CITY OF HAYWARD

Hayward City Hall
777 B Street
Hayward, CA 94541
www.Hayward-CA.gov

CITY OF
HAYWARD
HEART OF THE BAY

Agenda

Thursday, September 10, 2015

4:30 PM

City Hall, Conference Room 2A

Council Sustainability Committee

CALL TO ORDER

ROLL CALL

PUBLIC COMMENTS:

(The Public Comment section provides an opportunity to address the City Council Committee on items not listed on the agenda as well as items on the agenda. The Committee welcomes your comments and requests that speakers present their remarks in a respectful manner, within established time limits, and focus on issues which directly affect the City or are within the jurisdiction of the City. As the Committee is prohibited by State law from discussing items not listed on the agenda, any comments on items not on the agenda will be taken under consideration without Committee discussion and may be referred to staff.)

REPORTS/ACTION ITEMS

1. LB 15-012 Approval of Meeting Minutes of June 18, 2015

Attachments: Approval of Meeting Minutes of June 18 2015

2. LB 15-009 Zero Net Energy Policy for City Buildings

Attachments: Attachment I - Resolution
Attachment II - Fact Sheet ZNE
Attachment III Diagram of a ZNE Home

3. LB 15-016 State Model Water Efficient Landscape Ordinance Revision

Attachments: Attachment I - Bay Friendly
Attachment II - DWR Ordinance

4. LB 15-010 Options for Addressing Litter from Take-Out Food & Beverage Establishments

Attachments: Attachment I Litter Fact Sheet

5. LB 15-014 Sustainability Education and Outreach

Attachments: Attachment I Current Outreach and Education Activities
Attachment II Draft Sustainability Outreach Plan
Attachment III Calendar of Sustainability Events
Attachment IV Possible Messaging Campaigns
Attachment V Possible Photo Contests

6.	LB 15-011	Sustainability Metrics	
	Attachments:	Attachment I Example of Dashboard	
		Attachment II Sustainability Metrics	
7.	LB 15-018	Annual Update on City's Waste Reduction and Recycling Programs	
	Attachments:	FINAL Att. I - Summary of Participation in MRO	
8.	LB 15-015	Water Pollution Control Facility (WPCF) Reclaimed Water Project Update	
	Attachments:	FINAL Attachment I - Recycled Water System Pictures	
9.	LB 15-020	Public Litter Containers - Revised Locations for New Containers throughout City	
	Attachments:	Attachment I - Map of Proposed Locations	
		Att. II - Public Trash Can Review Criteria	
10.	LB 15-025	Suggested Sustainability Committee Quarterly Meeting Topics for 2015	
	Attachments:	Suggested Sustainability Cmmttee Qtrly Mtg Topics for 2015.doc	

Update on Waste Management Franchise Implementation (Verbal Only)

Update on Community Choice Energy (Verbal Only)

OLD BUSINESS (None)

FUTURE AGENDA ITEMS

COMMITTEE MEMBER/STAFF ANNOUNCEMENTS AND REFERRALS

ADJOURNMENT

NEXT REGULAR MEETING, 4:30 PM, THURSDAY, DECEMBER 10, 2015

CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING
Hayward City Hall – Conference Room 2A
777 B Street, Hayward, CA 94541-5007

September 10, 2015
4:30 p.m. – 6:30 p.m.

MEETING MINUTES

CALL TO ORDER: Meeting called to order at 4:02 p.m. by Chair Al Mendall, Council Member.

ROLL CALL:

Members

- Al Mendall, City Council Member /CSC Chair
- Greg Jones, City Council Member
- Francisco Zermeño, City Council Member

- Dianne McDermott, Planning Commission - absent

Staff:

- Kelly McAdoo, Assistant City Manager
- Alex Ameri, Utilities & Environmental Services Director
- David Rizk, Development Services Director
- Alicia Sargiotto, Senior Utility Services Representative
- Fred Cullum, City Building Official
- Corinne Ferreyra, Senior Management Analyst
- Erik Pearson, Environmental Services Manager
- Mary Thomas, Administrative Analyst I
- Ray Busch, Water Pollution Control Facility Manager
- Steve Osborne, Supervising Plan Checker
- Suzan England, Senior Utilities Engineer
- Vera Dahle-Lacaze, Solid Waste Manager
- Tori Johnson, Senior Secretary (Recorder)

Others:

- Gary Bookout, Hayward resident
- Kelly Fergusson, OpTerra Energy Services

PUBLIC COMMENTS

Gary Bookout presented his concerns about the lack of trash cans along Mission Boulevard, and made suggestions about the reallocation of litter cans, and getting the cooperation of fast food establishments to provide cans.

Alex Ameri responded that staff will be looking at litter management at fast food restaurants and the results will be brought to the Committee in September. Council Member Mendall suggested that Mr. Bookout return to the September meeting and asked that he provide staff with his suggested locations of litter cans.

1. Approval of Minutes of March 23, 2015 - Minutes were unanimously approved.

2. Streamlined Permitting and Reduced Fees for Small Residential Solar Energy System (per AB2188)

David Rizk, Development Services Director, gave a brief introduction of the proposal to adopt an Ordinance that creates an expedited, streamlined permitting process for small residential rooftop solar energy systems planned to go to City Council on July 7, with the Committee's recommendation.

Fred Cullum introduced Steve Osborne who presented a graph indicating there were 223 solar permits issued year to date, and by end of year it is expected to issue 400. In 2008, twelve solar permits were issued, and in 2014 there was a drastic uptick in solar permits. To respond to the increase in solar permits and to comply with the Legislation, since September 2014, every Tuesday there's been a dedicated person to review solar permits with a five business-day turnaround.

Council Member Zermeño thanked staff for speeding up the permit process, as well as the $300 fee. Mr. Zermeño asked if there had been any outreach to residents in their water bills to go solar. Director Rizk responded that typically permits are taken out by solar contractors rather than the homeowners. Steve Osborne commented that the subsidized permitting fee has been very impactful to the customers.

Council Member Mendall asked if the City has to make inspections in addition to PG&E's inspection. Steve Osborne explained that PG&E inspects the interconnections between the utility, the dwelling and the solar system, and that they do not go into the private property beyond that interconnection point. The Building Official and the Building Division are responsible for making sure the roof penetrations are adequately waterproofed, general electrical safety, and Fire jurisdictions want to make sure they have access around the array in order to respond to a fire.

Council Member Mendall asked if a spot check can be done for Solar City, for example, which installs so many per year, rather than an inspection on each permit. Fred Cullum explained that when a permit is issued, by law they are required to make an inspection, and these companies can miss the rafters, for example. Director Rizk added that the process has been streamlined, and they are working towards only one inspection.

Director Ameri stated that California's goal is 1,000,000 homes by 2016, and Hayward's "share" would be 4,000 homes by 2016. He suggested exploring some incentives to ensure that Hayward's goals are met.

Council Member Zermeño made a motion to approve the Staff recommendation and it was seconded and passed unanimously.

3. Update on Community Choice Aggregation ("East Bay Community Energy")

Director Ameri introduced Erik Pearson, who provided an update on Community Choice Aggregation (CCA). He explained that in June 2014 the Alameda County Board of Supervisors decided to form a countywide CCA program. The County formed a steering committee to guide the process and help to review the feasibility study. The steering committee was finalized June 2, 2015, and has 39 members. Council Member Mendall is the City's representative, and Council Member Jones is our alternate. Staff intends to assist Council by ensuring that the Steering Committee is looking at the ability of the CCA to provide electricity with fewer gashouse emissions than are available from PG &E, looking at risks associated with long-term energy contracts and price stability, and whether the CCA can maintain competitive rates with PG&E over the long term.

4. Update on Emergency Water Conservation Regulations

Director Ameri introduced Corinne Ferreyra. She provided a brief update on water conservation regulations, implications for the City, and what Staff is doing to ensure compliance.

Council Member Zermeño asked about water police. Director Ameri responded that if the water waste continues after a letter has been issued, there are fines; however no fines have been issued to-date. Council Member Zermeño asked if we are encouraging residents to use gray water. Director Ameri answered that staff is working on a document that will be discussed with Director Rizk requiring opportunities for limited use of gray water in new developments in Hayward.

In response to a question about lawn conversion, Alicia Sargiotto stated that 45 total applications have been received since 2012 when the Lawn Conversion Program started, and 27 of those were in this 2015. There was discussion about raising the cap of the maximum rebate as a better incentive.

Council Member Jones asked about banning ornamental turf in all new developments. Director Ameri responded that it could be considered. Corinne Ferreyra added that the current Ordinance as proposed is limited to 10-foot by 10-foot in the front yard for new developments, and she believes the State is starting to trend in that direction for new developments in particular. The City's current regulation is that no more than 25% of the landscape can be turf.

5. WPCF Clean & Renewable Energy

Director Alex Ameri introduced Suzan England, and Ray Busch. Suzan England explained the green power efforts at the Water Pollution Control Facility (WPCF). She explained the

working capabilities and process of the Cogeneration Facility, the heat recovery process, and the gas conditioning skid, both integral parts to the cogeneration process.

Ray Busch discussed the Fats Oils and Grease (FOG) Facility installed in 2013. He spoke about the solar array that was installed in 2010 that has 5,400 solar panels and most of the generated energy is now put on the grid. Mr. Busch commented that prior to the new Cogeneration system, the WPCF used almost 18% or a fifth of all the power used for municipal purposes in the City of Hayward, and now has gone from net generating to RES-BCT Tariff. He pointed out the many accomplishments of the Cogeneration facility, including the $2.6M self-generated grant from the CPUC that is administered by PG&E. Mr. Busch noted that Calpine is given about 2.5 million to 4 million gallons per day of the recycled water replacing potable water.

Council Member Mendall commended staff on the accomplishment of the WPCF going from being the largest consumer of energy to being the single largest producer of renewable energy, and he recommended that information get out to the community. It is a great story and a model.

Council Member Zermeño inquired why there are not more trees at WPCF. Director Ameri explained that trees are not compatible with the many pipes and underground facilities.

Council Member Jones suggested a Sustainability Report Card to get the word out to the community.

6. Property Assessed Clean Energy (PACE) – Consideration of New Programs

Director Alex Ameri presented Mary Thomas who presented a brief overview of what has been done and the opening report to City Council recommending that the City join HERO, Ygrene and OPEN Pace. She provided the Committee with information on the HERO, Ygrene and OPEN Pace programs and how to join them.

Council Member Jones encouraged more programs, and commented that Multi-Family property owners should be encouraged to do PACE.

Council Member Mendall said that the consensus of the Committee is to take it to the City Council.

7. Water Conservation, Efficiency, Outreach, and Rebate Programs

Director Ameri introduced Alicia Sargiotto. She described Hayward's different water conservation and outreach programs. She explained that Hayward's programs are a mix of mandatory requirements, voluntary programs and incentives, outreach and education, and City specific actions.

Council Member Jones encouraged staff to keep up the good work.

Council Member Mendall commented on replacing the turf in the Landscape Lighting Districts and installing bay-friendly landscaping, and using the savings to defray the cost. As well as investigate partnering with Landscape Maintenance. It would be very prominent and send a good message. He mentioned he has noticed lots of commercial properties that have been removing about 25% of their turf and suggested speaking to one or two of those properties to see why they are removing the turf.

8. Public Litter Containers – Locations for New Containers throughout City

Erik Pearson spoke about the new containers that will be placed about the community as a part of the new contract with Waste Management, 50 of the new aggregate style and 20 pairs of Big Belly containers have just been received. An inventory of containers was taken throughout the City to determine which containers needs removing or replacing and where new containers are needed.

Council Member Jones asked who is responsible to service the cans at the bus stations. Director Ameri answered that it is AC Transit's subcontractor, Clear Channel. A letter was written today from the City Manager to AC Transit's General Manager stated that the receptacles must be serviced more frequently.

The Committee reviewed the locations that speaker, Gary Bookout spoke about during public comments.

Council Member Jones spoke about the generation of fast food litter, and the possibility of enforcing a fee. Director Ameri said that discussion will be brought back in September to this Committee as a first step. Council Member Mendall requested that it include additional potential requirements for number of cans, placement and frequency, and potential taxes and fees placed on them for mitigation.

Council Member Mendall spoke about the need for more cans in addition to the downtown. He recommended new cans be added at Mission Blvd., Hesperian Blvd., Industrial Blvd., and Tennyson Road. He requested staff revisit the location of the cans. Director Ameri responded that the placement will be redone and will return to the Committee prior to implementation.

9. Update on Waste Management Franchise Implementation (Oral Report)

Director Ameri presented Vera Dahle-Lacaze. She described the status of the implementation of the various services included in the City's new Franchise Agreement with Waste Management. She explained that implementation has focused on providing outreach materials to single-and multi-family property owners and managers and businesses regarding the new and continued services and the rates for those services.

Council Member Mendall asked if anyone has complained about the increased garbage bill. Director Ameri responded that complaints have been very few in part because the increase was a reasonable amount and based on sound reasons.

10. Suggested Sustainability Committee Quarterly Meeting Topics for 2015

Alex Ameri presented the tentative meeting topics for 2015.

Council Member Mendall suggested informational only reports be delayed or put as Informational, if policy reports are ready to go.

COMMITTEE MEMBER/STAFF ANNOUNCEMENTS AND REFERRALS:

Erik Pearson pointed out September 10 is a short week with Labor Day and Admissions Day.

ADJOURNMENT: 6:19 p.m.

Attendance	Present 6/18/15 Meeting	MEETINGS Present to Date This Fiscal Year	Excused to Date This Fiscal Year	Absent to Date This Fiscal Year
Greg Jones	✓	4	1	0
Dianne McDermott	O	0	0	6
Al Mendall*	✓	5	0	1
Laura Oliva**	O	5	1	0
Francisco Zermeño	✓	5	1	0

✓ = Present O = absent X = excused
* Chair
** Vice Chair

Staff Report

File #: LB 15-009

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Director of Utilities and Environmental Services

SUBJECT
Zero Net Energy Policy for City Buildings

RECOMMENDATION
That the Committee reviews and comments on this report and recommends that the Council adopts the attached draft resolution (Attachment I).

SUMMARY

This report presents a policy that, if adopted by Council, would require new municipal buildings and significant retrofits of existing municipal buildings to be designed and constructed as zero net energy (ZNE) buildings. This policy would be consistent with current General Plan policies and would help prepare Hayward for anticipated changes to the State building code.

BACKGROUND

A ZNE building is one that produces as much energy as it consumes over the course of a year. More specifically, the California Energy Commission (CEC) defines ZNE as follows:

> "A Zero-Net-Energy Code Building is one where the net amount of energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building, at the level of a single "project" seeking development entitlements and building code permits, measured using the California Energy Commission's Time Dependent Valuation metric."

The Time Dependent Valuation (TDV) method encourages building designers to design buildings that perform better during periods of high energy cost. TDV is based on a series of annual hourly values for electricity cost and monthly costs for natural gas. The CEC is California's primary energy policy and planning agency and is responsible for forecasting future energy needs, promoting energy efficiency and conservation, and developing renewable energy resources. The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, telecommunications, water and transportation companies. The CPUC's Codes and Standards program works with the California Building Standards Commission to continuously improve the Title 24 Building Energy Efficiency Standards.
In 2008, the CPUC adopted a Long Term Energy Efficiency Strategic Plan, which includes the following

goals:

- all new residential buildings will be ZNE by 2020
- all new and 50% of existing state-owned public buildings will be ZNE by 2025
- all new and 50% of existing commercial buildings will be ZNE by 2030

California's ZNE goals are a part of the state's overall strategy to achieve the greenhouse gas reductions required by AB 32. Since 2008, the State has been actively working to support the ZNE goals by developing plans and requirements and is gradually incorporating the requirements into the state's building energy efficiency standards (Title 24). ZNE requirements will phased into future versions of the California Building Standards Code, so there is no need to adopt a resolution to implement the ZNE requirements for residential and commercial buildings. Benefits of ZNE buildings are listed in the State's *California ZNE Communications Toolkit* (Attachment II).

In April 2012, Governor Brown issued Executive Order B-18-12 requiring all new State buildings and major renovations beginning design after 2025 to be constructed as Zero Net Energy facilities with an interim target for 50% of new facilities beginning design after 2020 to be Zero Net Energy. The Order also requires State agencies to take measures toward achieving Zero Net Energy for 50% of the square footage of existing state-owned building area by 2025.

To achieve ZNE, a building must first be designed to be very energy efficient, and then include sufficient on-site renewable power generation, typically solar photovoltaic and solar hot water. An example ZNE home is shown in the diagram in Attachment III and includes LED lighting, extra insulation, high performance windows, a smart thermostat, high efficiency appliances, and a solar photovoltaic system.

In July 2008, the City Council adopted an ordinance requiring all new building or renovation projects that equal or exceed 20,000 square feet in area or $5 million in construction costs to be LEED Silver certified. LEED certification requires a high level of energy efficiency and green building materials, but it does not require renewable energy.

General Plan Policies - Hayward's General Plan, adopted on July 1, 2014, includes the following policies and implementation programs related to zero net energy in municipal buildings:

NR 2.5 Municipal Greenhouse Gas Reduction - The City shall reduce municipal greenhouse gas emissions by 20% below 2005 baseline levels by 2020, and strive to reduce community emissions by 61.7% and 82.5% by 2040 and 2050 respectively.

NR-4.10 Public Renewable Energy Generation - The City shall ensure that all new City-owned facilities are built with renewable energy, as appropriate to their functions, and shall install renewable energy systems at existing facilities where feasible.

NR-4.11 Green Building Standards - The City shall require newly constructed or renovated public and private buildings and structures to meet energy efficiency design and operations standards with the intent of meeting or exceeding the State's zero net energy goals by 2020.

PFS-2.3 Sustainable Practices -The City shall serve as a role model to businesses and institutions regarding purchasing decisions that minimize the generation of waste, recycling programs that

reduce waste, energy efficiency and conservation practices that reduce water, electricity and natural gas use, and fleet operations that reduce gasoline consumption.

PFS-2.7 Energy Efficient Buildings and Infrastructure - The City shall continue to improve the energy efficiency of City buildings and infrastructure through implementation of the Municipal Green Building Ordinance, efficiency improvements, equipment upgrades, and installation of clean, renewable energy systems.

DISCUSSION

Several cities in Alameda County have policies or ordinances similar to Hayward's, requiring new buildings to be LEED certified, but none have ZNE policies. Some cities have included ZNE requirements on a per-project basis. The City of Berkeley completed a new ZNE library in early 2014, the City of Fremont is contemplating ZNE for their new civic center, and the City of Albany is considering ZNE for a new maintenance center/corporation yard.

The only jurisdiction in California that has a ZNE policy is Santa Barbara County. In February 2014, the Santa Barbara County Board of Supervisors adopted a resolution requiring all new County-owned facilities and major renovations beginning design after 2025 be constructed as ZNE facilities.

To achieve the City's greenhouse gas emission reduction goals and to carry out the General Plan policies listed above, all new municipal buildings will need to be ZNE and existing buildings will need to be renovated to be ZNE. As stated in General Plan policy PFS 2.3 above, "the City shall serve as a role model to business and institutions." If the City can demonstrate successful construction and operation of ZNE buildings, then private developers may follow suit before mandated to do so. The 21st Century Library and Community Learning Center is slated to lead the way by being the City's first ZNE building when it is completed.

The technology and the knowledge necessary to create ZNE buildings are available now. While there are additional costs associated with construction of a ZNE building, it is more cost-effective to design a new ZNE building than it will be to retrofit an existing building. However, as the Committee considers a possible ZNE policy, a note of caution would be appropriate. In order to get input from professions in the field, staff contacted an architectural firm with experience in designing ZNE municipal buildings. Their response was that a ZNE policy would be a very ambitious and admirable goal, but that the City should consider the following:

- Different building types (offices, libraries, maintenance facilities, etc.) have significantly different levels of energy use intensity (EUI); there is growing data available to illustrate what building types are realistic candidates to achieve ZNE.
- Renovations with tight budgets/small scope may prove particularly difficult to achieve this goal, as there is a significant financial effort required to improve overall existing building performance.
- There are other "flavors" of benchmarking that can establish projects as "ZNE Capable" or "High performing buildings" that prepare you for potential better future renewable energy technology.
- Although there are other alternatives (wind, geothermal, hydro), generally speaking PVs are the primary viable option for onsite power generation. Cities do have a unique position to negotiate alternate energy contracts with utilities, leveraging multiple buildings into an aggregated service

contract.

- The more stories the building, the more challenging ZNE becomes due to limited roof area for PVs proportional to floor area.
- Some sites are shaded by geography or other buildings limiting solar power potential.
- Although the cost of PVs has been dropping over the last decade, the construction market is volatile and costs could rise unexpectedly to coincide with a project.
- There is a corresponding increase in design and engineering effort that needs to be taken into consideration.
- Plug loads have as much to do with achieving this goal as the building design - one donated "energy hog" refrigerator could blow the energy budget on a smaller project.
- Projects with intense "Process Loads" (such as large trash compactors and other high demand equipment), represent a challenging issue for ZNE.

Taking the above issues into consideration, the timeframes provided in staff's recommended policy provide some time to address these challenges. Staff recommends that:

- all new City buildings that begin design after 2025 be ZNE
- all new and existing City buildings with renovations exceeding 50% of the building's value and that begin design after 2020 be ZNE
- lesser improvements to existing City buildings should include efficiencies and technologies that facilitate achieving Zero Net Energy by 2025.

As noted above, there may be projects where the site, energy demand, and other aspects of a city building (or renovation) may make it challenging and costly to achieve ZNE. For these reasons, the Committee might consider the following alternative policies:

- Requires a minimum percentage (maybe 50%) of the projected energy demand be provided by on -site sources and that the remaining demand be offset by newly implemented renewable energy facilities at another City-owned property; or
- For buildings where it is not possible to install on-site renewable energy sufficient to qualify as ZNE, the building should be "ZNE Capable." ZNE Capable means that the building achieves energy performance similar to a ZNE building, but it does not have sufficient on-site power generation to qualify as ZNE.

FISCAL IMPACT

The costs associated with transforming the City's buildings to ZNE will be determined as each project is designed. Costs will decrease over time as the cost of solar photovoltaic panels continues to decline and as more builders gain experience constructing ZNE projects. According to the New Buildings Institute, several studies have found the incremental cost of ZNE buildings to be up to 15% more than conventional construction costs. This incremental cost is for design and construction only, and does not consider the life-cycle cost savings of lower energy costs to operate the building over time.

For residential construction, according to the CPUC, "Recent studies have indicated that the efficiency components of a new ZNE home have an incremental cost, after incentives, of just $2-$8 per square foot" and that "Custom home builders who are developing ZNE homes right now indicate that there are nominal additional costs and that the key issue to achieve ZNE is design and quality construction."

NEXT STEPS

Upon a recommendation from the Committee, staff will present the attached resolution to Council for adoption.

Prepared by: Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Utilities and Environmental Services

Approved by:

Fran David, City Manager

Attachments:

Attachment I	Draft Resolution
Attachment II	Fact Sheet: ZNE for Policymakers & Local Governments
Attachment III	Diagram of a ZNE Home

ATTACHMENT I

HAYWARD CITY COUNCIL

RESOLUTION NO. 15-

Introduced by Council Member _____

RESOLUTION REQUIRING CITY BUILDINGS TO BE ZERO NET ENERGY

WHEREAS, the City of Hayward City Council adopted a Climate Action Plan with goals to reduce municipal greenhouse gas emissions by 20 percent below 2005 baseline levels by 2020, and strive to reduce community emissions by 61.7 percent and 82.5 percent by 2040 and 2050 respectively; and

WHEREAS, California Governor Brown issued Executive Order B-18-12 requiring all new State buildings and major renovations beginning design after 2025 be constructed as Zero Net Energy facilities with an interim target for 50 percent of new facilities beginning design after 2020 to be zero net energy; and

WHEREAS, the City of Hayward's General Plan includes policy NR-4.10, Public Renewable Energy Generation, which states "The City shall ensure that all new City-owned facilities are built with renewable energy, as appropriate to their functions, and shall install renewable energy systems at existing facilities where feasible."; and

WHEREAS, the City of Hayward's General Plan includes policy NR-4.11, Green Building Standards, which states "The City shall require newly constructed or renovated public and private buildings and structures to meet energy efficiency design and operations standards with the intent of meeting or exceeding the State's zero net energy goals by 2020."

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Hayward that all new City buildings that begin design after 2020 shall be zero net energy; and

BE IT FURTHER RESOLVED that all existing City buildings for which renovations exceeding 50 percent of the building's value and that begin design after 2015 be zero net energy; and

BE IT FURTHER RESOLVED that lesser improvements to existing City buildings should include efficiencies and technologies that facilitate achieving zero net energy by 2030.

ATTACHMENT I

IN COUNCIL, HAYWARD, CALIFORNIA _____, 2015

ADOPTED BY THE FOLLOWING VOTE:

AYES: COUNCIL MEMBERS:
MAYOR:

NOES: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ATTEST: _____
City Clerk of the City of Hayward

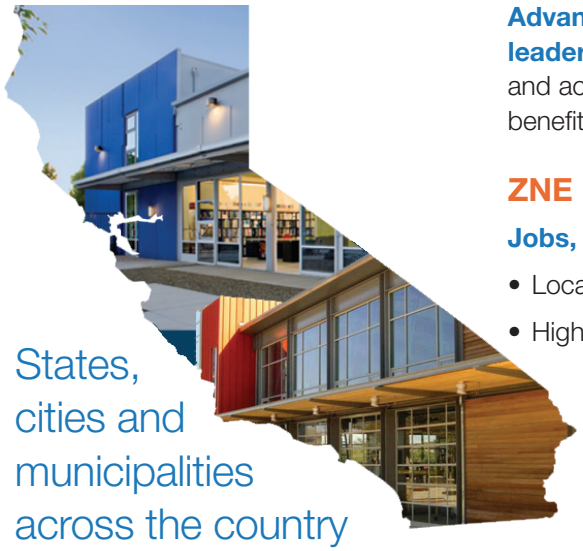
APPROVED AS TO FORM:

_____
City Attorney of the City of Hayward

zero net energy

ZNE for Policymakers & Local Governments

A ZNE building produces as much energy as it consumes over the course of a year



States, cities and municipalities across the country are integrating zero net energy building into energy policies, codes and standards.

Policymakers are using ZNE as a way to bring public buildings into the 21st century and put money back into classrooms.

Advancing ZNE policy means advancing economic development, energy leadership, ingenuity and resilience. Planning for a ZNE future creates practical and achievable energy solutions for residents, and economic and environmental benefits for a city itself.

ZNE Policy Provides Multiple Benefits

Jobs, Skills & Economic Development

- Local jobs and tax growth from more local construction
- Higher quality building stock that helps property values
- Skill development and career opportunities for residents
- Attract companies that provide ZNE-related products and services
- Create opportunities for a thriving clean energy industry with products that can be exported worldwide

Energy Independence & Local Resiliency

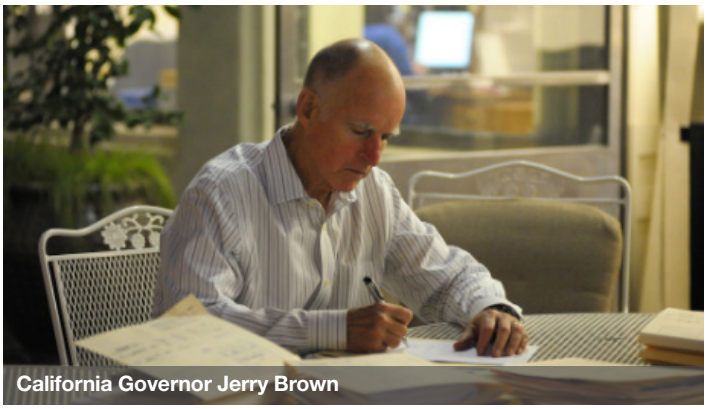
- Meet energy needs locally, achieve reach codes and sustainability goals
- Local communities become stronger and more resilient during severe weather events and natural disasters
- Increased stability of budgets and protection from uncertainty of changing energy costs.

Health & Productivity

- Support healthier environments and higher productivity with reduced net monthly costs
- Create schools and public buildings with lower operating costs allowing the savings to be used for needed services and programs

A new Salt Lake City Public Safety Building is designed to achieve ZNE. Bond funding for construction was approved by more than 65% of voters.

energy upgrade® CALIFORNIA


California Governor Jerry Brown

Setting Big Bold Goals for ZNE

The energy used in buildings accounts for the second largest contribution to California's greenhouse gas emissions. The California Global Warming Solutions Act of 2006 requires the State to reduce greenhouse gas emissions to 1990 levels by 2020 and beyond. To address these climate and energy-related issues, the California Public Utilities Commission (CPUC) adopted the California Energy Efficiency Strategic Plan in 2008 which sets ambitious goals to achieve zero net energy buildings, including:

- All new residential shall be ZNE by 2020
- 50% of existing commercial shall be ZNE by 2030
- All new commercial shall be ZNE by 2030

Governor Jerry Brown led by example when he signed an executive order (B-18-12) requiring State buildings to reduce consumption and meet the [following] ZNE targets:

- 50% of new State buildings shall be ZNE by 2020
- All new State buildings shall be ZNE by 2025

How is California Working to Achieve ZNE?

The California Public Utilities Commission has been working with interested stakeholders to develop ZNE Action Plans for commercial and residential buildings, codes and standards, and research and technology. These plans have helped engage regulators, building designers, energy efficiency experts, environmental nonprofits, and other leaders to advance policy approaches and develop tools. These leaders have also helped clarify definitional issues, advance critical policy, identify technology gaps, and create a Path to Zero outreach and education campaign.

How Can Local Governments Help Move Buildings to ZNE?

1. Establish data policies for annual benchmarking and disclosure policies, and aggregate energy use data to set local energy reduction targets.
2. Set local ZNE goals for your municipality or region (including government and other public buildings).
3. Create incentives for ZNE (e.g.funding, fast-track permitting, technical assistance, awards, etc.).
4. Educate planning, development and sustainability staff about ZNE and available incentive programs.
5. Adopt the CalGreen energy code and align local codes to remove any barriers to ZNE.
6. Create training for building departments and alignment of planning, urban design and zoning.
7. Provide ZNE resources, trainings and other assistance for designers, builders, and contractors.

Resources for more information:

California Public Utilities Commission ZNE Information
www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/Zero+Net+Energy+Buildings.htm

New Buildings Institute ZNE Resources
http://newbuildings.org/zero-net-energy-resources

zero net energy

Attachment III

Example of a Zero Net Energy Home

Source: Absolute Zero: U.S. is Closer to Building Zero-Net Energy Communities. *Government Technology.* http://www.govtech.com/federal/Absolute-Zero-Net-Energy-Communities.html

Staff Report

File #: LB 15-016

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Director of Development Services
Director of Utilities and Environmental Services

SUBJECT
State Model Water Efficient Landscape Ordinance Revision

RECOMMENDATION

That the Committee reviews and comments on this report.

BACKGROUND

A water efficient landscape ordinance addresses landscape requirements for new and rehabilitated development projects. The California Department of Water Resources (DWR) adopted the first Model Water Efficient Landscape Ordinance (State Ordinance) in 1992 with the passing of the Water Conservation in Landscaping Act of 1990 (Assembly Bill 325). The City Council adopted the State Ordinance for use as a local ordinance in the same year. Prompted by the Water Conservation in Landscaping Act of 2006 (Assembly Bill 1881), DWR updated the State Ordinance in 2009. In response, the City Council modified the State Ordinance and subsequently adopted the Bay-Friendly Water Efficient Landscaping Ordinance (Bay-Friendly Ordinance) in 2009 (Attachment I). The Bay-Friendly Ordinance differed slightly from the State Ordinance in that it took a more local, holistic, and sustainable approach to landscaping requirements, which was consistent with the City Council's sustainability goals. The Bay-Friendly Ordinance is enforced by a licensed staff Landscape Architect.

In response to severe drought conditions in recent years, Governor Brown issued Executive Order B-29-15 on April 1, 2015, which directed State agencies to implement immediate measures to save water, increase enforcement against water waste, invest in new technologies and streamline government response to ongoing drought conditions. One of the many actions the State has taken to address the provisions of the Executive Order is the revision of the 2009 State Ordinance. DWR has prepared the amended State Ordinance (Attachment II) through expedited regulation, and solicited public comment and input from stakeholders throughout month of June. The California Water Commission approved the proposed revisions to the State's Ordinance on July 15, 2015. The State's Ordinance is currently pending final approval from the Office of Administrative Law.

Local agencies are required to adopt the State Ordinance or adopt their own ordinances, which must be

at least as effective in conserving water as the State's Ordinance. The State Ordinance shall be effective on December 1, 2015. Local agencies working together to develop a regional ordinance have until February 1, 2016 to adopt. If a local agency does not take action on a water efficient landscape ordinance by the specified dates, the State's Ordinance becomes effective by default.

DISCUSSION

DWR estimates that with the new State Ordinance provisions, a typical California landscape will use 12,000 gallons less of water per year, which is twenty percent less than allowed by the 2009 State Ordinance. Commercial landscape will cut water use by thirty-five percent. Over the next three years, it is predicted that 470,000 new homes associated with 20,000 acres of landscape will be built in California. With proper implementation and enforcement, the State Ordinance is expected to lead to substantial water savings.

Summary of Changes to State Ordinance

Applicability. The most significant change to the State Ordinance is the reduction in the thresholds for applicability. See the table below for a comparison between the current and proposed ordinances.

Project Type	Hayward Bay-Friendly Ordinance (Consistent with 2009 State Ordinance)	State Ordinance 2015
New CII - *Developer Installed*	≥ 2,500 sf	≥ 500 sf
New SFR/MFR - *Developer Installed*	≥ 2,500 sf	≥ 500 sf
New SFR/MFR - *Homeowner Provided/Hired*	≥ 5,000 sf	≥ 500 sf
Rehabilitated Landscape	Same as above	≥ 2,500 sf

CII - Commercial, Industrial & Institutional
SFR - Single Family Residential
MFR - Multifamily Residential

In general, the State Ordinance prescribes that all new development projects that include landscape areas equal to or greater than 500 square feet are subject to requirements of the State Ordinance. Staff believes that the State's applicability thresholds are appropriate and would require most (if not all) landscape projects in Hayward to follow the requirements of the Ordinance. Therefore, staff recommends that the Bay-Friendly Ordinance be amended to be consistent with these new thresholds.

Dedicated Irrigation Meters. Another change included in the State Ordinance is the requirement for either dedicated irrigation service meters or private submeters to be installed for all non-residential irrigated landscapes of 1,000 square feet or more, and residential irrigated landscapes of 5,000 square feet or more. Dedicated irrigation service meters are read by the City for billing purposes, and consumption is charged at a non-residential rate. Private submeters are not used for billing and are simply a way of measuring water specifically used for irrigation. Currently, the City requires that new water service accounts have a separate irrigation meter when the property contains 5,000 or more square feet of

irrigated landscape for both non-residential developments and multifamily residential. The current requirement does not apply to single-family type residential properties, including single-family homes, duplexes, triplexes and four-plexes. Staff recommends that the City amend the Bay-Friendly Ordinance to be consistent with the State Ordinance in this regard, with the exception of requiring private submeters. Dedicated irrigation service meters allow for the City to measure water used specifically for irrigation, while a private submeter is a meter that can only be accessed by the property owner. For this reason, both the Bay-Friendly Ordinance and the Hayward Municipal Water System Code (Section 11-2.46) will need to be amended to require dedicated irrigation service meters for all non-residential irrigated landscapes of 1,000 square feet or more, and residential irrigated landscapes of 5,000 square feet or more.

