

This presentation premiered at WaterSmart Innovations

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TARGETING FUTURE CONSERVATION EFFORTS IN MARIN COUNTY, CA

Water Smart Innovations 2021
October 6, 2021
Drew Bost

OVERVIEW

- Water conservation planning in California
- Regional conservation planning
- Conservation program outreach targeting analysis
 - Spatial trends
 - Census demographics
 - Building stock characteristics
- Alternative targeting strategies

WATER CONSERVATION IN CALIFORNIA

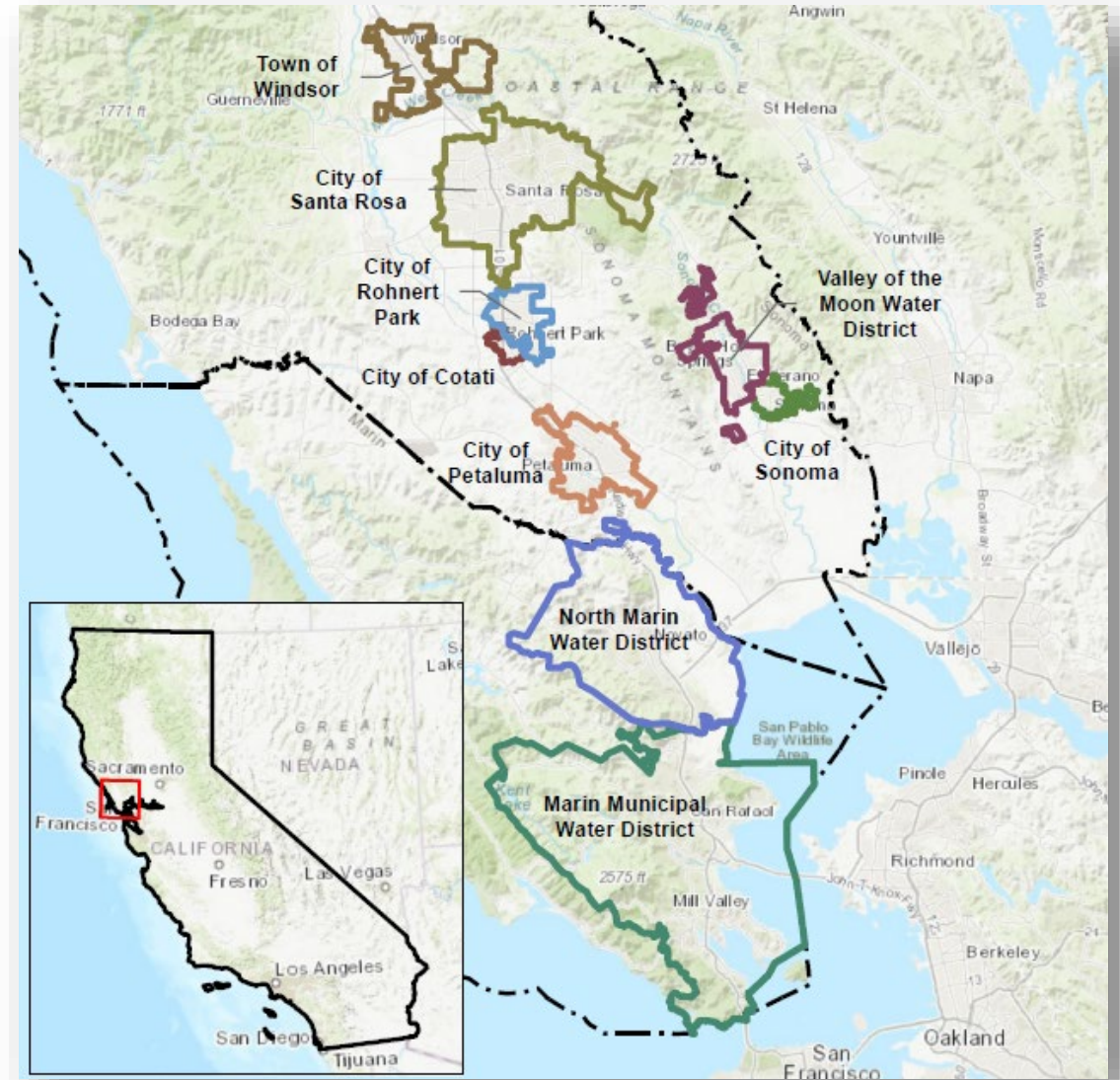
- Water Conservation Act of 2009 (“SB X7-7”)
 - Reduce water use 20% by 2020
- “Making Water Conservation a California Way of Life” (AB 1668/SB 606)
 - Ongoing annual “Water Use Objectives”
- Severe Droughts
 - 2012-2016 drought
 - Current drought (2021 - ?)
- Formation of regional partnerships to meet conservation goals



“Folsom Lake, California Drought” by Alan Grinberg, licensed under CC BY 2.0

SONOMA-MARIN SAVING WATER PARTNERSHIP

- Consists of thirteen cities and water districts in Marin and Sonoma Counties
- All receive water from Sonoma County Water Agency (Sonoma Water)
- Partnership to pool conservation resources and recommend water use efficiency projects
- Help implement ongoing conservation efforts



2020 WATER DEMAND ANALYSIS AND WATER CONSERVATION MEASURE UPDATE

- Developed water demand projections for 2020 UWMPs
- Evaluate and consider future water conservation programs
- High-level conservation program analysis for all 9 agencies
- Three districts elected detailed conservation program analysis



**NORTH MARIN
WATER DISTRICT**

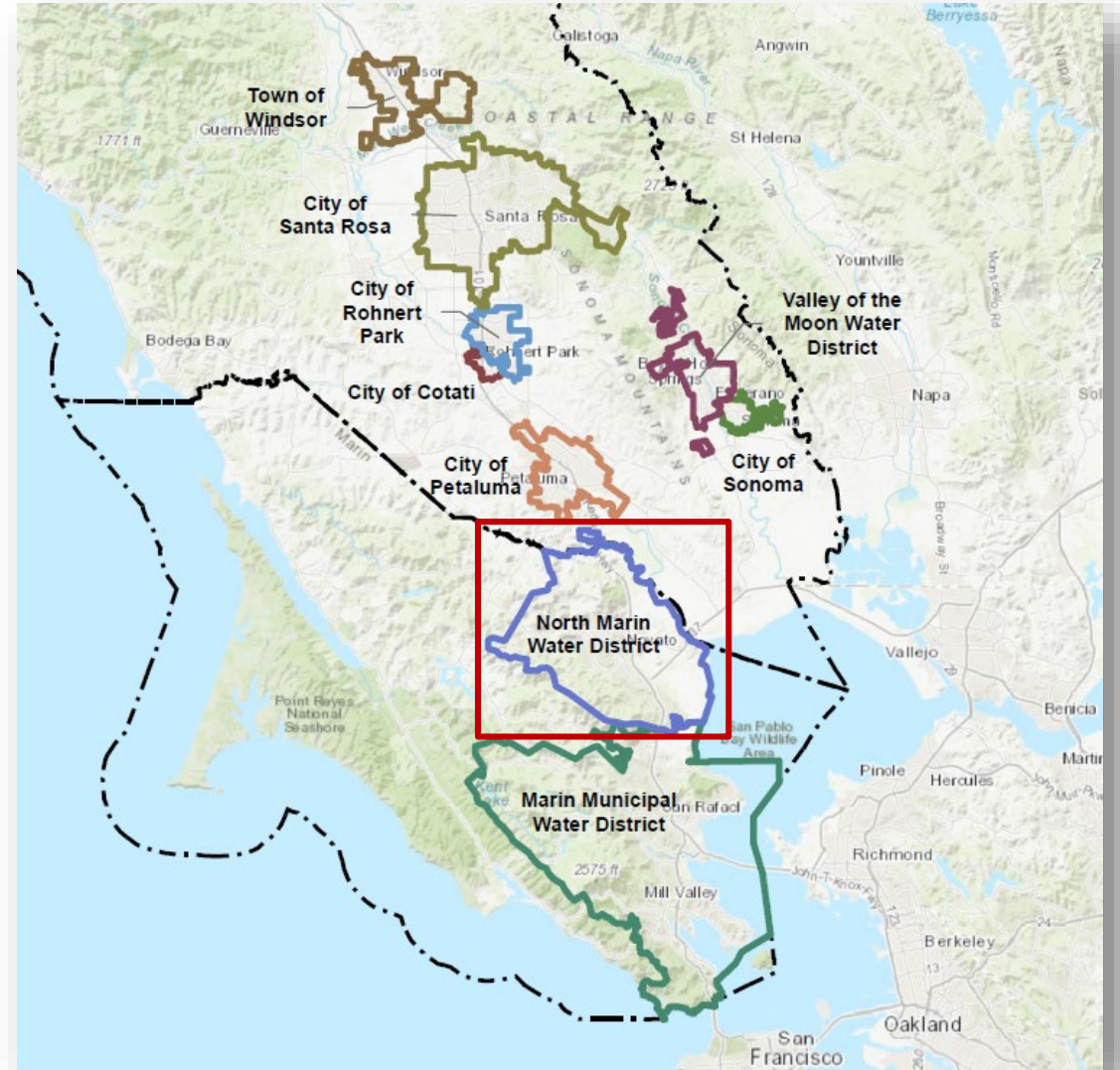
**2020 Water Demand Analysis and Water
Conservation Measure Update**
North Marin Water District

December 2020
(EKI C00004.00)

Prepared by:
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Daly City, California 94014
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NORTH MARIN WATER DISTRICT

