West Basin
Municipal Water District

Water Use Efficiency Data Study

Fiscal Year 2018-2019

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This study was partially funded by a WaterSmart grant from the United States Bureau of Reclamation.

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EXECUTIVE SUMMARY

West Basin's mission is "To provide a safe and reliable supply of high-quality water to the communities we serve." An integral part of West Basin's work to ensure water supply reliability for its diverse range of customer agencies is the proactive and innovative water use efficiency ("WUE" or "conservation") programs it provides to its communities. As a continuation of its leadership and proactive planning for WUE, West Basin worked with EKI Environment & Water, Inc. ("EKI") to develop this Water Use Efficiency Data Study ("WUE Data Study). The objective of the WUE Data Study is to provide a plan that articulates guiding principles and strategies for West Basin's WUE programs and services and facilitates innovation and adaptability given California's rapidly changing water resources landscape.

Water Use Efficiency Data Study Organization and Contents

Section 1 - Introduction

Provides an overview of the WUE Data Study process and approach

Section 2 - Customer Agency Water Use Profiles

Provides a summary and discussion of water use by sector within West Basin's service area and presents the results of Water Use Profiles prepared for each of West Basin's customer agencies

Section 3 - Customer Agency WUE Program Survey

Summarizes the results of a WUE Survey conducted of West Basin's customer agencies and other stakeholders to gain a deeper understanding of the programs and services likely to be most beneficial for West Basin's customer agencies

Section 4 - WUE Drivers

Identifies various WUE drivers, including state-level regulatory drivers and other motivating factors for West Basin and its customer agencies

Section 5 - WUE Program Analysis

Provides a detailed discussion and analysis of past participation in WUE programs, including analysis of geospatial, demographic, and land use trends in participation for selected WUE programs

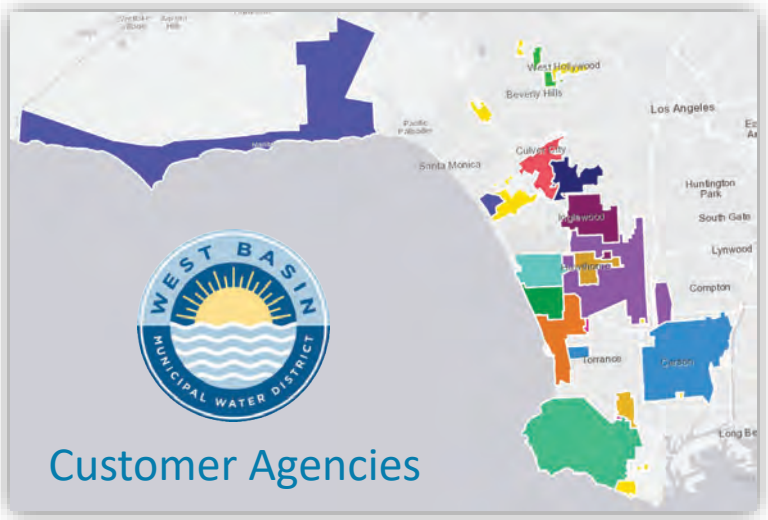
Section 6 - Recommendations for WUE Programs and Services

Provides the results of this WUE Data Study, including the identification of opportunities for high-value future WUE programs based on a set of strategic guiding principles and recommendations for future WUE programs, services, and studies

In order to facilitate and focus the analyses described herein to support development of recommendations that maximize the WUE benefit within the service area and support the pursuit of funding opportunities, a set of guiding principles were identified for the WUE Data Study**:**

1) Provide WUE programs that are highly valued and utilized by West Basin's customer agencies, cities, and their water customers.
2) Align West Basin's WUE program offerings with current California and Federal priorities.
3) Offer WUE programs that are progressive, and encourage the use of new, but proven, WUE technologies and devices as they evolve.
4) Leverage the WUE programs provided by other entities and provide outreach and marketing to target these programs to strategic customer sectors.

5) Rely on objective, quantitative assessment of existing WUE programs, customer demographics, and water use by customer agencies to continually inform decision-making in the future, and adaptively manage WUE programs and services to respond to the changing regulatory and water reliability environment.



Through this effort, a series of fifteen recommendations for West Basin's overall WUE program were developed based on: (1) the identified guiding principles, (2) a thorough review of customer agency, West Basin, and regulatory drivers for WUE, (3) current water use patterns and trends, and (4) a detailed and data-driven evaluation of past customer participation in WUE programs and land use and population demographics. The methodologies for and results of these detailed analyses are provided in **Sections 2** through **5** of this document. The recommendations are broken into categories, covering activities that support communication and outreach to stakeholders, activities that support planning and regulatory compliance by customer agencies, and targeting and prioritization of WUE programs to the residential and commercial, Industrial, and institutional ("CII") sectors. For the sake of brevity, each of these recommendations are identified below. Several recommendations are accompanied by tables and figures indicating specific areas of the West basin service area that may be targeted for outreach and marketing of programs; these tables and figures can be found in **Section 6** of the document. **Section 6** also provides a detailed discussion of the key findings and drivers behind each of these recommendations.

Table ES-1
WUE Program Recommendations

COMMUNICATION AND OUTREACH
1) Convene regular meetings of the WUE Workgroup and use this venue to provide regular and consistent information on WUE program offerings to WUE stakeholders, including factual and customer case study informational materials, which can be provided directly to customers through bill inserts, emails and newsletters, and hardcopy fliers. Through the WUE Workgroup meetings, solicit ongoing feedback from WUE stakeholders to allow for adaptive management of WUE programs.
2) Provide regular, routine updates of WUE program implementation to WUE stakeholders to facilitate local management and prioritization of WUE activities.
3) Share the approach to, and results of, this WUE Data Study broadly among interested water agencies and sustainability organizations and at WUE-related conferences.

Table ES-1 (continued)
WUE Program Recommendations

CUSTOMER AGENCY PLANNING AND REGULATORY COMPLIANCE SUPPORT
4) Engage in Department of Water Resources ("DWR") and State Water Resources Control Board ("SWRCB") stakeholder processes to develop water use objective standards and to provide regional representation on behalf of customer agencies.
5) Provide or coordinate drought planning assistance for customer agencies to supplement their local Water Shortage Contingency Plan ("WSCP") development in light of new requirements and to facilitate regional consistency.
6) Engage with customer agencies to understand what water loss control projects would be of most value and pursue funding opportunities for leak detection and water loss control technologies as they are made available. This effort should focus on those agencies experiencing the greatest amount of water loss and those that would benefit from regional implementation.
7) Conduct an evaluation of WUE marketing approaches and strategies to identify methods to achieve West Basin's WUE participation goals.
RESIDENTIAL WUE PROGRAMS
8) Provide a comprehensive set of residential WUE programs that include a range of programs that target indoor and outdoor water use, include both rebate and no-cost programs, and include a mix of device intervention programs and education programs.
9) Focus marketing and outreach of outdoor single-family residential WUE programs on areas with the highest amount of outdoor water use and target the type of WUE program relative to property size, as shown in **Figure 6-2**.
10) Focus marketing and outreach of indoor multi-family residential WUE programs on areas with the largest populations living in multi-family residential housing, as shown in **Figure 6-4**.
11) Focus marketing and outreach of indoor residential WUE programs on areas with low participation, primarily low-income and high rentership areas, as shown in **Figure 6-6**. West Basin should consider no-cost programs with eligibility requirements for low-income customers and partnerships with energy utilities offering the same.
12) Periodically review customer participation rates relative to customer agency service area, customer demographic sectors, or other factors, to evaluate whether the customers being reached by WUE programs aligns with West Basin's overall WUE objectives.
COMMERCIAL, INSTITUTIONAL, AND INDUSTRIAL WUE PROGRAM S
13) CII and multi-family residential parcels that are likely to have the most significant outdoor water use and are therefore the greatest potential benefit from large landscape programs are identified as high and medium priority on **Figure 6-7**. A detailed breakdown of land use type and prioritization rank by Division is provided in **Table 5-17**.
14) In order to reach CII customers with the greatest potential WUE savings opportunities, focus marketing and outreach efforts for CII customers on the areas indicated as high priority **Figures 6-8a**, **6-8b**, and **6-8c** and **Table 5-17**, for commercial, institutional, and industrial customers, respectively. Follow the DWR stakeholder outreach process for development of CII performance measures, and reevaluate CII program offerings and marketing for alignment with new performance measures as they are developed.
15) Look for further efficiencies in CII WUE program implementation by directing marketing outreach to public agencies, as shown in **Figure 6-9** and **Table 5-18**.

1. INTRODUCTION

1.1. West Basin Municipal Water District (West Basin) Service Area and Role

The West Basin Municipal Water District ("West Basin") covers an approximately 185-square mile service area and provides wholesale potable water to 17 cities through three investor-owned utilities, four municipal water departments, and one county waterworks district (collectively the "customer agencies"), in southwest Los Angeles County (see **Figure 1-1**). In addition, West Basin supplies recycled water for municipal, commercial, and industrial use, as well as for injection into the West Coast Basin Seawater Barrier to mitigate seawater intrusion and to replenish the groundwater aquifer (West Basin, 2016).

West Basin's mission is "To provide a safe and reliable supply of high-quality water to the communities we serve." An integral part of West Basin's work to ensure water supply reliability for its diverse range of customer agencies is the proactive and innovative water use efficiency ("WUE" or "conservation") programs it provides to its communities.

