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Landscape Irrigation Best Management Practices

California Energy Commission's
Irrigation Equipment Workshop

Sacramento, CA

April 1, 2009

PARTNERS FOR A WATER-EFFICIENT CALIFORNIA

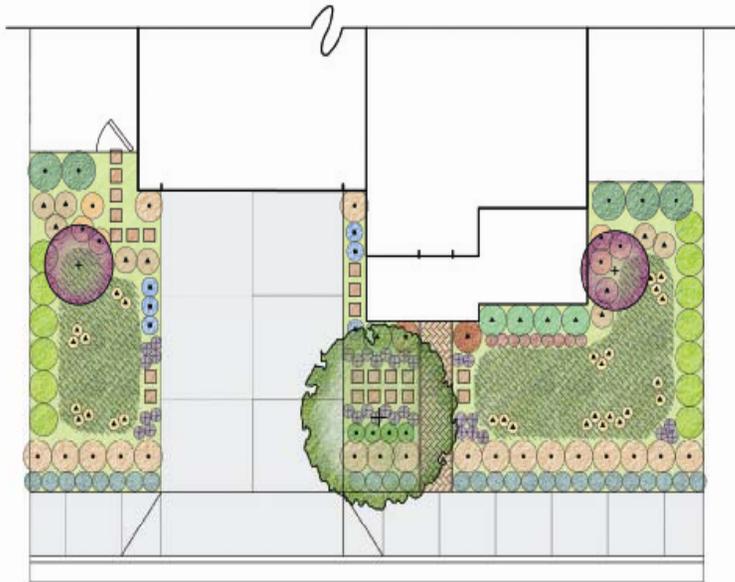


Landscape BMP supports Five Basic Elements of Water Efficient Landscapes

- Design
- Installation
- Operations and maintenance
- Management
- Equipment

"TYPICAL" SIZED LOT HOUSE
SOUTH FACING FRONT GARDEN, TYPICAL

60'x80' LOT



Plant Count
TREES 3
SHRUBS 167
GROUNDCOVER 250 SF

PAVING:
ENTRY AND SIDE WALKWAY TO BE SAND-SET PERMEABLE UNIT PAVERS, DECOMPOSED GRANITE, PEBBLES OR OTHER SURFACE LIGHT IN COLOR FOR LOW HEAT EMISSION. DRIVEWAY TO BE PERMEABLE CONCRETE, PERMEABLE ASPHALT OR UPGRADED TO SAND-SET PERMEABLE PAVER UNITS. IMPERVIOUS SURFACE SHOULD BE MINIMIZED.

MULCH:
3 INCHES OF MULCH IN ALL AREAS. SHEET MULCHING AND RECYCLED GREEN WASTE MULCH ARE RECOMMENDED.

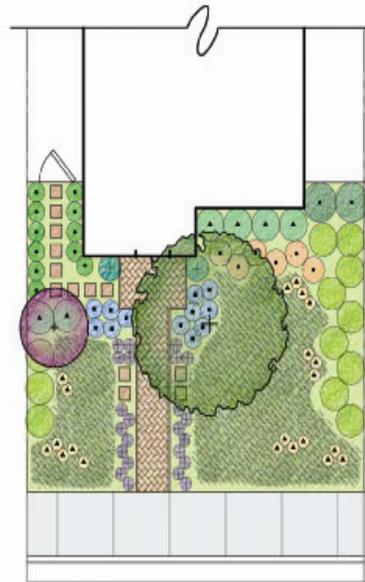
FIRE:
TEMPLATES ARE BASED ON INDIVIDUAL LOTS WITHIN A SUBDIVISION. WHEN DEVELOPING UP AGAINST MIDLANDS OR OTHER FIRE SENSITIVE AREAS FOR AN INDIVIDUAL PARCEL OR A PROJECT, A FIRE MANAGEMENT PLAN SHOULD BE CREATED.

DRAINAGE:
DOWNSPOUTS SHOULD BE DIRECTED INTO LANDSCAPE WITH GRADING FOR PROPER DRAINAGE AWAY FROM HOUSE. RUNOFF DURING PLANT ESTABLISHMENT MUST BE ACCOMMODATED ON-SITE.