- Serves population of 62,000
- Recently completed 2020 UWMP
- Conducted detailed analysis for key conservation programs
 - Quantified actual water saved based on customer billing data
 - Participation trends related to building stock and demographic characteristics
 - Spatial density trends



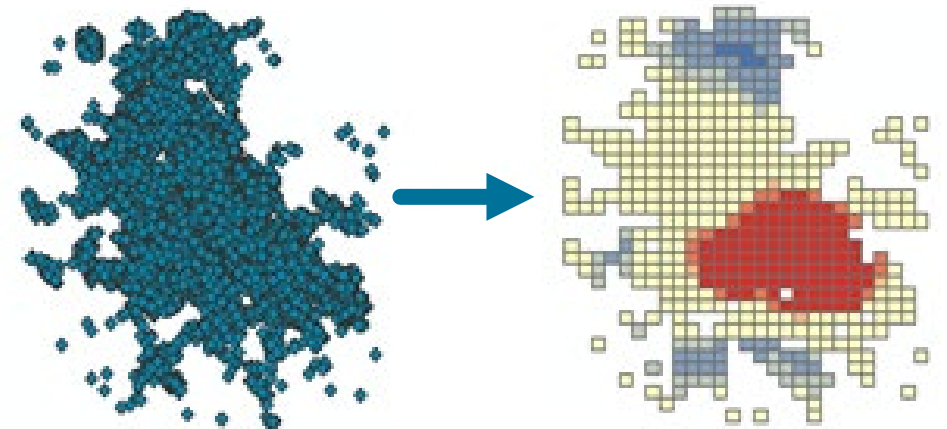
DATA-INTENSIVE ANALYSIS

- Publicly available or readily accessible agency data
- County parcel assessor data
 - Building stock characteristics (year built, lot size, lot type)
- US Census demographic data (American Community Survey)
 - Household income
 - Homeownership trends
 - Household member age
- Conservation program participation records
 - Participation dates and locations (address)

ServiceNo	Annual_WU_gal	StructureType
12548	20290	THCI
12562	307428	THCI
12562	380732	THCI
12562	214676	THCI
12562	236368	THCI
12562	189244	THCI
12562	261052	THCI
12562	228972	THCI
12562	169056	THCI
11104	293964	APT
11104	240108	APT
11104	248336	APT
11104	262548	APT
11104	247588	APT
11104	262548	APT
11104	356796	APT
11104	353056	APT
11108	198220	APT
11108	231132	APT
11108	239360	APT
11108	263296	APT
11108	287980	APT
11108	303688	APT
11108	270028	APT
11108	250580	APT
11116	378488	APT
11116	338844	APT
11116	501908	APT
11116	465256	APT

SPATIAL DENSITY TRENDS: OPTIMIZED HOTSPOT ANALYSIS

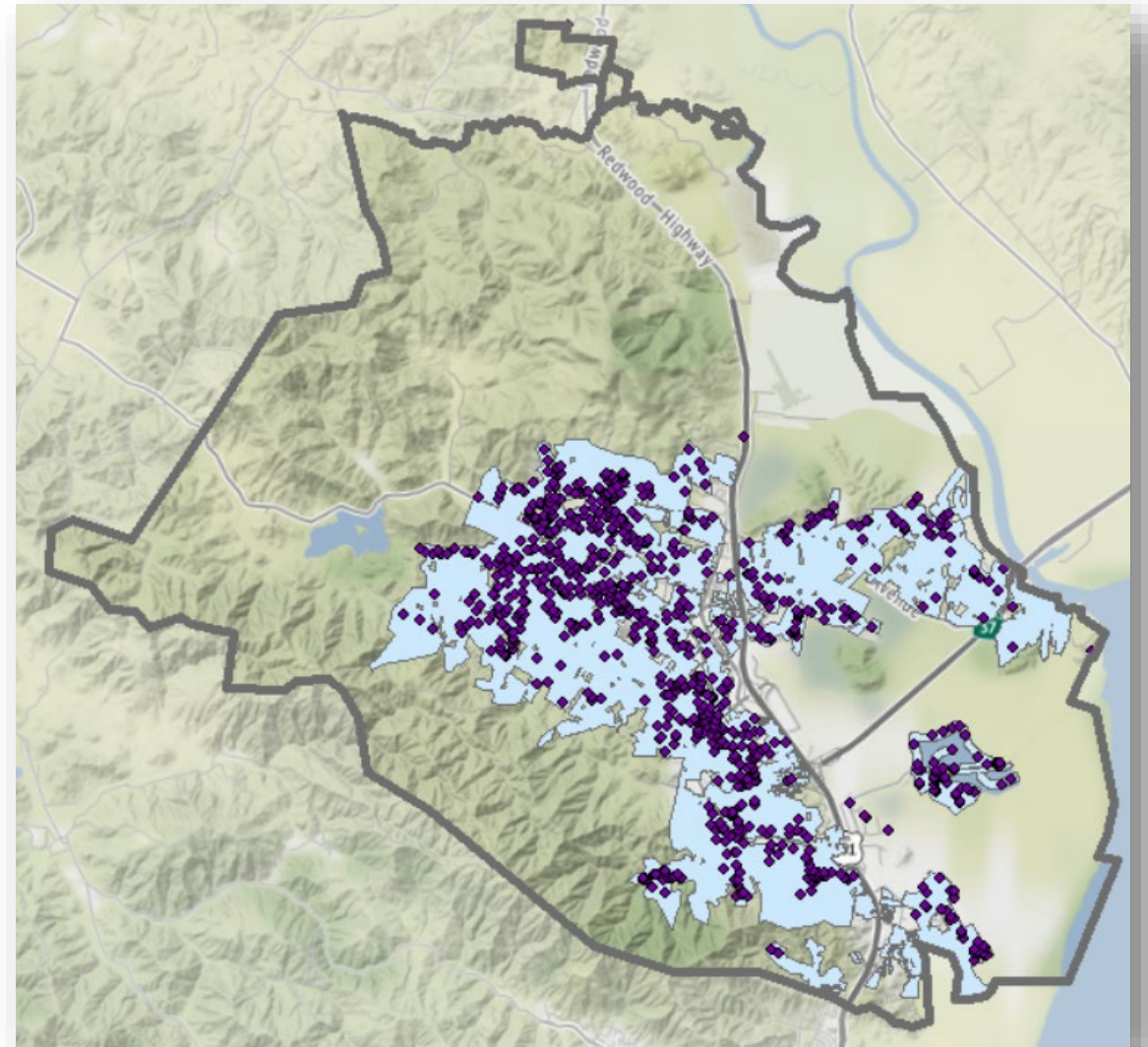
- ArcGIS Tool
- Calculates statistically significant “hot” and “cold” spots spatially using the Getis-Ord G_i^* statistic
- Aggregates point features based on number of features and bounding polygons
- Determines high and low density of aggregate features
- Allowing spatial targeting of low participation neighborhoods/regions



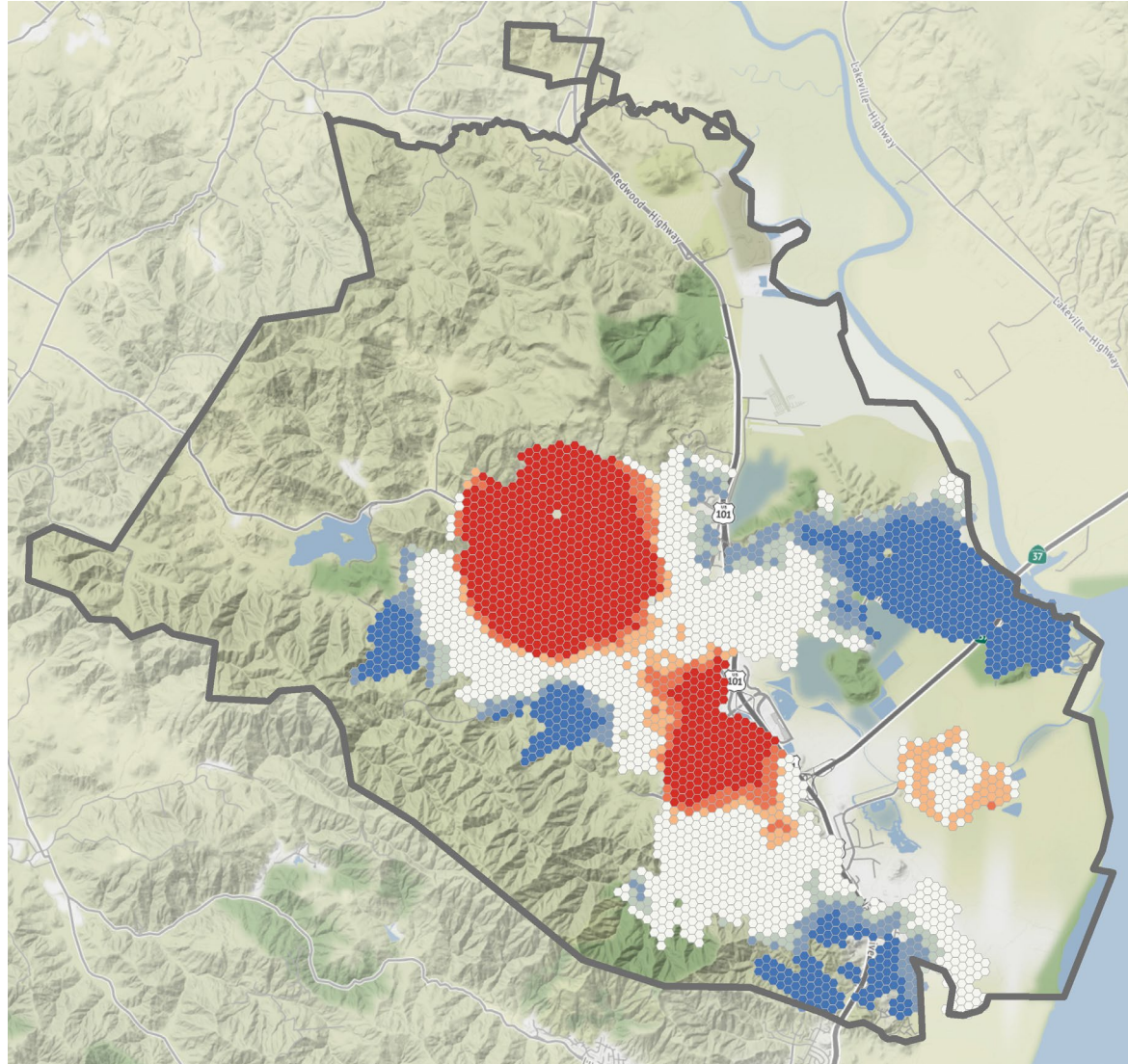
Source: pro.arcgis.com/en/pro-app/latest/tool-reference/spatial-statistics/optimized-hot-spot-analysis.htm