West Basin currently offers a wide range of WUE programs and support to its customer agencies. West Basin's approach to its conservation efforts includes:

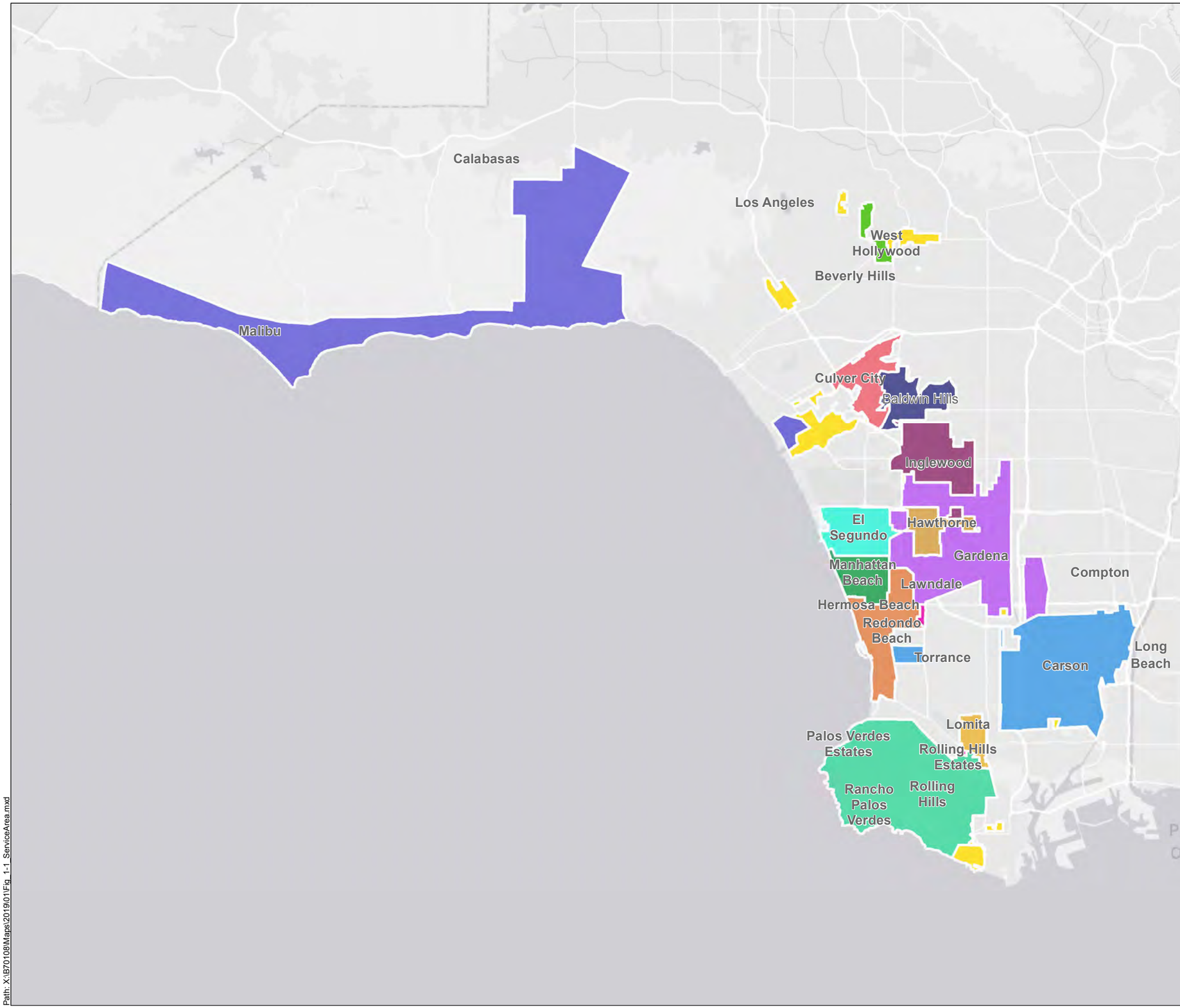
1) providing unique and innovative WUE programs to its customer agencies,
2) partnering with and supplementing WUE program offerings provided by the Metropolitan Water District ("MWD"),
3) leveraging grant funding for WUE programs and services on behalf of its customer agencies,
4) as a regional entity, leveraging economies of scale in program administration and implementation on behalf of its smaller customer agencies, and
5) providing regional consistency in WUE programs offered to the public.

***Figure 1-2**. Snapshot of WUE Programs and Services Offered to West Basin Customer Agencies and Public*

1.2. Data Study Approach and Objective

West Basin has long recognized the increasing need for supply reliability and growing emphasis on locally-sourced water supplies. Over the last two decades, West Basin has taken a proactive approach to its WUE planning, with the development of its *Conservation Master Plan* in 2006 and it's *Water Use Efficiency Master Plan 2011-2015* in 2011. In addition, West Basin supported its customer agencies with the development of eight individual Water Use Efficiency Master Plans in 2011.

As a continuation of its leadership and proactive planning for WUE, West Basin worked with EKI Environment & Water, Inc. ("EKI") to develop this Water Use Efficiency Data Study. The objective of the WUE Data Study is to provide a plan that articulates guiding principles and strategies for West Basin's WUE programs and services and facilitates innovation and adaptability given California's rapidly changing water resources landscape.



Legend

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.

N

0 4 8

(Scale in Miles)

West Basin Service Area

West Basin Municipan Water District
January 2019
EKI B70108.00

Figure 1-1

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Path: X:\B70108\Maps\2019\01\Fig_1-1_ServiceArea.mxd

1.3. Planning Process

The development of this WUE Data Study was partially funded by a United States Bureau of Reclamation ("USBR") WaterSmart grant. Phase 1 of the WUE Data Study was completed in Fiscal Year ("FY") 2017-2018, and Phase 2 was completed in FY 2018-2019.

The WUE Data Study was developed in close coordination with West Basin staff and included the following major focus areas:

- **Coordination with the West Basin Staff, Customer Agencies, and other Key Stakeholders**. With the goal of ensuring the WUE Data Study was responsive to the needs of West Basin and its customer agencies, EKI worked closely with West Basin and customer agency staff throughout the Data Study process. This coordination included multiple meetings and conference calls, as well as attendance and presentation at quarterly WUE Workgroup meetings. EKI also developed a detailed WUE Survey to capture agency-specific data and information with respect to different elements of the WUE Data Study. The WUE Survey was instrumental in informing the WUE Data Study recommendations and designing future West Basin work efforts.
- **Proactively Respond to Regulatory and Other Drivers for Water Conservation**. A WUE Data Study is most effective if it anticipates and supports agencies in their response to an evolving regulatory framework and other local and regional pressures. Significant effort associated with this WUE Data Study centered on highlighting the changing regulations, inventorying local drivers (e.g., via the WUE Survey), and identifying ways in which West Basin could support its customer agencies to satisfy the future requirements.
- **Conduct Innovative Analysis of WUE Programs.** A key goal of the WUE Data Study was to conduct an innovative, technical analysis of West Basin's WUE programs. EKI applied geospatial and statistical analytical techniques to evaluate program effectiveness and potential, additional WUE opportunities. The inclusion of key saturation, economic and demographic data into this analysis supports strategic decision making with respect to which programs to offer and how to market them.
- **Develop Strategic Recommendations**. Based on the data and information developed as part of the WUE Data Study, EKI made a series of near- and longer-term recommendations to support West Basin and its customer agencies to increase WUE and achieve measurable results.

1.4. Document Organization

This WUE Data Study is organized as follows:

- **Section 1** provides an overview of the WUE Data Study process and approach;
- **Section 2** provides a summary and discussion of water use by sector within West Basin's service area and presents the results of Water Use Profiles prepared for each of West Basin's customer agencies;
- **Section 3** summarizes the results of a WUE Survey conducted of West Basin's customer agencies and other stakeholders to gain a deeper understanding of the programs and services likely to be most beneficial for West Basin's customer agencies;
- **Section 4** identifies various WUE drivers, including state-level regulatory drivers and other motivating factors for West Basin and its customer agencies;

- **Section 5** provides a detailed discussion and analysis of past participation in WUE programs, including analysis of geospatial, demographic, and land use trends in participation for selected WUE programs;
- **Section 6** provides the results of this WUE Data Study effort, including the identification of opportunities for high-value future WUE programs based on a set of strategic guiding principles and recommendations for future WUE programs, services, and studies; and
- **Section 7** provides key references and sources.

Maps and figures presenting results of data analyses and recommendations are generally shown at the full West Basin scale. Larger scale versions of these maps, focused on each West Basin Director Division ("Division") area are provided in **Appendix A**. In general, analyses pertaining to historical water use are presented by customer agency and analyses pertaining to the future targeting and implementation of WUE programs are presented by Division.

A very large suite of WUE programs are offered to water customers within the West Basin service area, including programs provided by West Basin, MWD, customer agencies, and energy utilities such as SoCalGas. As such, the analyses performed as part of this Data Study are necessarily limited to a subset of these offerings. WUE programs selected for particular analyses were done in close consultation with West Basin staff and were intended to evaluate particular characteristics aimed at better informing future program offerings and outreach.