PLANT RESOURCES:
THE SAMPLE PLANT LEGEND ABOVE PROVIDES GUIDANCE FOR APPROPRIATE PLANT SELECTION. SELECTIONS SHOULD BE MODIFIED TO ADDRESS DIFFERENT SOLAR ORIENTATIONS, SOIL CONDITIONS, AND OTHER MICRO-CLIMATIC FACTORS OF A PARTICULAR BUILDING SITE. RESOURCES FOR ADDITIONAL PLANT SELECTIONS AND SUBSTITUTIONS INCLUDE SUNSET'S WESTERN GARDEN BOOK, EDITED BY KATHLEEN NORRIS BRENZEL; WATER USE CLASSIFICATION OF LANDSCAPE SPECIES (WUCOLS). <http://www-facilities.stanford.edu/environment/landscape.pdf> AND YOUR LOCAL CHAPTER OF THE CALIFORNIA NATIVE PLANT SOCIETY (www.cnps.org)

ZERO-LOT LINE HOUSE
SOUTH FACING FRONT GARDEN, TYPICAL

30'x80' LOT



Plant Count
TREES 2
SHRUBS 95
GROUNDCOVER 250 SF

PLANT CLIMATE:
BAY AREA SUMMERS ARE HOT AND DRY INLAND WITH MINIMAL MARINE LAYER INFLUENCE AND MOSTLY COOL AND FOGGY NEAR THE COAST. WINTERS ARE MILD AT THE COAST AND SOME FREEZE OCCURS IN THE INLAND VALLEYS.

BAY AREA FRONT YARD PRODUCTION SAMPLE

SAMPLE PLANT LEGEND

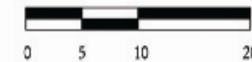
SYMBOL	BOTANICAL NAME	COMMON NAME
	<i>xChitalpa T. 'Moring Cloud'</i>	NCN
	<i>Quercus agrifolia</i>	Live Oak
	<i>Quercus suber</i>	Cork Oak
	<i>Arbutus unedo 'Elfin King'</i>	Dwarf Strawberry Tree
	<i>Cotinus cocczygia</i>	Smoke Tree
	<i>Lagerstroemia 'Natchez'</i>	Crape Myrtle
	<i>Leptospermum l. 'Compacta'</i>	Dwarf Tea Tree
	<i>Luma apiculata</i>	NCN
	<i>Myrtus communis</i>	Myrtle
	<i>Rosemarinus 'Collingwood Ingram'</i>	Rosemary
	<i>Barberis l. 'Marla'</i>	Gold Pillar
	<i>Myrsine africana**</i>	African Boxwood
	<i>Rhamnus c. 'MSB'</i>	Dwarf Coffeeberry
	<i>Ribes sanguineum**</i>	Currant
	<i>Arctostaphylos purissima</i>	Lompoc Manzanita
	<i>Santolina c. 'Nana'</i>	Dwarf Lavender Cotton
	<i>Polystichum callifornicum**</i>	Sword fern
	<i>Helictotrichon sempervirens</i>	Blue Oat Grass
	<i>Lavandula a. 'Munstead'</i>	Lavender
	<i>Nassella tenuisissima</i>	Mexican Feather Grass
	<i>Armeria maritima</i>	Common Thrift
	<i>Penstemon h. 'Purdy'</i>	Purple Beard Tongue
	<i>Arctostaphylos 'Emerald Carpet'</i>	Emerald Carpet
	<i>Thymus serpyllum*</i>	Creeping Thyme*
	<i>Rubus pentalobus*</i>	Bramble*