CASH FOR GRASS REBATE PROGRAM

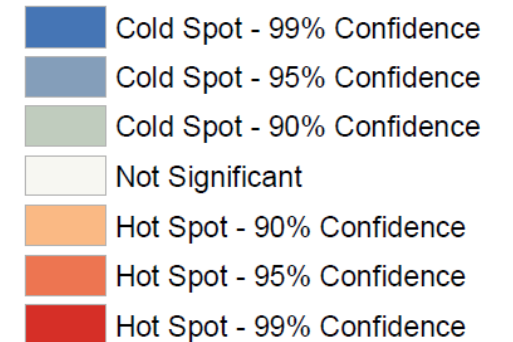
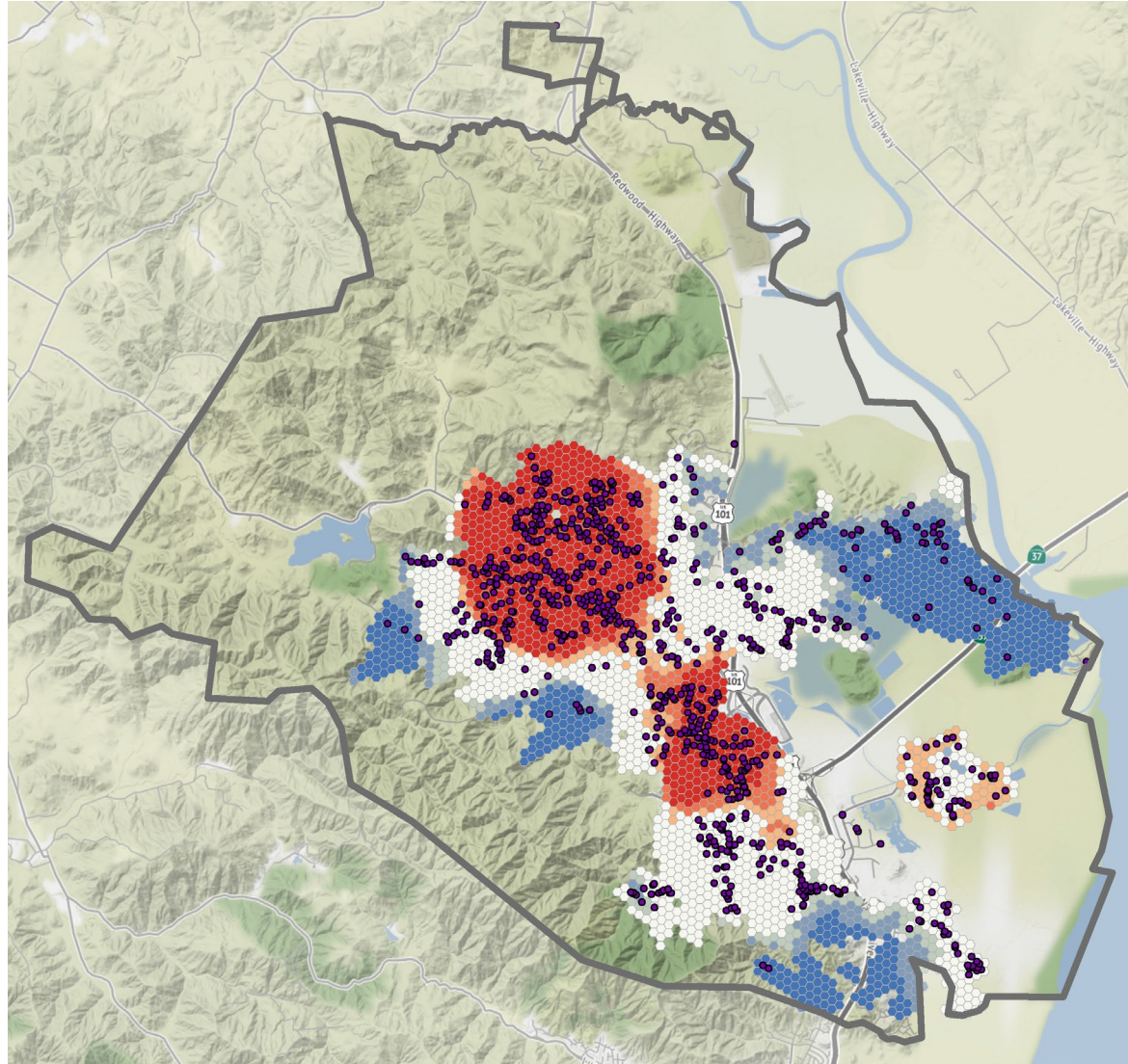
- Gives rebate for replacing lawns with low water use landscapes
- 921 Participants from 2000 – 2020
- Single family residential parcels



