, 2010 as to whether that City or County would adopt the DWR Model Ordinance, or adopt its own water efficient landscape ordinance. In January of 2010, the City notified DWR of the intent to develop a local ordinance. Subsequently in April of 2010, the City notified DWR of the intent to incorporate the DWR Model Ordinance requirements into its adoption of the 2010 State Green Building Code (CALGreen), which has now been adopted.

I. The City's Green Building Ordinance Implements the DWR Water Efficiency Requirements.

The City's new Green Building Ordinance (City Ordinance), which incorporates CALGreen with local amendments, became effective on January 1, 2011. A City-wide team reviewed the water efficiency measures included in CALGreen to ensure compatibility with the DWR Model Ordinance. The City's findings indicate that the City Ordinance covers more landscaping projects than the DWR Model Ordinance including both residential and non-residential new construction and renovation projects. For this reason and the detailed explanation that follows, the City finds that the City Ordinance is at least as effective as the DWR Model Ordinance.

In summary, the City Ordinance requires eligible projects to adhere to a water budget with an evapotranspiration adjustment factor (ETAF) lower than the DWR Model Ordinance resulting in lower allowable water use. Also, projects are required to provide a planting and irrigation design plan and water efficiency calculations demonstrating the landscape does not exceed the Maximum Applied Water Allowance (MAWA) measured under a formula consistent with the DWR Model Ordinance requirements.

Furthermore, the projects need to meet minimum requirements for irrigation efficiency consistent with the DWR Model Ordinance water allowance formula and install separate water meters and weather-based irrigation controllers.

P.O. Box 10250
Palo Alto, CA 94303

1. The City Ordinance Requirements for Non-Residential New Construction and Renovation Projects

Under the City Ordinance, non-residential new construction and renovation projects must comply with CALGreen mandatory water efficiency measures as well as additional outdoor water efficiency requirements based on project scope.¹ CALGreen mandatory requirements include development of a water budget based on the DWR Model Ordinance MAWA formula, installation of dedicated irrigation meters or sub-meters and use of weather-based irrigation controllers. The City Ordinance requires the following additional outdoor water reduction requirements:

- Use of a water budget following the formula of the DWR Model Ordinance MAWA;
- An ETAF of 55% to 60%, which is lower than the permitted amount of 70% under the DWR Model Ordinance;
- Separate water meters for indoor and outdoor water use; and
- Irrigation controllers with soil or weather-based adjustment sensors.

2. The City Ordinance Requirements for Residential New Construction and Renovation Projects

The City Ordinance meets comparable landscaping water efficiency requirements for residential design, construction, and renovation projects through the implementation of an amended version of the Build It Green, GreenPoint Rated program (GPR).² Applicants must achieve 70 GPR points under the program, and for landscape areas greater than 5,000 square feet, they must claim at least 15 points specifically from landscape water efficiency points. The City has reviewed the point selection scenarios and determined that any combination of the points selected from this category will result in landscape water savings at least as effective as the DWR Model Ordinance.

Landscape points can be gained through meeting a certain number of the following measures:

- Landscape design that meets a water budget between 50% to 70% of ETo;
- Low-flow irrigation system;
- Weather-based irrigation controller for automatic irrigation systems;
- Landscape sub-metering;
- Plant grouping by water needs (hydrozoning);
- Drought-tolerant and non-invasive plant selection;

¹ Outdoor water efficiency requirements depend on the scope of the project. CALGreen Tier 1 requirements apply to tenant improvements, renovations, or alterations of more than 5,000 square feet that include replacement or alteration of at least two of the following: Heating, Ventilating, and Air Conditioning (HVAC) system, building envelope, hot water system, or lighting system. Tier 1 projects must demonstrate through calculations that the water efficient landscape design reduces the use of potable water to a quantity that does not exceed 60% of ETo for the landscape area. Tier 2 requirements apply to all new construction and rebuilds of at least 1,000 square feet and additions of at least 1,000 square feet that include a new HVAC system. Tier 2 requirements reduce the potable water use to 55% of ETo for the landscape area.

² Build It Green is a non-profit organization that administers the GreenPoint Rated program for the design and construction of environmentally responsive and healthy homes. For a detailed description of this program please visit: www.builditgreen.org

- Turf grass limitation and restriction of overhead irrigation;
- Greater than 3 inches of mulch in all planting beds;
- Recycled water use for irrigation; and
- Use of a rainwater harvesting system.

II. The City Ordinance Is At Least As Effective As the DWR Model Ordinance.

For the following reasons, the City Ordinance is at least as effective as the DWR Model Ordinance in terms of saving water:

1. The City Ordinance applies to more projects than the DWR Model Ordinance.
 - a) The DWR Model Ordinance applies to non-residential landscapes with greater than 2,500 square feet. However, under the City Ordinance, compliance with the CALGreen tier 2 requirements for outdoor water efficiency is required for non-residential landscapes of any size when the project is a new construction, rebuild or addition with greater than 1,000 square feet of building area. All other non-residential projects must meet the CALGreen tier 1 requirements if a landscape area included in the scope of the project is greater than 1,000 square feet.
 - b) The DWR Model Ordinance applies to residential homeowner installed new construction projects when the landscape area is greater than 5,000 square feet. Under the City's Ordinance, all residential new construction and renovation projects with greater than 5,000 square feet of landscape area are subject to minimum landscape water efficiency requirements provided in the Landscape section of the GPR checklist.³
2. While the DWR Model Ordinance applies to projects requiring landscape permits, the City Ordinance applies to all the projects requiring building permits which undergo review through the City's Planning and Community Environment Department. Because the City does not issue separate landscape permits, the City Ordinance will apply to more projects and will capture projects which would have been missed under the DWR Model Ordinance.
3. The City Ordinance is more effective at achieving water savings than the DWR Model Ordinance for both non-residential and residential projects.
 - a) The City's Ordinance requires non-residential projects to adhere to a water budget and potable water use reduction lower than what is allowed through the DWR Model Ordinance MAWA formula. Landscape sub-metering is also required, which has been shown to significantly reduce overall site water use. The DWR Model Ordinance recommends but does not require dedicated metering. Irrigation system requirements set forth in both the DWR and City Ordinance must utilize low-volume, high efficiency, and/or subsurface technology, and automatic systems must be controlled with weather-based and/or soil moisture sensors.