* Can tolerate light traffic
** Can tolerate shade

SUNSET ZONES - 15, 16, 17



NORTH

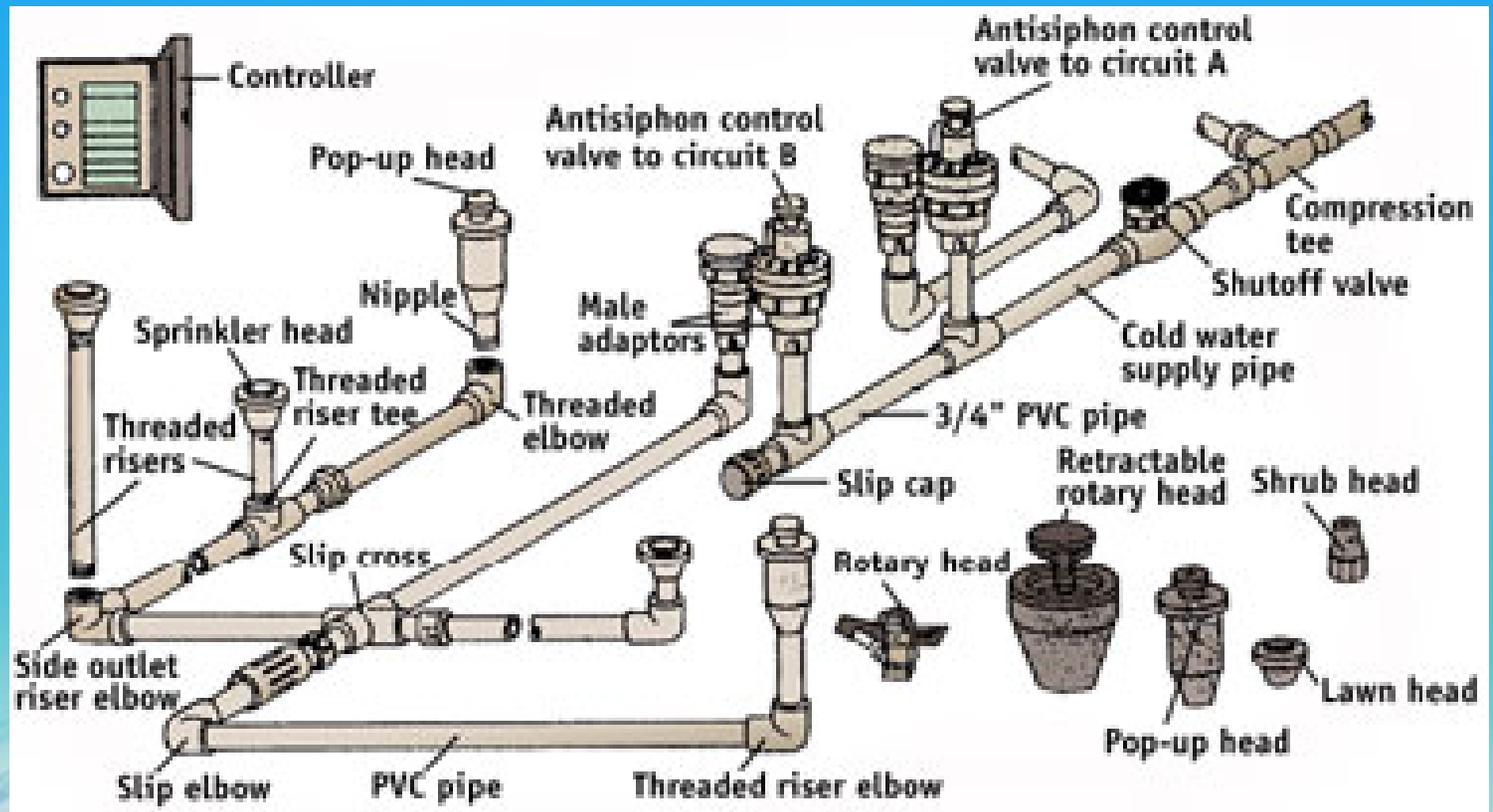


1" = 10'-0"



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Installation





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Operations



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Maintenance



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Equipment



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Landscape BMP

- 90% of dedicated CII landscape meters
- 15% of mixed and unmetered CII connections
- Parallels Model Landscape Ordinance
- Extensive Flex Menu



Landscape Flex Items

- Monitor & report on landscape water use
 - Water budgets & use reports
 - Agency-wide water budgets
- Technical landscape resources & training
 - Provide design assistance
 - Perform landscape & irrigation audits
 - Landscape workshops, training, & presentations



Landscape Flex Items (Con't)

- Provide Incentives:
 - Budget-based rate structures
 - Conversions to dedicated landscape meters
 - Irrigation system upgrades
 - Reduction in irrigation water use demand
 - Landscape design
 - Turf reduction
 - Conversion to recycled water or Alternative sources of water (graywater, rainwater, cisterns, etc.)