Limits Potable Irrigation Water Usage. The State Ordinance also lowers the current maximum allowed irrigation water with potable water by twenty-one percent for single-family residential developments and thirty-six percent for multi-family residential developments, including multi-family developments with more than four (4) units. Essentially, this requires landscapes to be designed within a "water budget" that is lower than the 2009 State Ordinance, limiting the use of high water-use plants. This is measured using the Water Efficient Landscape Worksheet, which contains information on the plant factor, irrigation method, irrigation efficiency, and area associated with each hydrozone. Calculations are then made to show the landscape will use less than the maximum allowed water.

Landscape & Irrigation Design Restrictions. The State Ordinance now explicitly prohibits the use of high water use plants in street medians. In addition, the minimum width of areas that can be overhead spray irrigated has been amended from eight feet to ten feet, which means that areas less than ten feet wide must be irrigated with subsurface drip or other technology that produces no overspray or runoff. Staff is further recommending that that the Bay-Friendly Ordinance include a provision to explicitly prohibit irrigation overspray onto impervious surfaces.

Professional Submittal. The State Ordinance will require applicable project landscape plans to be prepared by a licensed landscape architect, and an irrigation auditing and audit report submittal for all new development projects installed after December 1, 2015.

Agency Reporting. All local agencies will report on the implementation and enforcement of their ordinances to DWR by December 31, 2015, and subsequent annual reporting to DWR by January 31st of each year thereafter beginning in 2017.

Prescriptive checklist. Smaller projects with rehabilitated landscape areas under 2,500 square feet, or which use recycled water for irrigation, may comply with the performance requirements of the State Ordinance or conform to the prescriptive measures checklist contained within Appendix D of the State Ordinance. The intention of this checklist option is to simplify compliance for smaller projects by providing a template for submittal that is less complex than would otherwise be required for larger projects.

Recycled Water. The use of recycled water for irrigation continues to be incentivized in the State Ordinance by allowing landscapes using recycled water to have a higher Evapotranspiration Adjustment Factor (ETAF). This will allow a higher "water budget," so to speak, and can provide the opportunity to

plant higher water using plants.

Graywater & Rainwater Systems . A new section has been added to the State Ordinance to allow certain projects irrigated with graywater (e.g. from clothes washing machines) or rainwater to be subject only to the prescriptive checklist mentioned above. These projects are limited to those with 2,500 square feet of landscape or less, and must meet the parcel's landscape water requirement entirely with treated or untreated graywater or rainwater captured on site.

Local Enhancements to State Ordinance

The existing Hayward Bay-Friendly Ordinance exceeded the 2009 State Ordinance requirements in many aspects. The 2015 State Ordinance is now just "catching up" to what the City has been requiring for many years.

With that said, and given the Council's stated priorities, it is recommended that the existing Bay-Friendly Ordinance for Hayward should not only adopt the State's new provisions for water conservation, but also find opportunities to continue to enhance sustainability. Staff is seeking the Committee's feedback on the inclusion of the following items, as well as any additional items not mentioned:

Landfill Diversion. Staff recommends the revised Bay Friendly Ordinance include a requirement to comply with City's current Construction and Demolition Debris Waste Reduction and Recycling Requirements Ordinance (Chapter 5, Article 10). Additionally, the Ordinance could reference the Alameda County Plant Debris Landfill Ban Ordinance 2008-01, which requires landscape professionals, residents, and businesses in Alameda County to separate all plant debris from garbage.

Native Species: The State Ordinance does not explicitly require the use of native plants; however, Bay-Friendly Principles, which are included in the current Bay-Friendly Ordinance, contain a requirement that a minimum of 75 percent of plants shall be California native, Mediterranean, or other climate-adapted species that require occasional or no water once established. It is recommended that the amended Bay-Friendly Ordinance remain consistent with Bay-Friendly Principles. Staff also recommends continuing to include the provision that prohibits the use of invasive plant species, as defined by the California Invasive Plant Council in the Bay-Friendly Ordinance. The State Ordinance only "strongly discourages" the use of invasive species.

Graywater & Rainwater Systems. As mentioned above, there is an incentive in the State Ordinance for special circumstances where graywater or rainwater is used to irrigate the landscape. Staff recommends that the Bay-Friendly Ordinance require that all new single family residential developments include plumbing required for a "laundry-to-landscape" graywater system in each home. The State Ordinance encourages graywater, but does not require it. With respect to rain catchment (via cisterns or barrels, for example), staff is also recommending that the Bay-Friendly Ordinance requires that all new single family residential development include rain catchment on each parcel, with the minimum capacity size to be determined at a later date. Acknowledging that rain catchment systems are not a "one-size fits all" solution with variables that need to be considered, the staff will work on determining an acceptable minimum capacity size prior to bringing this Ordinance before the City Council.

ECONOMIC IMPACT

Adaptation of the Bay-Friendly Ordinance will result in more projects meeting the applicability thresholds, given the reduction in threshold size, and potentially more comprehensive and professional landscape plan submittals as a result of the detailed requirements. These items may result in increased costs of construction for the Development community in order to meet the compliance requirements. Some of these costs can be balanced with savings in water costs resulting from more efficient water use.

FISCAL IMPACT

Currently, one full-time staff Landscape Architect reviews, inspects and accepts all permitted landscape and irrigation improvement projects. Due to the lowering of thresholds requiring water efficiency landscaping, the recommended new requirements will result in additional staff time for plan review, plan checks, and inspections by the City's Landscape Architect, with the possibility that additional staffing may be needed. Also, with new "laundry-to-landscape" graywater and rainwater system requirements, Building plan checkers and inspectors will have additional responsibilities.

Staff will evaluate impacts and formulate a recommendation to City Council for staff augmentation and/or other measures to adequately respond to the impacts of the proposed new regulations. As all of this effort is to serve development needs and respond to a State mandate, any additional staffing and related costs can be recovered through new or increased fees, which would be proposed for inclusion in the City's Master Fee Schedule.

NEXT STEPS

Upon receiving input from the Committee, Staff will prepare the proposed revisions to the Bay-Friendly Ordinance for introduction at the October 20, 2015 City Council meeting. The Ordinance would then be scheduled for adoption on October 27, 2015 and would become effective 30 days afterwards (November 27, 2015).

Prepared by: Michelle Koo, RLA, ASLA, Landscape Architect, Development Services
Corinne Ferreyra, Senior Management Analyst, Utilities & Environmental Services

Recommended by: David Rizk, Director of Development Services
Alex Ameri, Director of Utilities & Environmental Services

Approved by:

Fran David, City Manager

Attachments:

Attachment I	City of Hayward Bay-Friendly Water Efficient Landscape Ordinance
Attachment II	California Department of Water Resources Model Water Efficient Landscape Ordinance (July 9, 2015)

ARTICLE 12

BAY-FRIENDLY WATER EFFICIENT LANDSCAPE ORDINANCE

ARTICLE 12

BAY-FRIENDLY WATER-EFFICIENT LANDSCAPE ORDINANCE

SEC. 10-12.01 AUTHORITY. This Article is enacted pursuant to California Government Code section 65591 et seq. and is a "water-efficient landscape ordinance" adopted by a local agency under the provisions of said section.

SEC. 10-12.02 PURPOSE. The City Council finds and declares that it is in the public interest to promote the conservation and efficient use of water and to prevent the waste of this valuable resource while recognizing the values and benefits of landscapes as essential to the quality of life in California. Landscapes provide areas for active and passive recreation and enhance the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development. The purpose of the regulations set forth in this Article is to establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects; establish provisions for water management practices and water waste prevention for existing landscapes; utilize Bay-Friendly Landscaping a whole systems approach to the design, construction and maintenance of the landscape, to conserve water; and adopt the Bay-Friendly Landscape Guidelines, Bay-Friendly Landscape Scorecards and Bay-Friendly Gardening Guide, as they may be amended from time to time, City reference documents.

This Article shall be applied in a manner that achieves the maximum consistency with the landscaping performance standards contained in the Hayward Zoning ordinance, Article 1 of Chapter 10 of the Hayward Municipal Code. To the extent that a conflict exists between this Article and the Zoning Ordinance, the requirements of this Article shall control.

SEC. 10-12.03 APPLICABILITY.

(a) After January 1, 2010, this Article shall apply to all of the following landscape projects:

(1) New construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check or planning permit. Other projects requiring a planning permit may be subject to provision of this Article at the discretion of Director of Development Services; and

(2) New construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, or planning approval. Other projects requiring planning approval may be subject to provision of this Article at the discretion of Director of Development Services; and

(3) New construction and rehabilitated landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family

residential projects with a total project landscape area equal to or greater than 5,000 square feet requiring a building or landscape permit, plan check or planning approval. Other projects requiring planning approval may be subject to provision of this Article at the discretion of Director of Development Services; and

(4) Existing landscapes as limited by Section 10-12.18; and

(5) Cemeteries: Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are governed by to Sections 10-12.07, 10-12.14 and 10-12.15; and existing cemeteries are governed by to Section 10-12.18.

(b) This Article does not apply to:

(1) Registered local, state or federal historical sites;

(2) Ecological restoration projects that do not require a permanent irrigation system;

(3) Mined-land reclamation projects that do not require a permanent irrigation system; or

(4) Plant collections, as part of botanical gardens and arboretums open to the public.

SEC. 10-12.04 DEFINITIONS. The following words and phrases whenever used in this Article shall be construed as defined below.

(a) "Applied Water" means the portion of water supplied by the irrigation system to the landscape.

(b) "Automatic Irrigation Controller" means an automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

(c) "Backflow Prevention Device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

(d) "Bay-Friendly Landscape Guidelines" means the most recent version of the guidelines developed by StopWaste.Org for use in the professional design, construction and maintenance of landscapes. City staff shall maintain the most recent version of the "Bay-Friendly Landscape Guidelines" at all times.

(e) "Bay-Friendly Landscaping Scorecard" means the most recent version of the Bay-Friendly Landscaping points system developed by StopWaste.Org. City staff shall maintain the most recent version of the Bay-Friendly Landscaping Scorecard at all times.

(f) "Certificate of Completion" means the document required by Section 10-12.12, in the form set forth in Appendix C.

(g) "Certified Irrigation Designer" means a person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

(h) "Certified Landscape Irrigation Auditor" means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

(i) "Check Valve" or "Anti-Drain Valve" means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

(j) "Common Interest Developments" means community apartment projects, condominium projects, planned developments, and stock cooperatives pursuant to Civil Code Section 1351.

(k) "Compost" shall mean the product of controlled biological decomposition of organic materials, often including urban plant debris and food waste. It is an organic matter resource that has the unique ability to improve the chemical, physical and biological characteristics of soils or growing media. It contains plant nutrients but is typically not characterized as a fertilizer. (Excerpted from US Compost Council, Field Guide to Compost Use.)

(l) "Conversion Factor (0.62)" means the product of controlled biological decomposition of organic materials, often including urban plant debris and food waste. It is an organic matter resource that has the unique ability to improve the chemical, physical and biological characteristics of soils or growing media. It contains plant nutrients but is typically not characterized as a fertilizer. (Excerpted from US Compost Council, Field Guide to Compost Use.)

(m) "Drip Irrigation" means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

(n) "Drought Resistant Soil" means soil that has been managed by amending with compost and covering with mulch, for example, to maximize rainfall infiltration, increase the soil's capacity to hold water, and allow for plant roots to penetrate and proliferate such that the landscape can survive with less than optimal water (i.e., less than Maximum Applied Water Allowance (MAWA)).

(o) "Ecological Restoration Project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

(p) "Effective Precipitation" or "Usable Rainfall" (Eppt) means the portion of total precipitation which becomes available for plant growth.

(q) "Emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.

(r) "Established Landscape" means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

(s) "Establishment Period of the Plants" means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

(t) "Estimated Total Water Use" (ETWU) means the total water used for the landscape as described in Section 10-12.07.

(u) "ET Adjustment Factor" (ETAF) means a factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is (0.7)=(0.5/0.71). ETAF for a Special Landscape Area shall not exceed 1.0. ETAF for existing non-rehabilitated landscapes is 0.8.

(v) "Evapotranspiration Rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

(w) "Flow Rate" means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

(x) "Hardscapes" means any durable material (pervious and non-pervious).

(y) "High-Flow Sensors" or "Flow Meters" detect and report high flow conditions created by system damage or malfunction.

(z) "Hydrozone" means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

(aa) "Infiltration Rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

(bb) "Invasive Plant Species" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. "Noxious weeds" means any weed designated by the Weed Control

Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

(cc) "Irrigation Audit" means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

(dd) "Irrigation Efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this Article is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

(ee) "Irrigation Survey" means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to, inspection, system test, and written recommendations to improve performance of the irrigation system.

(ff) "Irrigation Water Use Analysis" means an analysis of water use data based on meter readings and billing data.

(gg) "Landscape Architect" means a person who holds a license to practice landscape architecture in the State of California Business and Professions Code Section 5615.

(hh) "Landscape Area" means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

(ii) "Landscape Contractor" means a person licensed by the State of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

(jj) "Landscape Documentation Package" means the documents required under Section 10-12.06.

(kk) "Landscape Project" means total area of landscape in a project as defined in "landscape area" for the purposes of this Article.

(ll) "Lateral Line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

(mm) "Local Agency" means a city or county, including a charter city or charter county, that is responsible for adopting and implementing the Article. The local agency is

also responsible for the enforcement of this Article, including but not limited to, approval of a permit and plan check or design review of a project.

(nn) "Local Water Purveyor" means any entity, including a public agency, city, county, or private water company that provides retail water service.

(oo) "Low Volume Irrigation" means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

(pp) "Main Line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.

(qq) "Maximum Applied Water Allowance" (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 10-12.07. It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0.

(rr) "Microclimate" means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

(ss) "Mined-Land Reclamation Projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

(tt) "Mulch" means any organic material such as leaves, arbor or wood chips, recycled wood waste, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

(uu) "New Construction" means, for the purposes of this Article, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.

(vv) "Operating Pressure" means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

(ww) "Overhead Sprinkler Irrigation Systems" means systems that deliver water through the air (e.g., spray heads and rotors).

(xx) "Overspray" means the irrigation water which is delivered beyond the target area.

(yy) "Permit" means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.

(zz) "Pervious" means any surface or material that allows the passage of water through the material and into the underlying soil.

(aaa) "Plant Factor" or "Plant Water Use Factor" is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this Article, the plant factor range for low water use plants is 0 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this Article are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species".

(bbb) "Precipitation Rate" means the rate of application of water measured in inches per hour.

(ccc) "Project Applicant" means the individual or entity submitting a Landscape Documentation Package to request a permit, plan check, or design review from the local agency. A project applicant may be the property owner or his or her designee.

(ddd) "Rain Sensor" or "Rain Sensing Shutoff Device" means a component which automatically suspends an irrigation event when it rains.

(eee) "Record Drawing" or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

(fff) "Recreational Area" means areas dedicated to active play such as parks, sports fields, and golf courses where turf provides a playing surface.

(ggg) "Recycled Water", "Reclaimed Water", or "Treated Sewage Effluent Water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

(hhh) "Reference Evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Appendix A, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.

(iii) "Rehabilitated Landscape" means any re-landscaping project that requires a permit , plan check, or design review, meets the requirements of Section 10-12.03, and the modified landscape area is equal to or greater than 2,500 square feet, is 50% of the total landscape area, and the modifications are completed within one year.

(jjj) "Runoff" means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

(kkk) "Soil Moisture Sensing Device" or "Soil Moisture Sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

(lll) "Soil Texture" means the classification of soil based on its percentage of sand, silt, and clay.

(mmm) "Special Landscape Area" (SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

(nnn) "Sprinkler Head" means a device which delivers water through a nozzle.

(ooo) "Static Water Pressure" means the pipeline or municipal water supply pressure when water is not flowing.

(ppp) "Station" means an area served by one valve or by a set of valves that operate simultaneously.

(qqq) "Swing Joint" means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

(rrr) "Turf" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

(sss) "Valve" means a device used to control the flow of water in the irrigation system.

(ttt) "Water Conserving Plant Species" means a plant species identified as having a low plant factor.

(uuu) "Water Feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

(vvv) "Watering Window" means the time of day irrigation is allowed.

(www) "WUCOLS" means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

SEC. 10-12.05 COMPLIANCE WITH LANDSCAPE DOCUMENTATION PACKAGE.

(a) Prior to construction, the City shall:

(1) Provide the project applicant with the Article and procedures for permits, plan checks, or design reviews;
(2) Review the Landscape Documentation Package submitted by the project applicant;
(3) Approve or deny the Landscape Documentation Package; and
(4) Issue a permit or approve the plan check or design review for the project applicant.

(b) Prior to construction, the project applicant shall:

(1) Submit a Landscape Documentation Package to the City.

(c) Upon approval of the Landscape Documentation Package by the City, the project applicant shall:

(1) Receive a permit or approval of the plan check or design review and record the date of the permit in the Certificate of Completion; and
(2) Submit a copy of the approved Landscape Documentation Package along with the record drawings, and any other information to the property owner or his/her designee.

SEC. 10-12.06 LANDSCAPE DOCUMENTATION PACKAGE.

(a) The Landscape Documentation Package shall include the following six (6) elements:

(1) Project information;

(A) Date.

(B) Project applicant.

(C) Project address (if available, parcel and/or lot number(s).

(D) Total landscape area (square feet).

(E) Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed).

(F) Water supply type (e.g., potable, recycled, well).

(G) Checklist of all documents in Landscape Documentation Package.

(H) Project contacts to include contact information for the project applicant and property owner.

(I) Applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package."

(2) Water Efficient Landscape Worksheet:

(A) Hydrozone information table

(B) Water budget calculations

(1) Maximum Applied Water Allowance (MAWA)

(2) Estimated Total Water Use (ETWU).

(3) Soil Management Report.

(4) Landscape design plan.

(5) Irrigation Design Plan.

(6) Grading Design Plans.

SEC. 10-12.07 WATER EFFICIENT LANDSCAPE WORKSHEET.

(a) A project applicant shall complete the Water Efficient Landscape Worksheet which contains two sections (see Appendix B):

(1) A hydrozone information table (see Appendix B, Section A) for the landscape project; and

(2) A water budget calculation (see Appendix B, Section B) for the landscape project. For the calculation of the Maximum Applied Water Allowance and Estimated Total Water Use, a project applicant shall use the ETo values of 44.2 of Union City for City of Hayward from the Reference Evapotranspiration Table in Appendix A. For geographic areas not covered in Appendix A, use data from other cities located nearby in the same reference evapotranspiration zone, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999.

(b) Water budget calculations shall adhere to the following requirements:

(1) The plant factor used shall be from WUCOLS. The plant factor ranges from 0 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, from 0.7 to 1.0 for high water use plants, 0.8 for cool season turf, and 0.6 for warm season turf.

(2) All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.

(3) All Special Landscape Areas shall be identified and their water use calculated as described below.

(4) ETAF (ET adjustment factor) for Special Landscape Areas shall not exceed 1.0.

(c) Maximum Applied Water Allowance (MAWA) shall be calculated using the equation:

MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]

MAWA	Maximum Applied Water Allowance (gallons per year)
ETo	Reference Evapotranspiration (inches per year)
0.62	Conversion Factor (to gallons)
0.7	ET Adjustment Factor (ETAF)
LA	Landscape Area including SLA (square feet)
0.3	Additional Water Allowance for SLA
SLA	Special Landscape Area (square feet)

To convert from gallons per year to hundred-cubic-feet per year:
= MAWA/748 = hundred-cubic-feet per year (100 cubic feet = 748 gallons)

(d) Estimated Total Water Use. The Estimated Total Water Use shall be calculated using the equation below. The sum of the Estimated Total Water Use calculated for all hydrozones shall not exceed MAWA.

$$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$$

Where:

ETWU	Estimated Total Water Use per year (gallons)
ETo	Reference Evapotranspiration (inches): Use 44.2
PF	Plant Factor from WUCOLS (see Section 491)
HA	Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA	Special Landscape Area (square feet)
0.62	Conversion Factor
IE	Irrigation Efficiency (minimum 0.71)

SEC. 10-12.08 SOIL MANAGEMENT REPORT.

(a) In order to create drought resistant soil, reduce runoff and encourage healthy plant growth, a soil management report addressing soil attributes of the project site shall be completed by the project applicant or his/her designee.

(b) The soil management report shall address the soil attributes of the project site and shall include:

(1) Identification of areas of quality topsoil to be protected during construction and/or critical soil limitations such as compaction; water logged soils or wetlands; thin, eroded or erosion prone soils.

(2) A laboratory soil analysis of the soil(s) into which plantings are to be made:

(A) Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

(B) At a minimum the soil analysis shall include:

(1) Soil texture;

(2) Infiltration rate determined by laboratory test or soil texture infiltration rate table;

(3) pH;

(4) Total soluble salts;

(5) Sodium;

(6) Essential nutrients;

(7) Percent organic matter; and

(8) Recommendations for soil amendments or nutrient applications to ameliorate the soil limitations identified by the analysis and the amount of compost required to bring the soil organic matter content to a minimum 3 inches. The required practice of adding compost is waived if the plant palette primarily includes California native species that are adapted to soils with little or no organic matter as documented by a published plant reference.

(C) It is required that:

(1) The lab report recommendations are based on an "organic" approach to soil and landscape management that specifies natural and non-synthetic fertilizers to rectify any soil deficiencies.

(2) If the soils are to be irrigated with recycled water the lab report recommendations are tailored to recycled water.

(3) The types of plantings intended such as turf, perennial bed, annual bed, swale etc are provided to the soil laboratory.

(4) Management actions are identified to remediate limiting soil

characteristics such as ripping the soil to alleviate soil compaction.

(3) Specifications for protecting topsoil, ameliorating soil limitations, such as ripping the soil to alleviate soil compaction, and incorporating compost and/or amendments as per recommendations in the soil analysis report.

(c) The project applicant, or his/her designee, shall submit the soil management report as part of the Landscape Documentation Package.

(d) The soil management report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.

(e) The project applicant, or his/her designee, shall submit documentation verifying implementation of soil management report recommendations to the City with Certificate of Completion.

SEC. 10-12.09 LANDSCAPE DESIGN PLAN.

(a) A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

(1) Plant Material.

(A) The estimated total water use of the plant material selected shall not exceed the Maximum Applied Water Allowance.

(B) Each hydrozone shall have plant materials with similar water use.

(C) At least 75% of the total number of plants in non-turf areas shall require occasional, little or no summer water. All species should be adapted to the climate in which they will be planted, as documented by a published plant reference. If plants are given a range of water needs from "occasional to moderate" for example, the landscape designer must determine if the plant will require either occasional or moderate watering based on site, soil, and climate conditions and categorize the plant appropriately. Sources used to determine climate adaptation and watering requirements may include:

(1) Bornstein, Carol, David Fross and Bart O'Brien, California Native Plants for the Garden.
Qualifying irrigation designation: "occasional", "infrequent", or "drought tolerant".

(2) East Bay Municipal Utility District's publication Plants and Landscapes for Summer Dry Climates.
Qualifying irrigation designation: "occasional", "infrequent" or "no summer water".

(3) Sunset Publishing Corporation Sunset Western Garden Book. Qualifying irrigation designation: "little or no water".

(4) University of California Cooperative Extension's Guide to Estimating Irrigation Water Needs of Landscape Plantings in CA.
Qualifying irrigation designation: "Low" or "Very Low".

(D) Turf shall not be allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape.

(E) Total irrigated areas specified as turf shall be limited to a maximum of 25% with recreational areas exempted.

(F) A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches.

(G) Those species identified by CAL-IPC as invasive in the San Francisco Bay Area shall not be specified.

(H) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.

(I) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site:

(1) Protection and preservation of native species and natural vegetation.

(2) Selection of plants based on disease and pest resistance.

(3) Selection of trees based on applicable local tree ordinances or tree shading guidelines.

(4) Selection of California native plants from local and regional landscape program plant lists using local natural plant communities as models.

(5) Use of the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate.

(6) Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; to allow them to grow to their mature size within the space allotted them to avoid shearing and topping.

(7) Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

(8) Avoid specifying turf in street medians, traffic islands or bulbouts of any size unless irrigated with subsurface or low volume irrigation.

(2) Water Features.

(A) Recirculating water systems shall be used for water features.

(B) Where available, recycled water shall be used as a source for decorative water features unless a written exemption has been granted by the City stating that recycled water meeting all public health codes and standard is not available and will not be available for the foreseeable future.

(C) Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.

(D) Covers are required for pool and spa.

(3) Mulch and Amendments.

(A) A minimum three inch (3") layer of recycled chipped wood mulch in Dark Brown color, or organic green waste shall be applied on all exposed soil surfaces of planting areas except in turf areas, or direct seeding applications where mulch is contraindicated.

(B) Stabilizing mulching products shall be used on slopes. It is required that bio based products are used, and petroleum based products are not allowed.

(C) The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.

(D) Compost and soil amendments shall be incorporated according to recommendations of the soil report into minimum first 9 inches of soil in the entire planting areas unless otherwise directed in the soil report (see Section 10-12.08).

(E) Compost is purchased from processors who participate in the US Composting Council's Standard Testing Assurance Program.

(F) Ongoing maintenance shall maintain a minimum of (3") mulch.

(b) The landscape design plan, at a minimum, shall identify:

(1) Each hydrozone by number, letter, or other method;

(2) Each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;

(3) Recreational areas;

(4) Areas permanently and solely dedicated to edible plants;

(5) Areas irrigated with recycled water that meet all applicable City and State laws;

(6) Type of mulch and application depth;

(7) Soil amendments, type, and quantity;

(8) Type and surface area of water features;

(9) Hardscapes (pervious and non-pervious);

(10) Location and installation details of any applicable stormwater best management practices, but are not limited to:

(A) rain gardens, infiltration beds, swales, and basins that allow water to collect and soak into the ground;

(B) constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and

(C) pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.

(11) Any applicable rain harvesting or catchment technologies (e.g., cisterns, etc.);

(12) Contain the following statement: "I have complied with the criteria of the City of Hayward Bay-Friendly Water Efficient Landscape Ordinance, Hayward Municipal Code, Chapter 10, Article 12, and applied them for the efficient use of water in the landscape design plan"; and

(13) The signature of a licensed landscape architect, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.)

SEC. 10-12.10 IRRIGATION DESIGN PLAN.

(a) For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

(1) System.

(A) Dedicated landscape water meters are highly recommended on landscape areas smaller than 5,000 square feet to facilitate water management.

(B) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.

(C) The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.

(1) If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.

(2) Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.

(D) Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions.

(E) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.

(F) Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system.

(G) High flow sensors (flow meters) that detect and report high flow conditions created by system damage or malfunction shall be required.

(H) The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.

(I) Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.

(J) The design of the irrigation system shall conform to the hydrozones of the landscape design plan.

(K) The irrigation system must be designed and installed to meet the Maximum Applied Water Allowance.

(L) In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.

(M) Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.

(N) Sprinkler spacing shall be designed to achieve head to head coverage and the highest possible distribution uniformity using the manufacturer's recommendations.

(O) Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.

(P) Check valves or anti-drain valves are required for all irrigation systems.

(Q) Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or low volume irrigation system.

(R) Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. These restrictions may be modified if:

(1) the landscape area is adjacent to permeable surfacing and no runoff occurs; or

(2) the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or

(3) the irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package). Prevention of overspray and runoff must be confirmed during the irrigation audit.

(S) Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.65 inches per hour. The irrigation controller shall be programmed to "cycle and soaking" in a manner that the precipitation rate applied matches the infiltration rate. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

(2) Hydrozone.

(A) Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

(B) Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.

(C) Trees shall be placed on separate valves from shrubs, groundcovers, and turf.

(D) Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if the plant factor of the higher water using plant is used for calculations.

(E) Individual hydrozones that mix high and low water use plants shall not be permitted.

(F) On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Appendix B Section A). This table can also assist with the irrigation audit and programming the controller.

(b) The irrigation design plan, at a minimum, shall contain:

(1) Location and size of separate water meters for landscape;

(2) Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, high flow sensor and backflow prevention devices;

(3) Static water pressure at the point of connection to the City's water supply;

(4) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;

(5) Recycled water irrigation systems: landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for Special Landscape Areas shall not exceed 1.0;

(6) The following statement: "I have complied with the criteria of the City of Hayward Bay-Friendly Water Efficient Landscape Ordinance, Hayward Municipal Code, Chapter 10, Article 12, and applied them accordingly for the efficient use of water in the irrigation design plan"; and

(7) The signature of a licensed landscape architect, certified irrigation designer, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

SEC. 10-12.11 GRADING DESIGN PLAN.

(a) For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for permits satisfies this requirement.

(1) The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:

(A) Height of graded slopes;

(B) Drainage patterns;

(C) Pad elevations;

(D) Finish grade; and

(E) Stormwater retention improvements, if applicable.

(2) To prevent excessive erosion and runoff, it is highly recommended that project applicants:

(A) Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;

(B) Avoid disruption of natural drainage patterns and undisturbed soil; and

(C) Avoid soil compaction in landscape areas.

(3) The grading design plan shall contain the following statement: "I have complied with the criteria of the City of Hayward Bay-Friendly Water Efficient Landscape Ordinance, Hayward Municipal Code, Chapter 10, Article 12, and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

SEC. 10-12.12 CERTIFICATE OF COMPLETION.

(a) The Certificate of Completion (see Appendix C for a sample certificate) shall include the following six (6) elements:

(1) Project information sheet that contains:

(A) Date;

(B) Project name;

(C) Project applicant name, telephone, and mailing address;

(D) Project address and location; and

(E) Property owner name, telephone, and mailing address;

(2) Certification by either the signer of the landscape design plan, or the signer of the irrigation design plan, or the licensed landscape contractor when permitted by the City that the landscape project has been installed per the approved Landscape Documentation Package;

(A) Where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;

(3) Irrigation scheduling parameters used to set the controller:

(4) Landscape and irrigation maintenance schedule;

(5) Irrigation audit report; and

(6) Soil management report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations.

(b) The project applicant shall submit the signed Certificate of Completion to the City prior to requesting a landscape inspection;

(c) The City staff shall perform a final inspection upon receipt of Certificate of Completion. Building permit final approval shall not be completed until the landscape inspection is approved as follows:

(1) Receive the signed Certificate of Completion from the project applicant;

(2) Perform a landscape field inspection verifying implementation of the approved landscape and irrigation plans and soil report recommendations; and

(3) Sign the permit card upon the field verification.

SEC. 10-12.13 IRRIGATION SCHEDULING.

(a) For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

(1) Irrigation scheduling shall be regulated by automatic irrigation controllers.

(2) Overhead irrigation shall be scheduled between 9:00 p.m. and 8:00 a.m. unless weather conditions prevent it. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

(3) For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.

(4) Parameters used to set the automatic controller shall be developed and submitted for each of the following:

(A) The plant establishment period;

(B) The established landscape; and

(C) Temporarily irrigated areas.

(5) Each irrigation schedule shall consider for each station all of the following that apply:

(A) Irrigation interval (days between irrigation);

(B) Irrigation run times (hours or minutes per irrigation event to avoid runoff);

(C) Number of cycle starts required for each irrigation event to avoid runoff;

(D) Amount of applied water scheduled to be applied on a monthly basis;

(E) Application rate setting;

(F) Root depth setting;

(G) Plant type setting;

(H) Soil type and mulch depth;

(I) Slope factor setting;

(J) Shade factor setting; and

(K) Irrigation uniformity or efficiency setting.

SEC. 10-12.14 LANDSCAPE AND IRRIGATION MAINTENANCE SCHEDULE.

(a) Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.

(b) A regular maintenance schedule shall include, but not be limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing and obstruction to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

(c) Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.

(d) A project applicant is encouraged to implement sustainable or environmentally-friendly practices for overall landscape maintenance. The following are highly recommended:

(1) Use the "Bay-Friendly Landscape Model Maintenance Specifications" and the "Bay-Friendly Landscape Guidelines" as an official reference documents in the landscape maintenance contract and/or with on-site landscape staff.

(2) At least one landscaping staff member or contractor should be trained in the use of IPM or is a "Bay-Friendly Qualified Landscape Professional."

SEC. 10-12.15 IRRIGATION AUDIT, SURVEY, AND WATER USE ANALYSIS.

(a) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

(b) For new construction and rehabilitated landscape projects installed after January 1, 2010:

(1) The project applicant shall submit an irrigation audit report with the Certificate of Completion to the City that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule;

(2) The City shall administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

SEC. 10-12.16 STORMWATER MANAGEMENT.

(a) Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are encouraged. Examples include:

(1) Rain gardens, infiltration beds, swales and basins that allow water to collect and soak into the ground;

(2) Constructed wetlands and retention ponds that retain water, handle excess flow and filter pollutants; and

(3) Pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.

(b) Rain harvesting or catchment technologies such as cisterns are recommended for storage and use of rainwater to satisfy a percentage of the landscape irrigation requirements.

(c) Project applicants shall refer to Regional Water Quality Control Board for information on any applicable stormwater ordinances and stormwater management plans.

SEC. 10-12.17 PUBLIC EDUCATION.

(a) Model Homes. All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes described in this Article.

(1) Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme.

(2) Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

SEC. 10-12.18 IRRIGATION AUDIT, SURVEY, AND WATER USE ANALYSIS FOR EXISTING LANDSCAPES.

(a) This section shall apply to all existing landscapes that were installed before January 1, 2010, are over one acre in size, and exceed the applicable Maximum Applied Water Allowance.

(1) For all landscapes that have a water meter, the City shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as: MAWA = (0.8) (ETo)(LA)(0.62).

(2) For all landscapes that do not have a separate irrigation water meter, the City shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.

(b) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

SEC. 10-12.19 EFFECTIVE PRECIPITATION.

(a) A local agency may consider Effective Precipitation (25% of annual precipitation) in tracking water use and may use the following equation to calculate Maximum Applied Water Allowance:
MAWA= (ETo - Eppt) (0.62) [(0.7 x LA) + (0.3 x SLA)].