³ The Landscape section of the GPR checklist can be found at www.cityofpaloalto.org/greenbuilding

- b) Both new construction and renovation projects in residential landscapes must select minimum GPR points for landscape water efficiency for compliance with the City Ordinance. These point selections include adoption of a water budget, potable water use reduction at or below the DWR MAWA, minimum irrigation efficiency meeting or exceeding DWR requirements and hydrozoning. Additional options to set turf grass limitations and sub-meter landscape water use in residential landscapes are not required in the DWR Model Ordinance.
4. The City Ordinance sets forth maximum limits for Reference Evapotranspiration (ET_o), an important element in water use calculations, which are more effective in reducing landscape water use than what is required in the DWR Model Ordinance. The City Ordinance does not allow potable water use that exceeds 70% of ET_o for residential and 60% of ET_o for non-residential projects.
 5. The City Ordinance meets the DWR Model Ordinance's requirements of landscape and irrigation design plans. For all projects adhering to a water budget, landscape and irrigation design plans as well as water efficiency calculations are required to demonstrate compliance. These plans and calculations will be reviewed for compliance by a certified professional.
 6. The DWR Model Ordinance requires an irrigation efficiency of at least 71% for both residential and non-residential projects. The City Ordinance requires a minimum of 70% irrigation system efficiency for non-residential projects, and residential projects must use subsurface and/or low-volume irrigation in all areas that exhibit the following characteristics: areas that are less than 8 feet wide; areas with a slope greater than 25%; and setback areas within 24 inches of non-permeable surface. The City has determined that such requirements combined with other requirements under the City Ordinance which exceed the DWR Model Ordinance requirements render the City ordinance at least as efficient as the DWR Ordinance.
 7. The City Ordinance requires a reduction of the area and number of high water use plants such as irrigated turf grass through a requirement of an ETAF which is lower than the DWR Model Ordinance ETAF for both residential and non-residential projects. The City Ordinance further requires a maximum of 15% turf grass for commercial and industrial zoned projects, which is not specifically required under the DWR Ordinance.
 8. The City's Ordinance requirements for dedicated irrigation meters are more restrictive than the DWR Model Ordinance recommendation, which only applies to non-residential landscapes greater than 5,000 square feet. The City Ordinance requires dedicated landscape meters for new water service in non-residential projects with landscape area greater than 1,000 square feet. Applicants for residential new construction and renovation landscape projects of any size that install dedicated meters or sub-meters will receive GPR points.
 9. The City Ordinance does not specify allowable irrigation times similar to the DWR Ordinance requirement of irrigation between the hours of 8:00 p.m. to 10:00 a.m. However, the City uses public outreach and education to encourage customers to irrigate during appropriate times. The City engages in an aggressive water conservation campaign with frequent bill inserts, envelope messaging, and mailings to customers with information on water efficient landscaping. The City also offers free landscape and irrigation workshops to homeowners and landscape

professionals and promotes water efficient landscape practices through its offering of rebate programs and information on the City website. The City finds that these efforts to promote behavioral changes in irrigation practices, combined with other water efficiency measures, which exceed the DWR Model Ordinance requirements, compensate for the differences between the City and the DWR ordinance.

10. The City Ordinance meets the DWR Model Ordinance requirements for recycled water, which recommends use of recycled water when it is available. The City's Ordinance requires non-residential new construction projects with greater than 1,500 square feet of landscaping to install infrastructure for use of recycled water. The City does not supply recycled water to residential projects at this time, but the residential customers may elect to use recycled water provided by other sources.
11. The City Ordinance meets the non-mandatory DWR Model Ordinance recommendations to local water agencies to administer programs that include irrigation water use analyses and surveys. The City requires minimum performance criteria for building operations after a project is complete, including evaluation of water use to ensure the building or site does not exceed the maximum allowance set forth in the construction design. The City's Ordinance reserves the right for the City to conduct follow-up performance reviews for compliance with water efficiency regulations for sites participating in the Green Building Program. Non-compliance may generate penalties in the form of daily fines assessed through the City's administrative fee schedule.

Enclosed with this correspondence is a copy of the City Ordinance adopting the 2010 California Green Building Standards Code, with local amendments and related findings. Additional applications, resources, and forms for compliance with the Palo Alto Green Building Program can be found at www.cityofpaloalto.org/greenbuilding

Please let me know if any additional information is required at this time. If you have questions about this update, please do not hesitate to contact me at (650) 329-2417.

Sincerely,

Catherine Elvert

Catherine Elvert
Utility Account Representative
City of Palo Alto Utilities

Cc:

Curtis Williams, Director, Planning and Community Environment, City of Palo Alto
Valerie O. Fong, Director, City of Palo Alto Utilities
Bahareh Samsami, Management Specialist for City Attorney, City of Palo Alto
Anona Dutton, Water Resources Planner, BAWSCA

Ordinance No. 5107

Ordinance of the Council of the City of Palo Alto Adopting a New Chapter 16.14 of the Palo Alto Municipal Code, California Green Building Standards Code, 2010 Edition, and Local Amendments and Related Findings

WHEREAS, the City of Palo Alto's (City) Comprehensive Plan sets forth goals for preserving and improving the City's natural and built environment, protecting the health of its residents and visitors, conserving water and energy, and fostering its economy; and

WHEREAS, the City Council of the City of Palo Alto has identified Environmental Protection as one of its top five goals, and green building is a key component of Environmental Protection; and

WHEREAS, green building design, construction, restoration, operation, and maintenance can have a significant positive effect on energy, water, and resource conservation, waste management and pollution reduction, and the health and productivity of a property's residents, workers, and visitors over the life of a building and/or site; and

WHEREAS, green building regulations comprise an important component of a whole systems approach to the City's sustainability program related to building and land development, other components of which include but are not limited to requirements for: disposal of construction and demolition debris, storm water quality and flood protection, tree protection, water conservation, recyclable materials storage, parking lot landscaping, and transportation demand management; and

WHEREAS, the City has already adopted several ordinances to promote green building, sustainability, and environmental protection, including a green building ordinance (adopted 2008), a construction and demolition debris recycling ordinance (adopted 2004, amended 2009), a recycled water ordinance (adopted 2008), a storm water pollution prevention ordinance (adopted 2003, amended 2005 & 2006) and water use regulations (adopted 1989, amended 1990, 1991, 1993); and

WHEREAS, the State of California has adopted new mandatory green building regulations, known as the California Green Building Standards Code "CALGreen" that will take effect on January 1, 2011 for all new construction in the state and covers many of the same matters contained in the City's green building and sustainability ordinances; and

WHEREAS, adoption of the California Green Building Standards Code promotes statewide consistency and predictability for building professionals; and

WHEREAS, to maintain the City's existing level of green building requirements and to harmonize the City's various sustainability standards and regulations with the provisions of CALGreen, the City intends to adopt local amendments to CALGreen, make certain enhanced measures of CALGreen mandatory, and repeal and amend existing provisions of the City's green

building and sustainability ordinances, with the goal of providing a comprehensive, yet straightforward approach to green building in the City.