2. CUSTOMER AGENCY WATER USE PROFILES

West Basin serves a diverse area, with substantial differences in population, climate, housing stock, and other factors that can significantly affect customer water use. The diversity in West Basin's service area results in substantial differences between the customer agencies in terms of total water use, proportion of water use by sector, and other water use patterns (e.g., indoor versus outdoor water use). Key water use metrics for each of the twelve potable water customer agencies and districts are summarized and presented in Water Use Profiles (see **Figures 2-1** through **2-12**). These water use metrics are then aggregated for West Basin's potable water service area as a whole and presented in **Figure 2-13**. The results of the Water Use Profile analysis are provided in the following sections.

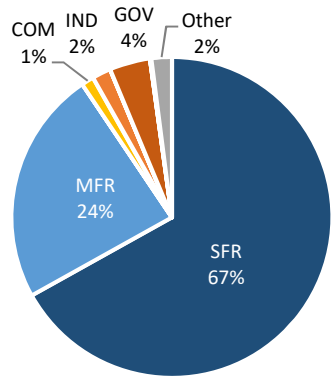
2.1. Methodology

In order to compare water use patterns within and between customer agencies and within the context of the new Urban Water Management Plan ("UWMP")[1] and annual water use objectives (discussed in Section 4.1), "Water Use Profiles" were developed for each potable water customer agency as shown on **Figures 2-1** through **2-12**. A summary of these water use characteristics for the West Basin service area as a whole is shown on **Figure 2-13**. The elements included in the Water Use Profiles are summarized below. While some of the customer agencies also purchase recycled water from West Basin, the Water Use Profiles evaluate only potable water use.

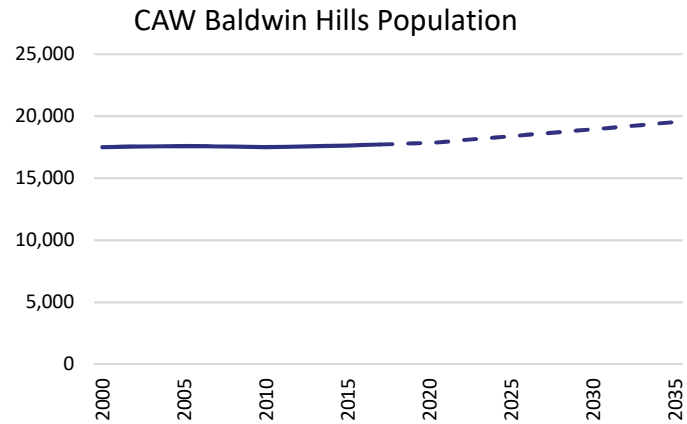
- **Service Area Map:** A West Basin service area map is provided, highlighting the location and extent of the given customer agency service area. The colors used for a given customer agency in this key map are used consistently in other maps and charts throughout the WUE Data Study to represent the customer agency.
- **2015 Water Use by Sector:** Water use in 2015 for each customer agency was summarized in terms of the percentage of water use by each of the following sectors: single-family residential ("SFR"), multi-family residential ("MFR"), commercial, industrial, institutional/government, dedicated irrigation, and system water loss, or combinations thereof, as reported by the customer agency. These data were summarized from each customer agency's 2015 UWMP.
- **Population:** Past and projected service area populations are shown for each customer agency, based on data reported in their 2015 UWMPs. Projected future population is shown as a dashed line through 2035 or 2040, depending on the available data.
- **Monthly Potable Water Use:** Total potable water use, or "consumption," by month is shown to illustrate the variability in water use by season and by year. Data are shown for selected years, ranging from 2000 through 2017. Monthly potable water use reflects total potable water deliveries by West Basin and groundwater sources, based on data provided by West Basin, unless otherwise noted.
- **Annual Potable Water Use:** Estimated annual indoor and outdoor potable water use were calculated on an annual basis, based on total potable water deliveries by West Basin and groundwater sources, unless otherwise noted. Estimated indoor water use is shown in blue and estimated outdoor water use is shown in green. Total per capita water use is shown in grey, based on total potable water use provided by West Basin and population data reported in customer agencies' 2015 UWMPs. Indoor water use is estimated as the lowest daily water use during the lowest water use month in a given year, adjusted by an annual irrigation scaling

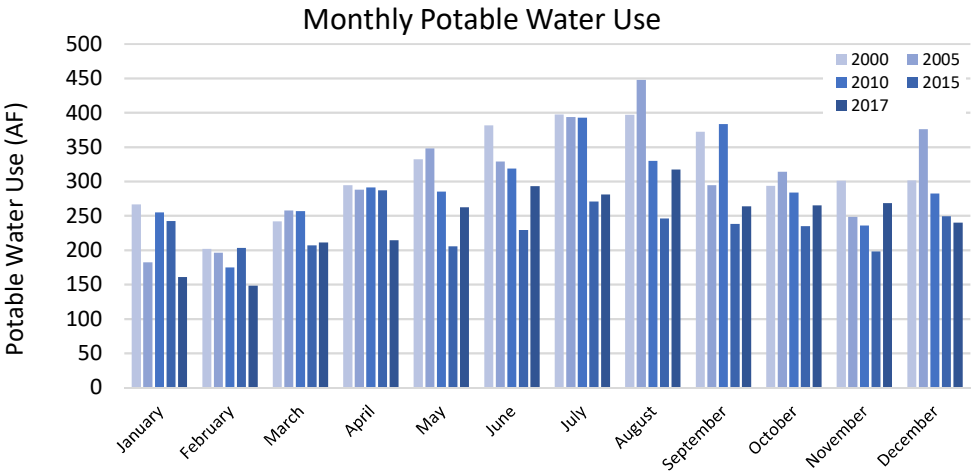
[1] Urban water retail and wholesale agencies are required to prepare UWMPs every five years to document past and project future water demands and supplies available to the agency.

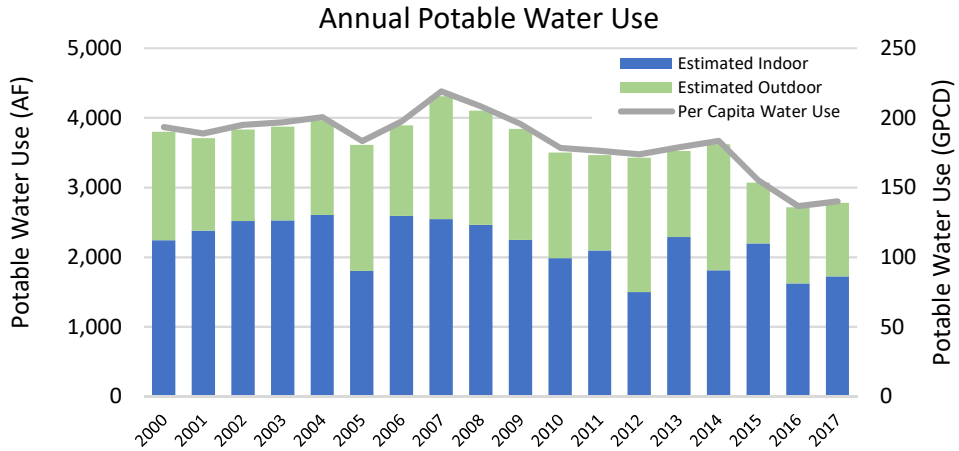
CAW BALDWIN HILLS



2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
CAW = California American Water
COM = Commercial
GOV = Government
GPCD = gallons per capita per day
IND = Industrial
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area.

Sources

1. Data for water use by sector and population are from the CAW Southern Division - Los Angeles County District 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017. Water deliveries for selected years were provided by CAW on 11 April 2018.

CAW Baldwin Hills
Water Use Profile

West Basin Municipal Water District
January 2019
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Figure 2-1