APPENDICES

Appendix A. REFERENCE EVAPOTRANSPIRATION (ETO) TABLE*

County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
ALAMEDA													
Fremont	1.5	1.9	3.4	4.7	5.4	6.3	6.7	6.0	4.5	3.4	1.8	1.5	47.0
Livermore	1.2	1.5	2.9	4.4	5.9	6.6	7.4	6.4	5.3	3.2	1.5	0.9	47.2
Oakland	1.5	1.5	2.8	3.9	5.1	5.3	6.0	5.5	4.8	3.1	1.4	0.9	41.8
Oakland Foothills	1.1	1.4	2.7	3.7	5.1	6.4	5.8	4.9	3.6	2.6	1.4	1.0	39.6
Pleasanton	0.8	1.5	2.9	4.4	5.6	6.7	7.4	6.4	4.7	3.3	1.5	1.0	46.2
Union City	1.4	1.8	3.1	4.2	5.4	5.9	6.4	5.7	4.4	3.1	1.5	1.2	44.2

* The values in this table were derived from:

1) California Irrigation Management Information System (CIMIS);
2) Reference Evapo Transpiration Zones Map, UC Dept. of Land, Air & Water Resources and California Dept. of Water Resources 1999;
3) Reference Evapotranspiration for California, University of Californian, Department of Agriculture and Natural Resources (1987) Bulletin 1922; and
4) Determining Daily Reference Evapotranspiration, Coorperative Extension UC Division of Agriculture and Natural Resources (1987), Publication Leaflet 21426.

Appendix B. WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package. Please complete all sections (A and B) of the worksheet.

SECTION A. HYDROZONE INFORMATION TABLE

Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per hydrozone.

Hydrozone*	Zone or Valve	Irrigation Method**	Area (Sq. Ft.)	% of Landscape Area
	Total			**100%**

** **Hydrozone***

HW = High Water Use Plants

MW = Moderate Water Use Plants

LW = Low Water Use Plants

*** **Irrigation Method***

MS = Micro-spray

S = Spray

R = Rotor

B = Bubbler

D = Drip

O = Other

SECTION B. WATER BUDGET CALCULATIONS

Section B1. Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using this equation:

MAWA = (44.2) (0.62) [(0.7 x LA) + (0.3 x SLA)]

Where:

MAWA	Maximum Applied Water Allowance (gallons per year)
ETo	44.2: ETo of Union City in Reference Evapotranspiration from Appendix A (inches per year)
0.7	ET Adjustment Factor (ETAF)
LA	Landscaped Area includes Special Landscape Area (square feet)
0.62	Conversion factor (to gallons per square foot)
SLA	Portion of the landscape area identified as Special Landscape Area (square feet)
0.3	The additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3)

Maximum Applied Water Allowance = _____**gallons per year**

Show calculations.

Effective Precipitation (Eppt)

If considering Effective Precipitation, use 25% of annual precipitation. Use the following equation to calculate Maximum Applied Water Allowance:

MAWA (44.2 – Eppt) (0.62) [(0.7 x LA) + (0.3 x SLA)]

Maximum Applied Water Allowance = _____**gallons per year**

Show calculations.

The project's Estimated Total Water Use is calculated using the following formula:

$$ETWU = (ETo)(0.62)\left(\frac{PF\,x\,HA}{IE} + SLA\right)$$

Where:

ETWU	Estimated total water use per year (gallons per year)
ETo	44.2 ETo of Union City in Reference Evapotranspiration (inches per year)
PF	Plant Factor from WUCOLS (see Definitions)
HA	Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA	Special Landscape Area (square feet)
0.62	Conversion Factor (to gallons per square foot)
IE	Irrigation Efficiency (minimum 0.71)

Hydrozone Table for Calculating ETWU

Please complete the hydrozone table(s). Use as many tables as necessary.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)	Area (HA) (square feet)	PF x HA (square feet)
			Sum	
	SLA			

Estimated Total Water Use = _____gallons

TABLE A - Plant Factors (PF) Based on WUCOLS			**TABLE B - Irrigation Efficiency (IE)**	
Cool Season Turf	0.8		Bubblers	0.85
Warm Season Turf	0.6		Drip Emitters	0.85
High Water Use Plants	0.7 – 1.0		Stream Sprinklers (in planter strips 8 feet or wider)	0.75
Moderate Water Use Plants	0.4 – 0.6		Spray Sprinklers (in planter strips 8 feet or wider)	0.625
Low Water Use Plants	0.1 – 0.3		Subsurface	0.85

Appendix C. CERTIFICATE OF COMPLETION
This certificate is filled out by the project applicant upon completion of the landscape project.

PART 1. PROJECT INFORMATION SHEET

Date	Permit No.	
Project Name	Project Address	
Name of Project Applicant	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Property Owner or his/her designee:

Name	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

"I/we certify that I/we have received copies of all the documents within the Landscape Documentation Package and the Certificate of Completion and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule."

Property Owner Signature Date

PART 2. CERTIFICATION OF INSTALLATION ACCORDING TO THE LANDSCAPE DOCUMENTATION PACKAGE

"I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the ordinance and that the landscape planting and irrigation installation conform with the criteria and specifications of the approved Landscape Documentation Package."

Signature*	Date	
Name (print)	Telephone No.	
Title	Email Address	
License No. or Certification No.		
Company	Street Address	
City	State	Zip Code

*Signer of the landscape design plan, signer of the irrigation plan, or a licensed landscape contractor when permitted by the City.

PART 3. IRRIGATION SCHEDULING
Attach parameters for setting the irrigation schedule on controller.

PART 4. SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE
Attach schedule of Landscape and Irrigation Maintenance.

PART 5. LANDSCAPE IRRIGATION AUDIT REPORT
Attach Landscape Irrigation Audit Report.

PART 6. SOIL MANAGEMENT REPORT
Attach soil management report, if not previously submitted with the Landscape Documentation Package.

Attach documentation verifying implementation of recommendations from soil analysis report.

Model Water Efficient Landscape Ordinance

~~**September 10, 2009**~~

July 9, 2015 (Draft to California Water Commission)

California Code of Regulations
Title 23. Waters
Division 2. Department of Water Resources
Chapter 2.7. Model Water Efficient Landscape Ordinance

§ 490. Purpose.

(a) The State Legislature has found:

(1) that the waters of the state are of limited supply and are subject to ever increasing demands;

(2) that the continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses;

(3) that it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource;

(4) that landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development; ~~and~~

(5) that landscape design, installation, maintenance and management can and should be water efficient; and

(6) that Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use.

(b) Consistent with these legislative findings, the purpose of this model ordinance is to:

(1) promote the values and benefits of landscaping practices that integrate and go beyond the conservation and efficient use of water; ~~landscapes while recognizing the need to invest water and other resources as efficiently as possible;~~

(2) establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects by encouraging the use of a watershed approach that requires cross-sector collaboration of industry, government and property owners to achieve the many benefits possible;

(3) establish provisions for water management practices and water waste prevention for existing landscapes;

(4) use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount;

(5) promote the benefits of consistent landscape ordinances with neighboring local and regional agencies;

(6) encourage local agencies and water purveyors to use economic incentives that promote the efficient use of water, such as implementing a tiered-rate structure; and

(7) encourage local agencies to designate the necessary authority that implements and enforces the provisions of the Model Water Efficient Landscape Ordinance or its local landscape ordinance.

(c) Landscapes that are planned, designed, installed, managed and maintained with the watershed based approach can improve California's environmental conditions and provide benefits and realize sustainability goals. Such landscapes will make the urban environment resilient in the face of climatic extremes. Consistent with the legislative findings and purpose of the Ordinance, conditions in the urban setting will be improved by:

(1) Creating the conditions to support life in the soil by reducing compaction, incorporating organic matter that increases water retention, and promoting productive plant growth that leads to more carbon storage, oxygen production, shade, habitat and esthetic benefits.

(2) Minimizing energy use by reducing irrigation water requirements, reducing reliance on petroleum based fertilizers and pesticides, and planting climate appropriate shade trees in urban areas.
(3) Conserving water by capturing and reusing rainwater and graywater wherever possible and selecting climate appropriate plants that need minimal supplemental water after establishment.
(4) Protecting air and water quality by reducing power equipment use and landfill disposal trips, selecting recycled and locally sourced materials, and using compost, mulch and efficient irrigation equipment to prevent erosion.
(5) Protecting existing habitat and creating new habitat by choosing local native plants, climate adapted non-natives and avoiding invasive plants. Utilizing integrated pest management with least toxic methods as the first course of action.

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Note: Authority cited: Section 65593, Government Code. Reference: Sections 65591, 65593, 65596, Government Code.

§ 490.1 Applicability

(a) After ~~January 1, 2010~~ December 1, 2015, and consistent with Executive Order No. B-29-15, this ordinance shall apply to all of the following landscape projects:

(1) new development projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building or landscape permit, plan check or design review;
(2) rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;
~~(1) new construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check or design review;~~
~~(2) new construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;~~
~~(3) new construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family residential projects with a total project landscape area equal to or greater than 5,000 square feet requiring a building or landscape permit, plan check or design review;~~
(3) ~~(4)~~ existing landscapes limited to Sections 493, 493.1 and 493.2; and
(4) ~~(5)~~ cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 492.4, 492.11 and 492.12; and existing cemeteries are limited to Sections 493, 493.1 and 493.2.

(b) For local land use agencies working together to develop a regional water efficient landscape ordinance, the reporting requirements of this ordinance shall become effective December 1, 2015 and the remainder of this ordinance shall be effective no later than February 1, 2016.
(c) Any project with an aggregate landscape area of 2,500 square feet or less may comply with the performance requirements of this ordinance or conform to the prescriptive measures contained in Appendix D.
(d) For projects using treated or untreated graywater or rainwater captured on site, any lot or parcel within the project that has less than 2500 sq. ft of landscape and meets the lot or parcel's landscape water requirement (Estimated Total Water Use) entirely with treated or untreated graywater or through stored rainwater captured on site is subject only to Appendix D section (5).
(~~b~~e) This ordinance does not apply to:

(1) registered local, state or federal historical sites;
(2) ecological restoration projects that do not require a permanent irrigation system;

(3) mined-land reclamation projects that do not require a permanent irrigation system; or
(4) existing plant collections, as part of botanical gardens and arboretums open to the public.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 491. Definitions.

The terms used in this ordinance have the meaning set forth below:

(a) "applied water" means the portion of water supplied by the irrigation system to the landscape.

(b) "automatic irrigation controller" means a~~n automatic~~ timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers are able to self-adjust and schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

(c) "backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

(d) "Certificate of Completion" means the document required under Section 492.9.

(e) "certified irrigation designer" means a person certified to design irrigation systems by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

(f) "certified landscape irrigation auditor" means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

(g) "check valve" or "anti-drain valve" means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

(h) "common interest developments" means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

(i) "compost" means the safe and stable product of controlled biologic decomposition of organic materials that is beneficial to plant growth.

(~~i~~j) "conversion factor (0.62)" means the number that converts acre-inches per acre per year to gallons per square foot per year.

(k) "distribution uniformity" means the measure of the uniformity of irrigation water over a defined area.

(~~j~~l) "drip irrigation" means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

(~~k~~m) "ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

(~~l~~n) "effective precipitation" or "usable rainfall" (Eppt) means the portion of total precipitation which becomes available for plant growth.

(~~m~~o) "emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.

(~~n~~p) "established landscape" means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

(~~o~~q) "establishment period of the plants" means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth. Native habitat mitigation areas and trees may need three to five years for establishment.

(~~p~~r) "Estimated Total Water Use" (ETWU) means the total water used for the landscape as described in Section 492.4.

(~~q~~s) "ET adjustment factor" (ETAF) means a factor of ~~0.7~~0.55 for residential areas and 0.45 for non-residential areas, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. ~~A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is (0.7)=(0.5/0.71).~~ The ETAF for ~~a~~ new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0. The ETAF for existing non-rehabilitated landscapes is 0.8.

(~~r~~t) "evapotranspiration rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

(~~s~~u) "flow rate" means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

(v) "flow sensor" means an inline device installed at the supply point of the irrigation system that produces a repeatable signal proportional to flow rate. Flow sensors must be connected to an automatic irrigation controller, or flow monitor capable of receiving flow signals and operating master valves. This combination flow sensor/controller may also function as a landscape water meter or submeter.

(w) "friable" means a soil condition that is easily crumbled or loosely compacted down to a minimum depth per planting material requirements, whereby the root structure of newly planted material will be allowed to spread unimpeded.

(x) "Fuel Modification Plan Guideline" means guidelines from a local fire authority to assist residents and businesses that are developing land or building structures in a fire hazard severity zone.

(y) "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers. Health and Safety Code Section 17922.12.

(~~t~~z) "hardscapes" means any durable material (pervious and non-pervious).

~~(u) "homeowner-provided landscaping" means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.~~

(aa) ~~(v)~~ "hydrozone" means a portion of the landscaped area having plants with similar water needs and rooting depth. A hydrozone may be irrigated or non-irrigated.

(bb) ~~(w)~~ "infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

(cc) ~~(x)~~ "invasive plant species" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. ~~"Noxious weeds" means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list.~~ Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

(dd) ~~(y)~~ "irrigation audit" means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule. The audit must be conducted in a manner consistent with the Irrigation Association's Landscape Irrigation Auditor Certification program or other U.S. Environmental Protection Agency "Watersense" labeled auditing program.

(ee) ~~(z)~~ "irrigation efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates

of irrigation system characteristics and management practices. The ~~minimum average~~ irrigation efficiency~~ies~~ for purposes of this ordinance are 0.75 for overhead spray devices and 0.81 for drip systems. ~~is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems~~.

(ff) ~~(aa)~~ "irrigation survey" means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

(gg) ~~(bb)~~ "irrigation water use analysis" means a review of water use data based on meter readings and billing data.

(hh) ~~(cc)~~ "landscape architect" means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

(ii) ~~(dd)~~ "landscape area" means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

(jj) ~~(ee)~~ "landscape contractor" means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

(kk) ~~(ff)~~ "Landscape Documentation Package" means the documents required under Section 492.3.

(ll) ~~(gg)~~ "landscape project" means total area of landscape in a project as defined in "landscape area" for the purposes of this ordinance, meeting requirements under Section 490.1.

(mm) "landscape water meter" means an inline device installed at the irrigation supply point that measures the flow of water into the irrigation system and is connected to a totalizer to record water use.

(nn) ~~(hh)~~ "lateral line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

(oo) ~~(ii)~~ "local agency" means a city or county, including a charter city or charter county, that is responsible for adopting and implementing the ordinance. The local agency is also responsible for the enforcement of this ordinance, including but not limited to, approval of a permit and plan check or design review of a project.

(pp) ~~(jj)~~ "local water purveyor" means any entity, including a public agency, city, county, or private water company that provides retail water service.

(qq) ~~(kk)~~ "low volume irrigation" means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

(rr) ~~(ll)~~ "main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.

(ss) "master shut-off valve" is an automatic valve installed at the irrigation supply point which controls water flow into the irrigation system. When this valve is closed water will not be supplied to the irrigation system. A master valve will greatly reduce any water loss due to a leaky station valve.

(tt) ~~(mm)~~ "Maximum Applied Water Allowance" (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 492.4. It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0. MAWA = (ETo) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)],

(uu) "median" is an area between opposing lanes of traffic that may be unplanted or planted with trees, shrubs, perennials, and ornamental grasses.

(vv) ~~(nn)~~ "microclimate" means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.
(ww) ~~(oo)~~ "mined-land reclamation projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.
(xx) ~~(pp)~~ "mulch" means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, ~~and~~ or decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.
(yy) ~~(qq)~~ "new construction" means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.
(zz~~xx~~)"non-residential landscape" means landscapes in commercial, institutional, industrial and public settings that may have areas designated for recreation or public assembly. It also includes portions of common areas of common interest developments with designated recreational areas.
(aaa) ~~(rr)~~ "operating pressure" means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.
(bbb) ~~(ss)~~ "overhead sprinkler irrigation systems" means systems that deliver water through the air (e.g., spray heads and rotors).
(ccc) ~~(tt)~~ "overspray" means the irrigation water which is delivered beyond the target area.
(ddd) ~~(uu)~~ "permit" means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.
(eee) ~~(vv)~~ "pervious" means any surface or material that allows the passage of water through the material and into the underlying soil.
(fff) ~~(ww)~~ "plant factor" or "plant water use factor" is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for very low water use plants is 0 to 0.1, the plant factor range for low water use plants is ~~0~~0.1 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the ~~Department of Water Resources 2000~~ publication "Water Use Classification of Landscape Species". Plant factors may also be obtained from horticultural researchers from academic institutions or professional associations as approved by the California Department of Water Resources (DWR).
~~(xx) "precipitation rate" means the rate of application of water measured in inches per hour.~~
(ggg) ~~(yy)~~ "project applicant" means the individual or entity submitting a Landscape Documentation Package required under Section 492.3 to request a permit, plan check, or design review from the local agency. A project applicant may be the property owner or his or her designee.
(hhh) ~~(zz)~~ "rain sensor" or "rain sensing shutoff device" means a component which automatically suspends an irrigation event when it rains.
(iii) ~~(aaa)~~ "record drawing" or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.
(jjj) ~~(bbb)~~ "recreational area" means areas, excluding private single family residential areas, ~~dedicated~~ designated ~~to~~ for active play, recreation or public assembly ~~such as~~ in parks, sports fields, picnic grounds, amphitheaters ~~and~~ or golf course~~s~~ tees, fairways, roughs, surrounds and greens.
(kkk) ~~(ccc)~~ "recycled water", "reclaimed water", or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.
(lll) ~~(ddd)~~ "reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Appendix A ~~Section 495.1~~, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as

the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.

(mmm) Regional Water Efficient Landscape Ordinance" means a local Ordinance adopted by two or more local agencies, water suppliers and other stakeholders for implementing a consistent set of landscape provisions throughout a geographical region. Regional ordinances are strongly encouraged to provide a consistent framework for the landscape industry and applicants to adhere to.

(nnn) ~~(eee)~~ "rehabilitated landscape" means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 490.1, and the modified landscape area is equal to or greater than 2,500 square feet~~. is 50% of the total landscape area, and the modifications are completed within one year.~~

(ooo) "residential landscape" means landscapes surrounding single or multifamily homes.

(ppp) ~~(fff)~~ "runoff" means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

(qqq) ~~(ggg)~~ "soil moisture sensing device" or "soil moisture sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

(rrr) ~~(hhh)~~ "soil texture" means the classification of soil based on its percentage of sand, silt, and clay.

(sss) ~~(iii)~~ "Special Landscape Area" (SLA) means an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water ~~and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface~~.

(ttt) ~~(jjj)~~ "sprinkler head" means a device which delivers water through a nozzle.

(uuu) ~~(kkk)~~ "static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

(vvv) ~~(lll)~~ "station" means an area served by one valve or by a set of valves that operate simultaneously.

(www) ~~(mmm)~~ "swing joint" means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

(xxx) "submeter" means a metering device to measure water applied to the landscape that is installed after the primary utility water meter.

(yyy) ~~(nnn)~~ "turf" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

(zzz) ~~(ooo)~~ "valve" means a device used to control the flow of water in the irrigation system.

(aaaa) ~~(ppp)~~ "water conserving plant species" means a plant species identified as having a very low or low plant factor.

(bbbb) ~~(qqq)~~"water feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

(cccc) ~~(rrr)~~ "watering window" means the time of day irrigation is allowed.

(dddd) ~~(sss)~~ "WUCOLS" means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension~~,~~ and the Department of Water Resources ~~and the Bureau of Reclamation, 2000~~ 2014.

Note: Authority Cited: Section 65595, Government Code. Reference: Sections 65592, 65596, Government Code.

§ 492. Provisions for New Construction or Rehabilitated Landscapes.
(a) A local agency may designate by mutual agreement, another agency, such as a water purveyor, to implement some or all of the requirements contained in this ordinance. Local agencies may collaborate with water purveyors to define each entity's specific responsibilities relating to this ordinance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.1 Compliance with Landscape Documentation Package.
(a) Prior to construction, the local agency shall:
(1) provide the project applicant with the ordinance and procedures for permits, plan checks, or design reviews;
(2) review the Landscape Documentation Package submitted by the project applicant;
(3) approve or deny the Landscape Documentation Package;
(4) issue a permit or approve the plan check or design review for the project applicant; and
(5) upon approval of the Landscape Documentation Package, submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.
(b) Prior to construction, the project applicant shall:
(1) submit a Landscape Documentation Package to the local agency.
(c) Upon approval of the Landscape Documentation Package by the local agency, the project applicant shall:
(1) receive a permit or approval of the plan check or design review and record the date of the permit in the Certificate of Completion;
(2) submit a copy of the approved Landscape Documentation Package along with the record drawings, and any other information to the property owner or his/her designee; and
(3) submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.2 Penalties.
(a) A local agency may establish and administer penalties to the project applicant for non-compliance with the ordinance to the extent permitted by law.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.3 Elements of the Landscape Documentation Package.
(a) The Landscape Documentation Package shall include the following six (6) elements:
(1) project information;
(A) date
(B) project applicant
(C) project address (if available, parcel and/or lot number(s))
(D) total landscape area (square feet)
(E) project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed)
(F) water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well
(G) checklist of all documents in Landscape Documentation Package
(H) project contacts to include contact information for the project applicant and property owner

(I) applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package".

(2) Water Efficient Landscape Worksheet;

(A) water budget calculations

1. Maximum Applied Water Allowance (MAWA)
2. Estimated Total Water Use (ETWU)

(3) soil management report;

(4) landscape design plan;

(5) irrigation design plan; and

(6) grading design plan.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.4 Water Efficient Landscape Worksheet.

(a) A project applicant shall complete the Water Efficient Landscape Worksheet in Appendix B which contains information on the plant factor, irrigation method, irrigation efficiency, and area associated with each hydrozone. Calculations are then made to show that the evapotranspiration adjustment factor (ETAF) for the landscape project does not exceed a factor of 0.55 for residential areas and 0.45 for non-residential areas, exclusive of Special Landscape Areas. The ETAF for a landscape project is based on the plant factors and irrigation methods selected. The Maximum Applied Water Allowance is calculated based on the maximum ETAF allowed (0.55 for residential areas and 0.45 for non-residential areas) and expressed as annual gallons required. The Estimated Total Water Use (ETWU) is calculated based on the plants used and irrigation method selected for the landscape design. ETWU must be below the MAWA. ~~two sections (see sample worksheet in Appendix B):~~

~~(1) a hydrozone information table (see Appendix B, Section A) for the landscape project; and~~
~~(2) a water budget calculation (see Appendix B, Section B) for the landscape project. For the calculation of the~~

(1) In calculating the Maximum Applied Water Allowance and Estimated Total Water Use, a project applicant shall use the ETo values from the Reference Evapotranspiration Table in Appendix A. For geographic areas not covered in Appendix A, use data from other cities located nearby in the same reference evapotranspiration zone, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999.

(b) Water budget calculations shall adhere to the following requirements:

(1) The plant factor used shall be from WUCOLS or from horticultural researchers with academic institutions or professional associations as approved by the California Department of Water Resources (DWR). The plant factor ranges from 0 to 0.1 for very low water using plants, 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.

(2) All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.

(3) All Special Landscape Areas shall be identified and their water use calculated as shown in Appendix B ~~described below~~.

(4) ETAF for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

~~(c) Maximum Applied Water Allowance~~

~~The Maximum Applied Water Allowance shall be calculated using the equation:~~

~~MAWA = (ETo) (0.62) [(0.70.5 x LA) + (0.3 x SLA)]~~

The example calculations below are hypothetical to demonstrate proper use of the equations and do not represent an existing and/or planned landscape project. The ETo values used in these calculations are from the Reference Evapotranspiration Table in Appendix A, for planning purposes only. For actual irrigation scheduling, automatic irrigation controllers are required and shall use current reference evapotranspiration data, such as from the California Irrigation Management Information System (CIMIS), other equivalent data, or soil moisture sensor data.

(1) Example MAWA calculation for a residential landscape project: a hypothetical landscape project in Fresno, CA with an irrigated landscape area of 50,000 square feet without any Special Landscape Area (SLA= 0, no edible plants, recreational areas, or use of recycled water). To calculate MAWA, the annual reference evapotranspiration value for Fresno is 51.1 inches as listed in the Reference Evapotranspiration Table in Appendix A.
MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]
MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
0.62 = Conversion Factor (to gallons)
0.7 = ET Adjustment Factor (ETAF)
LA = Landscape Area including SLA (square feet)
0.3 = Additional Water Allowance for SLA
SLA = Special Landscape Area (square feet)
MAWA = (51.1 inches) (0.62) [(0.7 x 50,000 square feet) + (0.3 x 0)]
= 1,108,870 gallons per year
To convert from gallons per year to hundred-cubic-feet per year:
= 1,108,870 /748 = 482 hundred-cubic-feet per year
(100 cubic feet = 748 gallons)

(2) In this next hypothetical example, the landscape project in Fresno, CA has the same ETo value of 51.1 inches and a total landscape area of 50,000 square feet. Within the 50,000 square foot project, there is now a 2,000 square foot area planted with edible plants. This 2,000 square foot area is considered to be a Special Landscape Area.
MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]
MAWA = (51.1 inches) (0.62) [(0.7 x 50,000 square feet) + (0.3 x 2,000 square feet)]
= 31.68 x [35,000 + 600] gallons per year
= 31.68 x 35,600 gallons per year
=1,127,808 gallons per year or 508 hundred-cubic-feet per year

(d) Estimated Total Water Use.
The Estimated Total Water Use shall be calculated using the equation below. The sum of the Estimated Total Water Use calculated for all hydrozones shall not exceed MAWA.

$$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$$

Where:

ETWU = Estimated Total Water Use per year (gallons)
ETo = Reference Evapotranspiration (inches)
PF = Plant Factor from WUCOLS (see Section 491)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor

IE = Irrigation Efficiency (minimum 0.71)

(1) Example ETWU calculation: landscape area is 50,000 square feet; plant water use type, plant factor, and hydrozone area are shown in the table below. The ETo value is 51.1 inches per year. There are no Special Landscape Areas (recreational area, area permanently and solely dedicated to edible plants, and area irrigated with recycled water) in this example.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)*	Hydrozone Area (HA) (square feet)	PF x HA (square feet)
1	High	0.8	7,000	5,600
2	High	0.7	10,000	7,000
3	Medium	0.5	16,000	8,000
4	Low	0.3	7,000	2,100
5	Low	0.2	10,000	2,000
			Sum	24,700

*Plant Factor from WUCOLS

$$ETWU = (51.1)(0.62)\left(\frac{17,500}{0.85} + 0\right)$$

= 1,102,116 gallons per year

Compare ETWU with MAWA: For this example MAWA = (51.1) (0.62) [(0.7 x 50,000) + (0.3 x 0)] = 1,108,870 gallons per year. The ETWU (1,102,116 gallons per year) is less than MAWA (1,108,870 gallons per year). In this example, the water budget complies with the MAWA.

(2) Example ETWU calculation: total landscape area is 50,000 square feet, 2,000 square feet of which is planted with edible plants. The edible plant area is considered a Special Landscape Area (SLA). The reference evapotranspiration value is 51.1 inches per year. The plant type, plant factor, and hydrozone area are shown in the table below.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)*	Hydrozone Area (HA) (square feet)	PF x HA (square feet)
1	High	0.8	7,000	5,600
2	High	0.7	9,000	6,300
3	Medium	0.5	15,000	7,500
4	Low	0.3	7,000	2,100
5	Low	0.2	10,000	2,000
			Sum	23,500
6	SLA	1.0	2,000	2,000

*Plant Factor from WUCOLS

$$ETWU = (51.1)(0.62)\left(\frac{16,300}{0.85} + 2,000\right)$$

= (31.68) (33,099 + 2,000)
= 1,111,936 gallons per year

Compare ETWU with MAWA. For this example:

~~MAWA = (51.1) (0.62) [(0.7 x 50,000) + (0.3 x 2,000)]~~
~~= 31.68 x [35,000 + 600]~~
~~= 31.68 x 35,600~~
~~= 1,127,808gallons per year~~

~~The ETWU (1,111,936 gallons per year) is less than MAWA (1,127,808 gallons per year). For this example, the water budget complies with the MAWA.~~

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.5 Soil Management Report.

(a) In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows:

(1) Submit soil samples to a laboratory for analysis and recommendations.

(A) Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

(B) The soil analysis ~~may~~ shall include:

1. soil texture;
2. infiltration rate determined by laboratory test or soil texture infiltration rate table;
3. pH;
4. total soluble salts;
5. sodium;
6. percent organic matter; and
7. recommendations

(C) In projects with multiple landscape installations (i.e. production home developments) a soil sampling rate of 1 in 7 lots or approximately 15% will satisfy this requirement. Large landscape projects shall sample at a rate equivalent to 1 in 7 lots.

(2) The project applicant, or his/her designee, shall comply with one of the following:

(A) If significant mass grading is not planned, the soil analysis report shall be submitted to the local agency as part of the Landscape Documentation Package; or

(B) If significant mass grading is planned, the soil analysis report shall be submitted to the local agency as part of the Certificate of Completion.

(3) The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.

(4) The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the local agency with Certificate of Completion.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.6 Landscape Design Plan.

(a) For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

(1) Plant Material

(A) Any plant may be selected for the landscape providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance. ~~To~~

~~encourage the efficient use of water, the following is highly recommended~~ Methods to achieve water efficiency shall include one or more of the following:

1. protection and preservation of native species and natural vegetation;
2. selection of water-conserving plant, tree and turf species, especially local native plants;
3. selection of plants based on local climate suitability, disease and pest resistance;
4. selection of trees based on applicable local tree ordinances or tree shading guidelines, and size at maturity as appropriate for the planting area; and
5. selection of plants from local and regional landscape program plant lists.
6. selection of plants from local Fuel Modification Plan Guidelines.

(B) Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 492.7(a)(2)(D).

(C) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. ~~To encourage the efficient use of water, the following is highly recommended~~ Methods to achieve water efficiency shall include one or more of the following:

1. use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
2. recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; allow for adequate soil volume for healthy root growth and
3. consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

(D) Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).

(E) High water use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians.

(F) ~~(E)~~ A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches. Refer to the local Fuel Modification Plan guidelines.

(G) ~~(F)~~ The use of invasive ~~and/or noxious~~ plant species, such as those listed by the California Invasive Plant Council, is strongly discouraged.

(H) ~~(G)~~ The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.

(2) Water Features

(A) Recirculating water systems shall be used for water features.

(B) Where available, recycled water shall be used as a source for decorative water features.

(C) Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.

(D) Pool and spa covers are highly recommended.

(3) Soil Preparation, Mulch and Amendments

(A) Prior to the planting of any materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.

(B) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 492.5).

(C) For landscape installations, compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area shall be incorporated to a depth of six inches into the soil. Soils with greater than 6% organic matter in the top 6 inches of soil are exempt from adding compost and tilling.

(D) ~~(A)~~ A minimum ~~two~~ three inch (~~2~~3″) layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. To provide habitat for beneficial insects and other wildlife, up to 5 % of the landscape area may be left without mulch. Designated insect habitat must be included in the landscape design plan as such.

(E) ~~(B)~~ Stabilizing mulching products shall be used on slopes that meet current engineering standards.

(F) ~~(C)~~ The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.

(G) Organic mulch materials made from recycled or post-consumer shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available. Organic mulches are not required where prohibited by local Fuel Modification Plan Guidelines or other applicable local ordinances.

~~(D) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 492.5).~~

(b) The landscape design plan, at a minimum, shall:

(1) delineate and label each hydrozone by number, letter, or other method;

(2) identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;

(3) identify recreational areas;

(4) identify areas permanently and solely dedicated to edible plants;

(5) identify areas irrigated with recycled water;

(6) identify type of mulch and application depth;

(7) identify soil amendments, type, and quantity;

(8) identify type and surface area of water features;

(9) identify hardscapes (pervious and non-pervious);

(10) identify location, installation details, and 24-hour retention or infiltration capacity of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Project applicants shall refer to the local agency or regional Water Quality Control Board for information on any applicable stormwater technical requirements. Stormwater best management practices are encouraged in the landscape design plan and examples ~~include, but are not limited to:~~ are provide in Section 492.16.

~~(A) infiltration beds, swales, and basins that allow water to collect and soak into the ground;~~

~~(B) constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and~~

~~(C) pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.~~

(11) identify any applicable rain harvesting or catchment technologies ~~(e.g., rain gardens, cisterns, etc.)~~ as discussed in Section 492.16 and their 24-hour retention or infiltration capacity;
(12) identify any applicable graywater discharge piping, system components and area(s) of distribution;
(13) ~~(12)~~ contain the following statement: "I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan"; and
(14) ~~(13)~~ bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.)

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code and Section 1351, Civil Code.

§ 492.7 Irrigation Design Plan.

(a) This section applies to landscaped areas requiring permanent irrigation, not areas that require temporary irrigation solely for the plant establishment period. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

(1) System

(A) ~~Dedicated~~ Landscape water meters, defined as either a dedicated water service meter or private submeter, ~~are highly recommended on landscape areas smaller than 5,000 square feet to facilitate water management~~ shall be installed for all non-residential irrigated landscapes of 1,000 sq. ft. but not more than 5,000 sq.ft. (the level at which *Water Code* 535 applies) and residential irrigated landscapes of 5,000 sq. ft. or greater. A landscape water meter may be either:

1. a customer service meter dedicated to landscape use provided by the local water purveyor; or
2. a privately owned meter or submeter.

(B) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data utilizing non-volatile memory shall be required for irrigation scheduling in all irrigation systems.

(C) If the water pressure is below or exceeds the recommended pressure of the specified irrigation devices, the installation of a pressure regulating device is required ~~The irrigation systems shall be designed~~ to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.

1. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.

2. Static water pressure, dynamic or operating pressure and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.

(D) Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
(E) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
(F) Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable local agency code (i.e., public health) for additional backflow prevention requirements.
(G) ~~High~~ Fflow sensors that detect ~~and report~~ high flow conditions created by system damage or malfunction are ~~recommended~~ required for all on non-residential landscapes and residential landscapes of 5000 sq. ft. or larger.
(H) Master shut-off valves are required on all projects except landscapes that make use of technologies that allow for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features.
(I) ~~(H)~~ The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
(J) ~~(I)~~ Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
(K) ~~(J)~~ The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
(L) ~~(K)~~ The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 492.4 regarding the Maximum Applied Water Allowance.
(M) All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standard, American Society of Agricultural and Biological Engineers'/International Code Council's (ASABE/ICC) 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard, All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.

(N) ~~(L)~~ It is highly recommended that the project applicant or local agency inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
(O) ~~(M)~~ In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
(P) ~~(N)~~ Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
(Q) ~~(O)~~ Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
(R) ~~(P)~~ Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to hardscapes or in high traffic areas of turfgrass.
(S) ~~(Q)~~ Check valves or anti-drain valves are required ~~for all irrigation systems~~ on all sprinkler heads where low point drainage could occur.
(T) ~~(R) Narrow or irregularly shaped areas, including turf,~~ Areas less than ten~~eight~~ (~~8~~10) feet in width in any direction shall be irrigated with subsurface irrigation or ~~low volume irrigation system.~~ other means that produces no runoff or overspray.

(U) ~~(S)~~ Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:

1. the landscape area is adjacent to permeable surfacing and no runoff occurs; or
2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
3. the irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 492.7 (a)(1)(I~~H~~). Prevention of overspray and runoff must be confirmed during the irrigation audit.

(V) Slopes greater than 25% shall not be irrigated with an irrigation system with a ~~precipitation~~ application rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

(2) Hydrozone

(A) Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

(B) Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.