Now, therefore the Council of the City of Palo Alto does ORDAIN as follows:

SECTION 1. Title 16 of the Palo Alto Municipal Code is amended to adopt a new Chapter 16.14 to read as follows:

16.14.010 2010 California Green Building Standards Code adopted.

The California Green Building Standards Code, 2010 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. One copy of the California Green Building Standards Code, 2010 Edition, has been filed for use and examination of the public in the Office of the Building Official of the City of Palo Alto.

Whenever the phrases “California Green Building Standards Code,” “California Green Building Code,” or “CALGreen” appear in this code or in any ordinance of the City, such phrases shall be deemed and construed to refer and apply to the “2010 California Green Building Standards Code” as adopted in the California Code of Regulations, Title 24, Part 11 and this chapter.

16.14.020 2010 California Green Building Standards Code Appendix Chapters adopted.

The following Appendix Chapters of the California Green Building Standards Code, 2010 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
- B. Appendix A5 – Nonresidential Voluntary Measures

16.14.030 Cross - References to California Green Building Standards Code.

The provisions of this Chapter contain cross-references to the provisions of the California Green Building Standards Code, 2010 Edition, in order to facilitate reference and comparison to those provisions.

16.14.040 Enforcement -- Citation authority.

The employee positions designated in this section may enforce the provisions of this chapter by the issuance of citations; persons employed in such positions are authorized to exercise the authority provided in Penal Code section 836.5 and are authorized to issue citations for violations of this chapter. The designated employee positions are: (1) chief building official; (2) assistant building official; (3) building inspection supervisor; (4) director of planning and community environment, and (5) code enforcement officer.

16.14.050 Local Amendments.

The provisions of this Chapter shall constitute local amendments to the cross-referenced provisions of the California Green Building Standards Code, 2010 Edition, and shall be deemed to replace the cross-referenced sections of said Code with the respective provisions set forth in this Chapter.

16.14.060 Section 101.3 amended – Scope.

Section 101.3 of the California Green Building Standards Code is amended to read:

101.3 Scope. The provisions of this code shall apply to the planning, design, operation, construction, use and occupancy of every building or structure unless otherwise indicated in this code, throughout the City of Palo Alto.

16.14.070 Section 101.3.1 amended – State-regulated buildings, structures and applications.

Section 101.3.1 of the California Green Building Standards Code is amended to read:

101.3.1 State-regulated buildings, structures and applications. Provisions of this code shall apply to the following buildings, structures, and applications regulated by state agencies as referenced in the Matrix Adoption Tables and as specified in Sections 103 through 106, except where modified by local ordinance pursuant to Section 101.7. When adopted by a state agency, the provisions of this code shall be enforced by the appropriate enforcing agency, but only to the extent of authority granted to such agency by statute.

- 1. State-owned buildings, including buildings constructed by the Trustees of the California State University, and to the extent permitted by California laws, buildings designed and constructed by the Regents of the University of California and regulated by the Building Standards Commission. See Section 103 for additional scoping provisions.*
- 2. Energy efficiency standards regulated by the California Energy Commission*
- 3. Residential buildings, whether low-rise or high-rise, constructed throughout the City of Palo Alto, including but not limited to, hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilets or cooking facilities regulated by the Department of Housing and Community Development. See Section 104 for additional scoping provisions.*
- 4. Public and private elementary and secondary schools, and community college buildings, whether or not regulated by the Division of the State Architect. See Section 105 for additional scope provisions.*
- 5. Qualified historical buildings and structures and their associated sites regulated by the State Historical Building Safety Board within the Division of the State Architect.*

6. *General acute care hospitals, acute psychiatric hospitals, skilled nursing and/or intermediate care facilities, clinics licensed by the Department of Public Health and correctional treatment centers regulated by the Office of Statewide Health Planning and Development. See Section 106 for additional scoping provisions.*
7. *Graywater systems regulated by the Department of Water Resources and the Department of Housing and Community Development.*

16.14.080 Section 101.4 amended – Appendices.

Section 101.4 of the California Green Building Standards Code is amended to read:

***101.4 Appendices.** Certain voluntary measures contained in the appendices of this code are mandatory in the City of Palo Alto pursuant to Palo Alto Municipal Code section 16.14.020. Refer to Sections 101.10, 304, Chapters 4, 5 and Appendix A5.*

16.14.090 Section 101.10 amended – Mandatory requirements.

Section 101.10 of the California Green Building Standards Code is amended to read:

***101.10 Mandatory requirements.** This code contains both mandatory and voluntary green building measures. Mandatory and voluntary measures are identified at the beginning of Chapters 4 and 5 and in the appropriate application checklists contained in this code, when modified and applied to specific projects.*

16.14.100 Section 202 amended – Definitions added.

Section 202 of the California Green Building Standards Code is amended to add the following definitions:

***ADDITION.** For application of green building requirements, this term means new floor area added to an existing building or structure.*

***BUILD IT GREEN, GREENPOINT RATED.** Build It Green means a non-profit organization that administers the GreenPoint Rated program for the design and construction of environmentally responsive and healthy homes. The program includes a rating system that is third-party verified and includes recognition.*

***ENERGY STAR PORFOLIO MANAGER.** Energy STAR Portfolio Manager (Portfolio Manager) shall mean the program managed by the U.S. Environmental Protection Agency that offers an energy management tool allowing applicants to track and assess energy and water consumption of a building project. Tracked projects receive an energy performance rating on a scale of 1–100 relative to similar buildings nationwide. Applicants are is not required to achieve a set rating.*

HERS II. *HERS shall mean the California Home Energy Rating System, a statewide program for residential dwellings administered by the California Energy Commission and defined in the 2008 California Building Energy Efficiency Standards. HERS Phase I provides field verification and diagnostic testing to show compliance with Title 24, Part 6, of the 2008 California Building Energy Efficiency Standards. HERS Phase II includes whole-house home energy efficiency ratings for existing and newly constructed homes. Applicants are not required to achieve a set rating.*

HIGH-RISE RESIDENTIAL BUILDING. *A building that is of Occupancy Group R and is not a low-rise residential building.*

MULTI-FAMILY RESIDENTIAL. *Any low- or high-rise residential building or structure with three or more attached units.*