CASH FOR GRASS HOTSPOT ANALYSIS

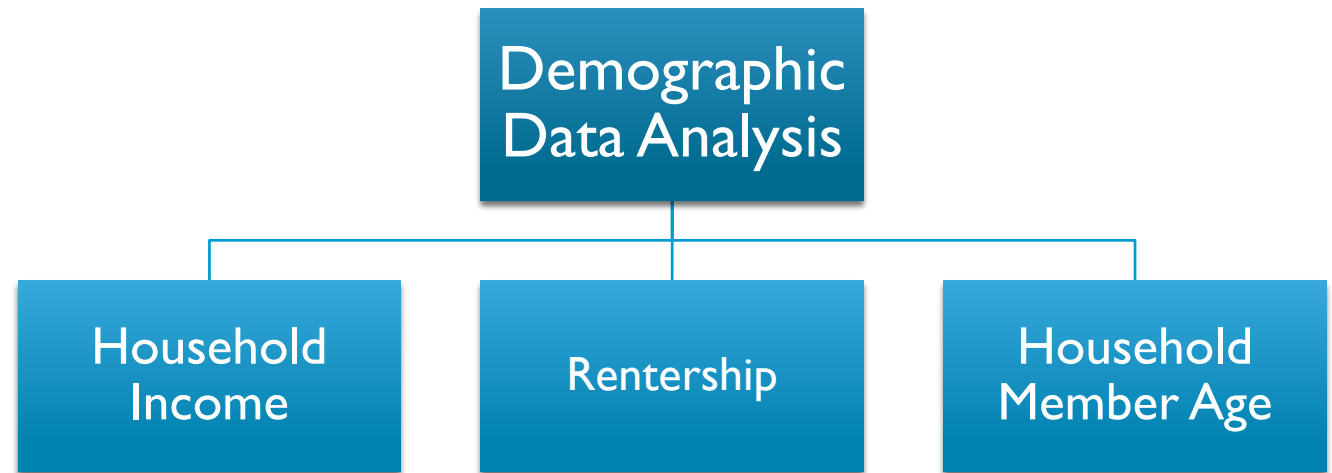


CASH FOR GRASS HOTSPOT ANALYSIS



DEMOGRAPHIC DATA ANALYSIS

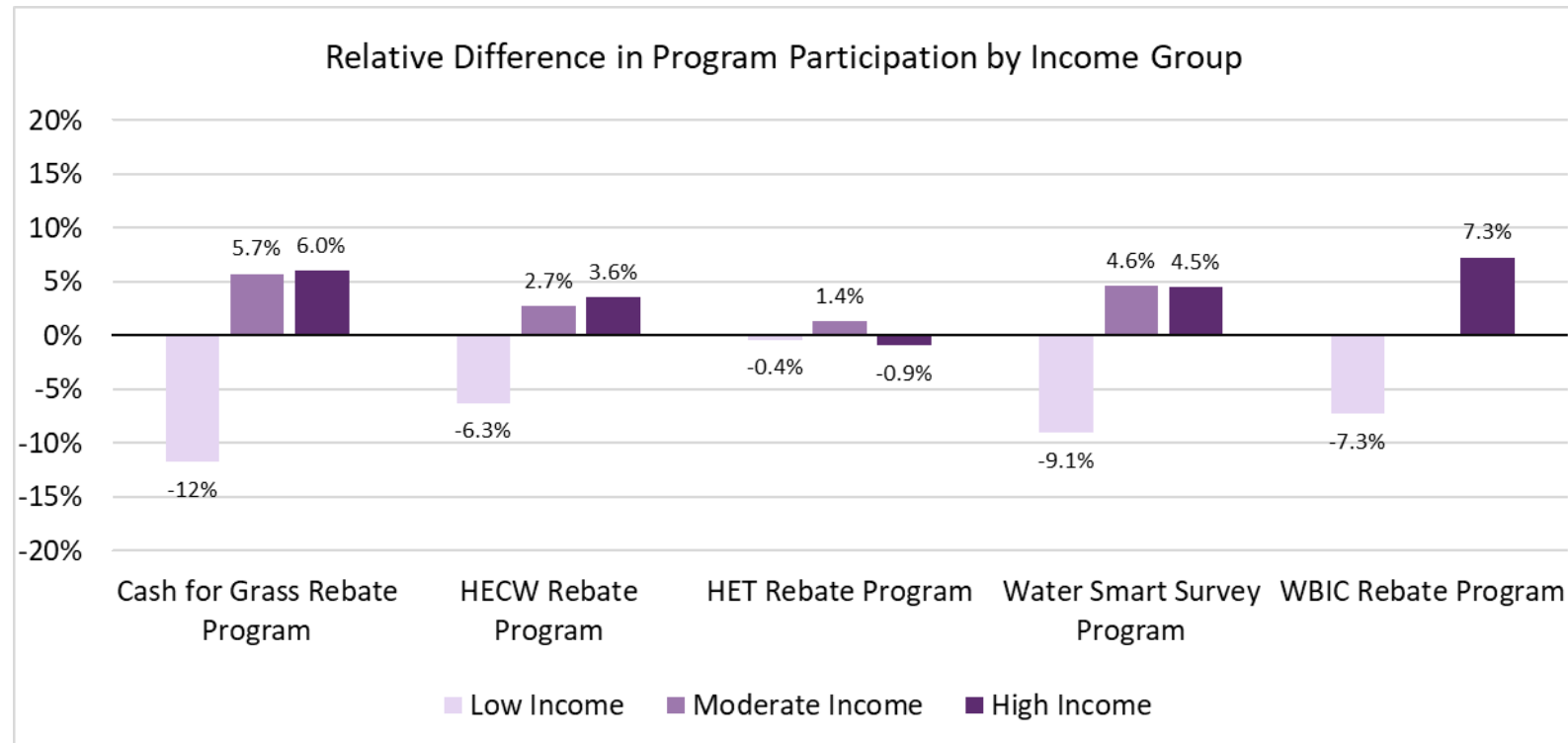
- US Census demographic data
- Determine participation relative to key demographic characteristics
- Allows targeting of program outreach to underrepresented communities



ASSESSING TRENDS IN PARTICIPATION

- Relative difference analysis
 - Assesses the relative difference between total customers and program participation in each category
 - Is participation in each demographic grouping representative of overall district demographics?

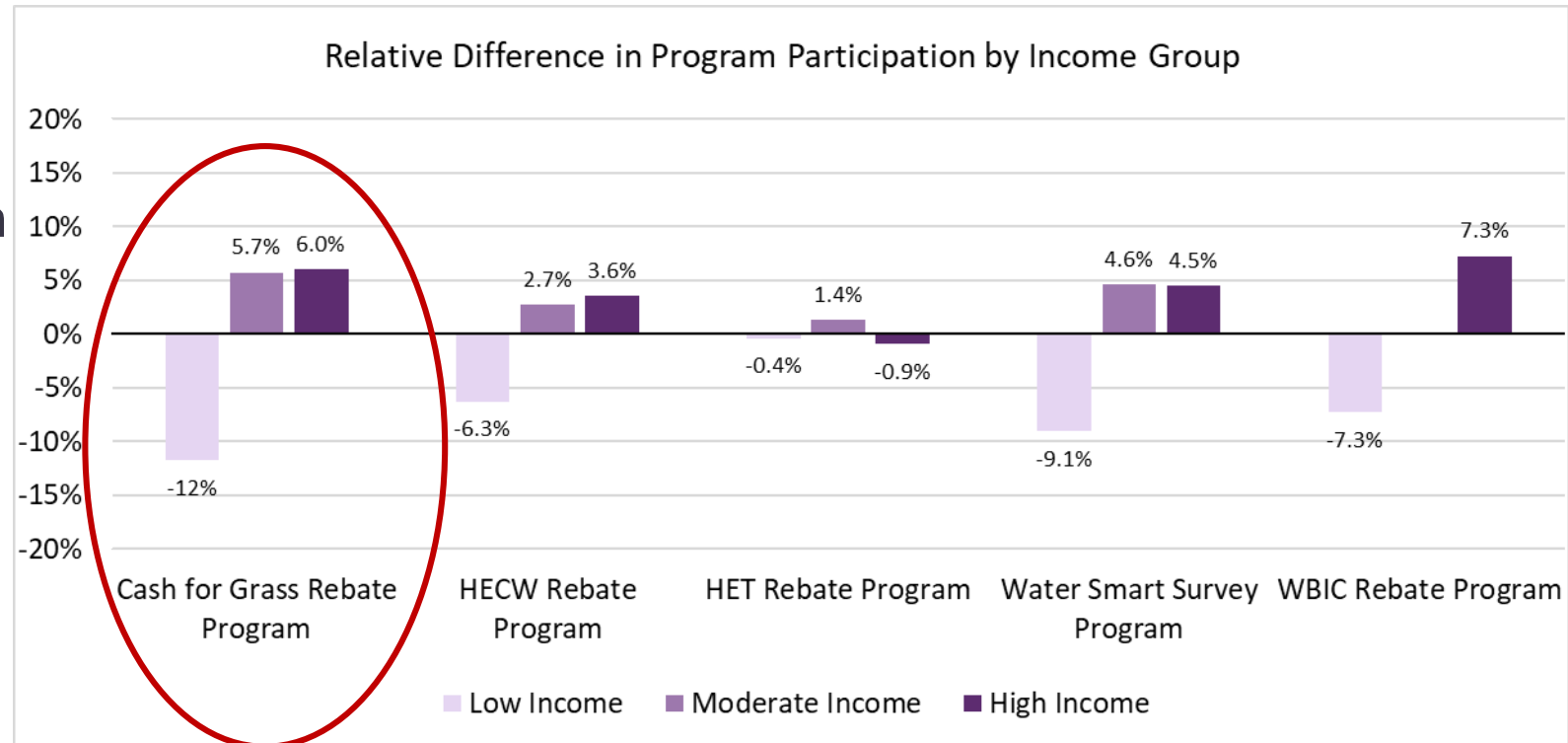
Median Household Income (a)		Percentage of Residential Customers in NMWD (b)	Percentage of Participating Residential Customers (b)				
			Cash for Grass Rebate Program	HECW Rebate Program	HET Rebate Program	Water Smart Survey Program	WBIC Rebate Program
Low Income	<\$94,850	40%	28%	34%	39%	31%	33%
Moderate Income	\$94,850 - \$124,500	28%	34%	31%	29%	32%	28%
High Income	>\$124,500	32%	38%	36%	31%	37%	40%



LOW INCOME PARTICIPATION

- Relative difference analysis
 - Participation in **low income** SFR households 12% less than overall proportion of SFR customers

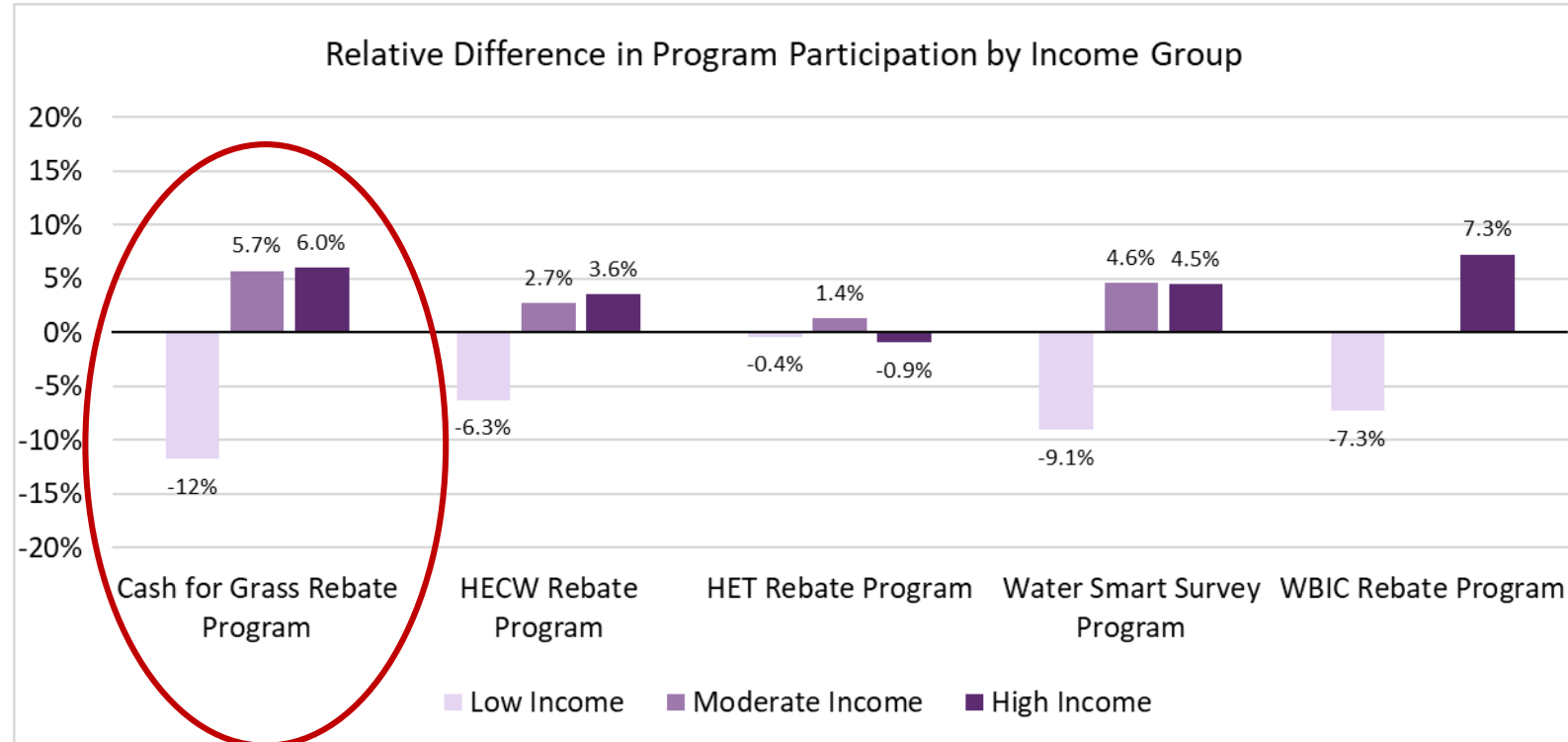
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Moderate Income	\$94,850 - \$124,500	28%	34%	31%	29%	32%	28%
High Income	>\$124,500	32%	38%	36%	31%	37%	40%