(C) Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf to facilitate the appropriate irrigation of trees. The mature size and extent of the root zone shall be considered when designing irrigation for the tree.

(D) Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:

1. plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
2. the plant factor of the higher water using plant is used for calculations.

(E) Individual hydrozones that mix high and low water use plants shall not be permitted.

(F) On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Appendix B Section A). This table can also assist with the irrigation audit and programming the controller.

(b) The irrigation design plan, at a minimum, shall contain:

(1) location and size of separate water meters for landscape;

(2) location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;

(3) static water pressure at the point of connection to the public water supply;

(4) flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;

(5) recycled water irrigation systems as specified in Section 492.14;

(6) the following statement: “I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan”; and

(7) the signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections

5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.8 Grading Design Plan.

(a) For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement.

(1) The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:

(A) height of graded slopes;
(B) drainage patterns;
(C) pad elevations;
(D) finish grade; and
(E) stormwater retention improvements, if applicable.

(2) To prevent excessive erosion and runoff, it is highly recommended that project applicants:

(A) grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
(B) avoid disruption of natural drainage patterns and undisturbed soil; and
(C) avoid soil compaction in landscape areas.

(3) The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.9 Certificate of Completion.

(a) The Certificate of Completion (see Appendix C for a sample certificate) shall include the following six (6) elements:

(1) project information sheet that contains:

(A) date;
(B) project name;
(C) project applicant name, telephone, and mailing address;
(D) project address and location; and
(E) property owner name, telephone, and mailing address;

(2) certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;

(A) where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;
(B) A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes.

(3) irrigation scheduling parameters used to set the controller (see Section 492.10);
(4) landscape and irrigation maintenance schedule (see Section 492.11);
(5) irrigation audit report (see Section 492.12); and
(6) soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 492.5).

(b) The project applicant shall:

(1) submit the signed Certificate of Completion to the local agency for review;

(2) ensure that copies of the approved Certificate of Completion are submitted to the local water purveyor and property owner or his or her designee.

(c) The local agency shall:

(1) receive the signed Certificate of Completion from the project applicant;

(2) approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the local agency shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.10 Irrigation Scheduling.

(a) For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

(1) Irrigation scheduling shall be regulated by automatic irrigation controllers.

(2) Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the local water purveyor, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

(3) For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.

(4) Parameters used to set the automatic controller shall be developed and submitted for each of the following:

(A) the plant establishment period;

(B) the established landscape; and

(C) temporarily irrigated areas.

(5) Each irrigation schedule shall consider for each station all of the following that apply:

(A) irrigation interval (days between irrigation);

(B) irrigation run times (hours or minutes per irrigation event to avoid runoff);

(C) number of cycle starts required for each irrigation event to avoid runoff;

(D) amount of applied water scheduled to be applied on a monthly basis;

(E) application rate setting;

(F) root depth setting;

(G) plant type setting;

(H) soil type;

(I) slope factor setting;

(J) shade factor setting; and

(K) irrigation uniformity or efficiency setting.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.11 Landscape and Irrigation Maintenance Schedule.

(a) Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.

(b) A regular maintenance schedule shall include, but not be limited to, routine inspection; auditing, adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; topdressing with compost, replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing ~~and~~ obstructions to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
(c) Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency.
(d) A project applicant is encouraged to implement established landscape industry sustainable Best Practices ~~or environmentally-friendly practices~~ for ~~overall~~ all landscape maintenance activities.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.12 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.
(a) All landscape irrigation audits shall be conducted by a local agency landscape irrigation auditor or a third party certified landscape irrigation auditor. Landscape audits shall not be conducted by the person who designed the landscape or installed the landscape
(b) In large projects or projects with multiple landscape installations (i.e. production home developments) an auditing rate of 1 in 7 lots or approximately 15% will satisfy this requirement.
~~(b)~~ (c)For new construction and rehabilitated landscape projects installed after ~~January 1, 2010~~December 1, 2015, as described in Section 490.1:

(1) the project applicant shall submit an irrigation audit report with the Certificate of Completion to the local agency that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule, including configuring irrigation controllers with application rate, soil types, plant factors, slope, exposure and any other factors necessary for accurate programming;
(2) the local agency shall administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.13 Irrigation Efficiency.
(a) For the purpose of determining ~~Maximum Applied Water Allowance~~ Estimated Total Water Use, average irrigation efficiency is assumed to be 0.75~~ 0.71~~ for overhead spray devices and 0.81 for drip system devices. ~~Irrigation systems shall be designed, maintained, and managed to meet or exceed a site-wide~~n average landscape irrigation efficiency of 0.71.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.14 Recycled Water.
(a) The installation of recycled water irrigation systems shall allow for the current and future use of recycled water~~, unless a written exemption has been granted as described in Section 492.14(b)~~.
~~(b) Irrigation systems and decorative water features shall use recycled water unless a written exemption has been granted by the local water purveyor stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future.~~
~~(c)~~ (b) All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.
~~(d)~~ (c) Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.15 Graywater Systems.

(a) Graywater systems promote the efficient use of water and are encouraged to assist in on-site landscape irrigation. All graywater systems shall conform to the California Plumbing Code (Title 24, Part 5, Chapter 16) and any applicable local ordinance standards. Refer to § 490.1 (d) for the applicability of this ordinance to landscape areas less than 2,500 square feet with the Estimated Total Water Use met entirely by graywater.

§ 492.16~~5~~ Stormwater Management and Rainwater Retention.

(a) Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site rainwater retention and infiltration are encouraged.

(b) Project applicants shall refer to the local agency or Regional Water Quality Control Board for information on any applicable stormwater technical requirements ~~ordinances and stormwater management plans~~.

(c) All planted landscape areas are required to have friable soil to maximize water retention and infiltration. Refer to § 492.6(a)(3).

(d) It is strongly recommended that landscape areas be designed for capture and infiltration capacity that is sufficient to prevent runoff from impervious surfaces (i.e. roof and paved areas) from either: the one inch, 24-hour rain event or (2) the 85th percentile, 24-hour rain event, and/or additional capacity as required by any applicable local, regional, state or federal regulation.

(e) It is recommended that storm water projects incorporate any of the following elements to improve on-site storm water and dry weather runoff capture and use:

- Grade impervious surfaces, such as driveways, during construction to drain to vegetated areas.
- Minimize the area of impervious surfaces such as paved areas, roof and concrete driveways.
- Incorporate pervious or porous surfaces (e.g., gravel, permeable pavers or blocks, pervious or porous concrete) that minimize runoff.
- Direct runoff from paved surfaces and roof areas into planting beds or landscaped areas to maximize site water capture and reuse.
- Incorporate rain gardens, cisterns, and other rain harvesting or catchment systems.
- Incorporate infiltration beds, swales, basins and drywells to capture storm water and dry weather runoff and increase percolation into the soil.
- Consider constructed wetlands and ponds that retain water, equalize excess flow, and filter pollutants.

~~(c) Rain gardens, cisterns, and other landscapes features and practices that increase rainwater capture and create opportunities for infiltration and/or onsite storage are recommended.~~

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.17~~6~~ Public Education.

(a) Publications. Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.

(1) A local agency or water supplier/purveyor shall provide information to owners of permitted renovations and new single-family residential homes regarding the design, installation, management, and maintenance of water efficient landscapes based on a water budget.

(b) Model Homes. All model homes shall be landscaped and ~~that are landscaped shall~~ use signs and written information to demonstrate the principles of water efficient landscapes described in this ordinance.

(1) Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme. Signage shall include information about the site water use as designed per the local ordinance; specify who designed and installed the water efficient landscape; and demonstrate low water use approaches to landscaping such as using native plants, graywater systems, and rainwater catchment systems.

(2) Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.18~~7~~ Environmental Review.

(a) The local agency must comply with the California Environmental Quality Act (CEQA), as appropriate.

Note: Authority cited: Section 21082, Public Resources Code. Reference: Sections 21080, 21082, Public Resources Code.

§ 493. Provisions for Existing Landscapes.

(a) A local agency may by mutual agreement, designate another agency such as a water purveyor, to implement some or all of the requirements contained in this ordinance. Local agencies may collaborate with water purveyors to define each entity's specific responsibilities relating to this ordinance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 493.1 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.

(a) This section, 493.1, shall apply to all existing landscapes that were installed before ~~January 1, 2010~~ December 1, 2015 and are over one acre in size.

(1) For all landscapes in 493.1(a) that have a water meter, the local agency shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as: MAWA = (0.8) (ETo)(LA)(0.62).

(2) For all landscapes in 493.1(a), that do not have a meter, the local agency shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.

(b) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 493.2 Water Waste Prevention.

(a) Local agencies shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff from leaving the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures. Penalties for violation of these prohibitions shall be established locally.

(b) Restrictions regarding overspray and runoff may be modified if:

(1) the landscape area is adjacent to permeable surfacing and no runoff occurs; or
(2) the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping.

Note: Authority cited: Section 65594, Government Code. Reference: Section 65596, Government Code.

§ 494. Effective Precipitation.

(a) A local agency may consider Effective Precipitation (25% of annual precipitation) in tracking water use and may use the following equation to calculate Maximum Applied Water Allowance:
MAWA= (ETo - Eppt) (0.62) [(~~0. 7~~0.55 x LA) + (~~0.3~~0.45 x SLA)] for residential areas.
MAWA= (ETo - Eppt) (0.62) [(0.45 x LA) + (0.55 x SLA)] for non-residential areas.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 495. Reporting.

(a) Local agencies shall report on implementation and enforcement by December 31, 2015. Local agencies responsible for administering individual ordinances shall report on their updated ordinance, while those agencies developing a regional ordinance shall report in their existing ordinance. Those agencies crafting a regional ordinances shall also report on their new ordinance by March 1, 2016. Subsequently, reporting for all agencies will be due by January 31st of each year. Reports should be submitted as follows.

(b) Local agencies are to address the following:

(1) State whether you are adopting a single agency ordinance or a regional agency alliance ordinance, and the date of adoption or anticipated date of adoption.
(2) Define the reporting period. The reporting period shall commence on December 1, 2015 and the end on December 28, 2015. For local agencies crafting regional ordinances with other agencies, there shall be an additional reporting period commencing on February 1, 2016 and ending on February 28, 2016. In subsequent years, all local agency reporting will be for the calendar year.
(3) State if using a locally modified Water Efficient Landscape Ordinance (WELO) or the MWELO. If using a locally modified WELO, how is it different than MWELO, is it at least as efficient as MWELO, and are there any exemptions specified?
(4) State the entity responsible for implementing the ordinance.
(5) State number and types of projects subject to the ordinance during the specified reporting period.
(6) State the total area (in square feet or acres) subject to the ordinance over the reporting period, if available.
(7) Provide the number of new housing starts, new commercial projects, and landscape retrofits during the reporting period.
(8) Describe the procedure for review of projects subject to the ordinance.
(9) Describe actions taken to verify compliance. Is a plan check performed; if so, by what entity? Is a site inspection performed; if so, by what entity? Is a post-installation audit required; if so, by whom?
(10) Describe enforcement measures.
(11) Explain challenges to implementing and enforcing the ordinance.
(12) Describe educational and other needs to properly apply the ordinance.

Appendices.

Appendix A. Reference Evapotranspiration (ETo) Table.

County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
ALAMEDA													
Fremont	1.5	1.9	3.4	4.7	5.4	6.3	6.7	6.0	4.5	3.4	1.8	1.5	47.0
Livermore	1.2	1.5	2.9	4.4	5.9	6.6	7.4	6.4	5.3	3.2	1.5	0.9	47.2
Oakland	1.5	1.5	2.8	3.9	5.1	5.3	6.0	5.5	4.8	3.1	1.4	0.9	41.8
Oakland Foothills	1.1	1.4	2.7	3.7	5.1	6.4	5.8	4.9	3.6	2.6	1.4	1.0	39.6
Pleasanton	0.8	1.5	2.9	4.4	5.6	6.7	7.4	6.4	4.7	3.3	1.5	1.0	46.2
Union City	1.4	1.8	3.1	4.2	5.4	5.9	6.4	5.7	4.4	3.1	1.5	1.2	44.2
ALPINE													
Markleeville	0.7	0.9	2.0	3.5	5.0	6.1	7.3	6.4	4.4	2.6	1.2	0.5	40.6
AMADOR													
Jackson	1.2	1.5	2.8	4.4	6.0	7.2	7.9	7.2	5.3	3.2	1.4	0.9	48.9
Shanandoah Valley	1.0	1.7	2.9	4.4	5.6	6.8	7.9	7.1	5.2	3.6	1.7	1.0	48.8
BUTTE													
Chico	1.2	1.8	2.9	4.7	6.1	7.4	8.5	7.3	5.4	3.7	1.7	1.0	51.7
Durham	1.1	1.8	3.2	5.0	6.5	7.4	7.8	6.9	5.3	3.6	1.7	1.0	51.1
Gridley	1.2	1.8	3.0	4.7	6.1	7.7	8.5	7.1	5.4	3.7	1.7	1.0	51.9
Oroville	1.2	1.7	2.8	4.7	6.1	7.6	8.5	7.3	5.3	3.7	1.7	1.0	51.5
CALAVERAS													
San Andreas	1.2	1.5	2.8	4.4	6.0	7.3	7.9	7.0	5.3	3.2	1.4	0.7	48.8
COLUSA													
Colusa	1.0	1.7	3.4	5.0	6.4	7.6	8.3	7.2	5.4	3.8	1.8	1.1	52.8
Williams	1.2	1.7	2.9	4.5	6.1	7.2	8.5	7.3	5.3	3.4	1.6	1.0	50.8
CONTRA COSTA													
~~Benicia~~	~~1.3~~	~~1.4~~	~~2.7~~	~~3.8~~	~~4.9~~	~~5.0~~	~~6.4~~	~~5.5~~	~~4.4~~	~~2.9~~	~~1.2~~	~~0.7~~	~~40.3~~
Brentwood	1.0	1.5	2.9	4.5	6.1	7.1	7.9	6.7	5.2	3.2	1.4	0.7	48.3
Concord	1.1	1.4	2.4	4.0	5.5	5.9	7.0	6.0	4.8	3.2	1.3	0.7	43.4
Courtland	0.9	1.5	2.9	4.4	6.1	6.9	7.9	6.7	5.3	3.2	1.4	0.7	48.0
Martinez	1.2	1.4	2.4	3.9	5.3	5.6	6.7	5.6	4.7	3.1	1.2	0.7	41.8
Moraga	1.2	1.5	3.4	4.2	5.5	6.1	6.7	5.9	4.6	3.2	1.6	1.0	44.9
Pittsburg	1.0	1.5	2.8	4.1	5.6	6.4	7.4	6.4	5.0	3.2	1.3	0.7	45.4
Walnut Creek	0.8	1.5	2.9	4.4	5.6	6.7	7.4	6.4	4.7	3.3	1.5	1.0	46.2
DEL NORTE													
Crescent City	0.5	0.9	2.0	3.0	3.7	3.5	4.3	3.7	3.0	2.0	0.9	0.5	27.7
EL DORADO													
Camino	0.9	1.7	2.5	3.9	5.9	7.2	7.8	6.8	5.1	3.1	1.5	0.9	47.3
FRESNO													
Clovis	1.0	1.5	3.2	4.8	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.4
Coalinga	1.2	1.7	3.1	4.6	6.2	7.2	8.5	7.3	5.3	3.4	1.6	0.7	50.9
Firebaugh	1.0	1.8	3.7	5.7	7.3	8.1	8.2	7.2	5.5	3.9	2.0	1.1	55.4
FivePoints	1.3	2.0	4.0	6.1	7.7	8.5	8.7	8.0	6.2	4.5	2.4	1.2	60.4
Fresno	0.9	1.7	3.3	4.8	6.7	7.8	8.4	7.1	5.2	3.2	1.4	0.6	51.1
Fresno State	0.9	1.6	3.2	5.2	7.0	8.0	8.7	7.6	5.4	3.6	1.7	0.9	53.7
Friant	1.2	1.5	3.1	4.7	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.3
Kerman	0.9	1.5	3.2	4.8	6.6	7.7	8.4	7.2	5.3	3.4	1.4	0.7	51.2
Kingsburg	1.0	1.5	3.4	4.8	6.6	7.7	8.4	7.2	5.3	3.4	1.4	0.7	51.6
Mendota	1.5	2.5	4.6	6.2	7.9	8.6	8.8	7.5	5.9	4.5	2.4	1.5	61.7
Orange Cove	1.2	1.9	3.5	4.7	7.4	8.5	8.9	7.9	5.9	3.7	1.8	1.2	56.7

Appendix A. Reference Evapotranspiration (ETo) Table.

County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
Panoche	1.1	2.0	4.0	5.6	7.8	8.5	8.3	7.3	5.6	3.9	1.8	1.2	57.2
Parlier	1.0	1.9	3.6	5.2	6.8	7.6	8.1	7.0	5.1	3.4	1.7	0.9	52.0
Reedley	1.1	1.5	3.2	4.7	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.3
Westlands	0.9	1.7	3.8	6.3	8.0	8.6	8.6	7.8	5.9	4.3	2.1	1.1	58.8
GLENN													
Orland	1.1	1.8	3.4	5.0	6.4	7.5	7.9	6.7	5.3	3.9	1.8	1.4	52.1
Willows	1.2	1.7	2.9	4.7	6.1	7.2	8.5	7.3	5.3	3.6	1.7	1.0	51.3
HUMBOLDT													
Eureka	0.5	1.1	2.0	3.0	3.7	3.7	3.7	3.7	3.0	2.0	0.9	0.5	27.5
Ferndale	0.5	1.1	2.0	3.0	3.7	3.7	3.7	3.7	3.0	2.0	0.9	0.5	27.5
Garberville	0.6	1.2	2.2	3.1	4.5	5.0	5.5	4.9	3.8	2.4	1.0	0.7	34.9
Hoopa	0.5	1.1	2.1	3.0	4.4	5.4	6.1	5.1	3.8	2.4	0.9	0.7	35.6
IMPERIAL													
Brawley	2.8	3.8	5.9	8.0	10.4	11.5	11.7	10.0	8.4	6.2	3.5	2.1	84.2
Calipatria/Mulberry	2.4	3.2	5.1	6.8	8.6	9.2	9.2	8.6	7.0	5.2	3.1	2.3	70.7
El Centro	2.7	3.5	5.6	7.9	10.1	11.1	11.6	9.5	8.3	6.1	3.3	2.0	81.7
Holtville	2.8	3.8	5.9	7.9	10.4	11.6	12.0	10.0	8.6	6.2	3.5	2.1	84.7
Meloland	2.5	3.2	5.5	7.5	8.9	9.2	9.0	8.5	6.8	5.3	3.1	2.2	71.6
Palo Verde II	2.5	3.3	5.7	6.9	8.5	8.9	8.6	7.9	6.2	4.5	2.9	2.3	68.2
Seeley	2.7	3.5	5.9	7.7	9.7	10.1	9.3	8.3	6.9	5.5	3.4	2.2	75.4
Westmoreland	2.4	3.3	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.4
Yuma	2.5	3.4	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.6
INYO													
Bishop	1.7	2.7	4.8	6.7	8.2	10.9	7.4	9.6	7.4	4.8	2.5	1.6	68.3
Death Valley Jct	2.2	3.3	5.4	7.7	9.8	11.1	11.4	10.1	8.3	5.4	2.9	1.7	79.1
Independence	1.7	2.7	3.4	6.6	8.5	9.5	9.8	8.5	7.1	3.9	2.0	1.5	65.2
Lower Haiwee Res.	1.8	2.7	4.4	7.1	8.5	9.5	9.8	8.5	7.1	4.2	2.6	1.5	67.6
Oasis	2.7	2.8	5.9	8.0	10.4	11.7	11.6	10.0	8.4	6.2	3.4	2.1	83.1
KERN													
Arvin	1.2	1.8	3.5	4.7	6.6	7.4	8.1	7.3	5.3	3.4	1.7	1.0	51.9
Bakersfield	1.0	1.8	3.5	4.7	6.6	7.7	8.5	7.3	5.3	3.5	1.6	0.9	52.4
Bakersfield/Bonanza	1.2	2.2	3.7	5.7	7.4	8.2	8.7	7.8	5.7	4.0	2.1	1.2	57.9
Bakersfield/Greenlee	1.2	2.2	3.7	5.7	7.4	8.2	8.7	7.8	5.7	4.0	2.1	1.2	57.9
Belridge	1.4	2.2	4.1	5.5	7.7	8.5	8.6	7.8	6.0	3.8	2.0	1.5	59.2
Blackwells Corner	1.4	2.1	3.8	5.4	7.0	7.8	8.5	7.7	5.8	3.9	1.9	1.2	56.6
Buttonwillow	1.0	1.8	3.2	4.7	6.6	7.7	8.5	7.3	5.4	3.4	1.5	0.9	52.0
China Lake	2.1	3.2	5.3	7.7	9.2	10.0	11.0	9.8	7.3	4.9	2.7	1.7	74.8
Delano	0.9	1.8	3.4	4.7	6.6	7.7	8.5	7.3	5.4	3.4	1.4	0.7	52.0
Famoso	1.3	1.9	3.5	4.8	6.7	7.6	8.0	7.3	5.5	3.5	1.7	1.3	53.1
Grapevine	1.3	1.8	3.1	4.4	5.6	6.8	7.6	6.8	5.9	3.4	1.9	1.0	49.5
Inyokern	2.0	3.1	4.9	7.3	8.5	9.7	11.0	9.4	7.1	5.1	2.6	1.7	72.4
Isabella Dam	1.2	1.4	2.8	4.4	5.8	7.3	7.9	7.0	5.0	3.2	1.7	0.9	48.4
Lamont	1.3	2.4	4.4	4.6	6.5	7.0	8.8	7.6	5.7	3.7	1.6	0.8	54.4
Lost Hills	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
McFarland/Kern	1.2	2.1	3.7	5.6	7.3	8.0	8.3	7.4	5.6	4.1	2.0	1.2	56.5
Shafter	1.0	1.7	3.4	5.0	6.6	7.7	8.3	7.3	5.4	3.4	1.5	0.9	52.1
Taft	1.3	1.8	3.1	4.3	6.2	7.3	8.5	7.3	5.4	3.4	1.7	1.0	51.2
Tehachapi	1.4	1.8	3.2	5.0	6.1	7.7	7.9	7.3	5.9	3.4	2.1	1.2	52.9

Appendix A. Reference Evapotranspiration (ETo) Table.

County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
KINGS													
Caruthers	1.6	2.5	4.0	5.7	7.8	8.7	9.3	8.4	6.3	4.4	2.4	1.6	62.7
Corcoran	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
Hanford	0.9	1.5	3.4	5.0	6.6	7.7	8.3	7.2	5.4	3.4	1.4	0.7	51.5
Kettleman	1.1	2.0	4.0	6.0	7.5	8.5	9.1	8.2	6.1	4.5	2.2	1.1	60.2
Lemoore	0.9	1.5	3.4	5.0	6.6	7.7	8.3	7.3	5.4	3.4	1.4	0.7	51.7
Stratford	0.9	1.9	3.9	6.1	7.8	8.6	8.8	7.7	5.9	4.1	2.1	1.0	58.7
LAKE													
Lakeport	1.1	1.3	2.6	3.5	5.1	6.0	7.3	6.1	4.7	2.9	1.2	0.9	42.8
Lower Lake	1.2	1.4	2.7	4.5	5.3	6.3	7.4	6.4	5.0	3.1	1.3	0.9	45.4
LASSEN													
Buntingville	1.0	1.7	3.5	4.9	6.2	7.3	8.4	7.5	5.4	3.4	1.5	0.9	51.8
Ravendale	0.6	1.1	2.3	4.1	5.6	6.7	7.9	7.3	4.7	2.8	1.2	0.5	44.9
Susanville	0.7	1.0	2.2	4.1	5.6	6.5	7.8	7.0	4.6	2.8	1.2	0.5	44.0
LOS ANGELES													
Burbank	2.1	2.8	3.7	4.7	5.1	6.0	6.6	6.7	5.4	4.0	2.6	2.0	51.7
Claremont	2.0	2.3	3.4	4.6	5.0	6.0	7.0	7.0	5.3	4.0	2.7	2.1	51.3
El Dorado	1.7	2.2	3.6	4.8	5.1	5.7	5.9	5.9	4.4	3.2	2.2	1.7	46.3
Glendale	2.0	2.2	3.3	3.8	4.7	4.8	5.7	5.6	4.3	3.3	2.2	1.8	43.7
Glendora	2.0	2.5	3.6	4.9	5.4	6.1	7.3	6.8	5.7	4.2	2.6	2.0	53.1
Gorman	1.6	2.2	3.4	4.6	5.5	7.4	7.7	7.1	5.9	3.6	2.4	1.1	52.4
Hollywood Hills	2.1	2.2	3.8	5.4	6.0	6.5	6.7	6.4	5.2	3.7	2.8	2.1	52.8
Lancaster	2.1	3.0	4.6	5.9	8.5	9.7	11.0	9.8	7.3	4.6	2.8	1.7	71.1
Long Beach	1.8	2.1	3.3	3.9	4.5	4.3	5.3	4.7	3.7	2.8	1.8	1.5	39.7
Los Angeles	2.2	2.7	3.7	4.7	5.5	5.8	6.2	5.9	5.0	3.9	2.6	1.9	50.1
Monrovia	2.2	2.3	3.8	4.3	5.5	5.9	6.9	6.4	5.1	3.2	2.5	2.0	50.2
Palmdale	2.0	2.6	4.6	6.2	7.3	8.9	9.8	9.0	6.5	4.7	2.7	2.1	66.2
Pasadena	2.1	2.7	3.7	4.7	5.1	6.0	7.1	6.7	5.6	4.2	2.6	2.0	52.3
Pearblossom	1.7	2.4	3.7	4.7	7.3	7.7	9.9	7.9	6.4	4.0	2.6	1.6	59.9
Pomona	1.7	2.0	3.4	4.5	5.0	5.8	6.5	6.4	4.7	3.5	2.3	1.7	47.5
Redondo Beach	2.2	2.4	3.3	3.8	4.5	4.7	5.4	4.8	4.4	2.8	2.4	2.0	42.6
San Fernando	2.0	2.7	3.5	4.6	5.5	5.9	7.3	6.7	5.3	3.9	2.6	2.0	52.0
Santa Clarita	2.8	2.8	4.1	5.6	6.0	6.8	7.6	7.8	5.8	5.2	3.7	3.2	61.5
Santa Monica	1.8	2.1	3.3	4.5	4.7	5.0	5.4	5.4	3.9	3.4	2.4	2.2	44.2
MADERA													
Chowchilla	1.0	1.4	3.2	4.7	6.6	7.8	8.5	7.3	5.3	3.4	1.4	0.7	51.4
Madera	0.9	1.4	3.2	4.8	6.6	7.8	8.5	7.3	5.3	3.4	1.4	0.7	51.5
Raymond	1.2	1.5	3.0	4.6	6.1	7.6	8.4	7.3	5.2	3.4	1.4	0.7	50.5
MARIN													
Black Point	1.1	1.7	3.0	4.2	5.2	6.2	6.6	5.8	4.3	2.8	1.3	0.9	43.0
Novato	1.3	1.5	2.4	3.5	4.4	6.0	5.9	5.4	4.4	2.8	1.4	0.7	39.8
Point San Pedro	1.1	1.7	3.0	4.2	5.2	6.2	6.6	5.8	4.3	2.8	1.3	0.9	43.0
San Rafael	1.2	1.3	2.4	3.3	4.0	4.8	4.8	4.9	4.3	2.7	1.3	0.7	35.8
MARIPOSA													
Coulterville	1.1	1.5	2.8	4.4	5.9	7.3	8.1	7.0	5.3	3.4	1.4	0.7	48.8
Mariposa	1.1	1.5	2.8	4.4	5.9	7.4	8.2	7.1	5.0	3.4	1.4	0.7	49.0
Yosemite Village	0.7	1.0	2.3	3.7	5.1	6.5	7.1	6.1	4.4	2.9	1.1	0.6	41.4
MENDOCINO													

Appendix A. Reference Evapotranspiration (ETo) Table.

County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
Fort Bragg	0.9	1.3	2.2	3.0	3.7	3.5	3.7	3.7	3.0	2.3	1.2	0.7	29.0
Hopland	1.1	1.3	2.6	3.4	5.0	5.9	6.5	5.7	4.5	2.8	1.3	0.7	40.9
Point Arena	1.0	1.3	2.3	3.0	3.7	3.9	3.7	3.7	3.0	2.3	1.2	0.7	29.6
Sanel Valley	1.0	1.6	3.0	4.6	6.0	7.0	8.0	7.0	5.2	3.4	1.4	0.9	49.1
Ukiah	1.0	1.3	2.6	3.3	5.0	5.8	6.7	5.9	4.5	2.8	1.3	0.7	40.9
MERCED													
Kesterson	0.9	1.7	3.4	5.5	7.3	8.2	8.6	7.4	5.5	3.8	1.8	0.9	55.1
Los Banos	1.0	1.5	3.2	4.7	6.1	7.4	8.2	7.0	5.3	3.4	1.4	0.7	50.0
Merced	1.0	1.5	3.2	4.7	6.6	7.9	8.5	7.2	5.3	3.4	1.4	0.7	51.5
MODOC													
Modoc/Alturas	0.9	1.4	2.8	3.7	5.1	6.2	7.5	6.6	4.6	2.8	1.2	0.7	43.2
MONO													
Bridgeport	0.7	0.9	2.2	3.8	5.5	6.6	7.4	6.7	4.7	2.7	1.2	0.5	43.0
MONTEREY													
Arroyo Seco	1.5	2.0	3.7	5.4	6.3	7.3	7.2	6.7	5.0	3.9	2.0	1.6	52.6
Castroville	1.4	1.7	3.0	4.2	4.6	4.8	4.0	3.8	3.0	2.6	1.6	1.4	36.2
Gonzales	1.3	1.7	3.4	4.7	5.4	6.3	6.3	5.9	4.4	3.4	1.9	1.3	45.7
Greenfield	1.8	2.2	3.4	4.8	5.6	6.3	6.5	6.2	4.8	3.7	2.4	1.8	49.5
King City	1.7	2.0	3.4	4.4	4.4	5.6	6.1	6.7	6.5	5.2	2.2	1.3	49.6
King City-Oasis Rd.	1.4	1.9	3.6	5.3	6.5	7.3	7.4	6.8	5.1	4.0	2.0	1.5	52.7
Long Valley	1.5	1.9	3.2	4.1	5.8	6.5	7.3	6.7	5.3	3.6	2.0	1.2	49.1
Monterey	1.7	1.8	2.7	3.5	4.0	4.1	4.3	4.2	3.5	2.8	1.9	1.5	36.0
Pajaro	1.8	2.2	3.7	4.8	5.3	5.7	5.6	5.3	4.3	3.4	2.4	1.8	46.1
Salinas	1.6	1.9	2.7	3.8	4.8	4.7	5.0	4.5	4.0	2.9	1.9	1.3	39.1
Salinas North	1.2	1.5	2.9	4.1	4.6	5.2	4.5	4.3	3.2	2.8	1.5	1.2	36.9
San Ardo	1.0	1.7	3.1	4.5	5.9	7.2	8.1	7.1	5.1	3.1	1.5	1.0	49.0
San Juan	1.8	2.1	3.4	4.6	5.3	5.7	5.5	4.9	3.8	3.2	2.2	1.9	44.2
Soledad	1.7	2.0	3.4	4.4	5.5	5.4	6.5	6.2	5.2	3.7	2.2	1.5	47.7
NAPA													
Angwin	1.8	1.9	3.2	4.7	5.8	7.3	8.1	7.1	5.5	4.5	2.9	2.1	54.9
Carneros	0.8	1.5	3.1	4.6	5.5	6.6	6.9	6.2	4.7	3.5	1.4	1.0	45.8
Oakville	1.0	1.5	2.9	4.7	5.8	6.9	7.2	6.4	4.9	3.5	1.6	1.2	47.7
St Helena	1.2	1.5	2.8	3.9	5.1	6.1	7.0	6.2	4.8	3.1	1.4	0.9	44.1
Yountville	1.3	1.7	2.8	3.9	5.1	6.0	7.1	6.1	4.8	3.1	1.5	0.9	44.3
NEVADA													
Grass Valley	1.1	1.5	2.6	4.0	5.7	7.1	7.9	7.1	5.3	3.2	1.5	0.9	48.0
Nevada City	1.1	1.5	2.6	3.9	5.8	6.9	7.9	7.0	5.3	3.2	1.4	0.9	47.4
ORANGE													
Irvine	2.2	2.5	3.7	4.7	5.2	5.9	6.3	6.2	4.6	3.7	2.6	2.3	49.6
Laguna Beach	2.2	2.7	3.4	3.8	4.6	4.6	4.9	4.9	4.4	3.4	2.4	2.0	43.2
Santa Ana	2.2	2.7	3.7	4.5	4.6	5.4	6.2	6.1	4.7	3.7	2.5	2.0	48.2
PLACER													
Auburn	1.2	1.7	2.8	4.4	6.1	7.4	8.3	7.3	5.4	3.4	1.6	1.0	50.6
Blue Canyon	0.7	1.1	2.1	3.4	4.8	6.0	7.2	6.1	4.6	2.9	0.9	0.6	40.5
Colfax	1.1	1.5	2.6	4.0	5.8	7.1	7.9	7.0	5.3	3.2	1.4	0.9	47.9
Roseville	1.1	1.7	3.1	4.7	6.2	7.7	8.5	7.3	5.6	3.7	1.7	1.0	52.2
Soda Springs	0.7	0.7	1.8	3.0	4.3	5.3	6.2	5.5	4.1	2.5	0.7	0.7	35.4
Tahoe City	0.7	0.7	1.7	3.0	4.3	5.4	6.1	5.6	4.1	2.4	0.8	0.6	35.5

Appendix A. Reference Evapotranspiration (ETo) Table.