INVASIVE PLANTS. *Invasive plants are both indigenous and non-indigenous species with growth habits that are characteristically aggressive. Invasive plants that are of concern and may be prohibited by this code are defined as such by WUCOLS (UCCE). <http://ucce.ucdavis.edu/files/filelibrary/1726/15359.pdf>.*

REBUILD. *For application of green building requirements, this term means any remodeled building or structure where the remodel includes exposure of insulation, or the removal of exterior sheathing on 25% or more of the exterior walls for a residential project, or 50% or more of the exterior walls for a nonresidential project.*

RENOVATION. *Means any rehabilitation, repair, remodel, change, or modification to an existing building, where changes to floor area and the footprint of the building are negligible. The valuation of renovation improvements shall be determined by the Director of Planning and Community Environment, upon recommendation of the Building Official. The Building Official may exclude from such valuation the cost of (a) seismic upgrades, (b) accessibility upgrades, or (c) photovoltaic panels or other solar energy or similar devices exterior to the building. Renovation valuation thresholds identified in Chapters 4 and 5 shall be adjusted to reflect changes in the City's valuation per square foot for new construction, using valuations in effect as of July 1, 2008, as the base index.*

RESIDENTIAL BUILDING. *(See "low-rise residential building" and "high-rise residential building.")*

SQUARE FOOTAGE. *For application of green building requirements, square footage means all new and replacement square footage, including basement areas (7 feet or greater in height) and garages, except that unconditioned garage space shall only count as 50%. Areas demolished shall not be deducted from the total new construction square footage. Square footage may also apply to landscapes, in*

which case it is the total surface area of the site not covered by impervious surfaces.

16.14.110 Section 303.1.2 added – Cumulative construction.

Section 303.1.2 is added to the California Green Building Standards Code to read:

***303.1.2 Cumulative construction.** Cumulative construction over any two-year period, or a project completed in phases, shall be considered as a single project, subject to the highest level of green building requirements for that project, unless exempted by the Building Official as impractical for compliance.*

16.14.120 Section 304 amended – Voluntary Tiers.

Section 304 of the California Green Building Standards Code is amended to read:

***304.1 Purpose.** Voluntary tiers are intended to further encourage building practices that improve public health, safety and general welfare by promoting the use of building concepts which minimize the building's impact on the environment and promote a more sustainable design. Use of the voluntary tiers is required in the City of Palo Alto for certain non-residential projects (see Chapter 5 for specific requirements).*

***304.1.1 Tiers.** The provisions of Appendices A4 and A5 outline means of achieving enhanced construction levels by incorporating additional measures. Buildings complying with tiers specified for each occupancy contain additional prerequisite and elective green building measures necessary to meet the threshold of each tier.*

Where there are practical difficulties involved in complying with the threshold levels of a tier, the enforcing agency may grant modifications for individual cases. The enforcing agency shall first find that a special individual reason makes the strict letter of the tier impractical and that modification is in conformance with the intent and purpose of the measure. The details of any action granting modification shall be recorded and entered in the files of the enforcing agency. Projects with an unusual scope or with unique circumstances may qualify for an exemption to the requirements either in whole or in part. Examples of such projects include cemeteries, ecological restoration projects, community gardens, commercial cultivation of agricultural products, and antenna installations.

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16.14.130 Chapter 4 Preface added – Green Building Requirements for Project Type and Scope.

A Preface is added to Chapter 4 of the California Green Building Standards Code to read:

Preface – Green Building Requirements for Project Type and Scope

The City of Palo Alto has expanded the types and scopes of projects covered by this code and established mandatory compliance requirements to address all aspects of a building's life cycle. For design and construction of residential projects, the City requires use of the Build It Green, GreenPoint Rated program to comply with the mandatory measures of Chapter 4 and Appendix A4. The following table prescribes the mandatory green building compliance requirements for residential projects:

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Project Type	Project Scope	Green Building Requirements
Design and Construction of Multi-Family Residential	<p>1. All new construction and rebuilds.</p> <p>Renovations or alterations $\geq 50\%$ of an existing unit's square footage, and that also include replacement or alteration of at least two of the following: HVAC system, building envelope, hot water system, or lighting system.</p>	<p><i>Build It Green, GreenPoint Rated (BIG GPR) minimum requirements and achieve 70 points.</i></p> <ul style="list-style-type: none"> ▪ <i>Additional measures that must be claimed under BIG GPR:</i> <ul style="list-style-type: none"> ▪ <i>A. SITE 2.c. Divert 100% of Asphalt and Concrete and 80% (by weight) of Remaining Materials.</i> ▪ <i>The project must claim 15 points in water efficiency.</i>
Design and Construction of Single and Two-Family Residential	<p>2. All new construction, rebuilds, and additions $\geq 1,250$ SF.</p>	<ul style="list-style-type: none"> ▪ <i>BIG GPR minimum requirements and achieve 70 points + 1 point per additional 70 SF over 2,550 SF (150 points maximum) for new construction and rebuilds, and 50 points for additions.</i> ▪ <i>Additional measures that must be claimed under BIG GPR:</i> <ul style="list-style-type: none"> ▪ <i>A. SITE 2.c. Divert 100% of Asphalt and Concrete and 80% (by weight) of Remaining Materials.</i> ▪ <i>The project must claim 15 points in water efficiency.</i>

<p>Design and Construction of All Residential</p>	<p>3. Any project not covered under project scopes 1 and 2 above \geq \$25,000 valuation AND physical site changes that require major or minor Architectural Review.</p> <ul style="list-style-type: none"> ▪ Compliance with the following CALGreen non-residential mandatory and voluntary measures is required based on project scope: <ul style="list-style-type: none"> ▪ 5.106.2 Local storm water pollution prevention. ▪ 5.303.5.1 Recycled water infrastructure. ▪ 5.304 OUTDOOR WATER USE when a landscape area greater than 1,000 SF is included in the project scope, and A5.304.4 Potable Water Reduction when a landscaped area greater than 1,500 SF is included in the project scope. ▪ A5.408.3.1 Enhanced construction waste reduction. 80% required for all projects regardless of scope. ▪ If the project is over \$100,000 in valuation: <ul style="list-style-type: none"> ▪ Complete an existing home green remodeling checklist. ▪ Complete a HERS II Rating.
<p>Operations</p>	<p>4. Buildings over 10,000 SF</p> <p><i>*effective only for those projects for which a building permit is issued after 01/01/2009.</i></p> <ul style="list-style-type: none"> • 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. Energy use reviews may be initiated by the Building Division or as a coordinated effort between the City's Utilities Department and/or its designated contractors. 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.