MODERATE INCOME PARTICIPATION

- Relative difference analysis
 - Participation in **moderate income** SFR households 5.7% more than overall proportion of SFR customers

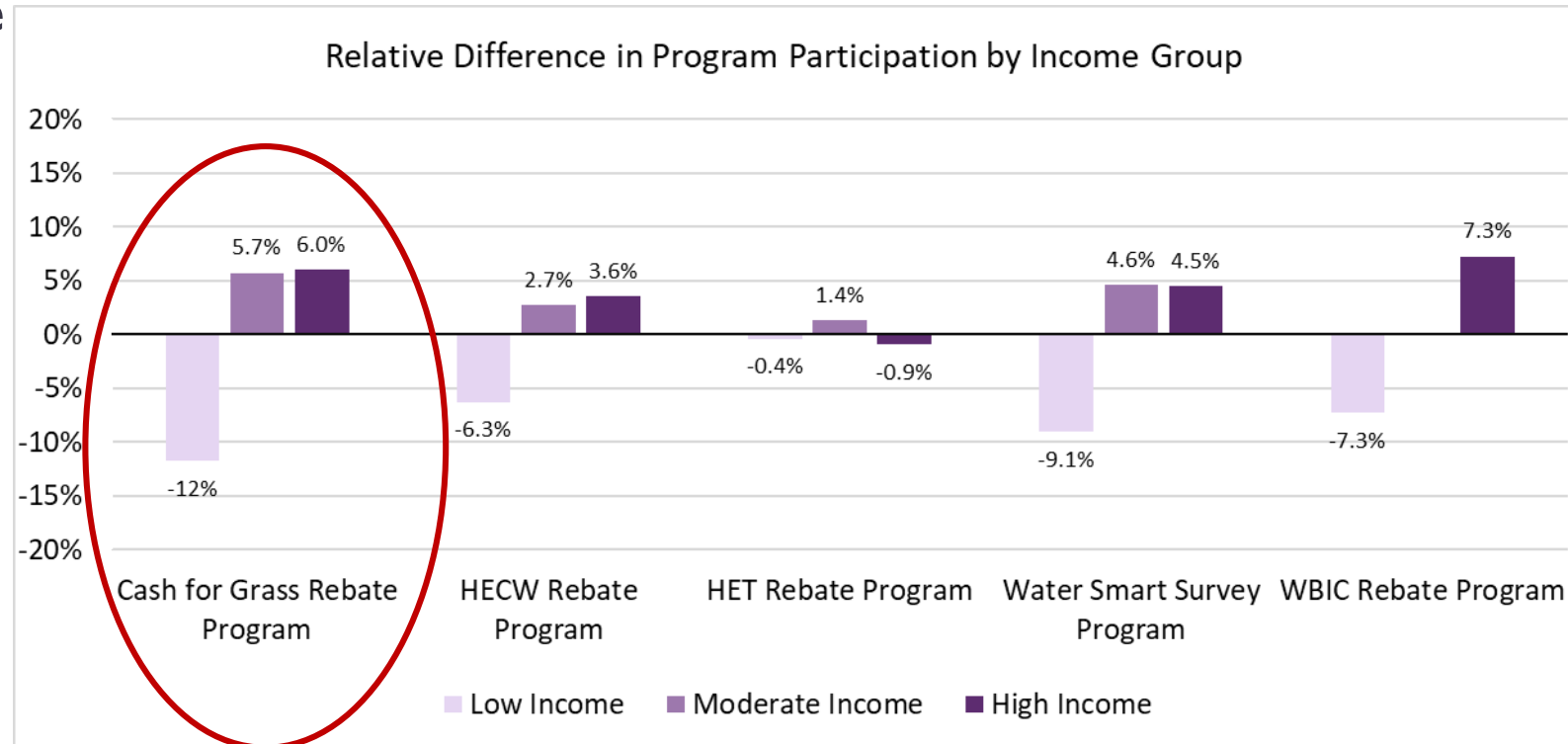
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Moderate Income	\$94,850 - \$124,500	28%	34%	31%	29%	32%	28%
High Income	>\$124,500	32%	38%	36%	31%	37%	40%



HIGH INCOME PARTICIPATION

- Relative difference analysis
 - Participation in **high income** SFR households 6% more than overall proportion of SFR customers
 - Greatest potential for targeting in the low income category

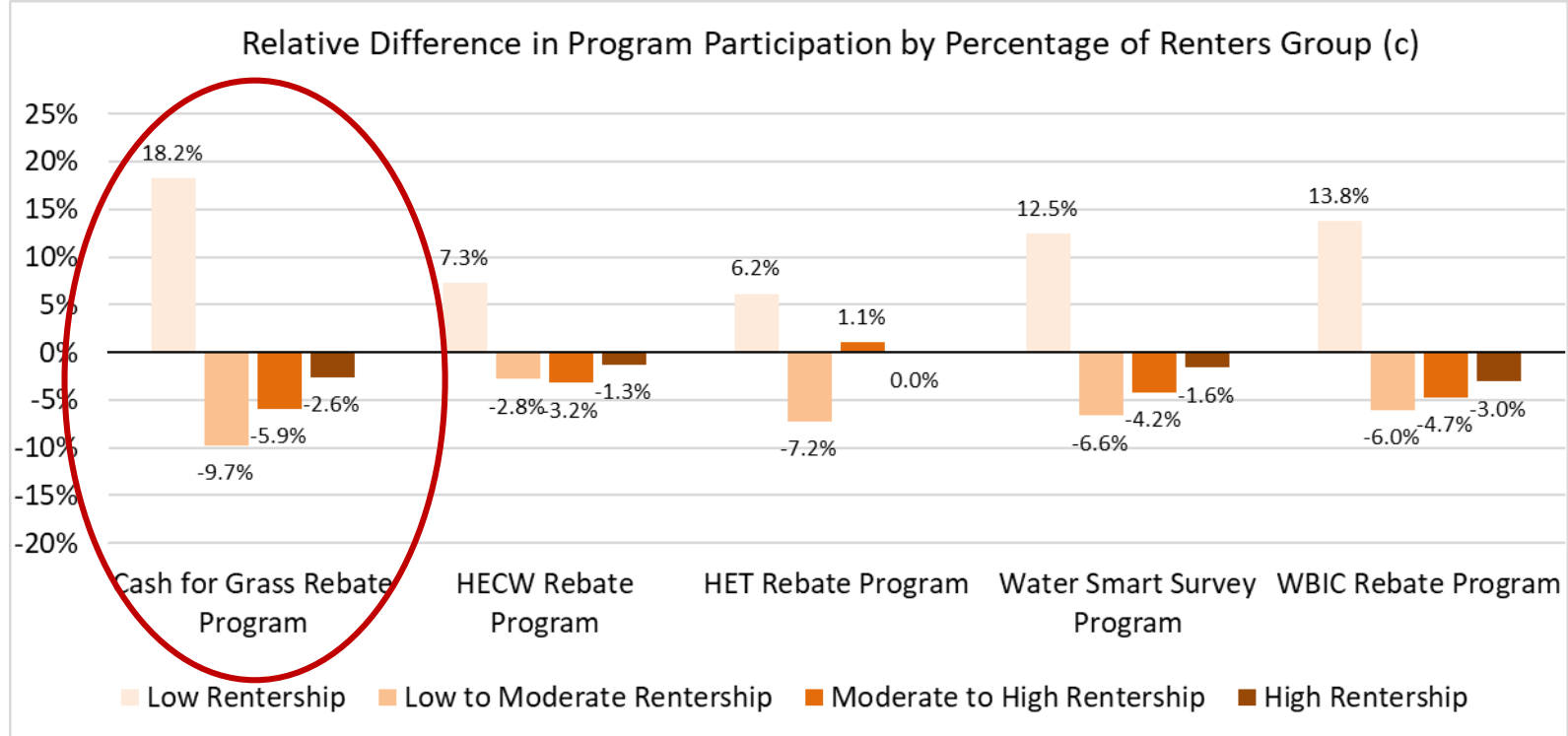
Median Household Income (a)		Percentage of Residential Customers in NMWD (b)	Percentage of Participating Residential Customers (b)				
			Cash for Grass Rebate Program	HECW Rebate Program	HET Rebate Program	Water Smart Survey Program	WBIC Rebate Program
Low Income	<\$94,850	40%	28%	34%	39%	31%	33%
Moderate Income	\$94,850 - \$124,500	28%	34%	31%	29%	32%	28%
High Income	>\$124,500	32%	38%	36%	31%	37%	40%