County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
Truckee	0.7	0.7	1.7	3.2	4.4	5.4	6.4	5.7	4.1	2.4	0.8	0.6	36.2
PLUMAS													
Portola	0.7	0.9	1.9	3.5	4.9	5.9	7.3	5.9	4.3	2.7	0.9	0.5	39.4
Quincy	0.7	0.9	2.2	3.5	4.9	5.9	7.3	5.9	4.4	2.8	1.2	0.5	40.2
RIVERSIDE													
Beaumont	2.0	2.3	3.4	4.4	6.1	7.1	7.6	7.9	6.0	3.9	2.6	1.7	55.0
Blythe	2.4	3.3	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.4
Cathedral City	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
Coachella	2.9	4.4	6.2	8.4	10.5	11.9	12.3	10.1	8.9	6.2	3.8	2.4	88.1
Desert Center	2.9	4.1	6.4	8.5	11.0	12.1	12.2	11.1	9.0	6.4	3.9	2.6	90.0
Elsinore	2.1	2.8	3.9	4.4	5.9	7.1	7.6	7.0	5.8	3.9	2.6	1.9	55.0
Indio	**3.1**	3.6	6.5	8.3	10.5	11.0	10.8	9.7	8.3	5.9	3.7	2.7	83.9
RIVERSIDE													
La Quinta	2.4	2.8	5.2	6.5	8.3	8.7	8.5	7.9	6.5	4.5	2.7	2.2	66.2
Mecca	2.6	3.3	5.7	7.2	8.6	9.0	8.8	8.2	6.8	5.0	3.2	2.4	70.8
Oasis	2.9	3.3	5.3	6.1	8.5	8.9	8.7	7.9	6.9	4.8	2.9	2.3	68.4
Palm Desert	2.5	3.4	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.6
Palm Springs	2.0	2.9	4.9	7.2	8.3	8.5	11.6	8.3	7.2	5.9	2.7	1.7	71.1
Rancho California	1.8	2.2	3.4	4.8	5.6	6.3	6.5	6.2	4.8	3.7	2.4	1.8	49.5
Rancho Mirage	2.4	3.3	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.4
Ripley	2.7	3.3	5.6	7.2	8.7	8.7	8.4	7.6	6.2	4.6	2.8	2.2	67.8
Salton Sea North	2.5	3.3	5.5	7.2	8.8	9.3	9.2	8.5	6.8	5.2	3.1	2.3	71.7
Temecula East II	2.3	2.4	4.1	4.9	6.4	7.0	7.8	7.4	5.7	4.1	2.6	2.2	56.7
Thermal	2.4	3.3	5.5	7.6	9.1	9.6	9.3	8.6	7.1	5.2	3.1	2.1	72.8
Riverside UC	2.5	2.9	4.2	5.3	5.9	6.6	7.2	6.9	5.4	4.1	2.9	2.6	56.4
Winchester	2.3	2.4	4.1	4.9	6.4	6.9	7.7	7.5	6.0	3.9	2.6	2.1	56.8
SACRAMENTO													
Fair Oaks	1.0	1.6	3.4	4.1	6.5	7.5	8.1	7.1	5.2	3.4	1.5	1.0	50.5
Sacramento	1.0	1.8	3.2	4.7	6.4	7.7	8.4	7.2	5.4	3.7	1.7	0.9	51.9
Twitchell Island	1.2	1.8	3.9	5.3	7.4	8.8	9.1	7.8	5.9	3.8	1.7	1.2	57.9
SAN BENITO													
Hollister	1.5	1.8	3.1	4.3	5.5	5.7	6.4	5.9	5.0	3.5	1.7	1.1	45.1
San Benito	1.2	1.6	3.1	4.6	5.6	6.4	6.9	6.5	4.8	3.7	1.7	1.2	47.2
San Juan Valley	1.4	1.8	3.4	4.5	6.0	6.7	7.1	6.4	5.0	3.5	1.8	1.4	49.1
SAN BERNARDINO													
Baker	2.7	3.9	6.1	8.3	10.4	11.8	12.2	11.0	8.9	6.1	3.3	2.1	86.6
Barstow NE	2.2	2.9	5.3	6.9	9.0	10.1	9.9	8.9	6.8	4.8	2.7	2.1	71.7
Big Bear Lake	1.8	2.6	4.6	6.0	7.0	7.6	8.1	7.4	5.4	4.1	2.4	1.8	58.6
Chino	2.1	2.9	3.9	4.5	5.7	6.5	7.3	7.1	5.9	4.2	2.6	2.0	54.6
Crestline	1.5	1.9	3.3	4.4	5.5	6.6	7.8	7.1	5.4	3.5	2.2	1.6	50.8
Lake Arrowhead	1.8	2.6	4.6	6.0	7.0	7.6	8.1	7.4	5.4	4.1	2.4	1.8	58.6
Lucerne Valley	2.2	2.9	5.1	6.5	9.1	11.0	11.4	9.9	7.4	5.0	3.0	1.8	75.3
Needles	3.2	4.2	6.6	8.9	11.0	12.4	12.8	11.0	8.9	6.6	4.0	2.7	92.1
Newberry Springs	2.1	2.9	5.3	8.4	9.8	10.9	11.1	9.9	7.6	5.2	3.1	2.0	78.2
San Bernardino	2.0	2.7	3.8	4.6	5.7	6.9	7.9	7.4	5.9	4.2	2.6	2.0	55.6
Twentynine Palms	2.6	3.6	5.9	7.9	10.1	11.2	11.2	10.3	8.6	5.9	3.4	2.2	82.9
Victorville	2.0	2.6	4.6	6.2	7.3	8.9	9.8	9.0	6.5	4.7	2.7	2.1	66.2

SAN DIEGO													
Chula Vista	2.2	2.7	3.4	3.8	4.9	4.7	5.5	4.9	4.5	3.4	2.4	2.0	44.2
Escondido SPV	2.4	2.6	3.9	4.7	5.9	6.5	7.1	6.7	5.3	3.9	2.8	2.3	54.2
Miramar	2.3	2.5	3.7	4.1	5.1	5.4	6.1	5.8	4.5	3.3	2.4	2.1	47.1
Oceanside	2.2	2.7	3.4	3.7	4.9	4.6	4.6	5.1	4.1	3.3	2.4	2.0	42.9
Otay Lake	2.3	2.7	3.9	4.6	5.6	5.9	6.2	6.1	4.8	3.7	2.6	2.2	50.4
Pine Valley	1.5	2.4	3.8	5.1	6.0	7.0	7.8	7.3	6.0	4.0	2.2	1.7	54.8
Ramona	2.1	2.1	3.4	4.6	5.2	6.3	6.7	6.8	5.3	4.1	2.8	2.1	51.6
San Diego	2.1	2.4	3.4	4.6	5.1	5.3	5.7	5.6	4.3	3.6	2.4	2.0	46.5
Santee	2.1	2.7	3.7	4.5	5.5	6.1	6.6	6.2	5.4	3.8	2.6	2.0	51.1
Torrey Pines	2.2	2.3	3.4	3.9	4.0	4.1	4.6	4.7	3.8	2.8	2.0	2.0	39.8
Warner Springs	1.6	2.7	3.7	4.7	5.7	7.6	8.3	7.7	6.3	4.0	2.5	1.3	56.0
SAN FRANCISCO													
San Francisco	1.5	1.3	2.4	3.0	3.7	4.6	4.9	4.8	4.1	2.8	1.3	0.7	35.1
SAN JOAQUIN													
Farmington	1.5	1.5	2.9	4.7	6.2	7.6	8.1	6.8	5.3	3.3	1.4	0.7	50.0
SAN JOAQUIN													
Lodi West	1.0	1.6	3.3	4.3	6.3	6.9	7.3	6.4	4.5	3.0	1.4	0.8	46.7
Manteca	0.9	1.7	3.4	5.0	6.5	7.5	8.0	7.1	5.2	3.3	1.6	0.9	51.2
Stockton	0.8	1.5	2.9	4.7	6.2	7.4	8.1	6.8	5.3	3.2	1.4	0.6	49.1
Tracy	1.0	1.5	2.9	4.5	6.1	7.3	7.9	6.7	5.3	3.2	1.3	0.7	48.5
SAN LUIS OBISPO													
Arroyo Grande	2.0	2.2	3.2	3.8	4.3	4.7	4.3	4.6	3.8	3.2	2.4	1.7	40.0
Atascadero	1.2	1.5	2.8	3.9	4.5	6.0	6.7	6.2	5.0	3.2	1.7	1.0	43.7
Morro Bay	2.0	2.2	3.1	3.5	4.3	4.5	4.6	4.6	3.8	3.5	2.1	1.7	39.9
Nipomo	2.2	2.5	3.8	5.1	5.7	6.2	6.4	6.1	4.9	4.1	2.9	2.3	52.1
Paso Robles	1.6	2.0	3.2	4.3	5.5	6.3	7.3	6.7	5.1	3.7	2.1	1.4	49.0
San Luis Obispo	2.0	2.2	3.2	4.1	4.9	5.3	4.6	5.5	4.4	3.5	2.4	1.7	43.8
San Miguel	1.6	2.0	3.2	4.3	5.0	6.4	7.4	6.8	5.1	3.7	2.1	1.4	49.0
San Simeon	2.0	2.0	2.9	3.5	4.2	4.4	4.6	4.3	3.5	3.1	2.0	1.7	38.1
SAN MATEO													
Hal Moon Bay	1.5	1.7	2.4	3.0	3.9	4.3	4.3	4.2	3.5	2.8	1.3	1.0	33.7
Redwood City	1.5	1.8	2.9	3.8	5.2	5.3	6.2	5.6	4.8	3.1	1.7	1.0	42.8
Woodside	1.8	2.2	3.4	4.8	5.6	6.3	6.5	6.2	4.8	3.7	2.4	1.8	49.5
SANTA BARBARA													
Betteravia	2.1	2.6	4.0	5.2	6.0	5.9	5.8	5.4	4.1	3.3	2.7	2.1	49.1
Carpenteria	2.0	2.4	3.2	3.9	4.8	5.2	5.5	5.7	4.5	3.4	2.4	2.0	44.9
Cuyama	2.1	2.4	3.8	5.4	6.9	7.9	8.5	7.7	5.9	4.5	2.6	2.0	59.7
Goleta	2.1	2.5	3.9	5.1	5.7	5.7	5.4	5.4	4.2	3.2	2.8	2.2	48.1
Goleta Foothills	2.3	2.6	3.7	5.4	5.3	5.6	5.5	5.7	4.5	3.9	2.8	2.3	49.6
Guadalupe	2.0	2.2	3.2	3.7	4.9	4.6	4.5	4.6	4.1	3.3	2.4	1.7	41.1
Lompoc	2.0	2.2	3.2	3.7	4.8	4.6	4.9	4.8	3.9	3.2	2.4	1.7	41.1
Los Alamos	1.8	2.0	3.2	4.1	4.9	5.3	5.7	5.5	4.4	3.7	2.4	1.6	44.6
Santa Barbara	2.0	2.5	3.2	3.8	4.6	5.1	5.5	4.5	3.4	2.4	1.8	1.8	40.6
Santa Maria	1.8	2.3	3.7	5.1	5.7	5.8	5.6	5.3	4.2	3.5	2.4	1.9	47.4
Santa Ynez	1.7	2.2	3.5	5.0	5.8	6.2	6.4	6.0	4.5	3.6	2.2	1.7	48.7
Sisquoc	2.1	2.5	3.8	4.1	6.1	6.3	6.4	5.8	4.7	3.4	2.3	1.8	49.2
Solvang	2.0	2.0	3.3	4.3	5.0	5.6	6.1	5.6	4.4	3.7	2.2	1.6	45.6

SANTA CLARA													
Gilroy	1.3	1.8	3.1	4.1	5.3	5.6	6.1	5.5	4.7	3.4	1.7	1.1	43.6
Los Gatos	1.5	1.8	2.8	3.9	5.0	5.6	6.2	5.5	4.7	3.2	1.7	1.1	42.9
Morgan Hill	1.5	1.8	3.4	4.2	6.3	7.0	7.1	6.0	5.1	3.7	1.9	1.4	49.5
Palo Alto	1.5	1.8	2.8	3.8	5.2	5.3	6.2	5.6	5.0	3.2	1.7	1.0	43.0
San Jose	1.5	1.8	3.1	4.1	5.5	5.8	6.5	5.9	5.2	3.3	1.8	1.0	45.3
SANTA CRUZ													
De Laveaga	1.4	1.9	3.3	4.7	4.9	5.3	5.0	4.8	3.6	3.0	1.6	1.3	40.8
Green Valley Rd	1.2	1.8	3.2	4.5	4.6	5.4	5.2	5.0	3.7	3.1	1.6	1.3	40.6
Santa Cruz	1.5	1.8	2.6	3.5	4.3	4.4	4.8	4.4	3.8	2.8	1.7	1.2	36.6
Watsonville	1.5	1.8	2.7	3.7	4.6	4.5	4.9	4.2	4.0	2.9	1.8	1.2	37.7
Webb	1.8	2.2	3.7	4.8	5.3	5.7	5.6	5.3	4.3	3.4	2.4	1.8	46.2
SHASTA													
Burney	0.7	1.0	2.1	3.5	4.9	5.9	7.4	6.4	4.4	2.9	0.9	0.6	40.9
Fall River Mills	0.6	1.0	2.1	3.7	5.0	6.1	7.8	6.7	4.6	2.8	0.9	0.5	41.8
Glenburn	0.6	1.0	2.1	3.7	5.0	6.3	7.8	6.7	4.7	2.8	0.9	0.6	42.1
McArthur	0.7	1.4	2.9	4.2	5.6	6.9	8.2	7.2	5.0	3.0	1.1	0.6	46.8
Redding	1.2	1.4	2.6	4.1	5.6	7.1	8.5	7.3	5.3	3.2	1.4	0.9	48.8
SIERRA													
Downieville	0.7	1.0	2.3	3.5	5.0	6.0	7.4	6.2	4.7	2.8	0.9	0.6	41.3
Sierraville	0.7	1.1	2.2	3.2	4.5	5.9	7.3	6.4	4.3	2.6	0.9	0.5	39.6
SISKIYOU													
Happy Camp	0.5	0.9	2.0	3.0	4.3	5.2	6.1	5.3	4.1	2.4	0.9	0.5	35.1
MacDoel	1.0	1.7	3.1	4.5	5.9	7.2	8.1	7.1	5.1	3.1	1.5	1.0	49.0
Mt Shasta	0.5	0.9	2.0	3.0	4.5	5.3	6.7	5.7	4.0	2.2	0.7	0.5	36.0
Tule lake FS	0.7	1.3	2.7	4.0	5.4	6.3	7.1	6.4	4.7	2.8	1.0	0.6	42.9
Weed	0.5	0.9	2.0	2.5	4.5	5.3	6.7	5.5	3.7	2.0	0.9	0.5	34.9
Yreka	0.6	0.9	2.1	3.0	4.9	5.8	7.3	6.5	4.3	2.5	0.9	0.5	39.2
SOLANO													
Benicia	1.3	1.4	2.7	3.8	4.9	5.0	6.4	5.5	4.4	2.9	1.2	0.7	40.3
Dixon	0.7	1.4	3.2	5.2	6.3	7.6	8.2	7.2	5.5	4.3	1.6	1.1	52.1
Fairfield	1.1	1.7	2.8	4.0	5.5	6.1	7.8	6.0	4.8	3.1	1.4	0.9	45.2
Hastings Tract	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
Putah Creek	1.0	1.6	3.2	4.9	6.1	7.3	7.9	7.0	5.3	3.8	1.8	1.2	51.0
Rio Vista	0.9	1.7	2.8	4.4	5.9	6.7	7.9	6.5	5.1	3.2	1.3	0.7	47.0
Suisun Valley	0.6	1.3	3.0	4.7	5.8	7.0	7.7	6.8	5.3	3.8	1.4	0.9	48.3
Winters	0.9	1.7	3.3	5.0	6.4	7.5	7.9	7.0	5.2	3.5	1.6	1.0	51.0
SONOMA													
Bennett Valley	1.1	1.7	3.2	4.1	5.5	6.5	6.6	5.7	4.5	3.1	1.5	0.9	44.4
Cloverdale	1.1	1.4	2.6	3.4	5.0	5.9	6.2	5.6	4.5	2.8	1.4	0.7	40.7
Fort Ross	1.2	1.4	2.2	3.0	3.7	4.5	4.2	4.3	3.4	2.4	1.2	0.5	31.9
Healdsburg	1.2	1.5	2.4	3.5	5.0	5.9	6.1	5.6	4.5	2.8	1.4	0.7	40.8
Lincoln	1.2	1.7	2.8	4.7	6.1	7.4	8.4	7.3	5.4	3.7	1.9	1.2	51.9
Petaluma	1.2	1.5	2.8	3.7	4.6	5.6	4.6	5.7	4.5	2.9	1.4	0.9	39.6
Santa Rosa	1.2	1.7	2.8	3.7	5.0	6.0	6.1	5.9	4.5	2.9	1.5	0.7	42.0
Valley of the Moon	1.0	1.6	3.0	4.5	5.6	6.6	7.1	6.3	4.7	3.3	1.5	1.0	46.1
Windsor	0.9	1.6	3.0	4.5	5.5	6.5	6.5	5.9	4.4	3.2	1.4	1.0	44.2
STANISLAUS													
Denair	1.0	1.9	3.6	4.7	7.0	7.9	8.0	6.1	5.3	3.4	1.5	1.0	51.4
La Grange	1.2	1.5	3.1	4.7	6.2	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.2
Modesto	0.9	1.4	3.2	4.7	6.4	7.7	8.1	6.8	5.0	3.4	1.4	0.7	49.7

Newman	1.0	1.5	3.2	4.6	6.2	7.4	8.1	6.7	5.0	3.4	1.4	0.7	49.3
Oakdale	1.2	1.5	3.2	4.7	6.2	7.7	8.1	7.1	5.1	3.4	1.4	0.7	50.3
Patterson	1.3	2.1	4.2	5.4	7.9	8.6	8.2	6.6	5.8	4.0	1.9	1.3	57.3
Turlock	0.9	1.5	3.2	4.7	6.5	7.7	8.2	7.0	5.1	3.4	1.4	0.7	50.2
SUTTER													
Nicolaus	0.9	1.6	3.2	4.9	6.3	7.5	8.0	6.9	5.2	3.4	1.5	0.9	50.2
Yuba City	1.3	2.1	2.8	4.4	5.7	7.2	7.1	6.1	4.7	3.2	1.2	0.9	46.7
TEHAMA													
Corning	1.2	1.8	2.9	4.5	6.1	7.3	8.1	7.2	5.3	3.7	1.7	1.1	50.7
Gerber	1.0	1.8	3.5	5.0	6.6	7.9	8.7	7.4	5.8	4.1	1.8	1.1	54.7
Gerber Dryland	0.9	1.6	3.2	4.7	6.7	8.4	9.0	7.9	6.0	4.2	2.0	1.0	55.5
Red Bluff	1.2	1.8	2.9	4.4	5.9	7.4	8.5	7.3	5.4	3.5	1.7	1.0	51.1
TRINITY													
Hay Fork	0.5	1.1	2.3	3.5	4.9	5.9	7.0	6.0	4.5	2.8	0.9	0.7	40.1
Weaverville	0.6	1.1	2.2	3.3	4.9	5.9	7.3	6.0	4.4	2.7	0.9	0.7	40.0
TULARE													
Alpaugh	0.9	1.7	3.4	4.8	6.6	7.7	8.2	7.3	5.4	3.4	1.4	0.7	51.6
Badger	1.0	1.3	2.7	4.1	6.0	7.3	7.7	7.0	4.8	3.3	1.4	0.7	47.3
Delano	1.1	1.9	4.0	4.9	7.2	7.9	8.1	7.3	5.4	3.2	1.5	1.2	53.6
Dinuba	1.1	1.5	3.2	4.7	6.2	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.2
Lindcove	0.9	1.6	3.0	4.8	6.5	7.6	8.1	7.2	5.2	3.4	1.6	0.9	50.6
Porterville	1.2	1.8	3.4	4.7	6.6	7.7	8.5	7.3	5.3	3.4	1.4	0.7	52.1
Visalia	0.9	1.7	3.3	5.1	6.8	7.7	7.9	6.9	4.9	3.2	1.5	0.8	50.7
TUOLUMNE													
Groveland	1.1	1.5	2.8	4.1	5.7	7.2	7.9	6.6	5.1	3.3	1.4	0.7	47.5
Sonora	1.1	1.5	2.8	4.1	5.8	7.2	7.9	6.7	5.1	3.2	1.4	0.7	47.6
VENTURA													
Camarillo	2.2	2.5	3.7	4.3	5.0	5.2	5.9	5.4	4.2	3.0	2.5	2.1	46.1
Oxnard	2.2	2.5	3.2	3.7	4.4	4.6	5.4	4.8	4.0	3.3	2.4	2.0	42.3
Piru	2.8	2.8	4.1	5.6	6.0	6.8	7.6	7.8	5.8	5.2	3.7	3.2	61.5
Port Hueneme	2.0	2.3	3.3	4.6	4.9	4.9	4.9	5.0	3.7	3.2	2.5	2.2	43.5
Thousand Oaks	2.2	2.6	3.4	4.5	5.4	5.9	6.7	6.4	5.4	3.9	2.6	2.0	51.0
Ventura	2.2	2.6	3.2	3.8	4.6	4.7	5.5	4.9	4.1	3.4	2.5	2.0	43.5
YOLO													
Bryte	0.9	1.7	3.3	5.0	6.4	7.5	7.9	7.0	5.2	3.5	1.6	1.0	51.0
Davis	1.0	1.9	3.3	5.0	6.4	7.6	8.2	7.1	5.4	4.0	1.8	1.0	52.5
Esparto	1.0	1.7	3.4	5.5	6.9	8.1	8.5	7.5	5.8	4.2	2.0	1.2	55.8
Winters	1.7	1.7	2.9	4.4	5.8	7.1	7.9	6.7	5.3	3.3	1.6	1.0	49.4
Woodland	1.0	1.8	3.2	4.7	6.1	7.7	8.2	7.2	5.4	3.7	1.7	1.0	51.6
Zamora	1.1	1.9	3.5	5.2	6.4	7.4	7.8	7.0	5.5	4.0	1.9	1.2	52.8
YUBA													
Browns Valley	1.0	1.7	3.1	4.7	6.1	7.5	8.5	7.6	5.7	4.1	2.0	1.1	52.9
Brownsville	1.1	1.4	2.6	4.0	5.7	6.8	7.9	6.8	5.3	3.4	1.5	0.9	47.4

* The values in this table were derived from:

1) California Irrigation Management Information System (CIMIS);
2) Reference EvapoTranspiration Zones Map, UC Dept. of Land, Air & Water Resources and California Dept of Water Resources 1999; and
3) Reference Evapotranspiration for California, University of California, Department of Agriculture and Natural Resources (1987) Bulletin 1922,
4) Determining Daily Reference Evapotranspiration, Cooperative Extension UC Division of Agriculture and Natural Resources (1987), Publication Leaflet 21426

~~Appendix B – Sample Water Efficient Landscape Worksheet.~~

~~WATER EFFICIENT LANDSCAPE WORKSHEET~~

~~This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package.~~
~~Please complete all sections (A and B) of the worksheet.~~

~~SECTION A. HYDROZONE INFORMATION TABLE~~

~~Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per hydrozone.~~

~~Hydrozone*~~	~~Zone or Valve~~	~~Irrigation Method**~~	~~Area (Sq. Ft.)~~	~~% of Landscape Area~~
	~~Total~~			~~100%~~

~~***Hydrozone***~~
~~*HW = High Water Use Plants*~~
~~*MW = Moderate Water Use Plants*~~
~~*LW = Low Water Use Plants*~~

~~****Irrigation Method***~~
~~*MS = Micro-spray*~~
~~*S = Spray*~~
~~*R = Rotor*~~
~~*B= Bubbler*~~
~~*D= Drip*~~
~~*O = Other*~~

SECTION B. WATER BUDGET CALCULATIONS

Section B1. Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using theseis equations:

MAWA = (ETo) (0.62) [(0.57 x LA) + (0.3 x SLA)]
where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration from Appendix A (inches per year)
0.7 = ET Adjustment Factor (ETAF)
LA = Landscaped Area includes Special Landscape Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
0.3 = the additional ET Adjustment Factors for Special Landscape Area in residential and non-residential areas, respectively (1.0 - 0.7 = 0.3)

Maximum Applied Water Allowance = _____**gallons per year**

Show calculations.

Effective Precipitation (Eppt)

If considering Effective Precipitation, use 25% of annual precipitation. Use the following equation to calculate Maximum Applied Water Allowance:

MAWA= (ETo – Eppt) (0.62) [(0.70.5 x LA) + (0.3 x SLA)]

Maximum Applied Water Allowance = _____**gallons per year**

Show calculations.

Section B2. Estimated Total Water Use (ETWU)

The project's Estimated Total Water Use is calculated using the following formula:

$$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$$

where:

ETWU = Estimated total water use per year (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
PF = Plant Factor (see Definitions)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor (to gallons per square foot)
IE = Irrigation Efficiency (minimum 0.71

Hydrozone Table for Calculating ETWU

Please complete the hydrozone table(s). Use as many tables as necessary.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)	Area (HA) (square feet)	PF x HA (square feet)
			Sum	
	SLA			

Estimated Total Water Use = _____gallons

Show calculations.

Appendix B – Sample Water Efficient Landscape Worksheet.

WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package.

Reference Evapotranspiration (ETo) _____

Hydrozone # /Planting Description[a]	Plant Factor (PF)	Irrigation Method[b]	Irrigation Efficiency (IE)[c]	ETAF (PF/IE)	Landscape Area (sq, ft,)	ETAF x Area	Estimated Total Water Use (ETWU)[e]
Regular Landscape Areas							
				Totals	(A)	(B)	
Special Landscape Areas							
				1			
				1			
				1			
				Totals	(C)	(D)	
						ETWU Total	
						Maximum Allowed Water Allowance (MAWA)[e]	

[a] ***Hydrozone #/Planting Description***
E.g
1.) front lawn
2.) low water use plantings
3.) medium water use planting

[b] ***Irrigation Method***
overhead spray or drip

[c] ***Irrigation Efficiency***
0.75 for spray head
0.81 for drip

[d] ***ETWU*** **(Annual Gallons Required) =**
Eto x 0.62 x ETAF x Area
where 0.62 is a conversion factor that acre-inches per acre per year to gallons per square foot per year.

[e] ***MAWA (Annual Gallons Allowed) = (****Eto) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]*
where 0.62 is a conversion factor that acre-inches per acre per year to gallons per square foot per year, LA is the total landscape area in square feet, SLA is the total special landscape area in square feet,
and ETAF is .55 for residential areas and 0.45 for non-residential areas.

ETAF Calculations

Regular Landscape Areas

Total ETAF x Area	(B)
Total Area	(A)
Average ETAF	**B ÷ A**

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas

Total ETAF x Area	(B+D)
Total Area	(A+C)
Sitewide ETAF	**(B+D) ÷ (A+C)**

Appendix C – Sample Certificate of Completion.

CERTIFICATE OF COMPLETION

This certificate is filled out by the project applicant upon completion of the landscape project.

PART 1. PROJECT INFORMATION SHEET

Date		
Project Name		
Name of Project Applicant	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Project Address and Location:

Street Address		Parcel, tract or lot number, if available.
City		Latitude/Longitude (optional)
State	Zip Code	

Property Owner or his/her designee:

Name	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Property Owner

"I/we certify that I/we have received copies of all the documents within the Landscape Documentation Package and the Certificate of Completion and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule."

_____

Property Owner Signature Date

Please answer the questions below:

1. Date the Landscape Documentation Package was submitted to the local agency_____
2. Date the Landscape Documentation Package was approved by the local agency_____
3. Date that a copy of the Water Efficient Landscape Worksheet (including the Water Budget Calculation) was submitted to the local water purveyor_____

PART 2. CERTIFICATION OF INSTALLATION ACCORDING TO THE LANDSCAPE DOCUMENTATION PACKAGE

"I/we certify that based upon periodic site observations, the work has been ~~substantially~~ completed in accordance with the ordinance and that the landscape planting and irrigation installation conform with the criteria and specifications of the approved Landscape Documentation Package."

Signature*	Date	
Name (print)	Telephone No.	
	Fax No.	
Title	Email Address	
License No. or Certification No.		
Company	Street Address	
City	State	Zip Code

*Signer of the landscape design plan, signer of the irrigation plan, or a licensed landscape contractor.

PART 3. IRRIGATION SCHEDULING

Attach parameters for setting the irrigation schedule on controller per ordinance Section 492.10.

PART 4. SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE

Attach schedule of Landscape and Irrigation Maintenance per ordinance Section 492.11.

PART 5. LANDSCAPE IRRIGATION AUDIT REPORT

Attach Landscape Irrigation Audit Report per ordinance Section 492.12.

PART 6. SOIL MANAGEMENT REPORT

Attach soil analysis report, if not previously submitted with the Landscape Documentation Package per ordinance Section 492.6~~5~~.

Attach documentation verifying implementation of recommendations from soil analysis report per ordinance Section 492.6~~5~~.

Appendix D – Sample Water Efficient Landscape Worksheet.

Appendix D – Prescriptive Compliance Option

(a) This appendix contains prescriptive requirements which may be used as a compliance option to the Model Water Efficient Landscape Ordinance.

(b)Compliance with the following items is mandatory and must be documented on a landscape plan in order to use the prescriptive compliance option:

(1) Submit a Landscape Documentation Package which includes the following elements:

(A) date

(B) project applicant

(C) project address (if available, parcel and/or lot number(s))

(D) total landscape area (square feet), including a breakdown of turf and plant material

(E) project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed)

(F) water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well

(G) contact information for the project applicant and property owner

(H) applicant signature and date with statement, "I agree to comply with the requirements of the prescriptive compliance option to the MWELO".

(2) Incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area (unless contra-indicated by a soil test);

(3) Plant material shall comply with all of the following;

(A) For residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75% of the plant area excluding edibles and areas using recycled water; For non-residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 100% of the plant area excluding edibles and areas using recycled water;

(B) A minimum three inch (3″) layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.

(4) Turf shall comply with all of the following:

(A) Turf shall not exceed 25% of the landscape area in residential areas, and there shall be no turf in non-residential areas;

(B) Turf shall not be planted on sloped areas which exceed a slope of 1 foot vertical elevation change for every 4 feet of horizontal length;

(C) Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to a parking strip and used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or by other technology that creates no overspray or runoff.

(5) Irrigation systems shall comply with the following:

(A) Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data.

(B) Irrigation controllers shall be of a type which does not lose programming date in the event the primary power source is interrupted.

(C) Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturers recommended pressure range.

(D) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be installed as close as possible to the point of connection of the water supply.

(E) All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014. "Landscape Irrigation Sprinkler and Emitter Standard," All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.

(c) At the time of final inspection, the permit applicant must provide the owner of the property with a certificate of completion, certificate of installation, irrigation schedule and a schedule of landscape and irrigation maintenance.

Staff Report

File #: LB 15-010

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Director of Utilities and Environmental Services

SUBJECT
Options for Addressing Litter from Take-Out Food & Beverage Establishments

RECOMMENDATION
That the Committee reviews, comments on this report, and provides policy direction.

SUMMARY

Staff presents this report to introduce a range of options for dealing with litter from take-out food and beverage establishments. Depending on direction from the Committee, staff will conduct additional research and community outreach to further explore the appropriate path forward for Hayward. Staff anticipates returning to the Committee with more information before presenting a recommendation to the full City Council.

BACKGROUND

At the Committee's March 23, 2015 meeting, staff noted that trash from fast food restaurants and other food and beverage establishments that offer take-out items has long been an ongoing community concern. The Committee asked staff to research the issue and return with creative solutions. The Committee suggested that convenience stores, liquor stores, and tobacco shops be included.

As one of Council's primary priorities is to keep the City clean, the City allocates significant resources to efforts to remove litter throughout the community. Efforts include several full time employees who spend the majority of their time removing dumped trash. Several more City employees are dedicated to street sweeping and cleaning storm drains. The City also sponsors weekend clean-up events, the annual clean-up day at Weekes Park, and the Adopt a Block program. Altogether, the City spends more than $2 million per year on litter collection. Some of the trash that remains on the streets eventually ends up in the storm drain inlets and makes its way to creeks and the shoreline.

Under the National Pollutant Discharge Elimination System (NPDES) permit program for non-point source discharges to the waters of the state, the City is regulated by the Municipal Regional Stormwater Permit (MRP) for its stormwater discharge to the San Francisco Bay. ("Non-point source", or diffuse, discharge does not originate from an identifiable location.) The MRP includes Provision C.10, Trash Load

Reduction, which requires a 70% reduction in trash by the year 2017 and a 100% reduction by the year 2022.

Current Ordinances - The City has two ordinances that directly address litter. Hayward Municipal Code (HMC) Chapter 5 (Sanitation and Health), Article 1 (Solid Waste Collection and Disposal) addresses the location and use of public litter receptacles:

> SEC. 5-1.20 SOLID WASTE RECEPTACLES. PUBLIC PLACES. Except as otherwise provided herein, no Solid Waste shall be placed or kept on or in any public street, sidewalk, footpath, or any public place whatsoever. Only Solid Waste receptacles owned by the City of Hayward shall be placed or kept on or in any public street, sidewalk, footpath, or any public place for use by pedestrians or other Persons using said street or public place to deposit small articles of waste carried by them. It shall be unlawful to place or cause to be placed any Solid Waste originating within or upon any private property into said receptacles.

Chapter 11 (Public Utilities), Article 5 (Stormwater Management and Urban Runoff Control) addresses litter that has the potential to enter the storm drain system:

> SEC. 11-5.22 REDUCTION OF POLLUTANTS IN STORMWATER. Any person engaged in activities which will or may result in pollutants entering the City storm sewer system shall undertake all practicable measures to reduce such pollutants. Examples of activities that might result in pollutants entering the City storm sewer system include littering and ownership or use of facilities which may be a source of pollutants such as but not limited to parking lots, gasoline stations, industrial facilities, commercial facilities, and stores fronting City streets. The following are minimal requirements applicable to such persons:
>
> a) Littering Prohibited. No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, placed, left, or maintained, any 'refuse,' 'rubbish,' 'garbage,' or other discarded or abandoned objects, articles, and accumulations, in or upon any street, alley, sidewalk, storm drain, inlet, catch basin, conduit, or other drainage structures, business place, or upon any public or private lot of land in the City, so that the same might be or become a pollutant. Nor shall any person throw or deposit litter in any fountain, pond, lake, stream, or any other body of water in a park or elsewhere within the City. The occupant or tenant, or in the absence of occupant or tenant, the owner, lessee, or proprietor, of any real property in the City of Hayward that abuts a paved sidewalk shall maintain said sidewalk free of dirt or litter to the maximum extent practicable. Sweepings from said sidewalk shall not be swept or otherwise made or allowed to go into the gutter or roadway, but shall be disposed of in receptacles maintained on said real property as required for the disposal of garbage.
>
> b) Standard of Maintenance for Parking Lots and Similar Structures. Persons owning or operating a parking lot, a gasoline station, or a similar structure or uses shall clean the property as frequently and thoroughly as practicable in a manner that does not result in discharge of pollutants to the City storm sewer system.

The above ordinances prohibit littering and require property owners to keep sidewalks clean, but they do not require occupants, tenants or property owners to keep the gutter or street free of litter.

The General Commercial zoning regulations include performance standards for drive-in uses, which include drive-through restaurants, drive-through coffee shop, gas stations, and gas stations with mini-marts.

> Section 10-1.1045 J(3). The premises shall be kept clean, and the operator shall make all reasonable efforts to see that no trash or litter originating from the use is deposited on adjacent properties. For drive-in restaurants or other uses which typically generate trash or litter, adequate trash containers, as determined by the Planning Director, shall

be required and employees shall be required daily to pick up trash or litter originating from the site upon the site and within 300 feet of the perimeter of the property.