	<p>5. Sites greater than one acre</p> <ul style="list-style-type: none"> • 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 the Building Division, or as a coordinated effort between the City's Utilities Department 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.
Demolitions	<p>6. Demolitions</p> <ul style="list-style-type: none"> ▪ Compliance with the following CALGreen non-residential voluntary measures is required based on project scope: <ul style="list-style-type: none"> ▪ A5.105.1.3 Salvage. ▪ A5.408.3.1 Enhanced Construction Waste Reduction. 80%.

16.14.140 Chapter 5 Preface added – 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

The City of Palo Alto has expanded the types and scopes of projects covered by this code and established mandatory compliance requirements to address all aspects of a building's life cycle. For design and construction of non-residential projects, the City requires compliance with the mandatory measures of Chapter 5 and Appendix A5, in addition to use of the Voluntary Tiers as prescribed in the following table:

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Project Type	Project Scope	Green Building Requirements
Design and Construction	1. All new construction and rebuilds $\geq 1,000$ SF, and additions $\geq 1,000$ SF that include a new HVAC system.	<ul style="list-style-type: none"> ▪ CALGreen Mandatory Measures. ▪ CALGreen Tier 2.
	2. Tenant improvements, renovations, or alterations $\geq 5,000$ SF that include replacement or alteration of at least two of the following: HVAC system, building envelope, hot water system, or lighting system.	<ul style="list-style-type: none"> ▪ CALGreen Mandatory Measures as applicable to project scope. ▪ CALGreen Tier 1 as applicable to project scope.
	3. Any project not covered under project scopes 1 and 2 above \geq \$25,000 valuation AND physical site changes that require major or minor Architectural Review.	<ul style="list-style-type: none"> ▪ Compliance with the following CALGreen non-residential mandatory and voluntary measures is required based on project scope: <ul style="list-style-type: none"> ▪ 5.106.2 Local storm water pollution prevention. ▪ 5.303.5.1 Recycled water infrastructure. ▪ 5.304 OUTDOOR WATER USE when a landscape area greater than 1,000 SF is included in the project scope, and A5.304.4 Potable Water Reduction when a landscaped area greater than 1,500 SF is included in the project scope. ▪ A5.408.3.1 Enhanced construction waste reduction. 80% required for all projects regardless of scope. ▪ If the project is over \$100,000 in valuation: <ul style="list-style-type: none"> ▪ Energy STAR Portfolio Manager Rating

<p>Operations</p>	<p>4. Buildings \geq 10,000 SF</p> <p><i>*effective only for those projects for which a building permit is issued after 01/01/2009.</i></p> <ul style="list-style-type: none"> <i>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. Energy use reviews may be initiated by the Building Division or as a coordinated effort between the City's Utilities Department and/or its designated contractors. 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.</i>
	<p>5. Sites greater than one acre</p> <ul style="list-style-type: none"> <i>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 the Building Division, or as a coordinated effort between the City's Utilities Department 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.</i>

Demolitions	6. Demolitions	<ul style="list-style-type: none"> ▪ <i>Compliance with the following CALGreen non-residential voluntary measures is required based on project scope:</i> <ul style="list-style-type: none"> ▪ <i>A5.105.1.3 Salvage.</i> ▪ <i>A5.408.3.1 Enhanced Construction Waste Reduction. 80%.</i>
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16.14.150 Section 5.106.2 added – Local storm water pollution prevention.

Section 5.106.2 is added to the California Green Building Standards Code to read:

5.106.2 Local storm water pollution prevention. *Comply with additional storm water pollution prevention measures as applicable. (See Chapter 16.11, Stormwater Pollution Prevention, of the Palo Alto Municipal Code.)*

16.14.160 Section 5.302 amended – Definitions added.

Section 5.302 of the California Green Building Standards Code is amended to include the following definitions:

DEDICATED IRRIGATION METER. *A dedicated irrigation meter is a water meter that exclusively meters water used for outdoor watering and irrigation, and is completely independent from the meter used for indoor water use.*

PROCESS WATER. *Process water means untreated wastewater, uncontaminated by toilet discharge or an unhealthy bodily waste, which is not a threat from unhealthful processing, manufacturing or operating wastes.*

SUBMETER. *A meter installed subordinate to a site meter, usually used to measure water intended for one purpose, such as landscape irrigation. For the purposes of this section, a Dedicated Meter may be considered a submeter, however a submeter may not be considered a Dedicated Meter.*

16.14.170 Section 5.303.5.1 added – Recycled Water Infrastructure.

Section 5.303.5.1 is added to the California Green Building Standards Code to read:

5.303.5.1 Recycled Water Infrastructure. *Install infrastructure for and/or use recycled water for irrigation and/or interior plumbing, as applicable. (See Recycled Water Ordinance No. 5002, Chapter 16.12 of the Palo Alto Municipal Code.)*

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16.14.180 Section 5.304.2 amended – Outdoor water use.

Section 5.304.2 of the California Green Building Standards Code is amended to read:

5.304.2 Outdoor water use. For new water service for landscaped areas greater than 1,000 square feet, separate meters or submeters shall be installed for indoor water use, and a dedicated meter shall be installed for outdoor water use. Backflow prevention devices shall be installed on each water line serving the property as required.

16.14.190 Section 5.304.3 amended – Irrigation design.

Section 5.304.3 of the California Green Building Standards Code is amended to read:

5.304.3 Irrigation design. In new non-residential construction with greater than 1,000 square feet of landscaped area, design the system and install irrigation hardware (i.e. controllers and sensors) which include the following criteria, and meet manufacturer's recommendations.

**16.14.200 Section 5.304.3.2 added – Irrigation efficiency.
Section 5.304.3.3 added – Water waste.**

Sections 5.304.3.2 and 5.304.3.3 are added to the California Green Building Standards Code to read:

5.304.3.2 Irrigation efficiency. The irrigation system must meet an efficiency level of 70%, and subsurface and/or low volume irrigation must be used in all areas that exhibit any of these characteristics: less than 8 feet in width, with a slope greater than 25%, setback area within 24 inches of a non-permeable surface.

5.304.3.3 Water waste. The irrigation system must be designed and installed to prevent water waste due to overspray, low head drainage, or other conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures.

16.14.210 Section 5.408 amended – Construction waste reduction, disposal and recycling.

Section 5.408 (Sections 5.408.1 through 5.408.4) of the California Green Building Standards Code is amended to read:

5.408.1 Construction waste diversion. Establish a construction waste management plan for the diverted material. All debris generated by a project that are not salvaged for reuse must be delivered to an Approved Facility as defined in Chapter 5.24 of the Palo Alto Municipal Code.