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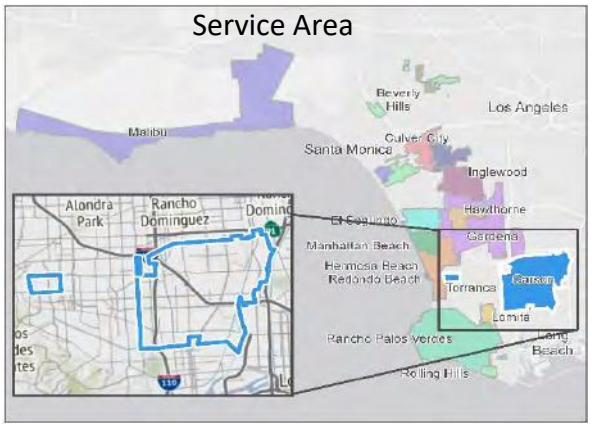
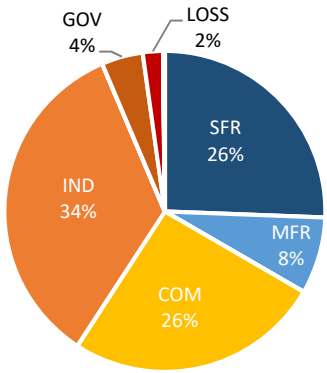
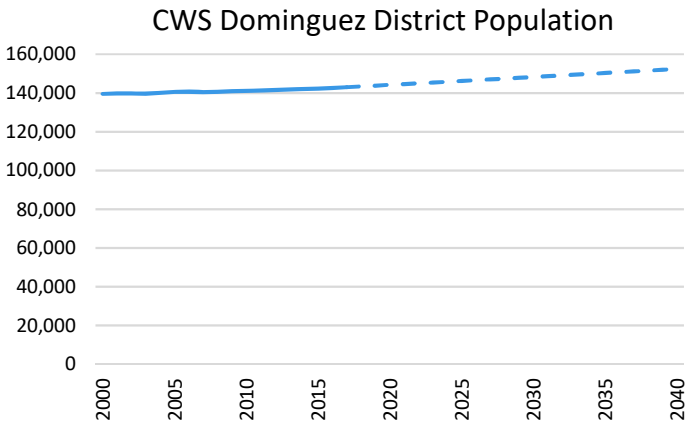
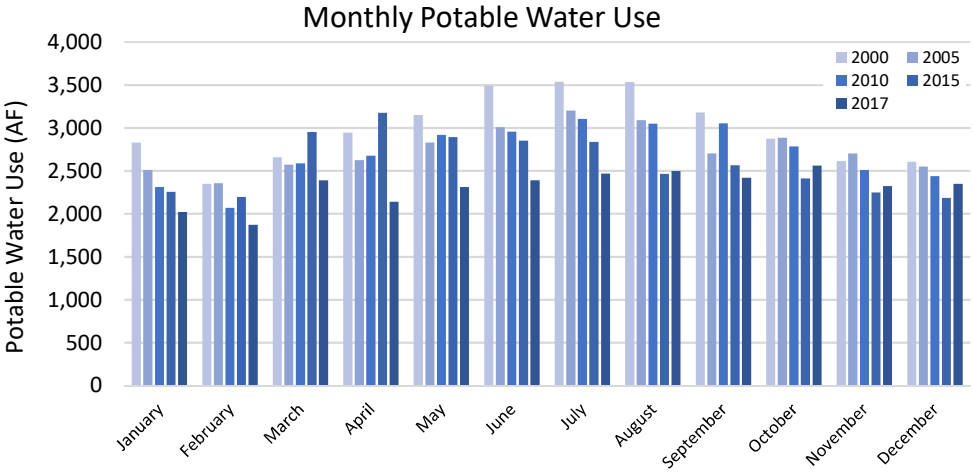
CWS DOMINGUEZ DISTRICT

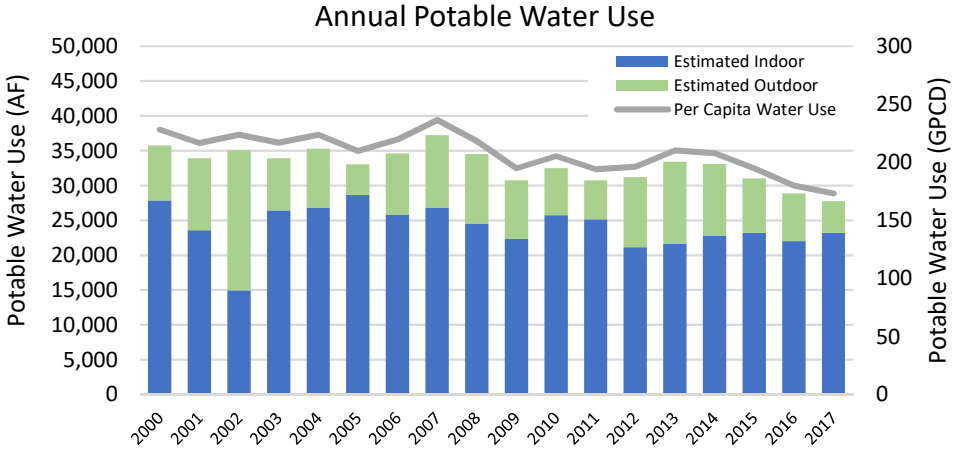




2015 Water Use by Sector







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Sources

1. Data for water use by sector and population are from the CWS Dominguez District 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

CWS Dominguez District Water Use Profile

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-2

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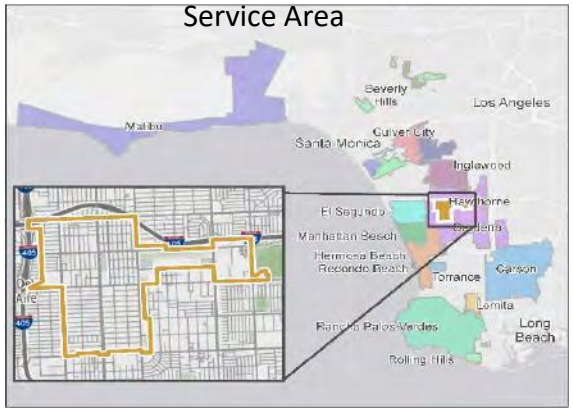
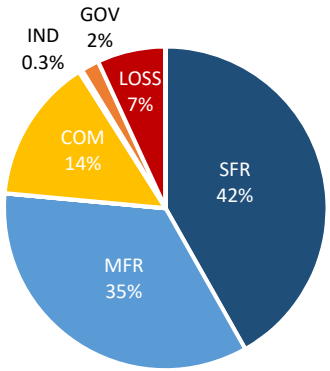
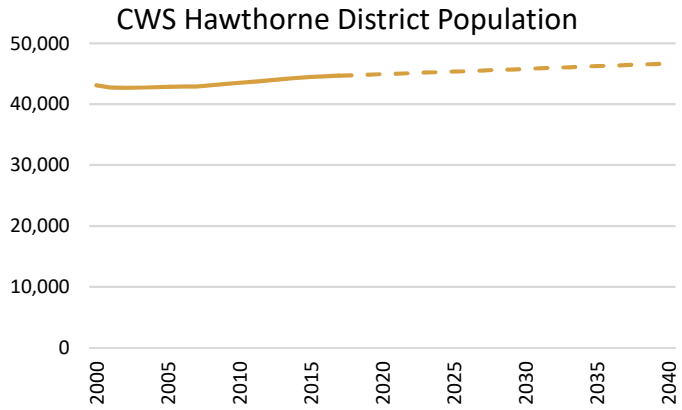
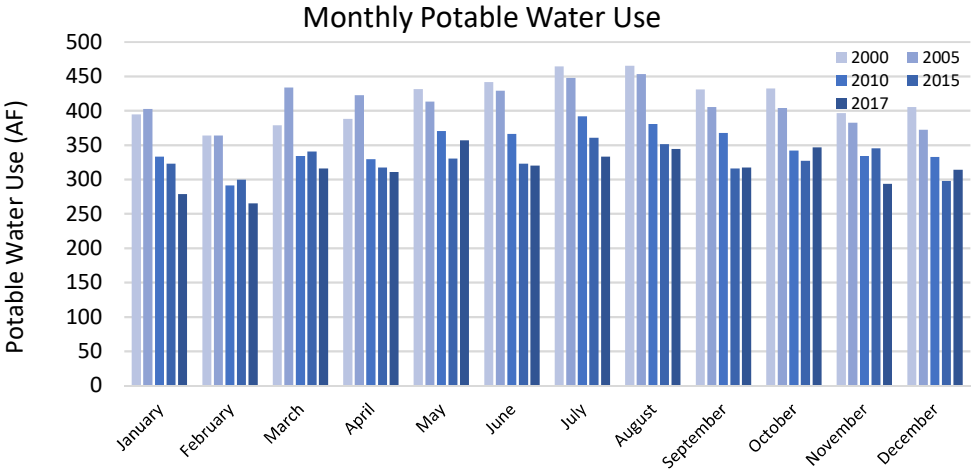
CWS HAWTHORNE DISTRICT

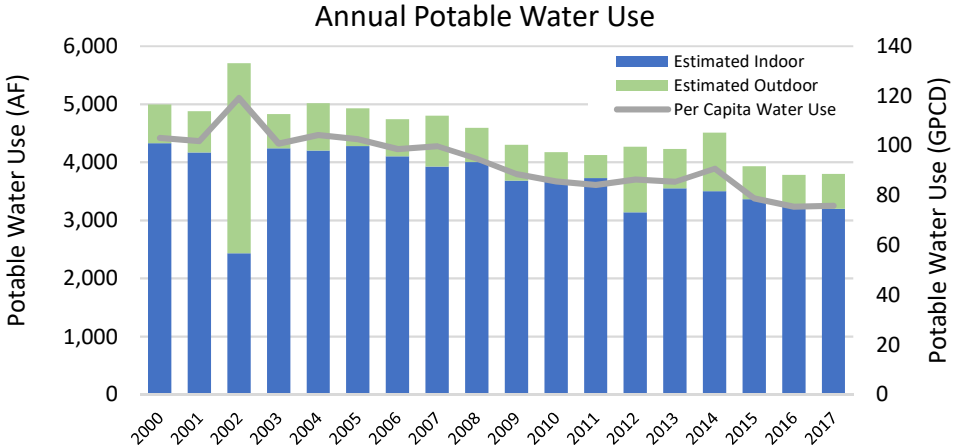




2015 Water Use by Sector







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Sources

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2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

CWS Hawthorne District Water Use Profile

West Basin Municipal Water District
January 2019
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Figure 2-3