When use permits for certain land uses are approved, conditions of approval are often included to require owners/managers to keep premises clean, but only three have a condition requiring the operator to pick up litter. One of the three is the McDonalds located at Jackson and Watkins, which includes the following condition:

> "Employees shall daily pick up the trash originating from the site that is deposited on adjacent properties within 300 feet of the perimeter of the site."

DISCUSSION

This report presents strategies that have been implemented by communities across the country to provide a range of options for Hayward. Staff looks forward to receiving direction from the Committee.

Litter from fast food, convenience markets (including mini marts at gas stations), and tobacco products is a significant issue throughout the Bay Area and the country. In 2011, Clean Water Action (CWA), a nonprofit that advocates for clean water and environmental protection, completed a study wherein samples were collected from Oakland, Richmond, San Jose, and South San Francisco and found that "the biggest source (49 percent) of litter is fast food. The five most significant sources were McDonalds, Burger King, Seven Eleven, Starbucks and Wendy's." According to Save the Bay, 65 percent of cigarette butts are littered and approximately 3 billion cigarette butts are littered in the Bay Area each year.

When Council adopted the Smoking Pollution Control ordinance (HMC Chapter 5, Article 6) in 2008, one of the supporting reasons identified was to "protect the public from smoking and tobacco-related litter and pollution," However, smoking still occurs in public places and many cigarette butts come from moving vehicles.

While pedestrians are certainly responsible for much of the litter found throughout the community, trash from moving vehicles is also a significant source of pollution. A study by Keep America Beautiful (see Attachment I) found that for litter more than four inches, 52 percent comes from motorists, 21 percent is from vehicles with improperly secured loads, and 18 percent comes from pedestrians.

Requirements for Property Owners

Some cities have adopted ordinances requiring property owners to clean not only sidewalks, but also gutters and beyond. Staff surveyed cities in Alameda County and the Bay Area and has not be able to find any local examples of such ordinances. The City of Charleston, South Carolina has an ordinance that requires property owners to keep sidewalks, curbs, and gutters clean (Sec. 14-5. - Duty of owners, etc., to keep property clean). The ordinance also requires non-resident property owners to designate a resident agent to maintain the vacant property.

a) "It shall be the duty of the owner, agent, occupant or lessee to keep exterior private and public property free of litter and unsightly growth. This requirement applies not only to removal of loose litter, but to materials that already are, or become, trapped at such locations as fences and wall bases, grassy and planted areas, borders, embankments and other lodging points.
c) Owners, agents, occupants or lessees whose properties face on a city right-of-way shall be responsible for keeping up

to, and including, the curb, gutter or street line free of litter and unsightly growth.

d) It shall be unlawful to sweep or push litter from buildings, property, sidewalks and strips into streets, sidewalks and the storm drainage system. Sidewalk and strip sweepings must be picked up and put into household or commercial material containers.

e) It shall be the duty of every non-resident owner of a vacant lot or other vacant property to appoint a resident agent who shall have responsibility for keeping that lot or other property free of litter and unsightly growth.

f) If an owner, agent, occupant or lessee fails to remove litter or unsightly growth from any private and public property, the city sanitation division shall be authorized to serve written notice to the owner or appointed agent to correct such violation within five (5) days. Failure to comply shall constitute grounds for prosecution.

g) It shall be unlawful for the owner of any property in the city to disobey or fail to comply with any provisions of this chapter. (Code 1975, § 26-9; Ord. No. 1982-52, § 1, 6-8-82)"

The City of St. Louis (Section 11.18.060) requires drive-in restaurants to pick up litter at least once every 12 hours and other businesses at least once every 24 hours. St. Louis also requires property owners to clean to the centerline of the street:

> "All persons owning or occupying any private property, public building or premises shall keep such premises, as the case may be, including the sidewalk, parkway, gutter, street, and alley (to the centerline thereof) adjoining or abutting to the place so occupied free and clear of litter."

Public Litter Containers - The City of Philadelphia City Council recently approved an ordinance that would require any store that sells any type of food to have a trash can within ten feet of the entrance. Hayward currently maintains approximately 280 public litter containers located on or adjacent to public sidewalks. One option for Hayward may be to require certain businesses to locate trash cans adjacent to the public sidewalk. For downtown businesses, HMC Section 5-1.20 would need to be amended to allow private trash cans on public sidewalks.

Deemed Approved Ordinance - As noted above, the City has included conditions of approval for fast food establishments requiring litter to be picked up on a regular basis. Newer establishments have use permits on file, but older restaurants do not. A deemed approved ordinance, such as the one adopted in November 2013 for alcoholic beverage outlets, could allow for such conditions or performance standards to be applied to existing establishments that do not have use permits and establishments that have use permits, but do not include a condition about picking up litter. Section 10-1.2769 of the Zoning Ordinance includes eight performance standards that apply to all deemed approved alcoholic beverage establishments.

Trash Capture Devices - The installation of trash capture devices or a filtration equipment in the storm drain system does not reduce litter deposited on streets and sidewalks, but they do limit the trash that enters the creeks and the San Francisco Bay. Hayward currently has one very large and 79 smaller such devices that were installed in inlets in the public right-of-way at the City's expense. The Cities of Dublin and Union City typically require, as a condition of approval, developers to install trash capture devices in on-site storm drain inlets.

Anti-Littering Campaigns - Some cities have focused on outreach and education as a strategy for reducing litter. Oakland participates in *Keep Oakland Beautiful*, which is an affiliate of *Keep America Beautiful* and coordinates clean up events. The Bay Area Stormwater Management Agencies Association created the *Be the Street* campaign, which included a mobile app game.

In Savannah, Georgia, "residents are being encouraged to take pictures and video of people caught littering and post them online, using the hashtag #LitterCrew, with the idea that embarrassment will help change their ways." In Jersey City, New Jersey, the *Stop the Drop* campaign has been very successful through its hiring of teens during the summer months to pick up litter.

As part of the EPA youth-based trash reduction grant, Hayward will be partnering with Litterati to run a trash clean up contest. Litterati is a social media platform that encourages people to photograph litter and then pick it up. The photos are posted to Instagram. All photos are geocoded and time stamped, and categorized by type of litter, creating a map and a "Digital Landfill."

Fee-Based Requirements for Businesses

Oakland - In 2006, the City of Oakland adopted an Excess Litter Fee on Fast Food Businesses, Convenience Markets, Gasoline Station Markets and Liquor Stores to fund collection and disposal of trash. Such establishments are required to pay annual fees based on annual gross receipts:

- Large Business with annual gross receipts of $1,000,000 or more pay $3,815.
- Medium business with annual gross receipts between $500,000 and $999,999 pay $910.
- Small Business with annual gross receipts between $5,000 and $499,999 pay $230.
- Annual gross receipts between $0 and $4,999 are exempt from the fee.

Gross receipts do not include receipts for the sale of alcohol, gasoline or automotive services or products. In 2009, Oakland used the fee revenue to award a contract to Civicorps Schools and in the first six months, the 18 to 24-year-olds collected 3,906 bags of litter. For the last several years, Oakland has hired Block by Block for approximately $400,000 per year to pick up litter and do other cleaning services in the downtown business improvement district. The fee, collected as part of business license renewal process, is currently imposed on approximately 900 businesses. In fiscal year 2013/2014, Oakland collected approximately $340,000 from businesses paying the fee.

Enforcement

For any regulation or ordinance to be effective, it must be widely publicized and it must be enforceable. Upon staff's investigation of the Charleston, South Carolina and St. Louis, Missouri ordinances mentioned above, staff found that the ordinances are rarely, if ever, enforced. Enforcement of an ordinance can be very difficult. For example, a business may or may not do a good job of cleaning the area around their business, but trash may be wind-blown and could potentially be beyond control of the responsible party.

Enforcement of an ordinance can also have significant impacts to staffing and workloads. When Council adopted new regulations for tobacco retail sales establishments in 2014, the ordinance required Code Enforcement staff to conduct annual compliance checks for each of the 143 tobacco shops, which required the hiring of new staff. Any new program or ordinance will need to be carefully considered for impacts to existing staff.

Toll-Free Hotline - San Francisco increased publicity of a litter hotline that generated thousands of calls each month. Washington State set up a hotline in 2002 and began sending vehicle owners letters stating that they were observed littering.

Fines - San Francisco's maximum fine is $1,000. In 2005, the City of San Francisco announced it would train 400 City employees from 43 different classifications and give them the authority to issue litter citations.

In Hayward, only police officers enforce littering. During the period from June 2014 through July 2015, the Hayward Police Department issued 18 tickets for littering. The Alameda County Superior Court can assess fines between $100 and $1,000 for littering. In 2014, the Alameda County Superior Court processed 65 citations for littering and 318 citations for "throwing lighted substance on highway" countywide.

OPTIONS

Control of litter originating from take-out food and beverage establishments is very challenging. There are no easy solutions. Options for addressing litter may include drawing upon one or more of the above examples. The following possible strategies are listed generally in order of 'easiest to implement' to 'most difficult to implement' and include:

1. Send a letter informing businesses owners that the City is considering new ordinance requirements related to litter. The letter would encourage property owners and managers to keep their parking lots, sidewalks and gutters clean.
2. Require new and redevelopment of certain land uses to install trash capture devices (filters in storm drain inlets).
3. Install anti-littering signs such as the examples below. (Visual clutter may be a concern.)
4. Conduct a campaign that educates people about the environmental impacts of litter.
5. Amend the Stormwater ordinance (Chapter 11, Article 5) to require property owners to clean sidewalks and gutters in front their properties and to require absentee owners to designate a local person to maintain vacant properties.
6. Amend the Stormwater ordinance to require owners of take-out restaurants and convenience markets to clean sidewalks and gutters within 300 feet of the establishment.
7. Consider a "deemed approved" ordinance such as the one adopted for alcoholic beverage establishments. The ordinance would include performance standards, such as litter removal, for certain business types. Enforcement of such an ordinance would likely be handled by Code Enforcement and would require additional resources.
8. Require certain businesses to locate trash cans on their properties.
9. Require signage inside fast food, convenience markets, liquor stores encouraging patrons to use litter containers.
10. Expand the adopt-a-block program through additional promotion and/or incentives.
11. Train City staff in addition to Police so that inspectors and other field staff can cite people for littering. This would impact existing services unless additional staff positions can be funded.
12. Assess a fee on certain business types and use the revenue generated to hire staff or contractors to pick up litter.
13. Assess a fee on certain products (i.e. fast food and cigarettes) to hire staff or contractors to pick up

litter.

14. Install surveillance cameras and send citations to motorists who litter. This approach would be very expensive to administer and fines are not likely to cover costs.

LEGAL ISSUES

Most of the options listed above do not pose immediate legal concerns. However, if Council were to consider adoption of a new fee to fund collection of litter, the Constitutional limitations upon taxes, fees, charges and assessments created by Prop. 218 and Prop. 26 must be considered. Regulatory fees, such as a fee upon specific business types that generate large amounts of litter (such as fast food establishments), comply with Prop. 218 and Prop. 26 as long as the amount of the fees do not exceed the reasonable costs of cleaning up the litter related to the fast food restaurants. Upon direction from the Committee, the City Attorney's Office will conduct further research regarding the legal issues related to imposition of fees in this specific context.

PUBLIC CONTACT

Staff met with the Executive Director of the Hayward Chamber of Commerce and discussed the idea of addressing litter and possible imposing new requirements on fast food businesses and convenience markets. There are very few such establishments represented by the Chamber.

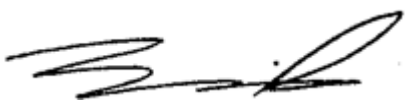
NEXT STEPS

Upon direction from the Committee, staff will conduct additional research, collect input from business groups and the Keep Hayward Clean and Green Task Force, and return to the Committee with more information.

Prepared by: Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Utilities and Environmental Services

Approved by:



Fran David, City Manager

Attachments:

Attachment I	Keep America Beautiful Fact Sheet: Sources of Litter

LITTER IN AMERICA

Results from the nation's largest litter study

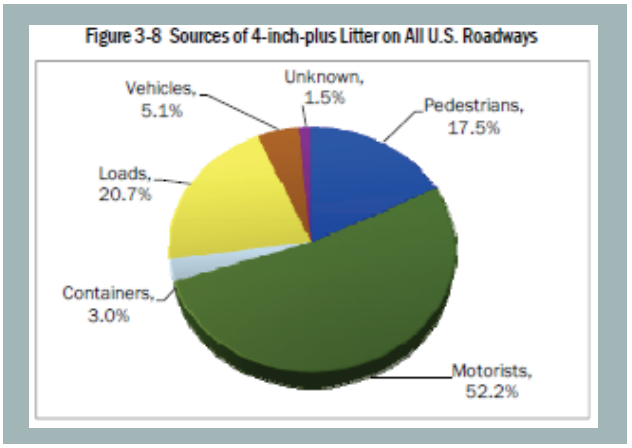
KEY FINDINGS: SOURCES OF LITTER

Keep America Beautiful's 2009 National Visible Litter Survey and Litter Cost Study* identifies individuals as the primary source of litter. Motorists and pedestrians are littering on roads and highways, in downtown business districts, recreational areas, and beaches.

LITTER ON ROADS AND HIGHWAYS IS THE RESULT OF INDIVIDUAL ACTIONS.

• **Motorists and pedestrians contribute a combined nearly 70% of litter over 4 inches.** Along roadways and highways, motorists generate 52.2% of litter and pedestrians 17.5%.

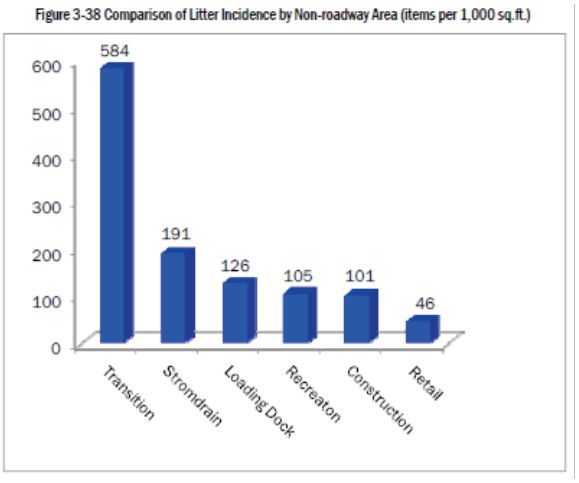
• **Motorists not properly securing truck or cargo loads, including collection vehicles, represent 20.7% of roadway litter 4 inches-plus**. Vehicle debris and improperly secured containers, dumpsters, trash cans or residential waste/recycling bins represent another 8.1% of litter over 4 inches.



ALONG U.S. ROADWAYS CIGARETTE BUTTS, DISCARDED IMPROPERLY BY MOTORISTS AND PEDESTRIANS, ARE THE MOST FREQUENTLY IDENTIFIED ITEM.

• **Tobacco products comprise roughly 38% of ALL U.S. roadway litter** in overall aggregate analysis. Paper (22%) and plastic (19%) are the next largest percentages of litter on roads and highways.

• **Packaging litter comprises nearly 46% of litter 4 inches and greater.** This includes fast food, snack, tobacco, and other product packaging. And 61% of beverage containers 4 inches or greater on U.S. roadways are soft drink and beer containers.



MORE ON REVERSE SIDE...

** The 2009 National Visible Litter Survey and Litter Cost Study was prepared by MidAtlantic Solid Waste Consultants for Keep America Beautiful, Inc. Research reports and an executive summary can be downloaded at www.kab.org/research09. Keep America Beautiful, Inc. 2009 national litter and littering behavior research were conducted through a grant from Philip Morris USA, an Altria Company. Wm. Wrigley Jr. Company Foundation sponsored the creation of these fact sheets.*

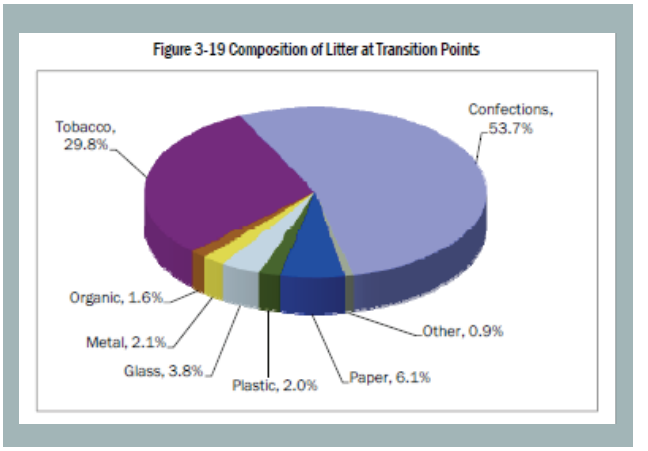
LITTER IN AMERICA

Results from the nation's largest litter study

OFF THE ROADS, MOST LITTER IS IMPROPERLY DISCARDED AT "TRANSITION POINTS."

• About 95% of litter at transition points is from pedestrians. These are areas where individuals consuming a food or tobacco product are required to discard the product before entering.

• Virtually all litter—97%--found at transition areas are small items. Confection litter (candy, chocolate, gum, etc.) is the most predominant at 53.7%, and tobacco products second at 29.8%.



STORM DRAINS, LOADING DOCKS, RECREATION AREAS, CONSTRUCTION SITES, AND RETAIL DISTRICTS ARE ALSO AREAS WHERE LITTER COLLECTS—MOSTLY SMALLER ITEMS LIKE CIGARETTE BUTTS, CONFECTION, AND PAPER.

• **After transition points, storm drains are the most littered.** Cigarette butts, confection, and other litter accumulate in or around storm drains, located primarily in gutters and designed to drain excess rain from paved streets, parking lots, etc.

• **85% of litter at loading docks is from workers loading and unloading goods.** Areas behind retail and other businesses are littered predominantly with cigarette butts, but also metals, plastic, and paper.

• **People litter both large and small items at recreational areas.** The source of most litter at parks, beaches, and open areas where people congregate for leisure activities is pedestrians—98.5%. Small items, which represent about half the litter, are cigarette butts and confection, while larger litter is most commonly food-related.

• **The primary source of litter at active residential and commercial construction sites is workers (69%).** They improperly dispose of trash from snacks, meals, smoking, etc. Most construction site litter is smaller items (93%), including cigarette butts, small pieces of paper, plastic, and confection.

• **High-traffic locations are a draw for a variety of items littered by shoppers.** Strip malls, shopping centers, and convenience stores all attract packaging litter, cigarette butts, and confection.

Staff Report

File #: LB 15-014

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Director of Utilities & Environmental Services

SUBJECT
Sustainability Education and Outreach

RECOMMENDATION
That the Committee reviews this report and provides comments.

BACKGROUND

The purpose of this report is to summarize current sustainability education and outreach activities, and present a proposed Outreach Plan for FY2016 and 2017 (Attachment II).

Climate Action Plan Strategy 9
The 2009 Hayward Climate Action Plan contained nine strategies for reducing greenhouse gas emissions (which have since been folded into the General Plan). Strategies 1 through 8 focus on actions that are not highly visible to the general public, such as offering energy efficiency financing programs, greening the building code, aligning zoning policies to minimize vehicle travel, updating the solid waste franchise agreement, and greening municipal operations. The City is on target to meet the recommended implementation timing for the majority actions under Strategies 1 through 8.

Strategy 9 in the Climate Action Plan is Engage and Educate Community. The Plan states that "The successful implementation of each action presented in Strategies 1 through 8 depends on community participation...The goal of Strategy 9 is to maximize community participation efforts to reduce emissions and continue harnessing residents' sense of commitment to environmental responsibility" (page 97). There are three actions listed under Strategy 9:

- Action 9.1: Create green-portal website
- Action 9.2: Develop and implement plan to engage residents in emissions reductions activities
- Action 9.3: Develop and implement plan to engage businesses in emissions reductions activities

General Plan Implementation Programs
Hayward's General Plan, adopted on July 1, 2014, includes the following implementation programs that are related to sustainability outreach and education. The first three are scheduled to be implemented by the end of 2016 and the last one is scheduled to be implemented during 2017-2019.

NR7 - Energy Reduction Initiative and Annual Report. The City shall develop and implement a public information and education campaign to encourage every household and every business to reduce their energy consumption by 10 percent by 2020. The City shall evaluate and report to the City Council annually on the community's progress in achieving the ten percent goal, and recommend additional efforts as necessary to ensure the goal is met. (2014-16 and Annually)

NR16 - Green Portal. The City shall develop and maintain a stand-alone Green Portal, or website, that serves as the City's hub for all things green. (2014-16 and Ongoing)

NR17 - Business Engagement in Climate Programs. The City shall engage local businesses and business organizations (e.g., Chamber of Commerce, the Keep Hayward Clean and Green Taskforce, the Alameda County Green Business Program) in climate-related programs. (Annually)

NR18 - Environmental Education Programs. The City shall coordinate with Alameda County, Pacific Gas & Electric Company, non-profit organizations, and other agencies and businesses to develop and implement an Environmental Education Program. (2017-19)

Staff is proposing the attached Sustainability Outreach Plan (Attachment II) as the blueprint for implementing the above actions.

Current Outreach and Education Activities
Staff currently conducts a range of outreach activities for sustainability programs, which are listed in Attachment I.

DISCUSSION

Outreach Goal
The desired outcome of community outreach is community behavior changes that decrease greenhouse gas emissions, resource consumption, litter, and pollution. To reach Hayward's climate and environmental goals, residents and businesses need to take action. However, asking for too much too soon without providing solutions and leadership opportunities can be discouraging and come across as reprimanding. The attached proposed outreach plan builds on itself over the course of 28 months to increase awareness of existing programs, create a community of shared concern, and offer new programs that remove barriers and provide motivation to change behaviors.

2016-17 Sustainability Outreach Plan
Staff is proposing a four part outreach plan. The four parts are briefly summarized below.

Lay the Groundwork (2015) - Staff is currently building the sustainability website (green portal), which will launch in December. The website will serve as the anchor for all outreach activities by centralizing information about green programs, events, and resources. Staff is also collecting datasets to create an online sustainability dashboard that will display Hayward's progress towards meeting its goals. Finally, staff is exploring diverse communication channels that can be used to reach as much of the Hayward community as possible, such as social media, online ads, and movie trailers.

Build Our Capacity (2016) - Because staff time is limited, the Plan seeks to expand our capacity to deliver wide-reaching education and engagement programing. Staff is currently in the process

of formalizing volunteer and internship programs. In addition, staff is proposing that the City convene a Green Hayward Alliance to communicate with community partners. Similarly, staff is proposing to convene a Student Allies program, which will have representatives from each of the environmental clubs and councils at Hayward middle schools, high schools, and colleges.

Educate (2016) - The outreach plan is intended to inspire behavior changes through targeted messaging, but we don't want to discourage residents with information overload. Staff proposes to select four messaging campaigns for 2016 (Attachment IV) and to measure our impact at the end of each campaign. Another objective will be to make sure that Hayward residents are fully aware of sustainability programs and financing opportunities. In addition, we want to residents to feel proud of Hayward success stories like the renewable energy production at the Water Pollution Control Facility. To get the word out, we propose to scale up our outreach at community events and City-sponsored events.

Engage (2017) - In the second year of the Plan, staff is proposing to build on the community involvement and awareness gained in the first year to launch Go Green Challenges. These challenges will be modeled on community based social marketing principals, which stress neighbor-to-neighbor outreach and creatively removing barriers to participation. To provide motivation, participants will be given opportunities and tools to make pledges and track their progress alongside their peers. Staff is anticipating learning lessons from the Unite2Green Hayward pilot that is being launched this fall with ICLEI.

FISCAL IMPACT

Staff time and other costs for outreach activities will be absorbed into the existing budget for the Utilities and Environmental Services Department.

NEXT STEPS

Staff is requesting general feedback on the outreach plan, and specific feedback on the following items. Based on the feedback, staff will proceed with the plan and update the Committee quarterly.

- Messaging campaigns for 2016 (Attachment IV)
- Photo contests for 2016 (Attachment V)
- Suggestions for additional communication channels to market messaging campaigns and City programs (see page 6 of Attachment II)
- Suggestions for community partners that should receive personal invitations to join the Green Hayward Alliance. These could include businesses, HOAs, neighborhood groups, nonprofits, and professional associations.
- Any feedback on existing environmental events that are hosted by the City

Prepared by: Mary Thomas, Management Analyst

Recommended by: Alex Ameri, Director of Utilities & Environmental Services

Approved by:

Fran David, City Manager

Attachments:

Attachment I	Current Outreach Activities
Attachment II	2016-17 Sustainability Outreach Plan
Attachment III	2016 Draft Calendar of Sustainability Events
Attachment IV	Possible Messaging Campaigns for 2016
Attachment V	Possible Photo Contests for 2016

Current Outreach and Education Activities

Staff currently conducts a range of outreach activities for sustainability programs, which are listed in detail in Attachment I.

Online Communications

- Drought Watch Website – Staff created a special website in response to the drought with tips, resources, and news.
- Nextdoor – Staff recently started posting events and notices on this widely used platform.
- Hayward Daily Bulletins – The City sends out an e-newsletter to those community members who have subscribed, which occasionally contains updates on clean up events and sustainability programs.
- City Twitter, Facebook, and YouTube Accounts – The City Manager's Office maintains social media accounts, on which sustainability staff posts content and videos.
- Seed-Lending Library E-newsletter – This e-newsletter is targeted to the members of the Garden Club and is available to all community members.
- Existing Green Hayward Website – Although the existing website has limitations, there is some good information, especially in the areas of water conservation and pollution prevention. This information will be transferred to and enhanced on the new website.

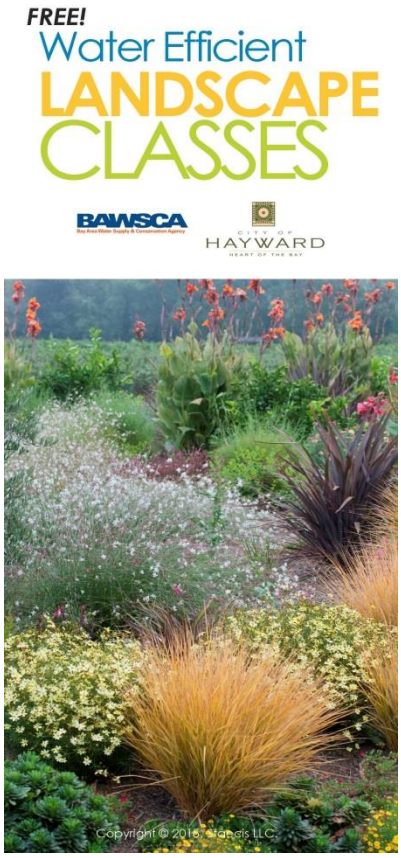
Facebook Post

Drought Watch Video

Hayward Daily Bulletin

Mail-based Communications

- Bi-Monthly Water Bill Inserts – Staff regularly uses these inserts to communicate sustainability related messages, such as the examples below.
- Topic-specific Mailings – Based on need and the availability of funds, mailings highlight specific programs, such as the brochure below on how to recycle used oil.
- Waste Management Mailings – As part of the Franchise Agreement, Waste Management is responsible for quarterly bill inserts and additional postcards advertising special services like bulky item pickup and holiday tree collection.
- Stopwaste Annual Report – As a member of Stopwaste, Hayward garbage account holders pay for and receive an annual mailing with information about how the County is doing at meeting its recycling goals.



Water bill inserts

Biannual mailing on how to recycle used oil

City-Sponsored Green Events

- Annual Environmental Awards – This past April the Awards ceremony honored six businesses, three schools, six multifamily properties, and ten residents for their exemplary efforts.

- Water Efficient Landscape Classes – These popular classes are run by noted landscape professionals six times a year and cover topics like mulching and irrigation.
- Seed Lending Library Classes – The Seed Lending Library runs regular workshops on ecofriendly methods for growing food and hosts the Hayward Gardeners' Club.
- Annual Citywide Cleanup – In addition to the monthly cleanups hosted by the Keep Hayward Clean and Green Taskforce (KHC&G), the City sponsors a cleanup event and barbeque each May. This past May the City also gave out bags of organic compost.
- Annual Earth Day Poster and Essay Contest – The City has hosted this contest every May since 1983. This past May 764 students from 29 Hayward schools entered the contest and 24 students received awards.
- Earth Week Display – staff displays educational material in the rotunda during the week leading up to Earth Day.

Seed Saving Workshop

Water Efficient Landscaping Class

Environmental Awards

Outreach at Other Community Events

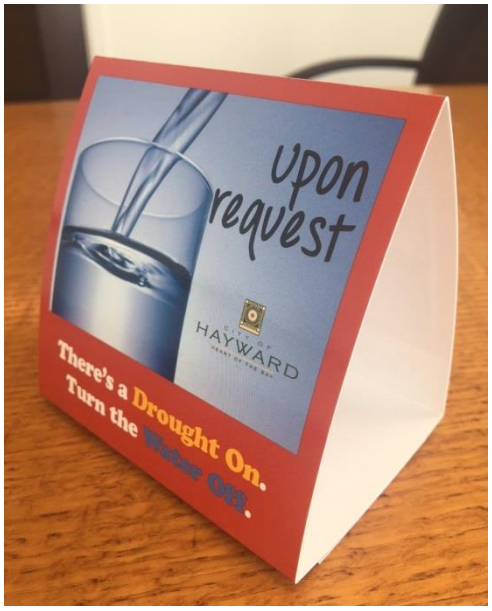
Staff tables at several events a year to provide educational material and information about City programs to Hayward community members. In addition, staff provides KHC&G with information to distribute at their monthly cleanups. Attachment III is a calendar including these and other possible events.

Staff at a Summer Street Party

Direct Outreach to Businesses and Multifamily Housing

- Drought related outreach – During the drought, staff has directly reached out to restaurants and hotels to inform them about the new water restrictions and provide resources like the below tent card. In addition, the City is working directly with large landscape managers to help them reduce their water use.
- Recycling and Organics Outreach – As part of the Franchise Agreement, Waste Management is responsible for conducting direct outreach to businesses and multifamily properties to assist with implementation of recycling and composting programs.
- Unite2Green Hayward – In partnership with ICLEI and the Hayward Promise Neighborhood, this pilot program will train Hayward students and Tiburcio Vasquez Promotoras (Health Promoters) to lead workshops for their neighbors in the Jackson Triangle about household solutions to address climate change.

Door hanger that the City provides to multifamily complexes



Tent card that the City provides to restaurants

School-Based Outreach

- Youth-Based Trash Capture, Reduction, and Watershed Education Project – This four year project, funded by an $800,000 EPA Community Stewardship Grant and matching funds from Hayward local agencies, will begin this fall with the installation of the trash capture devises and corresponding curriculum in neighboring schools.
- EarthCapades Assemblies – As a BAWSCA member, the City contributes to this environmental theater program, which reaches 6,000 Hayward elementary school students annually.

- Clean Water School Programs – As a member of the Alameda County Clean Water Program, the City contributes to the Storm Drain Rangers (3-5 grades) and Caterpillar Puppets (K-3 grade), which educates Hayward students about reducing storm water pollution.
- Water Pollution Control Facility Tours – WPCF staff routinely gives tours to the community highlighting water resource recovery and clean and renewable energy generation at the facility. This past year, staff gave tours to several classes from Cal State and is looking to expand tours to all school levels this year.
- WMAC irecycle@school Program – Waste Management has a special classroom at its Davis Street Transfer Station that hosts school field trips and tours of the facility. All Hayward classes are eligible to attend for free.

Waste Management's irecycle@school tour

EarthCapades Assembly

Utilities & Environmental Services
Draft Sustainability Outreach Plan

CONTENTS

DESIRED OUTCOME

Behavior changes throughout the Hayward community that result in:

- ✓ Decreased greenhouse gas emissions
- ✓ Decreased resource consumption
- ✓ Decreased litter and pollution

"Initiatives to promote behavior change are often most effective when they are carried out at the community level and involve direct contact with people…Numerous studies document that education alone often has little or no effect upon sustainable behavior."

-Doug McKenzie-Mohr[1]

[1] *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing.* New Society Publishers, 2011. Online book at http://www.cbsm.com/pages/guide/preface/.

Relevant General Plan Policies and Programs

The following are the General Plan policies and implementation programs that are related to sustainability outreach and education.

GENERAL PLAN POLICIES

NR-2.4 Community Greenhouse Gas Reduction. The City shall work with the community to reduce community-based GHG emissions by 20 percent below 2005 baseline levels by 2020, and strive to reduce community emissions by 61.7 percent and 82.5 percent by 2040 and 2050, respectively.

NR-2.14 Air Quality Education. The City shall educate the public about air quality standards, health effects, and efforts they can make to improve air quality and reduce greenhouse gas emissions.

HQL-2.3 Education about Walking, Cycling and Using Public Transit. The City shall partner with schools, employers, transit agencies, HARD, and community groups to teach bicycle and pedestrian safety in schools and workplaces and to educate residents and businesses about the health and environmental benefits of walking, bicycling, and using public transit.

HQL-7.3 Home Use of Hazardous Materials. The City shall encourage and educate residents, non-profits, and businesses to implement integrated pest management principles, reduce or discontinue the use of pesticides, herbicides, and toxic cleaning substances.

HQL-9.6 Energy Resiliency. The City shall continue to encourage residents and businesses to use less gasoline for transportation, and improve energy efficiency in and renewable energy generation from buildings and industry processes to reduce impacts from rising oil and energy prices.

PFS-7.13 Residential Recycling. The City shall encourage increased participation in residential recycling programs, and strive to comply with the recycling provisions approved by the Alameda County Waste Management Authority Board. The City shall work with StopWaste.org to monitor participation in residential recycling programs and educate the community regarding actual composition of waste sent to landfills.

PFS-7.23 Consumption Reduction. The City shall educate the community about the benefits of reducing overall consumption.

GENERAL PLAN IMPLEMENTATION PROGRAMS

NR-7. Energy Reduction Initiative and Annual Report. The City shall develop and implement a public information and education campaign to encourage every household and every business to reduce their energy consumption by 10 percent by 2020. The City shall evaluate and report to the City Council annually on the community's progress in achieving the ten percent goal, and recommend additional efforts as necessary to ensure the goal is met. (2014-16 and Annually)

NR-16. Green Portal. The City shall develop and maintain a stand-alone Green Portal, or website, that serves as the City's hub for all things green. (2014-16 and Ongoing)

NR-17. Business Engagement in Climate Programs. The City shall engage local businesses and business organizations (e.g., Chamber of Commerce, the Keep Hayward Clean and Green Taskforce, the Alameda County Green Business Program) in climate-related programs. (Annually)

NR-18. Environmental Education Programs. The City shall coordinate with Alameda County, Pacific Gas & Electric Company, non-profit organizations, and other agencies and businesses to develop and implement an Environmental Education Program. (2017-19)

Update Sustainability Website

Lay the Groundwork

WHAT?