5.408.2 Construction waste management plan. Where a local jurisdiction does not have a construction and demolition waste management ordinance, submit a construction waste management plan for approval by the enforcement agency that:

1. Identifies the materials to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale.
2. Determines if materials will be sorted on-site or mixed.
3. Identifies approved diversion facilities where material collected will be taken.
4. Identifies waste hauling company. Hauling of debris is subject to provisions of Chapter 5.20 of the Palo Alto Municipal Code.
5. Specifies that the amount of materials diverted shall be calculated by weight.

5.408.2.1 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 5.408.2 items 1 thru 5. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency, and upon completion of the project shall be revised to show actual debris tonnage diverted. Supporting documentation shall be provided, consisting of original receipts and weight tags or other records of measurement from the approved facility, which document the address of the project or project permit number and documentation of how the material was processed. Photocopies will be accepted if the permit number and/or project address is recorded on the receipts provided by an approved facility. In the case of reuse or salvage of material, a description of reused or salvaged materials and an estimate of the weight or volume of material reused or salvaged shall be provided.

Exception: Jobsites in areas where there is no mixed construction and demolition debris (C&D) processor or recycling facilities within a feasible haul distance shall meet the requirements as follows:

1. The enforcement agency having jurisdiction shall at its discretion, enforce the waste management plan and make exceptions as deemed necessary.

Exception: Jobsites where immediate or emergency demolition is required to protect the public health, safety, or welfare, as determined by the chief building official; or on the ground of impracticability or impossibility, including but not limited to, where the scope of the covered project is unusual (i.e. large mechanical equipment installation), and/or the amount of reusable material or recyclable debris is negligible.

5.408.2.2 Isolated jobsites. The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.

Notes:

1. *Sample forms found in Chapter 8 may be used to assist in documenting compliance with the waste management plan.*
2. *A list of approved construction and demolition debris diversion facilities can be located at www.cityofpaloalto.org/greenbuilding.*

5.408.3 Construction waste reduction of at least 80%. *Recycle and/or salvage for reuse a minimum of 80% of the non-hazardous construction and demolition debris. Calculate the amount of materials diverted by weight.*

Exceptions:

1. *Excavated soil, land-clearing debris and inert solids.*
2. *Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.*

5.408.4 Excavated soil and land clearing debris. *100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing, and inert solids such as concrete and asphalt, shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.*

16.14.220 Section A5.102 amended – Definitions added.

Section A5.102 of the California Green Building Standards Code is amended to include the following definitions:

SALVAGE. *Salvage means the controlled removal of construction or demolition debris/ 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.*

16.14.220 Section A5.105.1.3 amended – Salvage.

Section A5.105.1.3 of the California Green Building Standards Code is amended to read:

A5.105.1.3 Salvage. *Salvage structural and non-structural items in good condition such as wood, light fixtures, plumbing fixtures, and doors as follows. Document the weight and number of the items salvaged.*

1. *Salvage for reuse on the project items that conform to other provisions of Title 24 in an onsite storage area.*
2. *Nonconforming items may be salvaged in dedicated collection bins for exempt projects or other uses.*

16.14.230 Section A5.203.1.2 amended – Tier 2 Energy efficiency – 15% above Title 24, Part 6.

Section A5.203.1.2 of the California Green Building Standards Code is amended to read:

A5.203.1.2 Tier 2 Energy efficiency – 15% above Title 24, Part 6 [DSA-SS] *Exceed California Energy Code requirements, based on the 2008 Energy Efficiency Standards, by 15% and meet the requirements of Division A5.6.*

16.14.240 Section A5.302 amended – Definitions.

The following definitions in Section A5.302 of the California Green Building Standards Code are amended to read:

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE. *The California ordinance regulating landscape design, installation and maintenance practices that will ensure commercial, multifamily and other developer installed landscapes greater than 2,500 square feet meet an irrigation water budget developed based on landscaped area, and climatological parameters. The City of Palo Alto has adopted more stringent requirements in this code than the Model Water Efficient Landscape Ordinance, however the Model Ordinance is referenced as the method for determining the water budget associated with a project.*

SUBMETER. *Refer to Section 5.302.*

16.14.250 Section A5.304.4 amended – Potable water reduction.

Section A5.304.4 of the California Green Building Standards Code is amended to read:

A5.304.4 Potable water reduction. *Provide water efficient landscape irrigation design that reduces the use of potable water beyond the initial requirements for plant installation and establishment in accordance with Section A5.304.4.1 or A5.304.4.2. Calculations for the reduction shall be based on the water budget developed pursuant to section 5.304.1. Do not install invasive plant species.*

16.14.260 Section A5.408.3.1 amended – Enhanced construction waste reduction.

Section A5.408.3.1.1 amended – Verification of compliance.

Sections A5.408.3.1 and A5.408.3.1.1 of the California Green Building Standards Code are amended to read:

***A5.408.3.1 Enhanced construction waste reduction.** Divert to recycle or salvage non-hazardous construction and demolition debris generated at the site in compliance with one of the following:*

Tier 1. At least an 80% reduction.

Tier 2. At least an 80% reduction.

***A5.408.3.1.1 Verification of compliance.** A copy of the completed waste management report shall be provided, and upon completion of the project shall be revised to show actual debris tonnage diverted. Supporting documentation shall be provided, consisting of original receipts and weight tags or other records of measurement from the approved facility, which document the address of the project or project permit number and documentation of how the material was processed. Photocopies will be accepted if the permit number and/or project address is recorded on the receipts provided by an approved facility. In the case of reuse or salvage of material, a description of reused or salvaged materials and an estimate of the weight or volume of material reused or salvaged shall be provided.*

16.14.270 Section A5.601.2.4 amended – Voluntary measures for CALGreen Tier 1.

Sub-section 3 of Section A5.601.2.4 of the California Green Building Standards Code is amended to read:

3. From Division A5.4,

- a) Comply with recycled content of 10% of materials based on estimated total cost in Section A5.405.4.*
- b) Comply with the 80% reduction in construction waste in Section A5.408.3.1*
- c) Comply with one elective measure selected from this division.*

16.14.280 Section A5.601.3.3 amended – Tier 2.

Section A5.601.3.3 of the California Green Building Standards Code is amended to read:

***A5.601.3.3 Tier 2.** Exceed California Energy Code requirements, based on the 2008 Energy Efficiency Standards, by 15%. Field verify and document the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Nonresidential Alternative Calculation Method Manual. For each additional 5% the California Energy Code is exceeded beyond the 15% minimum required, the project can decrease one elective*

measure required under any section under A5.601.3.4 below (e.g. a project that exceeds the California Energy Code by 25% can decrease the required elective measures by two).