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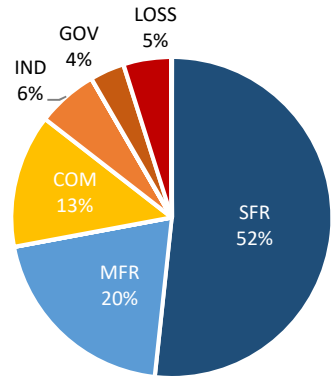
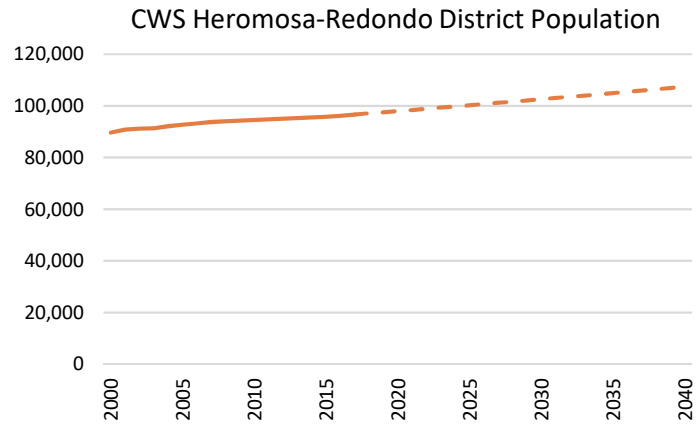
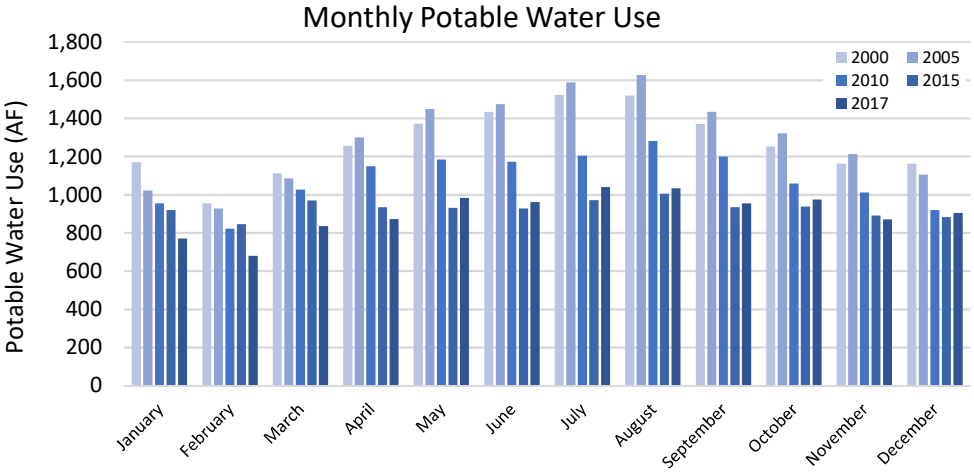
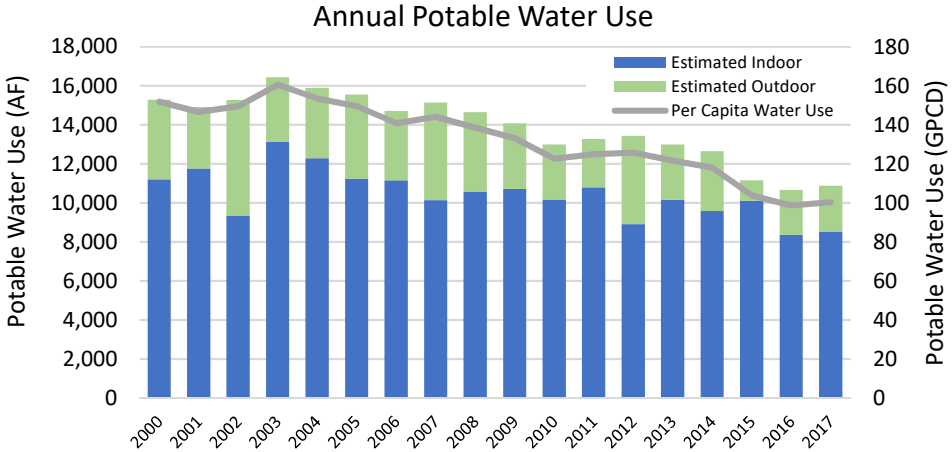
CWS HERMOSA-REDONDO DISTRICT



2015 Water Use by Sector







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Sources

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CWS Hermosa-Redondo District Water Use Profile

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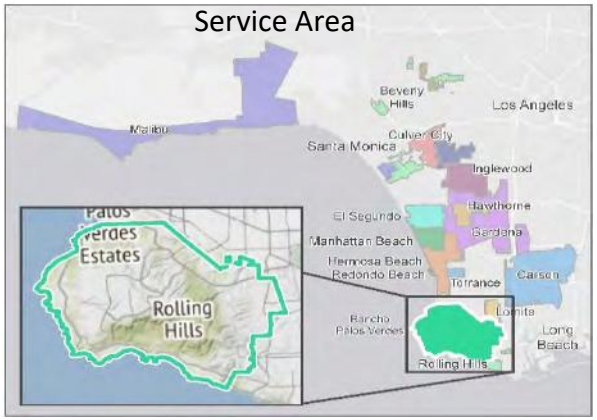
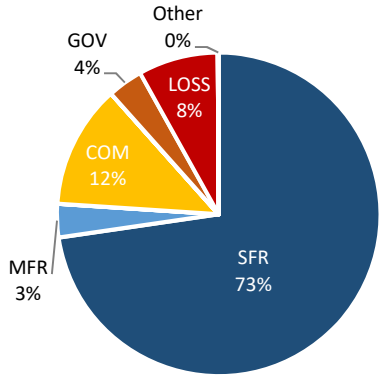
Figure 2-4

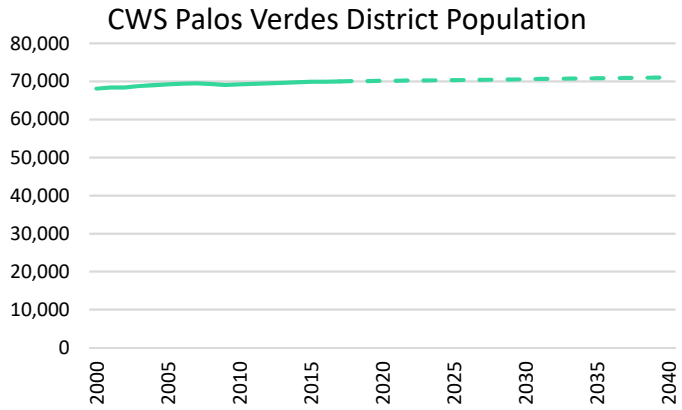
eki environment & water

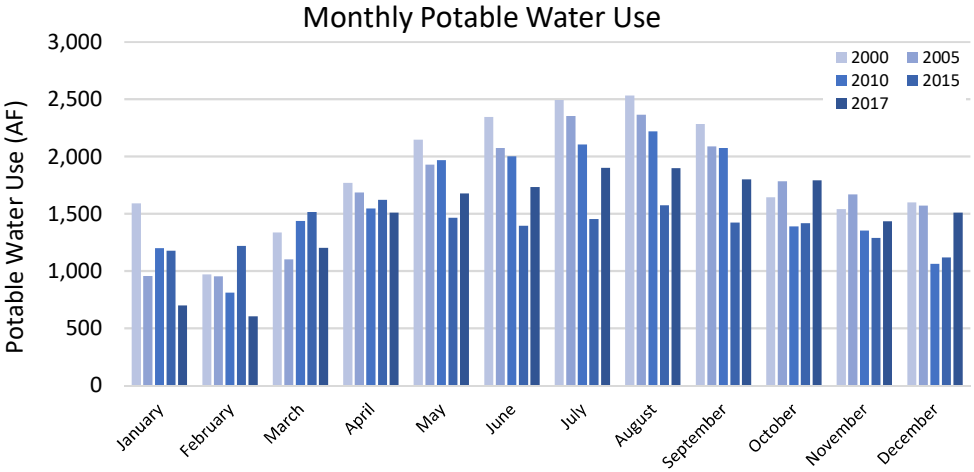
CWS PALOS VERDES DISTRICT

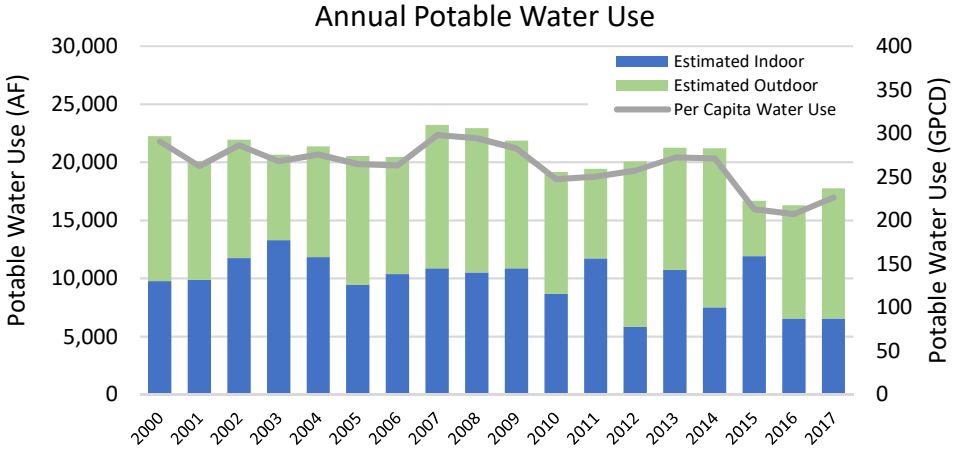




2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
COM = Commercial
CWS = California Water Service
GOV = Government
GPCD = gallons per capita per day
IND = Industrial
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area.