Create a website that will house all sustainability related programs and include the following features:

- A calendar of green events
- Photo and video galleries
- Maps of green initiatives that are happening throughout Hayward
- A dynamic dashboard displaying sustainability metrics
- Audience specific pages for individuals, businesses, and the community
- A green government page outlining municipal efforts and celebrating the City's success stories
- A short and simple URL for easy reference

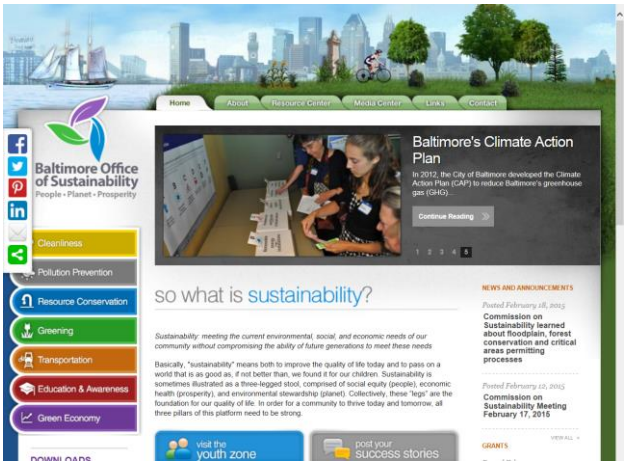
WHY?

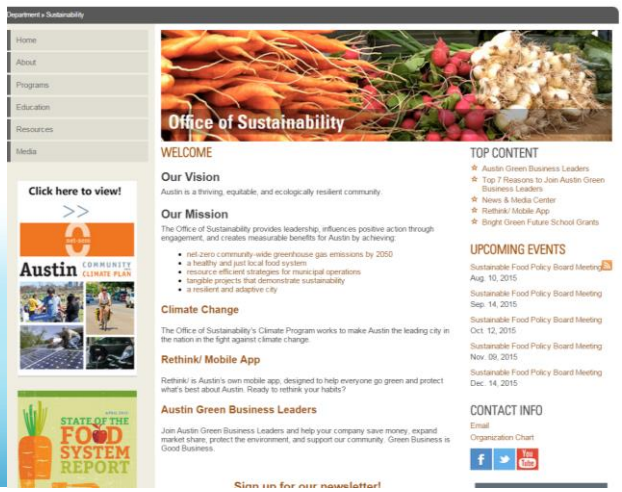
A well-maintained website is an essential building block for an outreach campaign. First, this will be a one-stop hub that community members can go for information and updates. Second, the dashboard will keep track of the City's progress towards meeting its sustainability goals. Third, this will help staff from multiple departments keep information organized by centralizing all campaigns and documents.

WHEN?

The Sustainability Website will be created as part of the overall update of the City's website, which will launch in December, 2015.

EXAMPLES (from Baltimore, MD, Santa Monica, CA, Seattle, WA, and Austin, TX)





Create Sustainability Dashboard

Lay the Groundwork

WHAT?

Create datasets and infographics that measure and depict the City's sustainability goals. The metrics will be displayed in an online dashboard on the website, in presentations, and on posters. The dashboard will also include historic data and regional comparisons when possible.

The datasets will be updated as frequently as data collection methods allow. Real-time monitoring of metrics is a long-term goal. As technology makes this possible through smart meters and other means, staff will work to incorporate real-time monitoring into the online dashboard.

The City does not currently have the capacity to compile all desired datasets. Staff will create a metric wish list to distribute to professors at Hayward colleges and universities who are interested in creating service-learning projects.

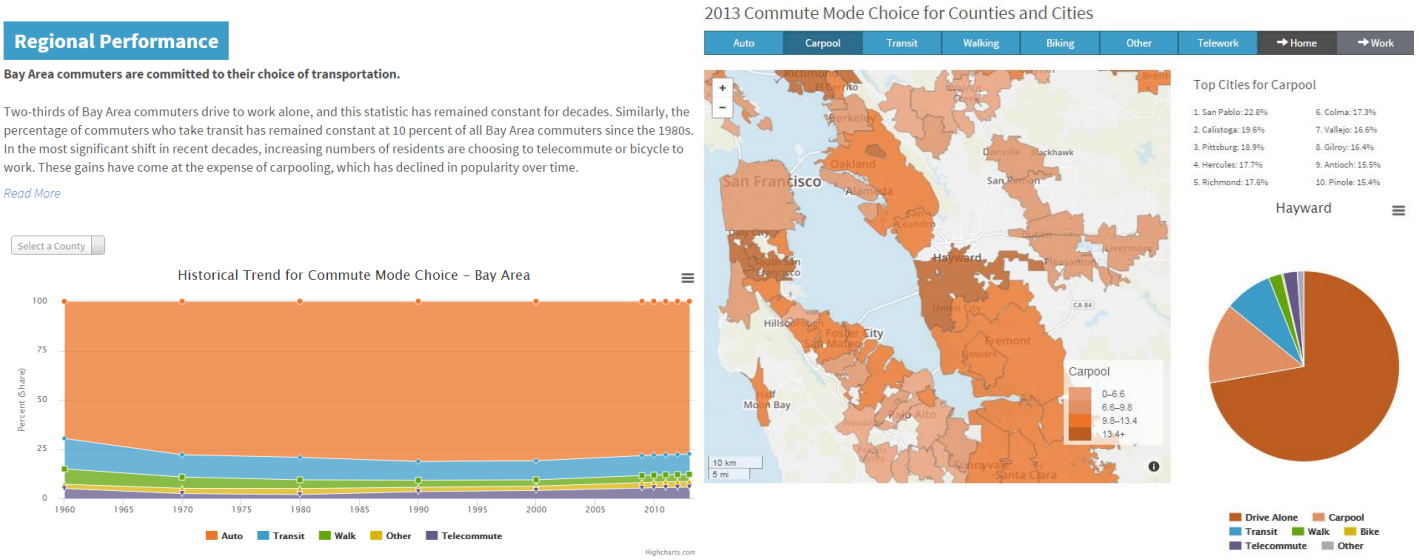
WHY?

A dashboard serves as an information piece about Hayward's current performance and a reminder of the City's goals. Also, a dashboard can also be a motivator for community members who would like to see improvement.

WHEN?

Datasets for the dashboard are currently being compiled. The online dashboard and infographics will be created as part of the overall update of the City's website, which will launch in December, 2015. Staff will report on the primary metrics at each Council Sustainability Committee (CSC) meeting.

EXAMPLE (from MTC's Vital Signs)

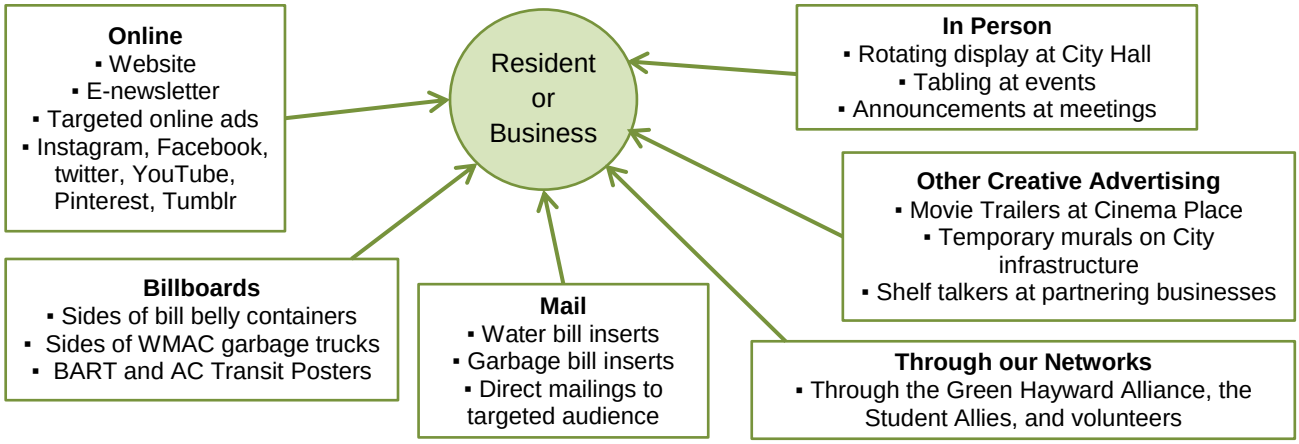


Increase Communication Channels

Lay the Groundwork

WHAT?

Identify and create a diverse range of communication channels. Staff is currently getting quotes to create a "menu" of communication channels and their associated costs. Staff can refer to this menu to select the appropriate channels for future messaging campaigns depending on the targeted audience and available budget. Communicating online is the most cost effective (and greenest) way to keep in regular contact with community members. Therefore, staff is particularly focused on providing ways for community members to pre-sign up for updates through social media and an e-newsletter.



WHY?

To reach as many segments of the Hayward community as possible.

WHEN?

The e-newsletter will launch in February, 2016. Over the coming year, staff will build the email list by tabling, creating promotional events (such as an opportunity to win a toilet), and allowing people to opt in when they pay their water bill.

EXAMPLES (Brisbane, Australia e-newsletter, Seattle, WA twitter feed, Middlebury College touch screen display, North Carolina State University creative advertising on dumpsters)

Expand Volunteer and Internship Programs

Build Our Capacity

WHAT?

Formalize a volunteer program for community members who are passionate about sustainability and increase opportunities to host local interns.

Staff is exploring several venues to host interns. As part of its budget, the Utilities and Environmental Services Department annually hosts one half-time intern in its Wastewater Division and one half-time intern in its Water Division. Last year, the Water Pollution Source Control Division hosted a Cal State intern through the University's Pioneers for Change program, which pays students to intern as part of their studies. There are also opportunities to host interns through the Civic Spark and Coro Fellowship programs.

Staff is currently working with the Keep Hayward Clean and Green Taskforce to expand their volunteer program to include additional green activities. In specific, staff is looking to train volunteers to help run City-sponsored events and be able to table at community events and meetings. Staff will be offering orientations three times a year, which will introduce volunteers to City programs and review the materials used when tabling.

WHY?

Hayward is fortunate to have a culture of volunteerism and quality institutions of higher education. By formalizing opportunities to contribute, the City can use that energy and passion to scale up our work. In addition, volunteers can help deliver information to community members that City staff would not otherwise reach.

WHEN?

In addition to the budgeted interns, the Environmental Services Division is expecting to host at least one Cal State East Bay intern this school year. Staff will continue to explore other opportunities and host additional interns this school year and summer if funding is available.

Staff plans to host the first formal volunteer orientation in February, 2016.

EXAMPLES (from San Francisco, CA – SF Environment and SFPUC)

Leverage Community Partners

WHAT?

Develop a Green Hayward Alliance for Hayward businesses, schools, HOAs, civic groups, nonprofits, and apartment managers. The time commitment for members will be minimal. Members will receive monthly e-newsletters and be invited to optional workshops and networking opportunities. The benefits of being an Alliance Member are outlined below.

Role of the City

- Manage group communications
- Convene technical assistance trainings and tours
- Forward funding opportunities and assist with grant-writing
- When appropriate, pass resolutions of support for work that is being done by partners

Role of Community Partners

- Make regular updates about Green Hayward programs at their membership meetings
- Spread the word about Green Hayward initiatives through their networks

In addition, convene a Student Allies program, which will have representatives from each of the environmental clubs and councils at Hayward middle schools, high schools, and colleges. The Allies will meet six times a year.

WHY?

Community partners are already passionate about sustainability. The Alliance will enhance their work through sharing of best practices, surfacing opportunities to partner, and creating coalitions to attract funding to Hayward. Non-profit partners are able to apply for foundation funding to do community work, which is often not available to government agencies.

WHEN?

Staff will convene the first class of the Green Student Allies in the fall of 2015. Staff will recruit members for the Green Hayward Alliance this winter and send the first newsletter in March, 2016.

EXAMPLES (from GTECH Strategies, a non-profit in Pittsburgh, PA and Oceanside, CA)

GTECH Strategies is on the ground in Pittsburgh neighborhoods connecting residents to funding, education, and technical resources. They work closely with the City and convene the region's sustainability coalition and Social Capital Council.

The City of Oceanside has an award winning partnership with their educational institutions. Above, Coastal Music Studios and the Discovery Isle Child Development Center celebrate Earth Day with a Recycled Drum Corps and a "Bug Out."

Run Coordinated Messaging Campaigns

WHAT?

Centralize the City's sustainability messaging and focus on four campaigns each year. The purpose of targeting one simple behavior change at a time is to create a gateway for community members to get further involved in conservation and efficiency activities. For each campaign, staff will measure the baseline, use diverse and creative communication channels to reach the targeted audience, and measure the results. The criteria for selecting campaign topics are:

- The behavior change should be concrete ("compost" is too vague, "compost your coffee cups" is better)
- The behavior change should be applicable and attainable for a sizable group of Hayward community members (at least 5,000 residents and/or 100 businesses)
- The behavior change should be a positive action ("bike and walk more" instead of "don't drive")
- The behavior change should be measurable for staff

WHY?

Staff is currently running separate messaging campaigns from within various City departments and divisions. Because of this, community members are receiving many messages from the City. Research shows that too many unrelated messages can lead to tuning out the information. By centralizing the messaging effort and focusing on one message at a time, the campaigns will hopefully make a greater impact on desired behavior changes. By measuring the impact of each campaign, staff can evaluate what is working and what can be improved.

WHEN?

The fist messaging campaign will launch in January, 2016. There will be a new campaign every quarter and staff will report on the previous campaign at each Sustainability Committee meeting.

EXAMPLES (from Livermore, CA and Vancouver, WA)

This Livermore, CA campaign included a marketing video, a photo contest, stickers on pizza boxes of participating busuinesses, tags on green carts, online ads, bill inserts, and social media.

This Vancouver, WA campaign uses a positive message and is displayed in highly relevant public areas.

Streamline Outreach at Community Events

WHAT?

Create three go green pre-assembled tabling kits that can be used by staff or volunteers at community events. One kit will be comprehensive for larger events and two kits will be more compact for community meetings and other small events.

In addition, staff will create a display that will accompany trash and recycling carts at community events. The display will explain the three waste streams and possibly market the City's recycling programs.

WHY?

Intentionally designed, attractive displays are good marketing for the City and its sustainability programing.

Staff currently assembles materials each time there is an event. A pre-assembled kit will allow staff to train volunteers and interns, who can set up and run the tables. This will allow the City to be at more events and spend less time preparing for each event. For 2016, staff is looking to have a table at most of the downtown events, such as Cinco de Mayo and the Blues Festival. By 2017, staff is hoping to have enough volunteers trained to expand the effort to smaller events like the farmer's market and school registration days.

WHEN?

Staff is currently working on creating the tabling kit. Interns and volunteers will be trained on an ongoing basis, starting in the fall of 2015.

EXAMPLE (from the San Francisco Green Festival)

Each tabling kit will include attractive posters, display cases for handouts, signup sheets for the e-newsletter, surveys, giveaways, and other compelling visual elements.

Scale Up City-Sponsored Green Events

WHAT?

Evaluate existing events to determine high-impact opportunities for growth and involve volunteers and partners to grow and improve each event. Staff will streamline existing events by creating standard procedures that can be replicated by staff, volunteers, and community partners. The ultimate goal of this effort will be to identify and train community partners that are willing to entirely take over and expand the events in the future.

In addition, launch two new events in 2016 with community partners: an environmental film series and an online photo contest. The film series will show three films at several locations throughout Hayward and be followed with panel discussions and an online forum. The Hayward Library has run similar successful events in the past. The photo contest will be run on Instagram, a free social media platform. Winners will be displayed on the website and outside the Council Chambers in City Hall.

City of Hayward staff currently hosts the following green events:

- The annual Environmental Awards
- Water efficient landscape classes and gardening workshops
- The annual citywide cleanup in May
- The environmental poster and essay contest
- An Earth Week display in the rotunda

WHY?

Events are an important outreach tool, but running events can demand large amounts staff time. Standardizing the procedures from year to year will streamline event planning, allowing staff to focus on improving and expanding the events. It will also allow staff to delegate tasks to volunteers, interns, and community partners.

WHEN?

Staff will evaluate and standardize procedures for all 2016 events. The film series will run from February through April. The first photo contest will also launch in February.

EXAMPLES

Earth Day Celebration in Nyack, NY hosted by the Chamber of Commerce
San Diego beach cleanup hosted by the Surfrider Foundation and local surf shops
Summer Film Series in Lafayette, CA hosted by the non-profit Sustainable Lafayette

Launch Go Green Challenges

WHAT?

Launch challenges that result in concrete, measurable behavior changes and environmental results. These challenges will be modeled on community based social marketing principals, which stress neighbor-to-neighbor outreach and creatively removing barriers to participation. To provide motivation, participants will be given opportunities and tools to make pledges and track their progress alongside their peers.

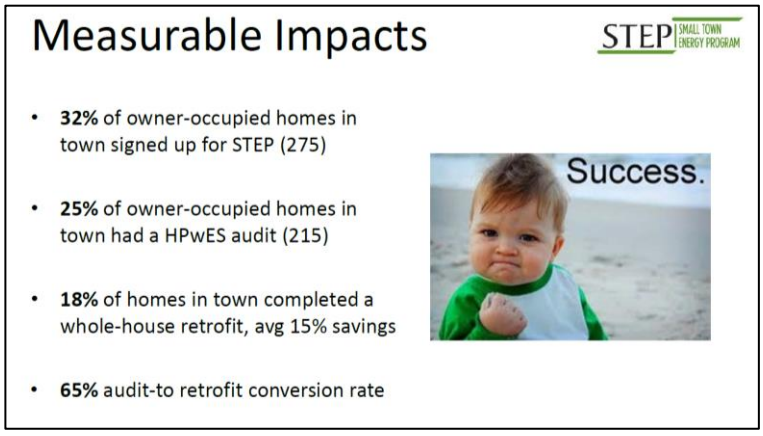
WHY?

The desired outcome of the outreach plan is community behavior changes. The Go Green Challenges will take the community involvement and awareness gained in the first year to that next level. As noted above, "education alone often has little or no effect upon sustainable behavior."

WHEN?

Staff is planning to launch the challenges in 2017.

EXAMPLES (University Park, Maryland STEP-UP Program and OneChange's Project Porchlight Program)



The Small Town Energy Program for University Park (STEP-UP) used town hall meetings and house parties to sign up homeowners for energy audits. The program then used a one-on-one coach to help homeowners find a contractor and financing to complete a retrofit. As a result of their efforts, 18% of homes in the town completed a whole-house retrofit. The US Department of Energy is now working to replicate this model elsewhere.

Project Porchlight partners with utilities and sponsors to provide free CFL bulbs. The bulbs are distributed door-to-door by neighbors and volunteers, who also assist with installation. Their philosophy is that "when people participate in that first simple action (changing a light bulb) they become empowered to believe that their simple actions matter and they can make a difference." Up to this point, Project Porchlight has changed 3,588,000 bulbs.

Timeline

Tasks	2015			2016												2017											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lay the Groundwork																											
Create content for new sustainability website																											
Collect datasets for dashboard																											
Create menu of communications channels																											
Plan 2016 messaging campaigns																											
Create tabling kit for community events																											
Create internal metrics to evaluate 2016 events																											
Design city hall display																											
Create content for social media and e-newsletter																											
Build Our Capacity																											
Convene Green School Allies																											
Host school year intern(s)																											
Create volunteer program with KHCG taskforce																											
Volunteer/intern orientations																											
Host summer interns																											
Develop and recruit for Green Hayward Alliance																											
Convene Green Hayward Alliance																											
Educate																											
Launch and maintain sustainability website																											
Launch dashboard and maintain datasets																											
Run and evaluate messaging campaigns																											
Publish monthly e-newsletters																											
City-sponsored green events																											
Outreach at other green events																											
Install and update city hall display																											
Evaluate events and tabling and propose updates																											
Engage																											
Design and find funding for go green challenge(s)																											
Launch and measure go green challenge(s)																											

ATTACHMENT III

Calendar of Sustainability Events

January	February	March	April
▪ KHCG Cleanup	▪ KHCG Cleanup ▪ Environmental Film Series ▪ 1st Photo Contest Launched	▪ KHCG Cleanup ▪ Environmental Film Series ▪ Hayward Honors Women	▪ Annual Environmental Awards ▪ Earth Week Display ▪ KHCG Cleanup ▪ Environmental Film Series ▪ 1st Photo Contest Awarded
May	**June**	**July**	**August**
▪ Poster and Essay Contest ▪ Citywide Cleanup and BBQ ▪ Airport Open House ▪ 2nd Photo Contest Launched ▪ Cinco de Mayo	▪ KHCG Cleanup ▪ Downtown Street Party ▪ 2nd Photo Contest Awarded	▪ KHCG Cleanup ▪ Downtown Street Party ▪ Russell City Blues Festival	▪ KHCG Cleanup ▪ Citywide Garage Sale ▪ Downtown Street Party ▪ Zucchini Festival
September	**October**	**November**	**December**
▪ KHCG Cleanup ▪ 3rd Photo Contest Launched ▪ EBRPD Coastal Cleanup	▪ KHCG Cleanup ▪ Mariachi Festival	▪ KHCG Cleanup ▪ 3rd Photo Contest Awarded	▪ KHCG Cleanup

Current City-Sponsored Events ▪ **Proposed City-Sponsored Events**

Current Outreach at Community Events ▪ **Proposed Outreach at Community Events**

*Landscaping classes and gardening workshops are not included

Possible Messaging Campaigns for 2016

There will be four three-month campaigns. The criteria for the campaign topics are:

- Only one behavior change at a time
- The behavior change should be concrete ("compost" is too vague, "compost your coffee cups" is better)
- The behavior change should be applicable and attainable for a sizable group of Hayward community members (at least 5,000 residents and/or 100 businesses)
- The behavior change should be a positive action ("bike and walk more" instead of "don't drive")
- The behavior change should be measurable for staff

Timeline for Campaigns

Activity	Campaign 1	Campaign 2	Campaign 3	Campaign 4
Design campaign	Nov-Dec	Feb-Mar	May-June	Aug-Sep
Baseline measurement	Jan	Apr	July	Oct
Run campaign	Jan 15-Mar 15	Apr 15-June 15	July 15-Sep 15	Oct 15-Dec 15
Evaluate success	Mar 15-31	June 15-30	Sep 15-30	Dec 15-31

Possible Campaign Topics (choose four or suggest others for 2016)

Desired Outcome	Behavior Change	Measurement of Success	Thank you to Participants (optional - depends on budget)
Reduced greenhouse gas emissions	**1 Get a quote from a PACE program or contractor**	Increase in PACE financed projects	Be entered to win a free smart power strip
Reduced water consumption	**2 Install a rain barrel**	Increase in use of BAWSCA rebate	Send us a photo of your rain barrel and enter to win a free 100ft hose
Reduced trash to the landfill	**3 Compost your tissues and paper towels**	A waste audit of organics route shows increase in proper disposal of tissues and paper towels	A "door hanger" thank you on residents' green cart
	4 Bring your old lightbulbs to HHW	An increase in the number of trips to the Hayward HHW Facility	Be entered to win a free lighting retrofit
Reduced pollutants/litter in wastewater and storm water	**5 Adopt your block**	Increase in the number of blocks that are adopted	Party for all adopters at the end of deadline
	6 Only flush toilet paper	Decrease in wipes and other trash in wastewater	Take the pledge and enter to win a free toilet

Possible Photo Contests for 2016

There will be three photo contests in 2016. Winners will be displayed outside the Council Chambers in City Hall. Several schools have expressed interest in partnering. The contests will use Instagram, a free social media platform. In July of 2015, Instagram increased the resolution of uploads from 640px to 1080px, allowing for higher quality photo contests. One of the photo contests will be in combination with the Litterati contest that is part of the Youth-Based Trash Capture, Reduction, and Watershed Education Project. The Litterati photo contest will ask community members to submit their most artistic photos of litter as they clean up Hayward.

Possible Contest Topics (choose two or suggest others for 2016)

- **#MyHaywardEnvironment** – Show us your favorite places to get outside in Hayward
- **#IGreenHayward** – Show us what you do to make Hayward a little greener
- **#HaywardDroughtWatch** – Show us how you conserve water
- **#HaywardKitchenGardens** – Show us your home veggie garden
- **#HaywardMeatlessMondays** – Show us your favorite vegetarian meal (also provide a chance to submit recipes)
- **#HaywardFarmersMarket** - Show us your favorite seasonal meal (also provide a chance to submit recipes)
- **#HaywardCreativeReuse** – Show us how you repurpose items instead of throwing them away
- **#BikeHayward** – Show us how you bike

Examples of Instagram Photo Contests:

Staff Report

File #: LB 15-011

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Alex Ameri, Director of Utilities & Environmental Services

SUBJECT
Sustainability Metrics

RECOMMENDATION

That the Committee reviews and comments on this report. Specifically, staff would like the Committee's input on which sustainability metrics should be displayed to the public on the new website and the metrics for which the Committee would like regular reports.

SUMMARY

As Hayward continues to implement programs and best practices to meet the goals of the Climate Action Plan and other sustainability objectives, identifying metrics to measure the progress against each goal is increasingly important. This report focuses on the metrics that are central indicators of overall progress toward the City's sustainability goals. Metrics are broken down into Community Metrics and Green Government Metrics (i.e. municipal). In each category, primary metrics indicate key performance indicators while secondary metrics will provide program-specific performance indicators and informational material. Metrics will allow the City to monitor and display progress toward our sustainability goals on the upcoming renovated website.

BACKGROUND

The City monitors and reports on community and municipal water usage, greenhouse gas (GHG) emissions, electricity use, and solid waste diversion from landfills. Community and municipal energy use is based on PG&E data and is reported annually to the Council Sustainability Committee. Hayward's solid waste diversion rate is reported annually to CalRecycle and Hayward's water usage is reported monthly to the State Water Resources Control Board.

A complete GHG inventory is completed every five years. This inventory includes PG&E data as well as emissions from transportation, solid waste and wastewater treatment. Hayward has completed GHG inventories for 2005 and 2010 and staff anticipates that the 2015 inventory will be available in late 2016.

The City's original Climate Action Plan (CAP) was adopted by Council in July 2009. In July 2014 Council adopted the City's new General Plan and re-affirmed the City's commitment to sustainability by updating and incorporating the CAP into the General Plan. Following is a list of some of the General Plan policies with goals to achieve a more sustainable community and government:

> *Policy NR-2.4 Community Greenhouse Gas Reduction* - The City shall work with the community to reduce community-based GHG emissions by 20 percent below 2005 baseline levels by 2020, and strive to reduce community emissions by 61.7 percent and 82.5 percent by 2040 and 2050 respectively.

Policy NR 2.5 Municipal Greenhouse Gas Reduction - The City shall reduce municipal greenhouse gas emissions by 20 percent below 2005 baseline levels by 2020, and strive to reduce community emissions by 61.7 percent and 82.5 percent by 2040 and 2050 respectively.

Policy NR-4.6 Renewable Energy - The City shall encourage and support the generation, transmission, use, and storage of locally-distributed renewable energy in order to promote energy independence, efficiency, and sustainability. The City shall consider various incentives to encourage the installation of renewable energy projects (i.e. reduce permit fees and permit streamlining).

Policy NR-4.10 Public Renewable Energy Generation - The city shall ensure that all new City-owned facilities are built with renewable energy, as appropriate to their functions, and shall install renewable energy systems at existing facilities where feasible.

Policy NR- 6.9 Water Conservation - The City shall require water customers to actively conserve water year-round and especially during drought years.

Policy PFS-2.3 Sustainable Practices -The City shall serve as a role model to business and institutions regarding purchasing decisions that minimize the generation of waste, recycling programs that reduce waste, energy efficiency and conservation practices that reduce water, electricity and natural gas use, and fleet operations that reduce gasoline consumption.

Policy PFS-2.7 Energy Efficient Buildings and Infrastructure - The City shall continue to improve the energy efficiency of City buildings and infrastructure through implementation of the Municipal Green Building Ordinance, efficiency improvements, equipment upgrades, and installation of clean, renewable energy systems.

Policy PFS-7.4 Solid Waste Diversion - The City shall comply with Sate goals regarding diversion from landfill, and strive to comply with the provisions approved by the Alameda County Waste Management Authority.

Policy PFS-7.13 Residential Recycling - The City shall encourage increased participation in residential recycling programs and strive to comply with the recycling provisions approved by the Alameda County Waste Management Authority Board. The City shall work with StopWaste.org to monitor participation in residential recycling programs and educate the community regarding actual composition of waste sent to landfills.

The above list is just a snapshot of the many sustainability policies and implementation programs in the General Plan. In total, there are 99 policies and 34 implementation programs that are associated with the CAP and sustainability goals.

Finally, in July 2015, Council adopted the FY 2016 Operating Budget, which includes several performance measures or metrics that will be used to measure progress on Council priorities.

DISCUSSION

The renovated website will prominently display sustainability metrics on an "online dashboard." Many governments and organizations now use dashboards to visually display their goals and their performance. Examples from different sectors are provided in Attachment I. Some dashboards also display historical data and comparisons to the performance of similar organizations.

The goal of the online sustainability dashboard is to increase transparency and showcase the City's concerted efforts to achieve its sustainability goals. As indicated previously, the City is already measuring and reporting on several key metrics, and it makes sense to include these on the new website. However, there are numerous additional metrics that could be included.

Staff is suggesting the metrics that appear in the tables of Attachment II. These are broken up into two categories - community metrics (Table 1) and green government or municipal metrics (Table 2). Within each category, staff has identified primary

metrics, which will be prominently displayed on the sustainability dashboard, and secondary metrics, which will be displayed on program-specific webpages and in informational material. Each metric is displayed with its associated data source, frequency of measurement, and the goal that Council has set in policy documents, regulations, or directives. The green performance measures that were adopted by Council as part of the FY 2016 Operating Budget are included in the list.

The City's new website will include an open data platform called Socrata, which is being used by the cities of Los Angles, New York, San Francisco, and others. Socrata The intent is that the open data platform will allows staff to upload datasets and create charts and maps and will allows web users to sort data by category and download datasets to use in academic reports or in the creation of apps. A screenshot of the Los Angles Open Data website is included in Attachment I.

Once entered in Socratathe open data platform, data will automatically populate the online dashboard and website. Staff's goal is to update the datasets as frequently as is possible to show the most up-to-date progress toward the Council's priorities and the City's sustainability goals. As indicated in the tables below, some metrics can be updated monthly, while others can only be updated annually. The gold standard is real-time data. Staff is currently exploring platforms to measure and report real-time energy and water use for City Hall.

The datasets in Socrata will be easily accessible to support local reporting and applications for regional recognition programs. Tracking the City's progress in various sustainability measures against other local agencies will place Hayward at the forefront of sustainability reporting.

As noted in Attachment II, data exist for many of the secondary metrics, but few of them have formal goals. Staff would like the Committee's direction regarding the process for establishing goals. For example:

- Would the Committee like to recommend specific goals to Council, or to provide feedback once goals are proposed by staff?
- The Committee may also choose to establish goals once staff has begun data collection and has some baseline measurements and short term identified.
- The Committee might also provide guidance on the timeframes in which metrics should be measured, such as setting the baseline date and the date by which a goal should reasonably be met.

Most of the secondary metrics are rooted in General Plan policies. There are additional policies and implementation programs for many of the metrics that were not listed for sake of brevity.

Staff has not identified data sources for all the sustainability metrics. For those metrics that do not currently have data, staff is creating a "Data Wish List." The wish list will be distributed to teachers and college students who are interested in completing service learning projects for the City. Staff will work with teachers and students to determine a valid data collection methodology.

Staff welcomes input from the Committee regarding additional metrics not listed in this report. Furthermore, because there is a long list of secondary metrics, the Committee is asked to provide feedback on which metrics are a priority.

NEXT STEPS

Based on feedback from the Committee, staff will incorporate primary sustainability metrics into the online dashboard and secondary metrics throughout the new website. In addition, staff will provide regular reports on a subset of metrics to the Committee.

Prepared by: Jennifer Yee, Sustainability Technician

Recommended by: Alex Ameri, Director of Utilities & Environmental Services

Approved by:

Fran David, City Manager

Attachments:

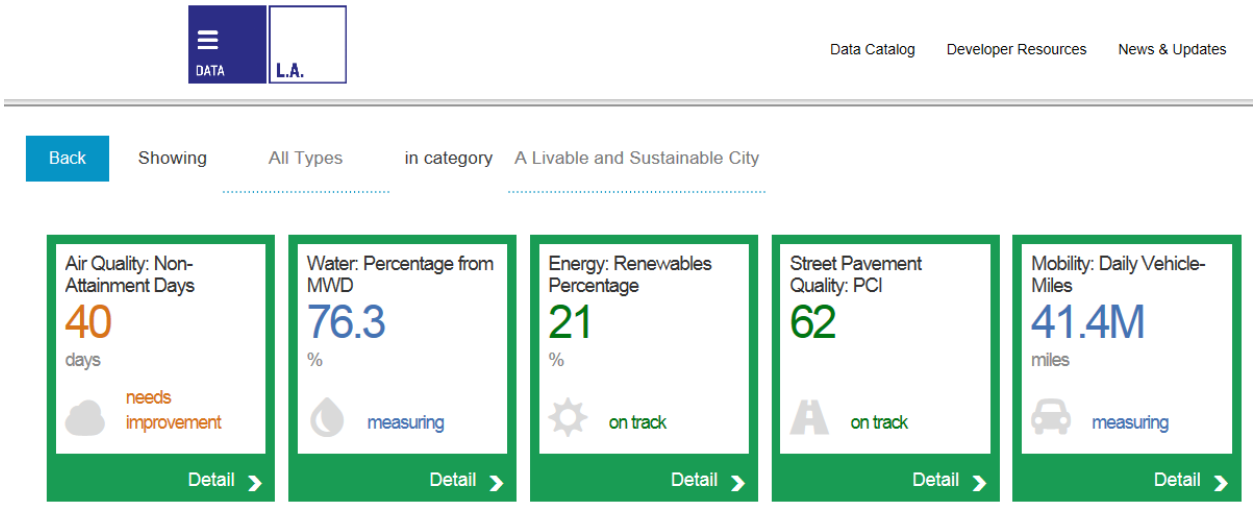
Attachment I	Examples of Dashboard from Different Sectors
Attachment II	Sustainability Metrics

ATTACHMENT I

Examples of Metrics Dashboards in a Variety of Sectors

The examples below are provided as a visual sample of the simple types of graphics that staff is looking to emulate when designing the Sustainability Dashboard on the website.