TRENDS IN RENTERSHIP PARTICIPATION

- Highest participation in high ownership category (<25% rentership) at 18% above overall proportion
- Lowest in high to moderate ownership category (25-50% rentership) at ~10% below overall proportion
- Greatest potential in the higher rentership category

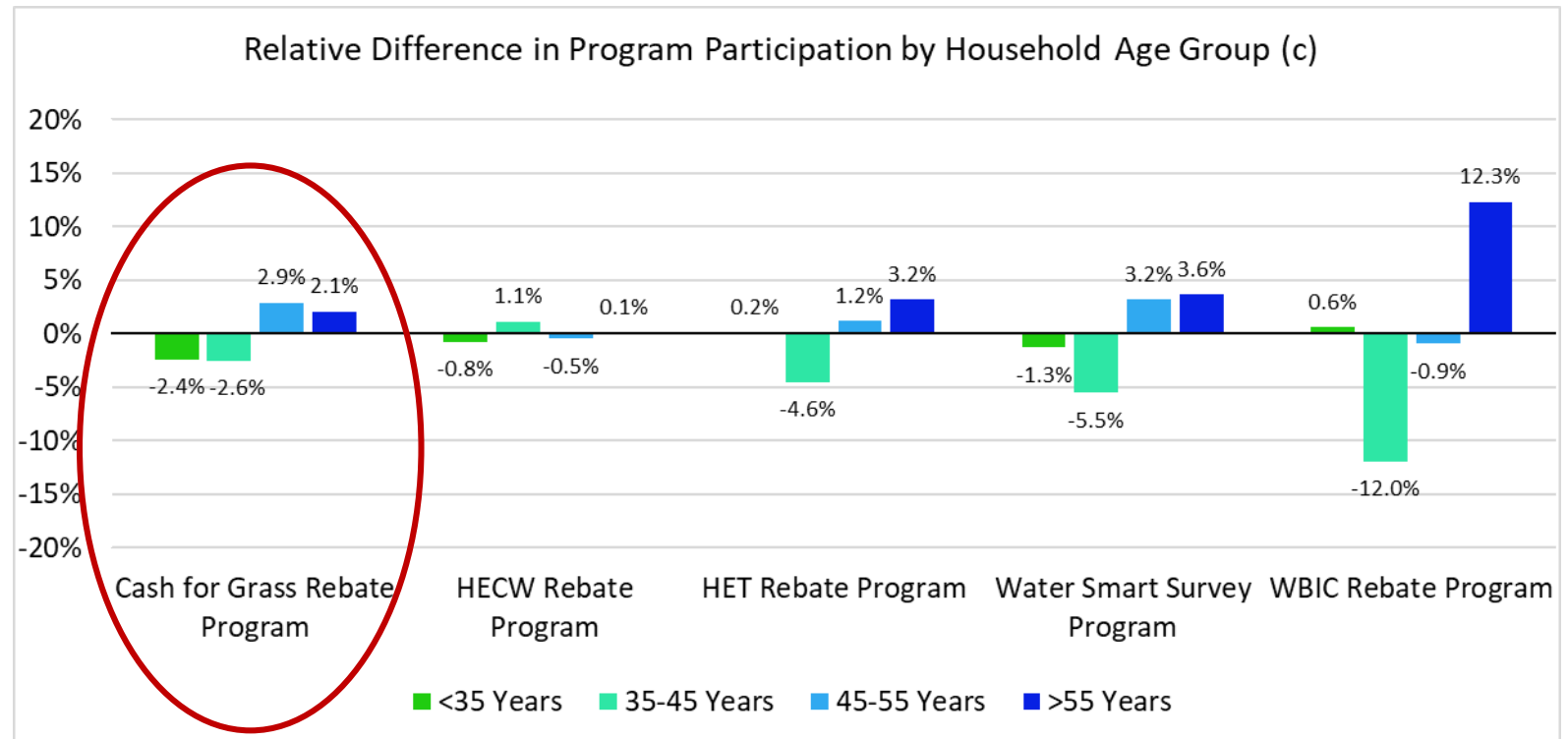
Percentage of Renters (a)		Percentage of Residential Customers in NMWD (b)	Percentage of Participating Residential Customers (b)				
			Cash for Grass Rebate Program	HECW Rebate Program	HET Rebate Program	Water Smart Survey Program	WBIC Rebate Program
Low Rentership	≤25%	63%	81%	70%	69%	75%	77%
Low to Moderate Rentership	25.1%-50%	23%	14%	21%	16%	17%	17%
Moderate to High Rentership	50.1%-75%	11%	4.6%	7.3%	12%	6.3%	5.8%
High Rentership	≥75%	3.0%	0.44%	1.8%	3.0%	1.4%	0%



TRENDS IN HOUSEHOLD AGE PARTICIPATION

- Highest participation in 45-55 year category at 2.9% above overall proportion
- Lowest in 35-45 year category at 2.6% below overall proportion
- High success in reaching customers in all categories

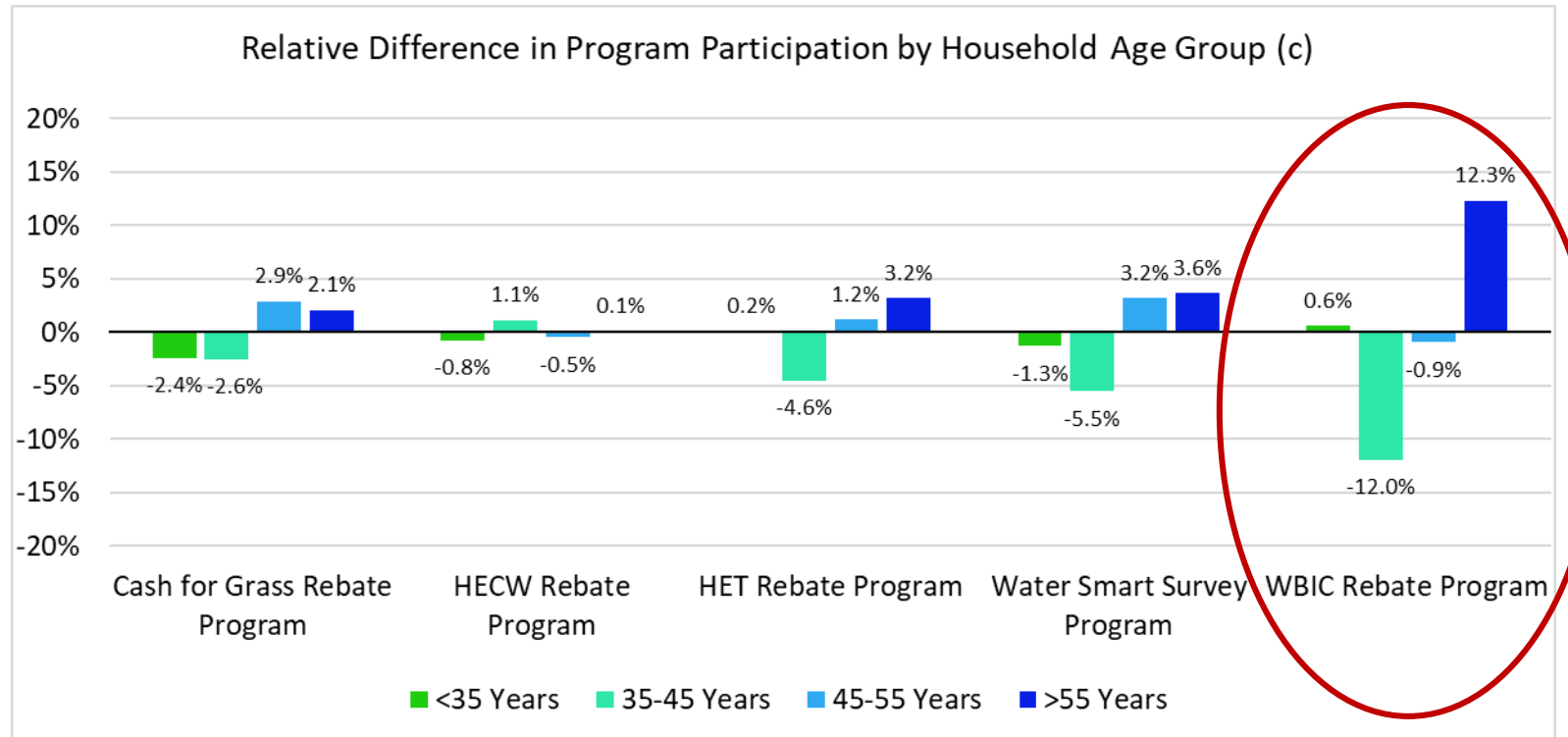
Median Household Age (a)	Percentage of Residential Customers in NMWD (b)	Percentage of Participating Residential Customers (b)				
		Cash for Grass Rebate Program	HECW Rebate Program	HET Rebate Program	Water Smart Survey Program	WBIC Rebate Program
<35 Years	4.1%	1.6%	3.3%	4.3%	2.8%	4.7%
35-45 Years	28%	26%	29%	24%	23%	16%
45-55 Years	58%	61%	57%	59%	61%	57%
>55 Years	9.8%	12%	9.8%	13%	13%	22%