Sources

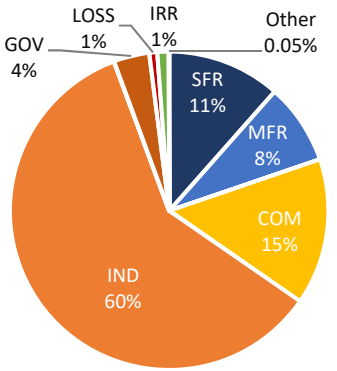
1. Data for water use by sector and population are from the CWS Palos Verdes District 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

CWS Palos Verdes District Water Use Profile

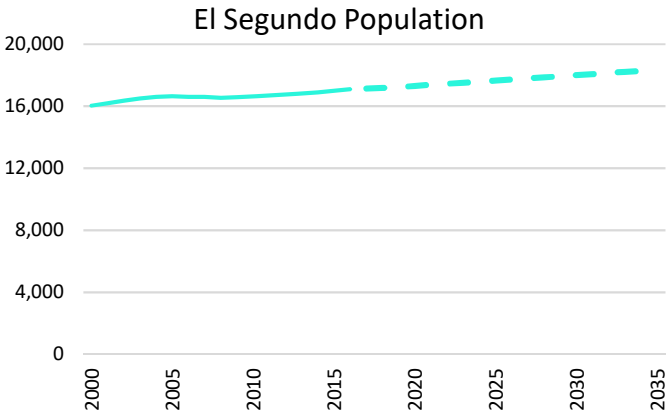
West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-5

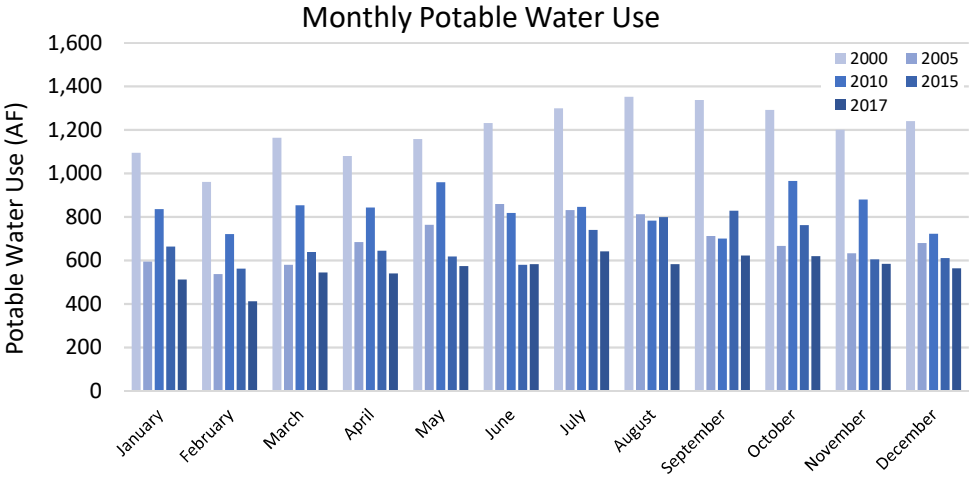
eki environment & water

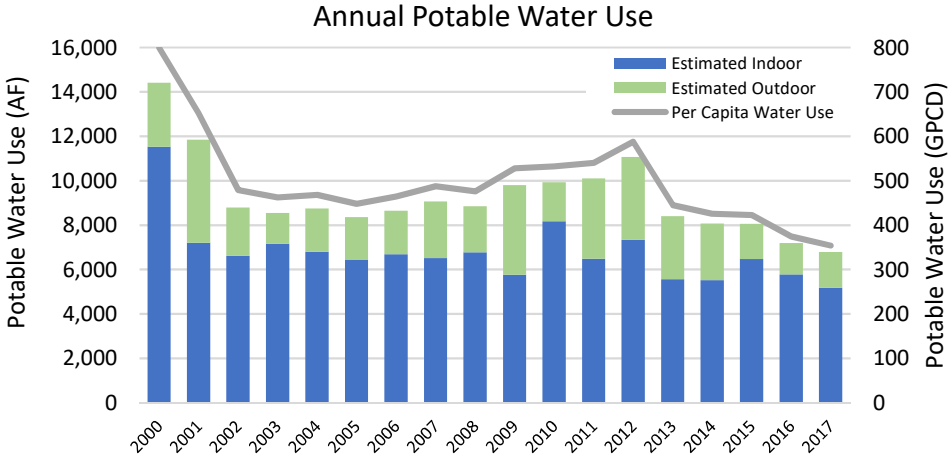
CITY OF EL SEGUNDO



2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
COM = Commercial
GOV = Government
GPCD = gallons per capita per day
IND = Industrial
IRR = Dedicated Irrigation
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area.

Sources

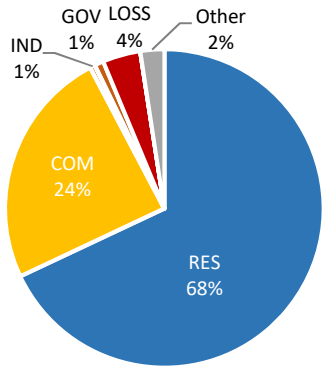
1. Data for water use by sector and population are from the City of El Segundo 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

City of El Segundo
Water Use Profile

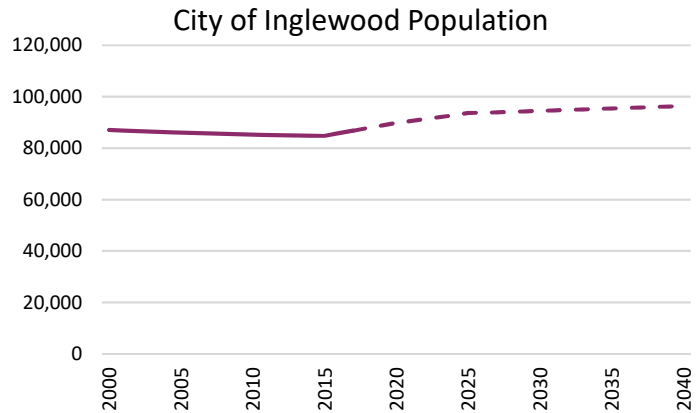
West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-6

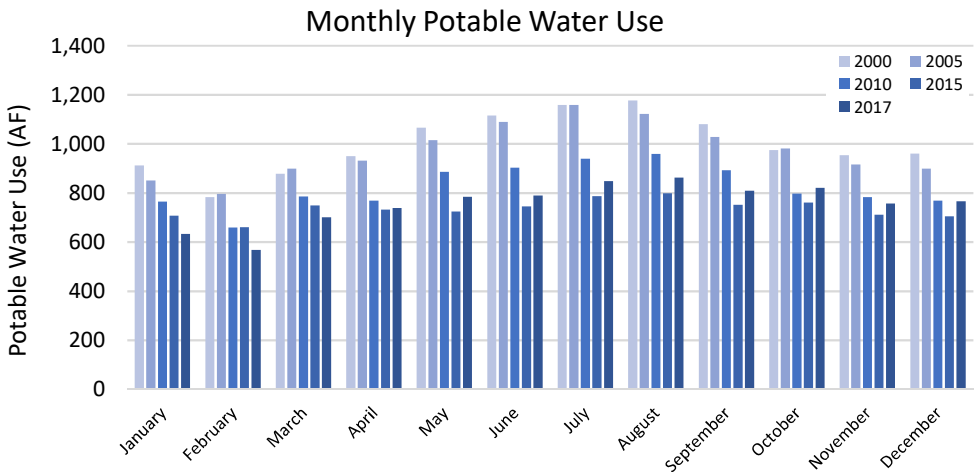
eki environment & water

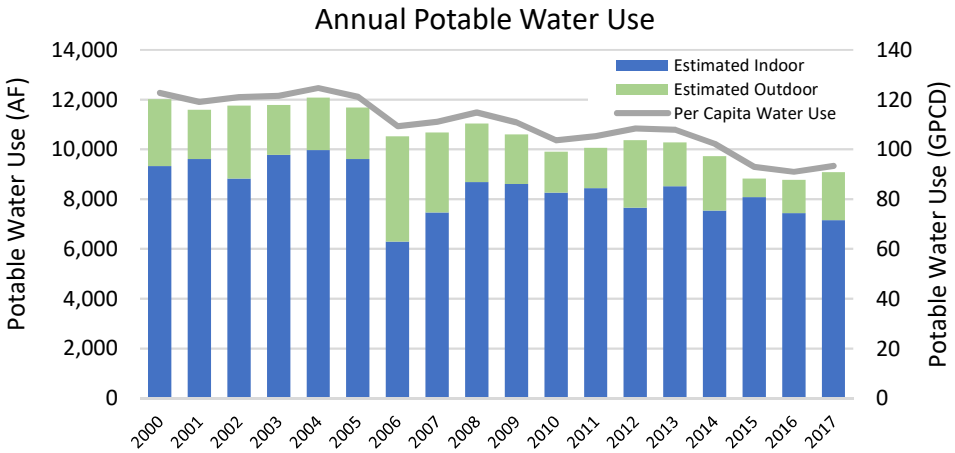
CITY OF INGLEWOOD



2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
COM = Commercial
GOV = Government
GPCD = gallons per capita per day
IND = Industrial
LOSS = Water Loss
RES = Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area. Outdoor water use for 2006 and 2007 reflect anomalies in seasonal water use in the available historical data.