Implementation

Council is developing a Guidebook for supplemental implementation information:

- Mentoring
- Continuing educational opportunities
- Useful research, case studies and examples
- Step by step how's & why's



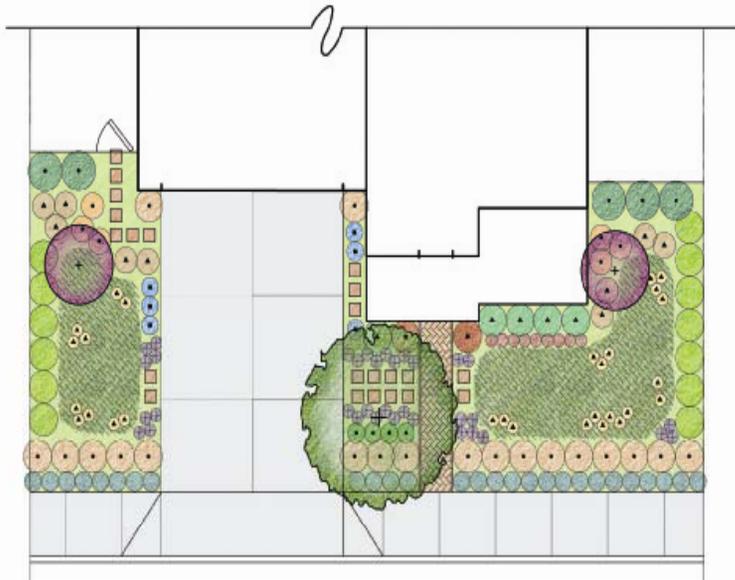
Smart Urban Landscapes

**Landscape Design Guidelines
incorporating the best ideas from
existing standards for new residential
construction**

**Six residential landscape design
templates that incorporate Landscape
Design Guidelines**

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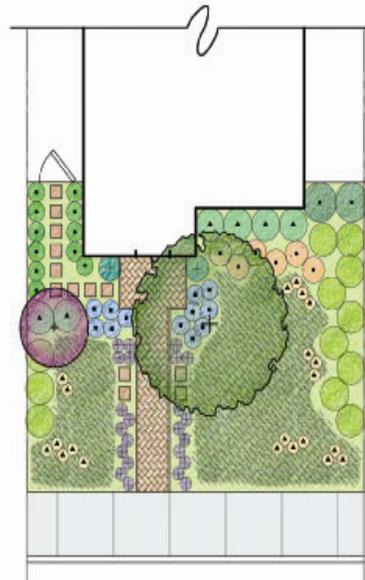
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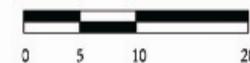
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Landscape Templates

- For “typical” and “zero-lot line” homes
- Bay Area; Central Valley; Sierra Foothills; Southern Coastal, Inland, and Foothills
- Landscape design with plant list; irrigation design with schedule & water budget



Status of Smart Urban Landscape Project

- Materials will be posted on Council website by April 15, 2009
- Materials will be available to members soon thereafter



The California Water Smart Irrigation Controller Project

Results and Perspective on a Large Field Study of an Important Emerging Technology



Project Funding Provided by California Department of Water Resources

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Preliminary Results

Location	N	Mean %	Mean Kgal
All Sites	2294	-14.5	137.9
North	411	-4.7	363.5
South	1883	-16.6	88.7



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Preliminary Results

Statistically Significant Change in Water Use?	# of Sites	%
Increase	959	41.8
No Change (+ or – 6%)	35	1.5
Decrease	1300	56.7



Questions?

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- Marsha Prillwitz,
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- (916) 552-5885