TRENDS IN HOUSEHOLD AGE PARTICIPATION

Median Household Age (a)	Percentage of Residential Customers in NMWD (b)	Percentage of Participating Residential Customers (b)				
		Cash for Grass Rebate Program	HECW Rebate Program	HET Rebate Program	Water Smart Survey Program	WBIC Rebate Program
<35 Years	4.1%	1.6%	3.3%	4.3%	2.8%	4.7%
35-45 Years	28%	26%	29%	24%	23%	16%
45-55 Years	58%	61%	57%	59%	61%	57%
>55 Years	9.8%	12%	9.8%	13%	13%	22%

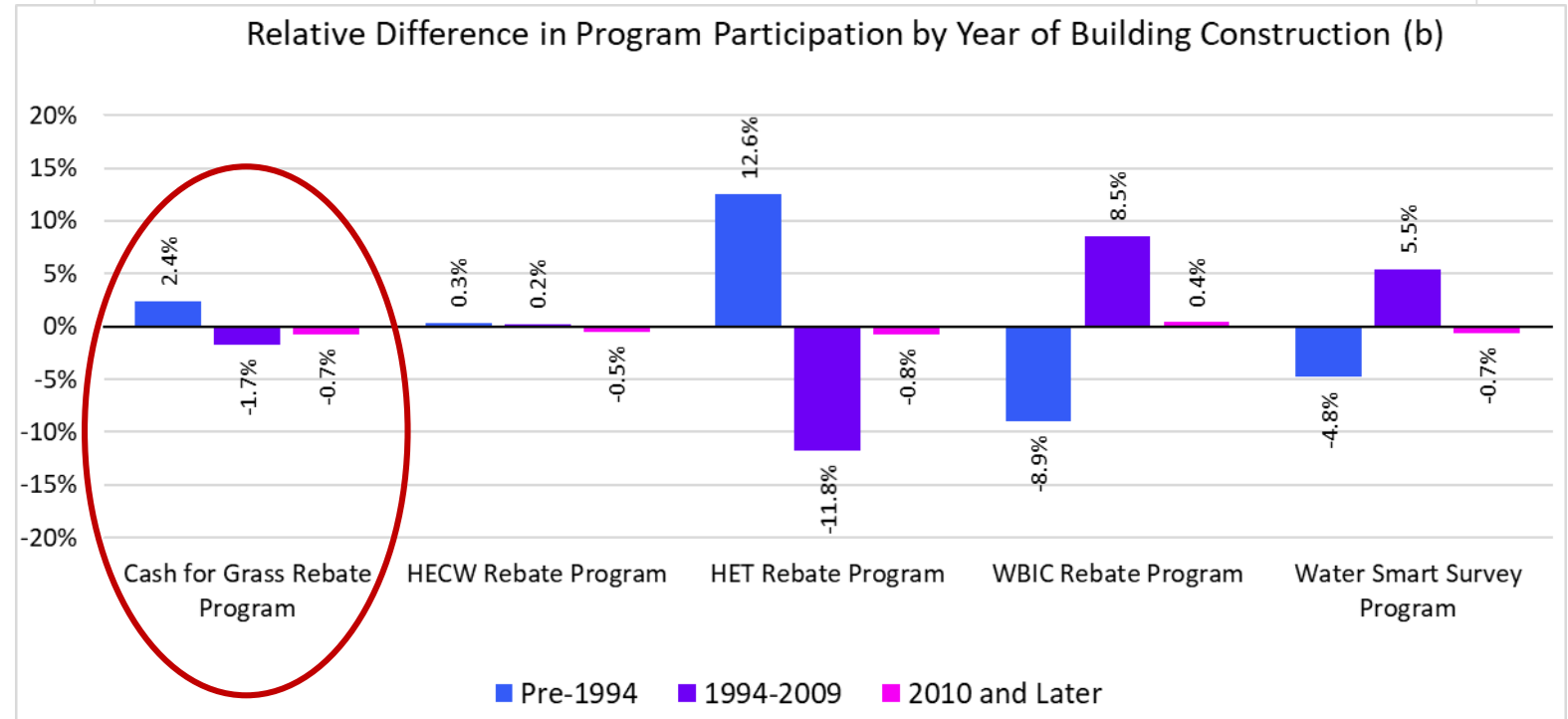
- Participation trends vary across programs
- Can't assume similar trends for every program



BUILDING STOCK CHARACTERISTICS

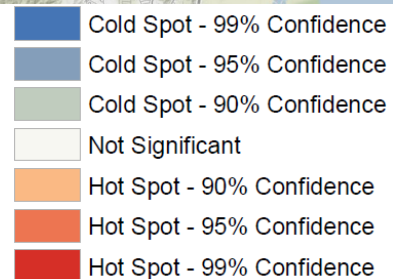
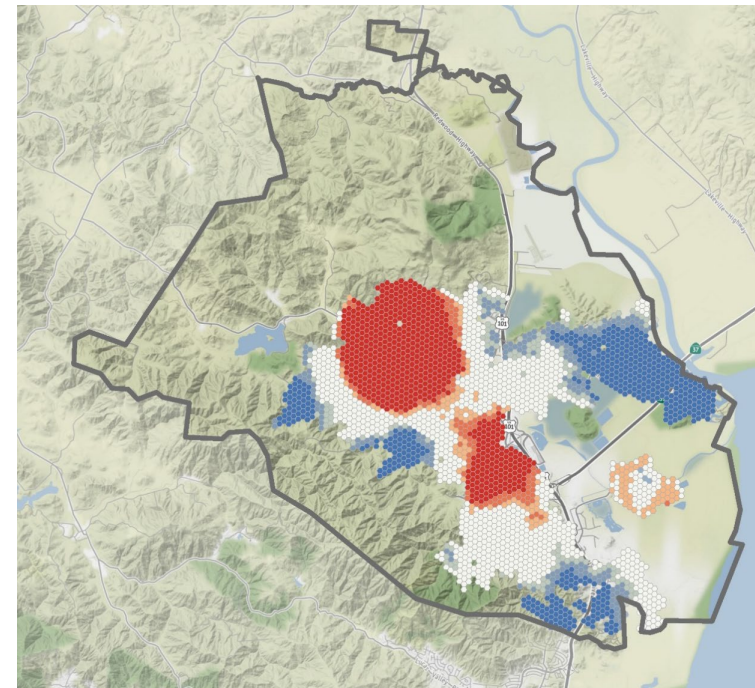
- Highest participation in homes built pre-1994 at 2.4% above overall participation
- Lowest in homes built 2010 and later at 0.7% below overall participation
- High success in reaching customers in all categories, including newer homes

Water Efficiency Program (a)	Sector	Avg Year Built	Avg Lot Size (sq ft)	Avg Lot Size (ac)	Year of Construction		
					pre-1994	1994-2009	2010 and Later
Cash for Grass Rebate Program	SFR	1980	15,176	0.35	82%	18%	0.12%
HECW Rebate Program	SFR	1981	16,852	0.39	80%	20%	0.32%
	MFR	1988	2,269	0.05	75%	24%	0.60%
HET Rebate Program	SFR	1977	18,103	0.42	92%	8.1%	0.06%
	MFR	1984	18,298	0.42	92%	8.4%	0%
WBIC Rebate Program	SFR	1986	18,372	0.42	70%	28%	1.2%
Water Smart Survey Program	SFR	1983	23,298	0.53	75%	25%	0.17%
	MFR	1984	2,192	0.05	86%	14%	0%

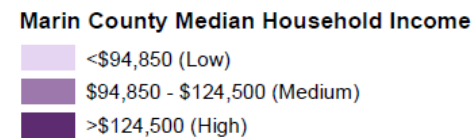
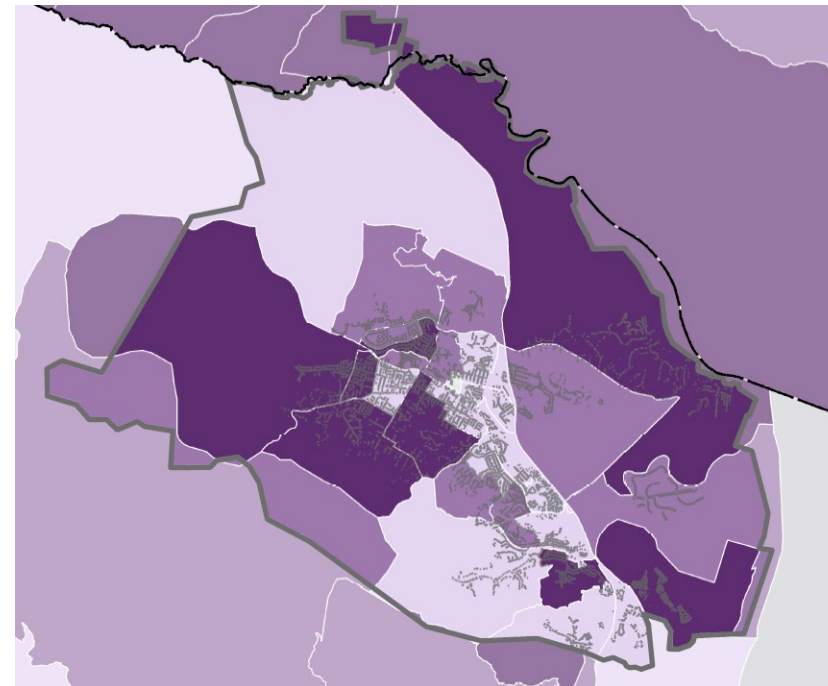