1. Los Angeles Open Data displays a series of metrics that the City has identified as primary indicators of environmental well-being and sustainability. Please see a snapshot of their main dashboard below:



2. The Fitbit online dashboard displays a participant's activity progress against their fitness goals. The dashboard provides simple infographics that are easy to read and follow:

3. The 2014 I <3 Data packet by the DC Promise Neighborhood Initiative displays infographics in a easily viewable method with simple characters representing the different metric categories:

4. The C*Tools dashboard displays information in a clean, simple format that shows progress against their organization's goals and also displays easy to follow graphs of simple trends:

Table 1. Community Metrics

Metric	Data Source	Frequency	Hayward's Goal	Source Document(s) for Goal
Primary Metrics				
GHG Emissions (metric tons)	GHG emissions inventory	Every 5 years	Reduce to 20% below 2005 levels by 2020, 61.7% by 2040, and 82.5% by 2050	GP Policy NR-2.4 Community Greenhouse Gas Reduction
Solid Waste Diversion Rate (percent)	Reports compiled from Hayward waste transfer facilities, landfills, and StopWaste	Annually	75% of all solid waste recycled, composted or source reduced, 80% by 2018	Resolution 07-041, 2015 WMAC Franchise Agreement, and GP Policy PFS-7.4 Solid Waste Diversion
Residential Electricity Use (kilowatt hours)	PG&E	Annually	10% percent reduction below 2010 levels by 2020	GP Implementation Program NR-7
Residential Natural Gas Use (therms)	PG&E	Annually	10% percent reduction below 2010 levels by 2020	GP Implementation Program NR-7
Residential Water Use (daily per capita gallons)	Bi-Monthly water meter readings	Monthly	Reduce to 8% below 2013 levels in 2015	Mandated by statewide Executive Order, GP Implementation Program PFS-2 Water Conservation Programs
Trash in the Watershed (BASMAA Visual Trash Assessment Protocol[1])	Visual Assessments conducted by staff and interns	Bi-annually	100% reduction below 2009 levels by 2022	Mandated by Water Quality Control Board's Municipal Regional Permit
Secondary Metrics				
Households and businesses with solar photovoltaic systems (number)	Permits	Annually		Policy NR-4.6 Renewable Energy
Households and businesses with solar hot water systems (number)	Permits	Annually		Policy NR-4.6 Renewable Energy
Water efficient fixtures given away (number)	City data	Annually		Policy NR-6.9 Water Conservation
Residents who have taken landscape classes (number)	City data	Annually		Policy NR-6.15 Native Vegetation Planting
Businesses with recycling programs (percent)	Waste Management (WMAC) records	Annually	100% by July 1, 2017	Policy PFS-7.14 Commercial Recycling; 2016 Operating Budget
Businesses and multifamily properties with organics collection (percent)	Waste Management (WMAC) records	Annually	100% by July 1, 2016 where applicable	Policy PFS-7.16 Organics Collection; 2016 Operating Budget; City-wide Ordinance effective March 1, 2015
Students who participated in the poster and essay contest (number)	Entry log	Annually		Implementation Program NR-18 Environmental Education Programs

[1] http://www.scvurppp-w2k.com/pdfs/1213/Visual_Trash_Assessment_Methodology-DRAFT_050213.pdf

Trash removed per stormwater trash capture devices (gallons)	City data	Bi-Annually		2016 Operating Budget ; Compliance with 100% trash reduction mandated by the Municipal Regional Permit
Outdoor Air Quality Index—Fine Particulate Matter 2.5 Microns (AQI Index Value)	Bay Area Air Quality Management District	Monthly		2016 Operating Budget, Policy NR- 2.1 Ambient Air Quality Standards
KHCG event participants (number)	City data and sign in sheets	Annually		Policy HQL-7.1 Support Sustainability Practices
KHCG trash removed (cubic yards)	City data	Annually		Policy HQL-7.1 Support Sustainability Practices
Days this year that wastewater met standards before being released into the bay (percent)	City data	Annually	100% annually	Policy PFS-4.10 Wastewater Disposal
Blocks adopted (number)	City data	Annually		Policy HQL-7.1 Support Sustainability Practices
Trash collected by street sweepers (gallons)	City data	Annually		Compliance with 100% trash reduction mandated by the Municipal Regional Permit
Households with a half mile walk to transit (percent)	GIS analysis of census data	Annually		2016 Operating Budget, Policy M-5.3 Access to Transit
People who commute to work using public transportation (percent)	American Community Survey	Annually		Policy HQL-2.3 Education about Walking, Cycling, and Using Public Transit
Class 1, 2, and 3 bike lanes (miles)	City, HARD, and East Bay Regional Parks data	Annually		Policy M-6.1 Bikeway System
Parent-led walking school buses (number)	ALCO Safe Routes to Schools	Annually		Policy HQL-2.5 Safe Routes to School
Public EV charging stations (number)	Permits	Annually		Policy M-9.9 Alternative Fuel Vehicle Parking
EVs purchased by Hayward residents (number)	Data from state rebates per zip code	Annually		
Seeds planted from the seed lending library (number)	Estimate based on seed packets borrowed	Annually		Policy EDL-4.6 Library Programs
Community gardens (acres)		Annually		Policy HQL-3.5 Community Garden Target
Organic compost given away (bags)	City data	Annually		2015 Franchise Agreement with Waste Management
Residents within 1 mile of a market with fresh produce (percent)	GIS analysis of census data	Annually		Policy HQL-3.1 Access to Healthy Goods

New (non-replacement) trees planted this year (number)	City data	Annually		NR-4.12 Urban Forestry
Parks (square miles)	City, HARD, and East Bay Regional Parks data	Annually		Policy HQL-10.2 Parks Standard
People within a half mile of a park (percent)	GIS analysis of census data	Annually		Policy HQL-10.2 Parks Standard
Volume of Hazardous Materials Disposed Properly (gallons)	Hayward Hazardous Waste Facility	Annually		2016 Operating Budget; Policy HAZ-6.1 Hazardous Materials Program
Volume of recycled material (tons)	WMAC & Tri-CED	Monthly		2016 Operating Budget; Policy PFS-7.13 Residential Recycling

Table 2. Green Government Metrics

Metric	Data Source	Frequency	Hayward's Goal	Source Document(s) for Goal
Primary Metrics				
GHG Emissions (metric tons)	GHG emissions inventory	Every 5 years	20% reduction from 2005 levels by 2020, 61.7% by 2040, and 82.5% by 2050	Policy NR-2.5 Municipal Greenhouse Gas Reduction; 2016 Proposed Operative Budget[2]
Electricity Use (kilowatt hours)	PG&E	Annually	Per the Beacon Award: 5% reduction from 2008 levels for Silver, 10% reduction from 2008 levels for Gold, and 20% reduction from 2008 levels for Platinum	Beacon Award Program[3]
Natural Gas Use (therms)	PG&E	Annually	Per the Beacon Award: 5% reduction from 2008 levels for Silver, 10% reduction from 2008 levels for Gold, and 20% reduction from 2008 levels for Platinum	Beacon Award Program
Water Use (average daily gallons)	Bi-Monthly water meter readings	Monthly	Community goals are to reduce to 8% below 2013 levels in 2015. Consider alternative goal for municipal operations.	2016 Operative Budget
Solid Waste Diversion Rate (percent)	City data	Annually	75% of all solid waste recycled, composted or source reduced, 80% by 2018	Statewide and City-adopted goal, 2015 WMAC Franchise Agreement, and GP Policy PFS-7.7 Municipal Collection of Recyclables and Organics
Power from Onsite Renewable Sources (percent)	PG&E	Monthly	Pending Council direction on Zero Net Energy Policy	GP Implementation Program NR-14
Secondary Metrics				
Municipal fuel use (for fleet) (gallons)	City data	Annually		2016 Operating Budget; Policy NR-2.9 Fleet Operations
Municipal fleet efficiency (average miles per gallon)	City data	Annually		2016 Operating Budget; Policy NR-2.9 Fleet Operations
LED streetlights (percent)	City data	Annually	100% of streetlights to be LEDs	Policy PFS-2.3 Sustainable Practices
Employees using pre-tax commuter benefits (percent)	City data	Annually		Implementation Program M.18 City Commuter Benefits
Landscaping replaced with drought resistant plants at City Facilities (square feet)	City data	Annually		2016 Operating Budget; Policy NR-6.14 Native and Drought-tolerant landscaping

[2] http://www.hayward-ca.gov/CITY-GOVERNMENT/DEPARTMENTS/FINANCE/documents/2015/FY16_Proposed_Operating_Budget.pdf
[3] http://www.ca-ilg.org/beacon-award-program

Staff Report

File #: LB 15-018

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Director of Utilities & Environmental Services

SUBJECT
Annual Update on City's Waste Reduction and Recycling Programs

RECOMMENDATION
That the Committee reviews and comments on this report.

SUMMARY

This report is an annual update on the recycling services offered residents and businesses under the City's contract with Waste Management of Alameda County (WMAC) that became effective March 1, 2015. Included in this report is the City's diversion rate for 2014, which has been determined to be 76%. This meets and exceeds the City's previously established diversion goal of 75%. Also described in this report is a summary of the City's compliance with the mandatory recycling ordinance and a description of the outreach activities conducted to inform residents and owners of multi-family and business properties of the variety of services available under the City's new contract.

BACKGROUND

In accordance with the requirements of Measure D, a County Charter initiative amendment passed in 1990, the Alameda County Recycling Board established the goal of at least 75% diversion of all discarded materials in Alameda County by 2010. In 2007, Council adopted a goal of diverting at least 75% of waste from the landfill by 2010. In 2013, the City's actual diversion rate was 74%. The City's contract with WMAC establishes diversion goals based on the tons of discarded materials collected as recyclables, organics, or solid waste to be landfilled. The diversion goals identified in the contract are designed, in part, to help the City to achieve an 80% diversion rate by 2018.

In conjunction with the City's contract with WMAC, staff manages a variety of programs that are intended to help achieve the City's diversion goals.

General Plan Policies - Hayward's General Plan, adopted on July 1, 2014, includes the following policies and implementation programs related to solid waste, recycling and organics collection use:

Public Facilities and Services, Policy 7.4 Solid Waste Diversion - The City shall comply with State goals regarding diversion from landfill, and strive to comply with the provisions approved by the

Alameda County Waste Management Authority (ACWMA).

Public Facilities and Services, Policy 7.12 Construction and Demolition Waste Recycling - The City shall require demolition, remodeling and major new development projects to salvage or recycle asphalt and concrete and all other non-hazardous construction and demolition materials to the maximum extent practicable.

Public Facilities and Services, Policy 7.13 Residential Recycling - The City shall encourage increased participation in residential recycling programs, and strive to comply with the recycling provisions approved by the ACWMA Board. The City shall work with ACWMA to monitor participation in residential recycling programs and educate the community regarding actual composition of waste sent to landfills.

Public Facilities and Services, Policy 7.14 Commercial Recycling - The City shall encourage increased participation in commercial and industrial recycling programs, and strive to comply with the recycling provisions approved by the ACWMAB. The City shall work with ACWMA to provide technical assistance to businesses to implement mandatory recycling.

Public Facilities and Services, Policy 7.15 Yard Clippings Reduction - The City shall encourage residents to reduce yard clippings through at-home composting or use the green waste collection service provided by the City's franchisee.

Public Facilities and Services, Policy 7.16 Organics Collection - The City shall encourage residents and businesses to separate for collection food and food-soiled paper using organics collection services provided by the City's franchisee.

Public Facilities and Services, Policy 7.20 Food Scraps Collection - The City shall promote and expand the food scraps collection program for single-family homes to minimize organic waste in landfills.

Public Facilities and Services, Policy 7.21: Mandatory Recycling - The City shall implement mandatory recycling for commercial and multifamily uses and work with ACWMA to increase participation in this program.

DISCUSSION

Staff has been working with WMAC to promote participation in on-going programs as well as new programs that became available on March 1, 2015. Staff from WMAC and the City have contacted multi-family property managers to offer assistance with scheduling removal of bulky items and implementing organics collection and will continue to do so.

Mandatory Recycling Ordinance - ACWMA enacts and implements County-wide ordinances and diversion programs to help member agencies achieve their waste reduction and diversion goals. In January 2012, the ACWMA Board approved a mandatory recycling ordinance. The goal of the ordinance is to reduce the amount of recyclable and compostable materials landfilled to no more than 10% by 2020.

The ordinance consists of two phases. Phase 1 requires businesses with four cubic yards or more of weekly garbage service (large businesses) and all multi-family property owners to arrange for collection of recyclables, such as a variety of paper types, and food and beverage containers made of glass, metal

and plastic. On January 4, 2012, Council authorized the City's participation in Phase 1 of ACWMA's ordinance. The provisions of Phase 1 of the ordinance have been met in that all multi-family properties have arranged for collection of recyclables. In addition, the requirement that all large commercial customers subscribe to recycling services has also been implemented.

On January 20, 2015, Council authorized the City's participation in Phase 2 of ACWMA's ordinance. The City's new contract with WMAC provides for organics collection service to multi-family properties. To allow time for adequate public education and outreach for organics collection, all multi-family properties (about 420 developments and 15,000 units) will be required to implement this service by January 1, 2016. As indicated in Attachment I, 12% (51 of 420) of multi-family properties currently subscribe to organics collection service. Businesses that regularly generate organics, including food processors, grocers, restaurants and some convenience stores, will be required to implement separate organics collection by that same date. Organics collection for multi-family properties is available free of charge. For businesses, the service is available at 50% of the comparable garbage rate . Businesses that subscribe to less than four cubic yards of weekly garbage service are encouraged to subscribe to recycling services, but are not required to do so at this time.

Inspections and enforcement are performed by ACWMA's agents or staff from participating municipalities. Notices of violation may only be issued after three warning letters have been mailed and assistance to implement services has been offered. Such notices may only be issued by ACWMA with written approval by staff from participating municipalities. ACWMA will assume all costs to implement these services, including assistance to businesses to implement recycling programs, inspection and enforcement.

The table below indicates the number and percent of businesses that have arranged with WMAC for collection of recyclables and organics and is based on data provided by WMAC. Businesses may also comply with the ordinance by arranging with other service providers, or self-hauling their recyclables and organics for donation or sale. When ACWMA enforces the ordinance, inspectors will determine which businesses are in compliance without recycling and organics service from WMAC. Businesses that subscribe to four cubic yards or more of weekly garbage service subscribe to recycling services at a higher rate (80%; 517 of 650) than businesses subscribing to less than four cubic yards (69%; 1,470 of 2,142). Over the past year, the total number of businesses has increased about 9.7% (262); most are smaller businesses that will be required to implement recycling services by January 1, 2017. WMAC and City staff will continue to work with the remaining businesses and multifamily properties to provide assistance to implement both services.

Outreach to Multi-Family Properties - From February through June, three letters that summarized the new services were mailed to property managers and owners of all multi-family properties. Each mailing included a letter in Spanish and English. Staff made a presentation to the Hayward Promise Neighborhood group and will continue to work with property managers and owners to facilitate bulky item removal and organics collection. Presentations to tenants are coordinated with WMAC and the property manager. Brochures have also been distributed at each of the street parties and to the Keep Hayward Clean & Green Task Force. In addition, WMAC has hired new staff who is responsible for contacting all multi-family property managers with offers of assistance to implement bulky item removal and organics collection services.

Outreach to Businesses - Three letters summarizing the continuing services and requirements of Phase 2 of the ordinance were also mailed to all businesses from February through June. Each mailing included a letter in Spanish and English and a flyer advising customers of the continued services available for collection of recyclables and organics. Recyclables collection is available at 20% of the comparable garbage rate, and organics collection is available at half the price of regular garbage collection. Although not always the case, numerous businesses, including restaurants, grocers and food processors, have been able to reduce garbage service and cost after implementing one or both services.

Assistance with implementing programs, including a waste assessment and employee training, is provided by WMAC and City staff. City assistance includes labels for containers and posters for reference by employees and patrons. City staff will continue to disseminate informational materials to businesses via field visits and the monthly bills issued by WMAC.

Outreach to Single-Family Residents - Informational materials to single-family residents have included bill inserts that highlight the twice annual bulky item appointments and the variety of other services that continue to be offered. Additionally, WMAC mailed a postcard describing removal of bulky items to all households. WMAC also applied stickers to the lids for all trash and organics carts to inform residents which materials should be placed in each cart. (The recycling carts provided by Tri-CED already have an in-mold graphic on each lid.) Quarterly bill inserts will continue to present information to residents. The mandatory recycling ordinance does not apply to single-family households.

City's Diversion Rate - The City's contract with WMAC requires implementation of new programs to divert additional tonnage from the landfill. Also specified in the contract are annual diversion rates that WMAC has agreed to meet and which will help the City to achieve its goal of an 80% diversion rate by 2018.

The City's 2014 diversion rate is 76%. This rate, based on calculations required by CalRecycle, is based on total tons sent to landfill that originated from the City and landfilled by WMAC or other haulers. The County-wide average for 2014 will not be available until late September when ACWMA staff will have completed its calculations. The diversion rate in 2013 was 74% and has increased from the low 70% range achieved in 2011-2012 (see Attachment I for actual rates). Staff attributes the primary reasons for the increased diversion rate to a 26% increase in tonnage recycled by the commercial sector. Participation by businesses and apartment complexes is important because about 80% of all franchised materials sent to landfill are generated by those two groups.

State law (AB 939) mandates that, beginning in calendar year 2000 and each year thereafter, all municipalities divert from landfill at least 50% of all waste generated. In 2007, the City Council adopted a 75% diversion goal. In addition, Measure D includes a 75% diversion goal by 2010. Staff calculated the 76% diversion rate for 2014 based on the per capita disposal rate compiled by the State and a methodology approved by State CalRecycle Board staff. The per capita disposal rate is unique to each municipality, as the population and tonnage disposed for each varies. Thus, the per capita disposal rate cannot be easily compared with other municipalities.

FISCAL IMPACT

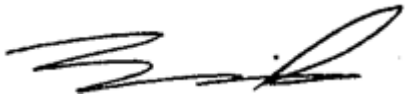
Solid Waste Program staff will continue to work with the ACWMA to coordinate implementation and enforcement of the mandatory recycling ordinance. Recycling Fund monies will be used to fund these activities, so there will be no impact to the General Fund. These funds are based on tons of garbage disposed at the landfill, and are collected and disbursed by ACWMA. Currently, there is sufficient revenue in the Recycling Fund balance to pay costs associated with implementing the ordinance. However, funds have decreased by about 50% from several years ago as tons landfilled has decreased. To replenish the City's Recycling Fund, additional funds will be remitted by WMAC, per the terms of the contract, to the City beginning in FY2018-19.

NEXT STEPS

City staff will continue to offer assistance to businesses and multi-family properties to implement separate collection of recyclables and organics. Outreach efforts will continue through a variety of channels, including the Rental Housing Owners Association and the Chamber of Commerce.

Prepared by: Vera Dahle-Lacaze, Solid Waste Manager
Recommended by: Alex Ameri, Director of Utilities & Environmental Services

Approved by:



Fran David, City Manager

Attachments: Attachment I -- Mandatory Recycling Ordinance: Summary of Participation Diversion Rates: 2010-2014

ATTACHMENT I

Mandatory Recycling Ordinance: Summary of Participation

Collection of Recyclables from Businesses	No. Accounts	Percent
Total	2,792	
Currently subscribing to service	1,987	71%
Balance that have not subscribed to WMAC service	805	29%

Collection of Organics from Businesses	No. Accounts	Percent
Total	554	
Currently subscribing to service	235	42%
Balance that have not subscribed to WMAC service	319	58%

Collection of Organics from Multi-Family Properties	No. Accounts	Percent
Total	420	
Currently subscribing to service	51	12%
Balance that have not subscribed to WMAC service	369	88%

Diversion Rates: 2010-2014

	Calendar Year				
	2010	2011	2012	2013	2014
Diversion Rate	67.0%	70.7%	71.4%	73.6%	75.7%

Staff Report

File #: LB 15-015

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Director of Utilities and Environmental Services

SUBJECT
Water Pollution Control Facility (WPCF) Reclaimed Water Project Update

RECOMMENDATION
That the Committee reviews and comments on this report.

BACKGROUND AND DISCUSSION

Staff is planning on constructing a new Recycled Water Treatment and Distribution Facility Project that will provide tertiary treated wastewater for irrigation and other industrial uses. Tertiary recycled water is the highest level of wastewater treatment defined by the State of California (referred to as Title 22). Tertiary treatment requires secondary effluent, which is what the WPCF is currently producing, to go through additional treatment processes including coagulation and filtration followed by a high level of disinfection that results in clean safe water that will allow unrestricted irrigation and industrial use for the City's customers. The City is currently working on obtaining funding from the California State Revolving Fund (SRF) program, and will be hiring a consultant to start the design process in the next few months.

Aside from the Recycled Water Treatment and Distribution Facility Project, the City has an existing reclaimed water system at the WPCF. The reclaimed water system provides filtration and disinfection of the secondary effluent for various uses at the plant. Because of the recent drought, and the need to reduce potable water use this year, staff is working on modifying and expanding the reclaimed water system to provide additional capacity for other City uses such as street sweeping, dust control, and for cleaning sanitary sewers. In addition, additional capacity will be provided for private contractor use upon request. The system was originally installed during the 2006 WPCF Facility Improvements - Phase 1 Project and was designed to supply up to 300 gallons per minute of reclaimed water for various plant uses including supply water for process, wash down, and other general uses. Although there is some spare capacity to deliver reclaimed water to City trucks for such uses as street sweeping and dust control, the system cannot reliably provide excess water on days when heavy maintenance activities are planned and the system is in full demand for cleaning basins and/or tanks. In addition, reliability improvements are needed to ensure the water meets regulatory requirements for hauling and use of reclaimed water by commercial or private entities in accordance with the State requirements.

The existing reclaimed water system consists of a packaged filtration system with three pressure filters with mixed media, a sodium hypochlorite bleach dosing system which provides disinfection for the filtered water, followed by storage and distribution pumps (Attachment 1 shows the existing facility).

In addition to purchasing a new set of pressure filters to double the system capacity, the project includes installing alarms and monitoring to ensure the system reliably meets disinfection requirements for recycled water. This includes installing a turbidimeter to ensure the filtered water is of high quality, and a chlorine residual analyzer to ensure disinfection is maintained at all times. A truck fill station will be constructed as part of the project.

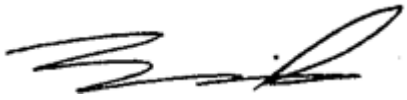
It is important to note that this system will supply water exclusively for the City's use and limited use by contractors as it is designed to meet the treatment standards required that allow for certain restricted uses only (i.e., where exposure to the public is minimized). The facility is not designed for residential uses like the Dublin San Ramon recycled water facility which has been in the news because that requires a much higher level of treatment that results in tertiary recycled water for unrestricted use. The City's future Recycled Water System will produce that kind of water. That project has completed feasibility and planning stages, and environmental documentation. Staff is in the process of securing funding for the project. It is anticipated that the project could go on-line within the next few years.

FISCAL AND ECONOMIC IMPACTS

The estimated cost of this project is approximately $250,000. There are adequate funds in the Wastewater Fund working capital balance to pay for the project. There will be no impact on the General Fund. Some or all of the cost may be recovered through pricing of reclaimed water. There will be no immediate impact on sewer rates related to this project. Contractors working on projects in the City could benefit from lower water cost for construction water when using the reclaimed water.

Prepared by: Suzan England, Senior Utilities Engineer

Recommended by: Alex Ameri, Director of Utilities and Environmental Services
Approved by:



Fran David, City Manager

Attachments:

Attachment I Reclaimed Water System Pictures

Existing Plant Reclaimed Water System

Existing Reclaimed Water Pressure Filters

Staff Report

File #: LB 15-020

DATE: September 10, 2015

TO: Council Sustainability Committee

FROM: Director of Utilities and Environmental Services

SUBJECT
Public Litter Containers - Revised Locations for New Containers throughout City

RECOMMENDATION
That the Committee reviews and comments on this report.

SUMMARY

Based on the Committee's direction at the June 18, 2015 meeting, staff revised the placement plan for new public receptacles to locate more of them in commercial areas outside of the downtown.

BACKGROUND

As part of the City's contract with Waste Management that took effect March 1, 2015, the City has received 20 new pairs of Bigbelly trash/recycling receptacles and 50 new exposed aggregate containers. On June 18, 2015 (<http://www.hayward-ca.gov/CITY-GOVERNMENT/COUNCIL-STANDING-COMMITTEES/COUNCIL-SUSTAINABILITY-COMMITTEE/2015/CSC-CCSC061815full.pdf>), staff presented a map showing locations of the 280 existing containers and proposed locations for 15 of the new Bigbellies and 22 of the new exposed aggregate containers.

During and after the June 18 meeting, Committee members commented that containers should be more widely distributed throughout the City's commercial areas and not concentrated in downtown. Specifically, containers were suggested for:

- Industrial Boulevard between Mission and the BART tracks
- Mission Boulevard - entire length. More specifically, the east side between Arrowhead Lane and Industrial Boulevard, the "par course" area, and the area surrounding the Fairway Park shopping center
- Tennyson Road - entire length
- Shopping centers - all of them (within a half-block in each direction)
- Fast food restaurants and convenience stores (within a half-block in each direction)
- Vacant lots (In the right of way fronting or near vacant lots)

DISCUSSION

In response to input from the Committee and community members, staff added 19 more proposed exposed aggregate containers (for a total of 41). The additional containers are indicated by yellow circles in the attached map (see Attachment I or <http://arcg.is/1LYbjil>) and include:

- Harder Road, West A Street, Hesperian Blvd. and Clawiter Road - all near fast food and convenience markets
- Two on Industrial Boulevard - one near a Burger King and one near a bus stop under the BART tracks
- Several on Mission Boulevard near bus stops, convenience markets, and the Fairway Park shopping center
- Two containers near Ruus Park

Staff uses a set of criteria when siting new litter containers and when evaluating requests to remove existing containers. Staff revised the criteria (Attachment II) incorporating comments received from the Committee and requests from the community. The criteria include:

- Types and sources of litter
- Proximity to bus stops, fast food restaurants, etc.
- Occurrences of illegally dumped debris or household trash
- Minimum distances from curbs, hydrants, and other street furnishings

Staff is seeking input from the Committee on the revised criteria.

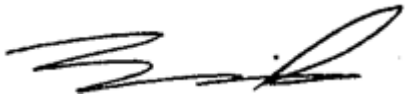
NEXT STEPS

If necessary, staff will update the map of proposed container locations and will begin placing containers accordingly. Staff will also make any necessary revisions to the container placement criteria.

Prepared by: Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Utilities and Environmental Services

Approved by:



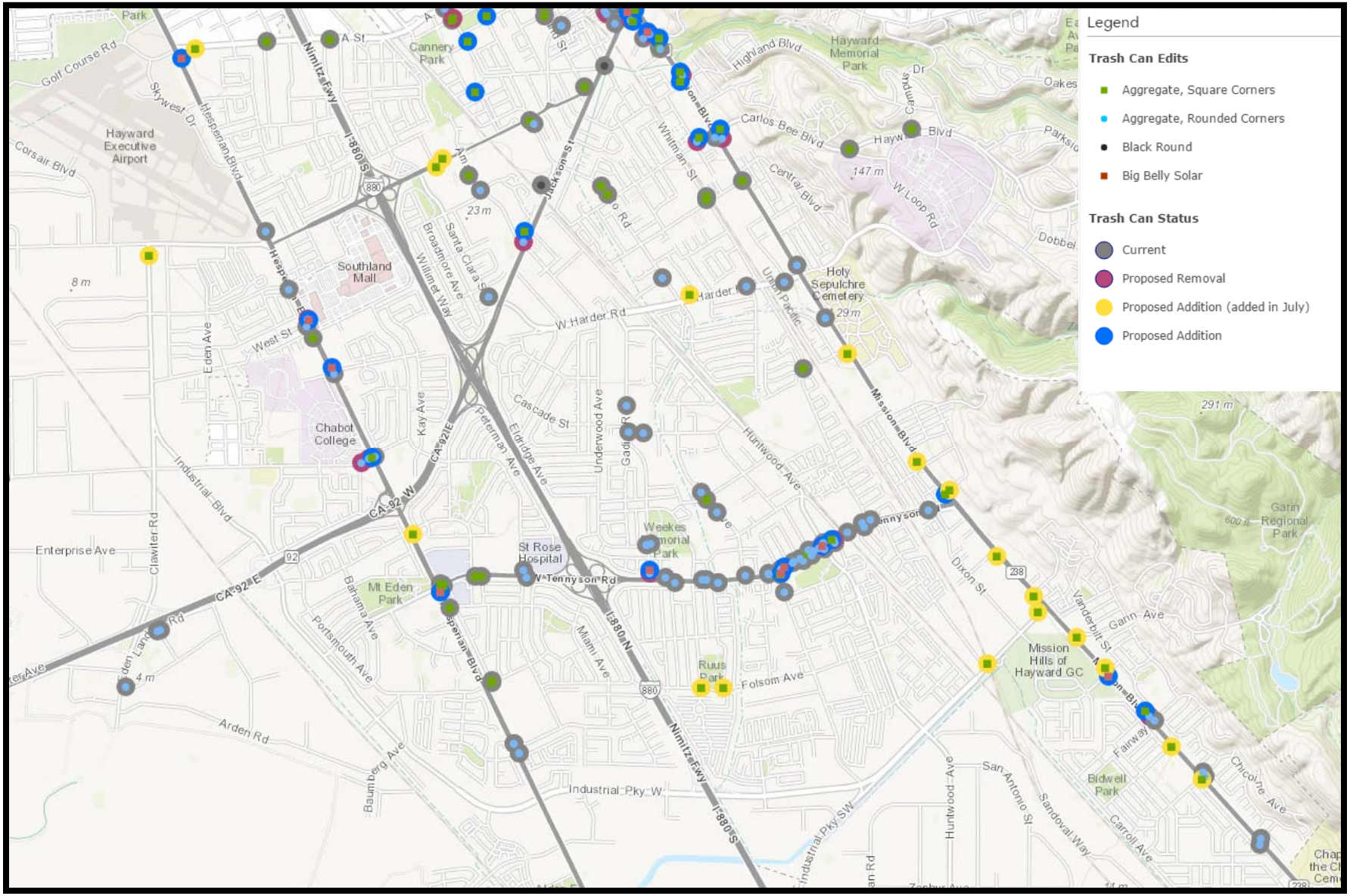
Fran David, City Manager

Attachments:

Attachment I	Map of Proposed Container Locations
Attachment II	Proposed Criteria for Siting Public Litter Containers

Attachment I

Proposed Locations for Public Litter Containers



Public Litter Container Siting and Removal Criteria

Proposed or Existing Location _____

Individual(s) Requesting Action Request Date Response Due

Evaluate appropriate placement of or removal of City litter containers using these criteria:

- ☐ Site Assessment
- ☐ Outreach
- ☐ Analysis and Determination
- ☐ Follow-Up

Site Assessment

Evaluate Quantities, Types, and Sources of Litter
Evaluate the quantities and types of litter (e.g., fast-food packaging, cigarettes, plastic film), when, where and how frequently the litter is generated and where the litter collects after it is left on the ground by a pedestrian. Is it possible to determine whether or not the trash is from pedestrians or moving vehicles? Determine from WMAC or Maintenance Services whether there are reports of illegally dumped household trash and where those items have been placed.

Determine Proximity of Litter Container to Premises that Generate Litter
Is the current (or proposed) City litter container within two or three blocks of locations with significant pedestrian traffic where litter is generated, e.g., fast-food restaurants, convenience stores, schools, bus stops, or BART stations?

Observe Pedestrian Traffic Patterns
Is the current (or proposed) City litter container convenient to the walking patterns of those who generate the litter?

Review Safety and Access
Review site safety and access to determine if a City litter container in the proposed location will be safe for WMAC drivers to service. The back-up distance should be no more than 150 feet. Confirm that the proposed location is not immediately adjacent to waterways or storm drains.

Consider Effectiveness
Evaluate whether:

- siting a proposed City litter container would result in illegally dumped trash or household trash by determining whether there have been instances of illegally dumped trash nearby and with what frequency; and

- siting a City litter container in the proposed location is an effective response to the situation. For example, if WMAC or Maintenance Services has confirmed reports of household trash dumped nearby, enlist their assistance to try to identify whether any personal mail is in any of the bags and issue a letter to affected parties advising that illegally dumped trash is a violation of City regulations and must be stopped.

Outreach

In addition to a site assessment, research any Planning permits on file for nearby businesses to evaluate the level of compliance with conditions of approval regarding removal of litter. Determine whether a courtesy notice or notice of non-compliance should be generated by Code Enforcement.

Evaluate the potential impacts siting a container might have on nearby businesses and residents in the immediate vicinity. Consider contacting affected parties to collect comments/concerns.

Staff consults with Water Pollution Source Control for any existing information resulting from visual trash assessments. Staff should also consider consultation with representatives from Maintenance Services and WMAC.

Analysis and Determination

The table on the following page is a reference to compile notes from the site assessment and any outreach activities. The Yes/No checkbox should be used to indicate the appropriateness of the proposed location.

A site assessment should include notes and photos. City staff will make a final determination based on the comments from the assessment and any outreach to residents and businesses.

Guidelines

Trash receptacles should be located according to the following guidelines:

- as near to corners as is practicable, but out of the required visibility triangle.
- near high activity generators such as major civic, commercial and transit destinations.
- a maximum of two trash receptacles per block face in the downtown and a maximum of one per block face outside downtown.
- a maximum of four trash receptacles may be provided at an intersection (one per corner).
- on streets with a large amount of pedestrian activity and streets where pedestrians may linger and enjoy the public realm, such as downtown, commercial food and beverage establishments, mixed-use areas, or parks.
- near bus stops.

Trash receptacles should be placed not less than:

- 18 inches from the outside edge of the curb
- 2 feet from any driveway or wheelchair ramp and 4 feet at the landings of the ramp
- 5 feet from any fire hydrant and 2 feet from a stand pipe
- 4 feet from any bus shelter

Additional considerations:

- consider car overhangs and door swings.
- should reduce streetscape clutter by consolidating containers with miscellaneous furnishings such as utility poles, news racks, mail boxes, etc. as much as possible.

Removal of Containers

Containers may be removed upon request if it is found that the container is causing negative impacts. Staff may determine that a litter container should be removed based on the types or frequency of illegally dumped trash next to City litter containers.

Analysis and Determination

Criteria	Comments	Yes	No
Quantities & Types of Litter		☐	☐
Proximity		☐	☐
Traffic		☐	☐
Safety and Access		☐	☐
Effectiveness		☐	☐
Outreach		☐	☐

Follow-Up

Describe follow-up actions to be taken based on determination.

CITY OF HAYWARD

Hayward City Hall
777 B Street
Hayward, CA 94541
www.Hayward-CA.gov

Staff Report

File #: LB 15-025

Suggested Sustainability Committee Quarterly Meeting Topics for 2015

September 10, 2015

- Recycled Water Project Update
- Sustainability Education & Outreach, GreenHayward.gov (website)
- Sustainability Metrics
- Waste Reduction Report – Annual Update on Recycling Programs
- Update on Community Choice Aggregation
- Public Litter Containers – Revised Locations
- Implementation of California's Model Water Efficient Landscape Ordinance (MWELO)
- Litter from Take-Out Food & Beverage Establishments
- Zero Net Energy Policy for City Facilities

December 10, 2015

- Renewable Energy Generation and Near-Term Potential at City Facilities
- Energy Update: 2014, Energy Reduction Initiative
- Annual Update on Admin. Rule 3.9 – Environmentally Preferred Purchasing Policy
- Bike Sharing – Options for Implementation
- Climate Action Plan – Status on Meeting Goals
- California Youth Energy Services (CYES) – Report on 2015 Activities
- Update on PAYS Implementation
- Update on Car Sharing Grant
- Update on EPA Trash Reduction Grant
- Review Agenda Topics For 2016