16.14.290 Section A5.601.3.4 amended – Voluntary measures for CALGreen Tier 2.

Sub-section 4 of Section A5.601.3.4 of the California Green Building Standards Code is amended to read:

4. *From Division A5.5,*
- a) *Comply with resilient flooring systems for 90% of resilient flooring in Section A5.504.4.7.1.*
 - b) *Comply with thermal insulation meeting 2009 CHPS low-emitting materials list and no added formaldehyde in Section A5.504.4.8.1.*
 - c) *Comply with four elective measures selected from this division.*

SECTION 2. The Council adopts the findings for local amendments to the California Green Building Standards Code, 2010 Edition, attached hereto as Exhibit “A” and incorporated herein by reference.

SECTION 3. 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.

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SECTION 4. This ordinance shall be effective on the thirty-first day after the date of its adoption.

INTRODUCED: November 8, 2010

PASSED: December 13, 2010

AYES: BURT, ESPINOSA, HOLMAN, KLEIN, PRICE, SCHARFF, SCHMID, SHEPHERD, YEH

NOES:

ABSENT:

ABSTENTIONS:

ATTEST:

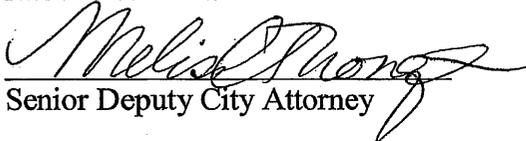


City Clerk



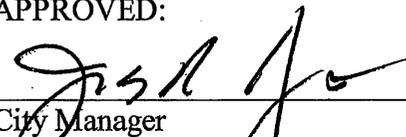
Mayor

APPROVED AS TO FORM:

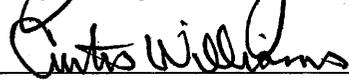


Senior Deputy City Attorney

APPROVED:



City Manager



Director of Planning & Community Environment

EXHIBIT "A"

Findings Adoption of California Green Building Standards Code and Related Amendments

In adopting the ordinance adding Chapter 16.14 to the Palo Alto Municipal Code, the City Council finds as follows:

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, including green building standards, 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.

A. General Findings Related to Green Building and Sustainability Requirements in City of Palo Alto

1. 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) Increase water and resource conservation;
- (c) Reduce waste generated by construction and demolition projects;
- (d) Provide durable buildings that are efficient and economical to own and operate;
- (e) Promote the health and productivity of residents, workers, and visitors to the city;
- (f) Recognize and conserve the energy embodied in existing buildings;
- (g) Encourage alternative transportation; and
- (h) Reduce disturbance of natural ecosystems.

2. The City of Palo Alto's (City) Comprehensive Plan sets forth goals for preserving and improving the City's natural and built environment, protecting the health of its residents and visitors, conserving water and energy, and fostering its economy;

3. The Council identified Environmental Protection as one of its top five goals and green building is a key component of environmental protection;

4. Green building design, construction, restoration, operation, and maintenance can have a significant positive effect on energy, water, and resource conservation, waste management and pollution generation, and the health and productivity of a property's residents, workers, and visitors over the life of a building and/or site;

5. Green building regulations comprise an important component of a whole systems approach to the City's sustainability program related to building and land development, other components of which include but are not limited to requirements for: disposal of construction and demolition debris, storm water quality and flood protection, tree protection, water conservation, recyclable materials storage, parking lot landscaping, and transportation demand management.

B. Findings for Local Amendments to 2010 California Green Building Standards Code (PAMC 16.14.020)

1. The City Council adopted a local Green Building Ordinance in 2008. In adopting that Ordinance, the Council recognized that a green building program supports the following principles important to the City of Palo Alto and found that:

(a) The City of Palo Alto's (City) Comprehensive Plan sets forth goals for preserving and improving the City's natural and built environment, protecting the health of its residents and visitors, conserving water and energy, and fostering its economy;

(b) The Council identified Environmental Protection as one of its top four goals for 2008, and green building is a key component of environmental protection;

(c) Green building design, construction, restoration, operation, and maintenance can have a significant positive effect on energy, water, and resource conservation, waste management and pollution generation, and the health and productivity of a property's residents, workers, and visitors over the life of a building and/or site;

(d) The provisions of California Assembly Bill 32 (Global Warming Solutions Act) require actions on the part of State and local governments to significantly reduce greenhouse gas (GHG) emissions such that statewide GHG emissions in 2020 are lowered to 1990 levels;

(e) Failure to address and significantly reduce greenhouse gas emissions 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;

(f) Green building regulations comprise an important component of a whole systems approach to the City's sustainability program related to building and land development, other components of which include but are not limited to requirements for: disposal of construction and demolition debris, storm water quality and flood protection, tree protection, water conservation, recyclable materials storage, parking lot landscaping, and transportation demand management;

(g) The City's Climate Protection Plan (CPP), adopted by the City Council on December 3, 2007, identifies green building as an important approach to reducing greenhouse gases generated in the Palo Alto community. The CPP notes that building construction and maintenance accounts

for approximately 38% of U.S. greenhouse gas emissions (U.S. Department of Energy) and approximately 40% of the energy use in the Palo Alto community. Buildings also account for much of the 14% of emissions that are generated by waste materials;

(h) Green building and landscape design, construction, operations and maintenance techniques are increasingly widespread in residential and commercial building construction, and green building benefits can be spread throughout the systems and features of a building such that green buildings can include: the use of certified sustainable wood products and high-recycled content products; reuse of existing facilities and recycling and salvage; reduced demands on heating and cooling systems; increased energy efficiency; enhancement of indoor air quality; reduced per capita demand on water resources and infrastructure; and the installation of alternative and renewable energy systems;

(i) At the state level, Build It Green has taken the lead in promoting and defining residential green building by developing the GreenPoint Rated Rating SystemTM; and

(j) Because the design, restoration, construction, and maintenance of buildings and structures within the City can have a significant impact on the City's environment, greenhouse gas emissions, resource usage, energy efficiency, waste management and the health and productivity of residents, workers and visitors over the life of the building, requiring commercial and residential projects to incorporate green building measures is necessary and appropriate to achieve the public health and welfare benefits of green building.