IDENTIFYING OPPORTUNITIES FOR CONSERVATION

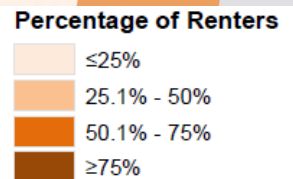
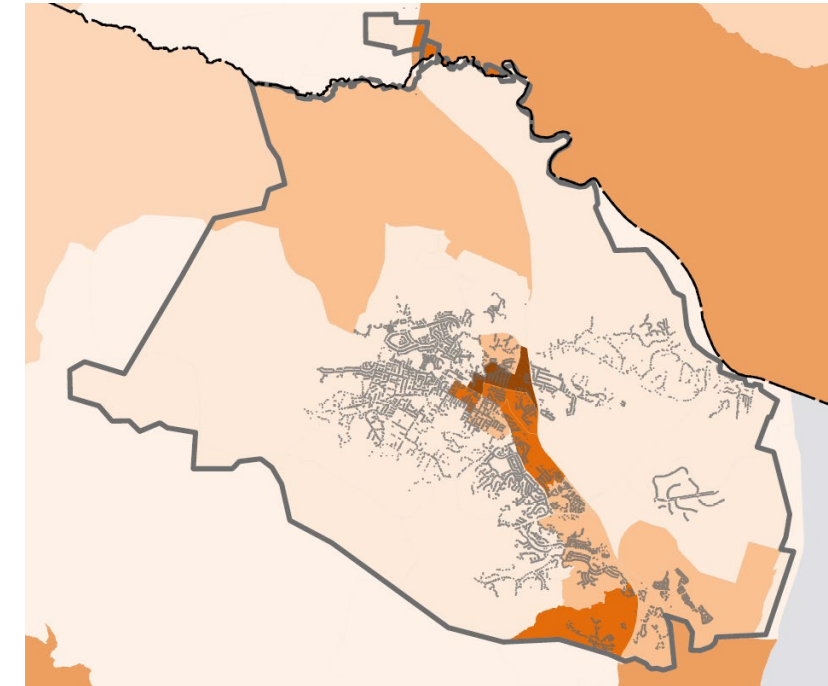
Low/Neutral Participation Density



Low Income

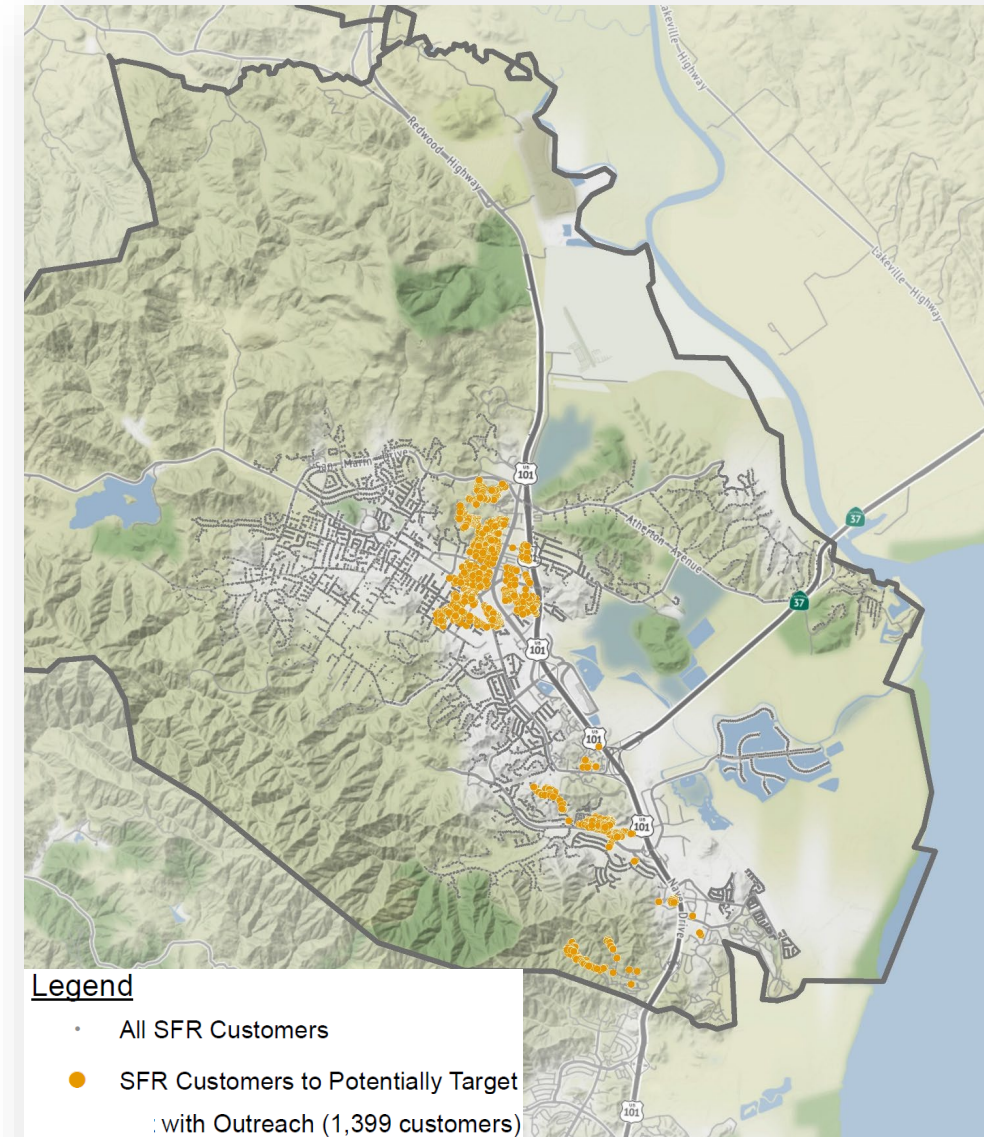


> 25 % Rentership



IDENTIFYING OPPORTUNITIES FOR CONSERVATION

- Targeted Areas:
 - 1) Low income
 - 2) >25% rentership
 - 3) Low or neutral participation density
- 1,399 potential customers to target with outreach
- Targeting strategies:
 - Use WaterSmart AMI spatial emailing system to target outreach to these individuals
 - Can apply to email or direct mailing



ANALYSIS APPLICATIONS: SOLANO COUNTY WATER AGENCY

- Adapted their Water-Efficient Landscape Rebate Program to be more accessible to low income customers
- Offered low-water use plants, labor for planting, and lawn removal
- Greater incentive to participate for low income customers

Water-Efficient Landscape Rebate Program



Assistance Available for Residents with Limited Incomes and Disabilities



Solano County Water Agency (SCWA) is pleased to offer a new program that provides extra assistance for residents with limited incomes and/or disabilities who wish to replace lawn with a beautiful, low-water landscape. Qualifying residents can receive:

-  Up to 20 low-water native plants for your yard
-  Help with eliminating lawn using sheet mulching (a natural method for removing turf)
-  Labor for planting your new landscape

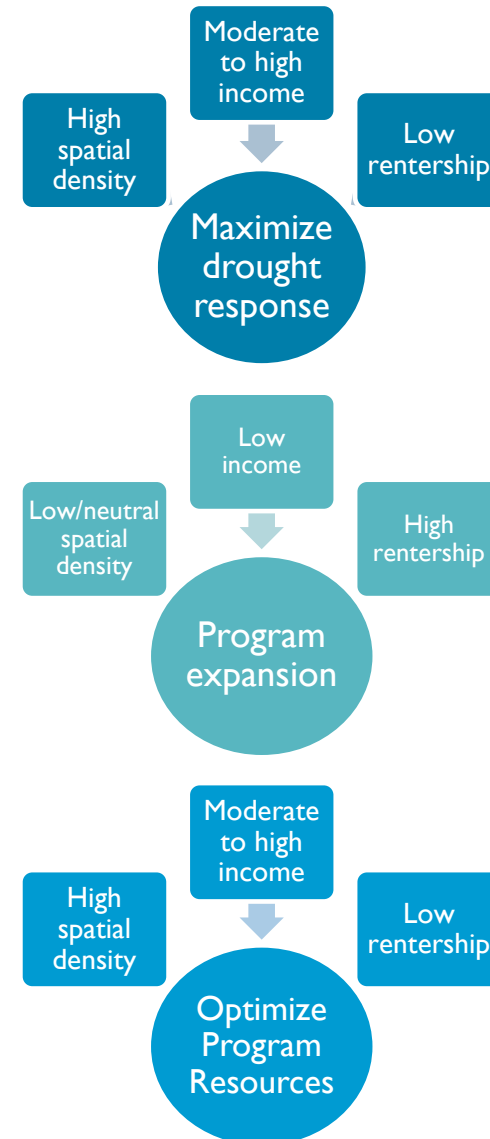
This is in addition to SCWA's existing rebate of \$1 per square foot of landscape converted (up to \$1,000 total in rebates).

To qualify, participants must be enrolled in PG&E's CARE Program and/or should show a disabled driving placard, ADA assistance dog registry or a doctor's note. This program is open on a first-come, first-served basis until June 2018 or until funds are depleted.

For more information and to apply visit <http://solanosaveswater.org/rebates/> or call (707) 455-4450.

ALTERNATIVE OUTREACH TARGETING STRATEGIES

- Design your outreach to most efficiently meet program goals
 - Drought Response: targeting those most likely to participate to maximize savings
 - Program Expansion: targeting those that have historically low participation rates
 - Optimize Program Resources: Targeting those most likely to result in higher savings



KEY TAKEAWAYS

Data Intensive Analysis

- Spatial analysis
- Census demographics
- Building stock characteristics
- Publicly available/readily accessible

Allows for detailed targeting

- Determine areas of high and low participation
- Identifies opportunities for outreach targeting

Flexible targeting strategies

- Drought response
- Program expansion
- Maximize effectiveness
- Program adaptation

QUESTIONS



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