Sources

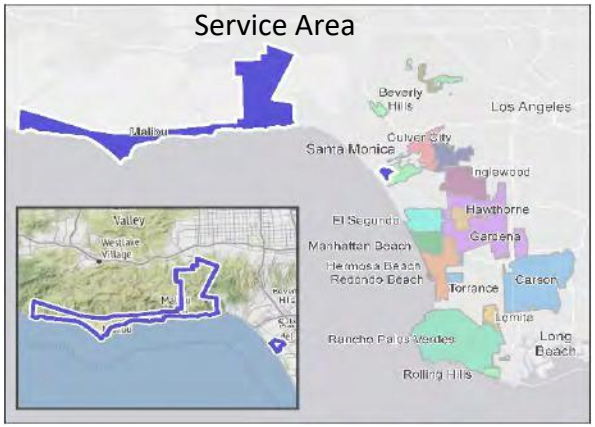
1. Data for water use by sector and population are from the City of Inglewood 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017. Water delivery data for selected years provided by City of Inglewood on 16 April 2018.

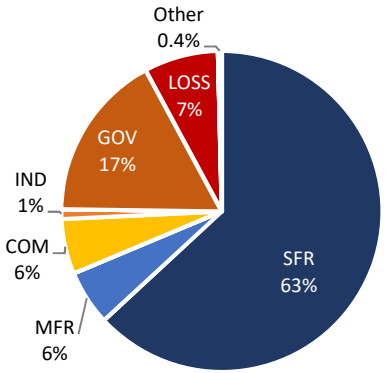
City of Inglewood Water Use Profile

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-7

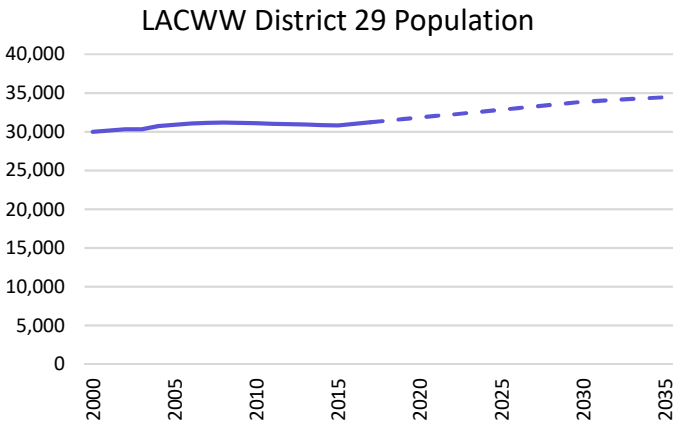
eki environment & water

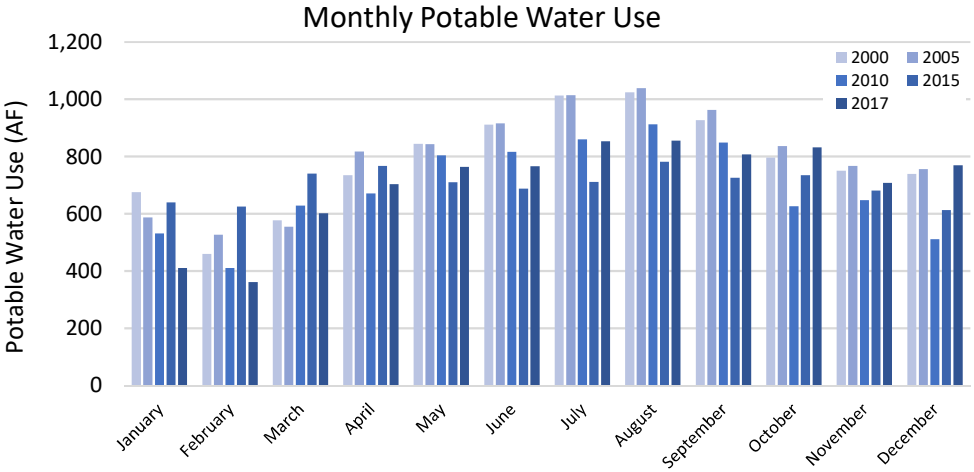
LOS ANGELES COUNTY WATERWORKS DISTRICT 29

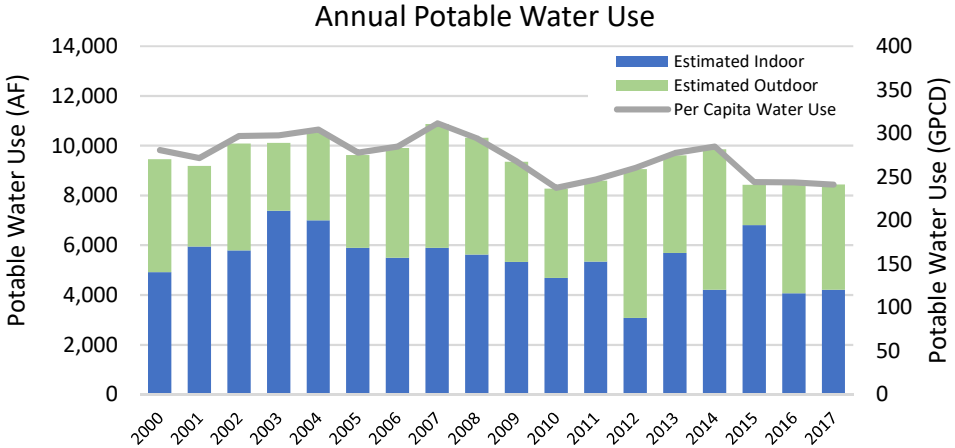




2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
COM = Commercial
GOV = Government
GPCD = gallons per capita per day
IND = Industrial
LACWW = Los Angeles County Waterworks
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area.

Sources

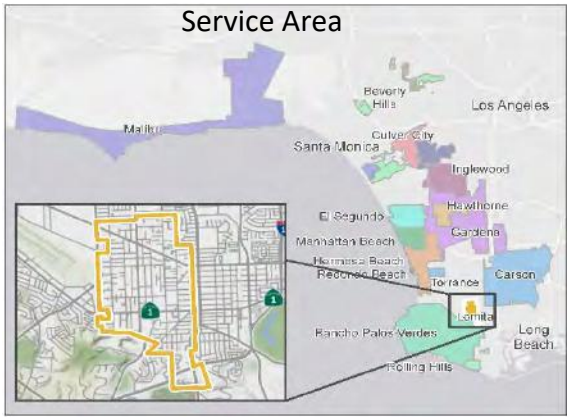
1. Data for water use by sector and population are from the LACWW District 29 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

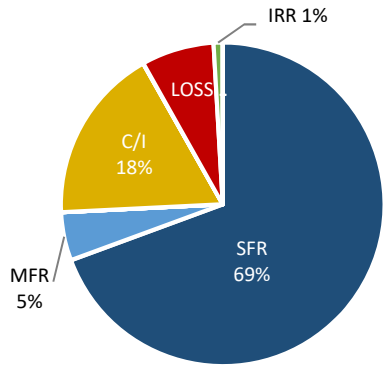
Los Angeles County Waterworks District 29 Water Use Profile