2. The local amendments to the California Green Building Standards Code make that code consistent with the City's previously adopted Green Building Ordinance and are reasonably necessary because of the following local climatic, geological, topographical or environmental conditions:

(a) The principles articulated and restated in Section 1 of this exhibit remain as relevant to the City today as they were when the City's original Green Building Ordinance was adopted in 2008;

(b) Green building and landscape design, construction, operations and maintenance techniques are increasingly widespread in residential and commercial building construction in Palo Alto, and green building benefits can be spread throughout the systems and features of a building, such that green buildings can include: the use of certified sustainable wood products and high-recycled content products; reuse of existing facilities and recycling and salvage; reduced demands on heating and cooling systems; increased energy efficiency; enhancement of indoor air quality; reduced per capita demand on water resources and infrastructure; and the installation of alternative and renewable energy systems;

(c) The design, restoration, construction, and maintenance of buildings and structures within the City can have a significant positive impact on the City's environment by reducing greenhouse gas emissions and resource usage, and promoting energy efficiency and sustainable waste management. These impacts improve the health and productivity of residents, workers and visitors over the life of a green building. As such, requiring commercial and residential projects

to incorporate green building measures is necessary and appropriate to achieve the public health and welfare benefits of green building;

(d) The City of Palo Alto's (City) Comprehensive Plan sets forth goals for preserving and improving the City's natural and built environment, protecting the health of its residents and visitors, conserving water and energy, and fostering its economy;

(e) 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;

(f) The City of Palo Alto Utilities (CPAU) is the only municipal utility in California that operates City-owned-utility services including electric, fiber optic, natural gas, water and wastewater services, and as such, the City Council is uniquely concerned that CPAU be able to provide reliable power to Palo Alto residents and businesses, especially in periods of peak energy demand;

(g) Summer ambient temperatures in the City during the months of June, July and August can reach over 100 degrees, creating peak energy load demands that can cause power outages, affecting public safety and causing adverse local economic impacts;

(h) The total square footage of conditioned habitable space within residential and nonresidential buildings in the City is increasing and using more energy and resources than in the past;

(i) 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;

(j) Reduction of total and peak energy use as a result of incremental energy efficiency measures will have local and regional benefits in the cost-effective reduction of energy costs for building owners, additional available system energy capacity, and a reduction in greenhouse gas emissions;

(k) The provisions of California Assembly Bill 32 (Global Warming Solutions Act) require actions on the part of State and local governments to significantly reduce greenhouse gas (GHG) emissions such that statewide GHG emissions in 2020 are lowered to 1990 levels; Failure to address and significantly reduce greenhouse gas emissions 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);

(l) The City's local Green Building Ordinance has already resulted in considerable local environmental benefits to the City, including but not limited to, benefits to the local environmental conditions addressed in the CPP. Specifically, for calendar year 2009, staff calculated that the Green Building Ordinance resulted in the following benefits to the City:

- (i) 74,021 square feet of green construction;
- (ii) More than 900 City residents or employees now housed in green facilities;
- (iii) Energy efficiency savings beyond the requirements of the California State Energy Code averaging twenty one percent;
- (iv) Annual electricity savings of 21,526 kwh;
- (v) Annual natural gas savings of 535 therms;
- (vi) Annual indoor water use savings of 286,389 gallons;
- (vii) Annual outdoor water use savings of 50,000 gallons;
- (viii) 16,122 tons of waste diverted from landfills; and
- (ix) Avoidance of 5,800 metric tons of greenhouse gas emissions (from energy, water and waste).

(m) At the state level, Build It Green has taken the lead in promoting and defining residential green building by developing the GreenPoint Rated Rating System™, and the City of Palo Alto finds that meeting the minimum requirements of Build It Green, GreenPoint Rated system to be equivalent to the mandatory provisions of the California Green Building Standards Code.

C. Findings Related to Enhanced Green Building Measures (PAMC §§ 16.14.080-.140, 16.14.270-.290):

1. The California Green Building Standards Code appendices include voluntary tiers to provide cities, counties, building professionals, and the general public with a range of prerequisite and elective green building measures for builders to choose from when constructing homes in California.
2. The California Green Building Standards Code appendices benefited from extensive input from cities, counties, building professionals, state agencies, and recognized green building professionals, and the practices contained in these guidelines were selected for their viability in today's market and their ability to promote sustainable buildings and communities.
3. Adoption of the California Green Building Standards Code appendices promotes statewide consistency and predictability for building professionals, while ensuring that the level of green building standards established by the City of Palo Alto in its 2008 Green Building Ordinance is not diminished.

D. Findings Related to Construction and Demolition Debris Amendments (PAMC §§ 16.14.210-.220):

1. The State of California through its California Integrated Waste Management Act of 1989, Assembly Bill 939 (AB 939), requires that each local jurisdiction in the state divert 50% of discarded materials (base year 1990) from landfills.
2. The City Council adopted a Zero Waste Strategic Plan in 2005 that sets a goal of zero waste by 2021 and provides that 90% or more of waste materials should be diverted from landfills through waste reduction, reuse, and recycling efforts.

3. There are facilities both within the City and in nearby surrounding areas that can effectively reuse, recycle or otherwise recover the constituent elements of the waste materials generated by construction and demolition activity and thereby divert such materials from landfills.

4. Construction and demolition debris recovery programs reduce the amount of materials generated and hauled to landfills.

E. Findings Related to Water Efficiency Amendments (PAMC § 16.14.160-.200; 16.14.240-.260):

1. The outdoor water use requirements set forth in the California Green Building Standards Code (CALGreen) meet or exceed the minimum requirements of the Department of Water Resources' (DWR) Model Water Efficient Landscape Ordinance, mandated by state law (AB 1881 (2006)), and are at least as effective in reducing landscape water use as the DWR Model Ordinance, for the following reasons:

(a) CALGreen applies to more projects than the DWR Model Ordinance;

(b) CALGreen is linked to projects requiring building permits, which undergo review through the City's Planning and Community Environment Department, whereas the DWR Ordinance applies only to projects that require landscape permits. Because the City does not issue landscape permits, more projects will be captured by the CALGreen requirements and subjected to the landscape water use standards contained therein;

(c) CALGreen sets forth maximum limits for evapotranspiration, an important element in water use calculations, which are more effective in reducing landscape water use than what is required in the DWR Model Ordinance;

(d) Planting specifications under CALGreen reduce the area and amount of high water use plants allowed for landscape projects, which exceed DWR requirements;

(e) Under CALGreen, landscape submetering is required for both residential and nonresidential projects with landscape areas smaller than what is recommended in the DWR Model Ordinance. Landscape submetering has been shown in many cases to reduce overall site water use.