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-8

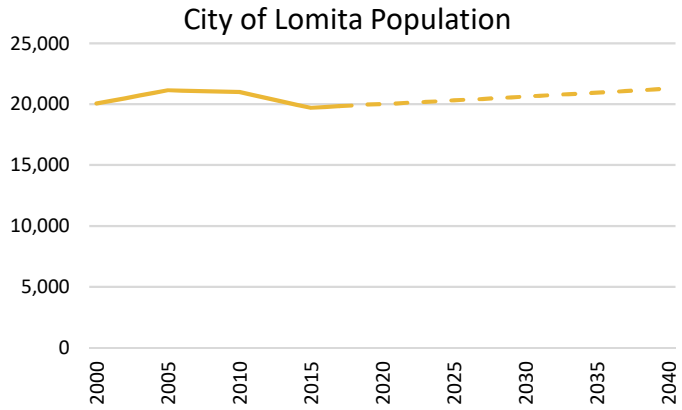
eki environment & water

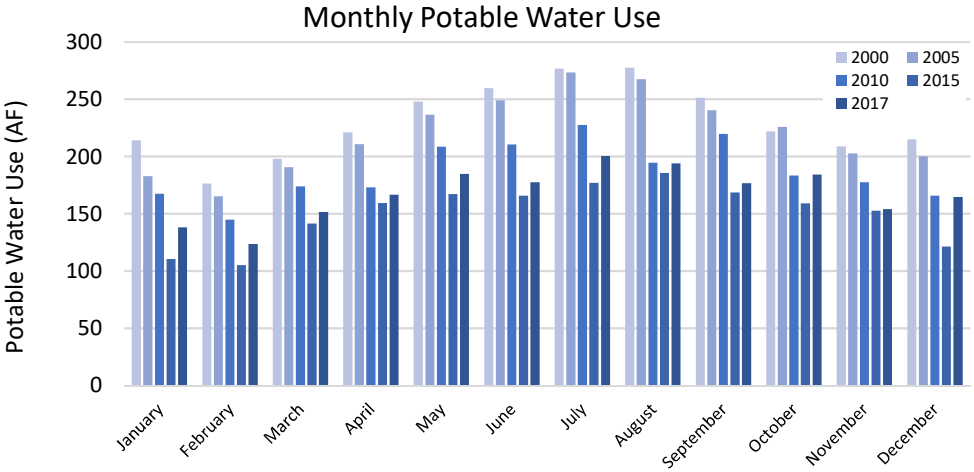
CITY OF LOMITA

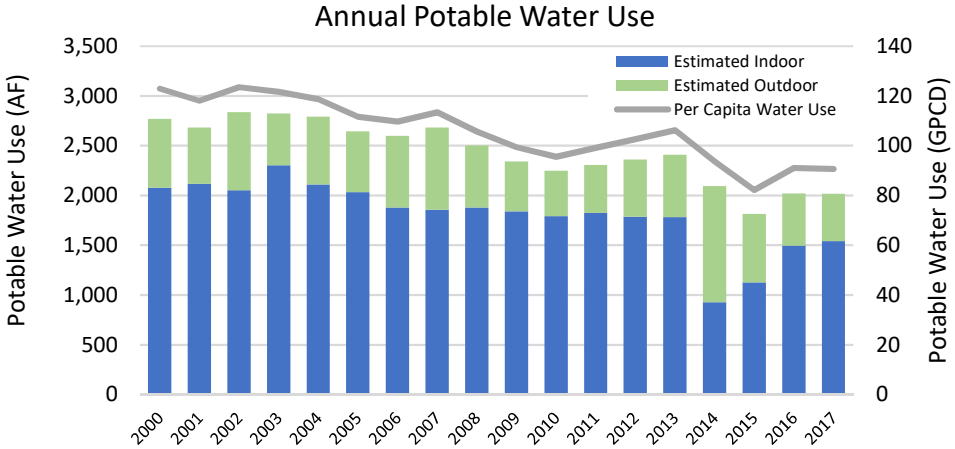




2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
C/I = Commercial/Institutional
COM = Commercial
GOV = Government
GPCD = gallons per capita per day
IND = Industrial
IRR = Dedicated Irrigation
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area.

Sources

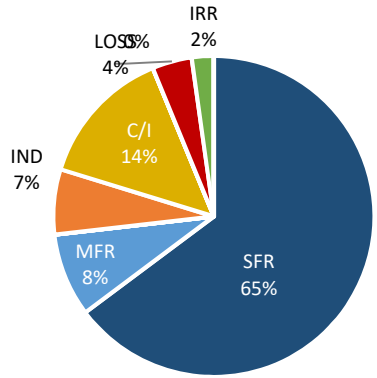
1. Data for water use by sector and population are from the City of Lomita 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

City of Lomita
Water Use Profile

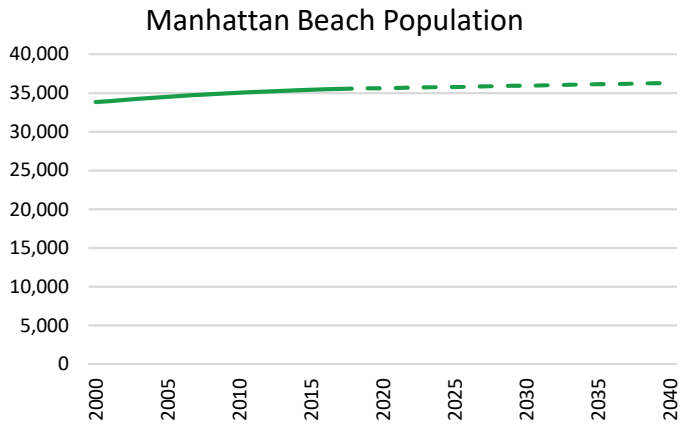
West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-9

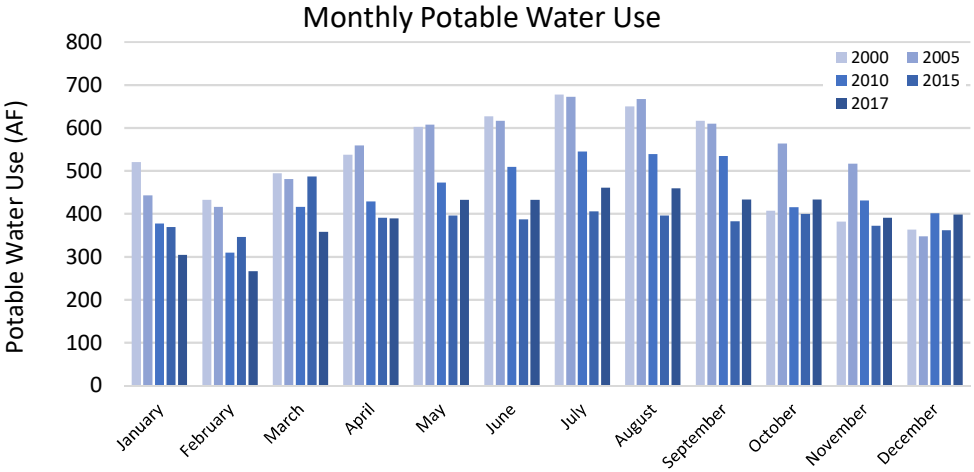
eki environment & water

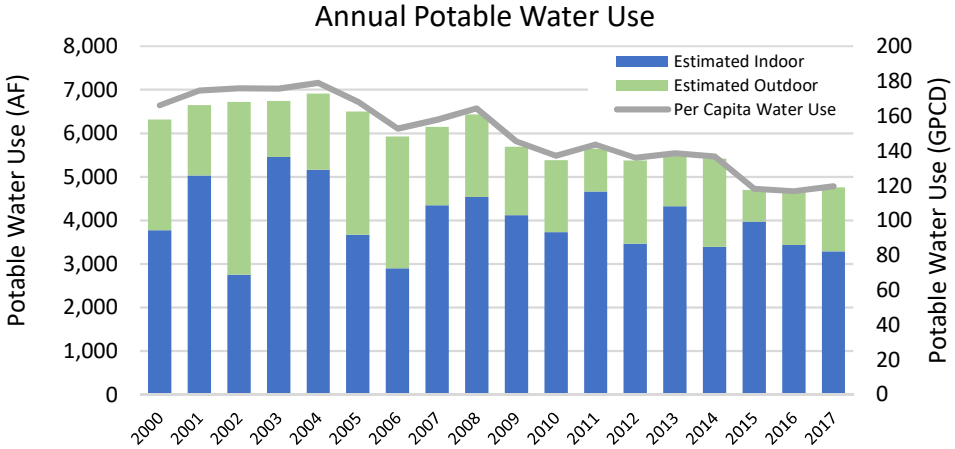
CITY OF MANHATTAN BEACH



2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
C/I = Commercial/Institutional
GOV = Government
GPCD = gallons per capita per day
IRR = Dedicated Irrigation
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area. Outdoor water use may be overestimated in years when seasonal long term storage was utilized, due to timing of use.

Sources

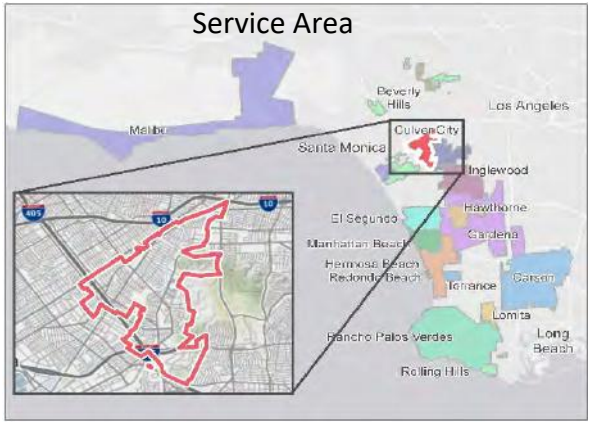
1. Data for water use by sector and population are from the City of Manhattan Beach 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

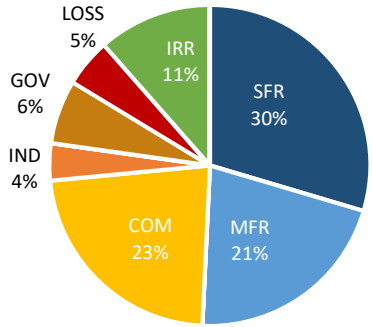
City of Manhattan Beach
Water Use Profile

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-10

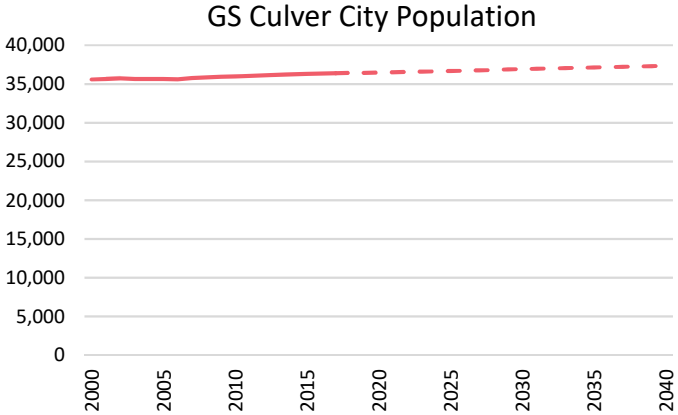
eki environment & water

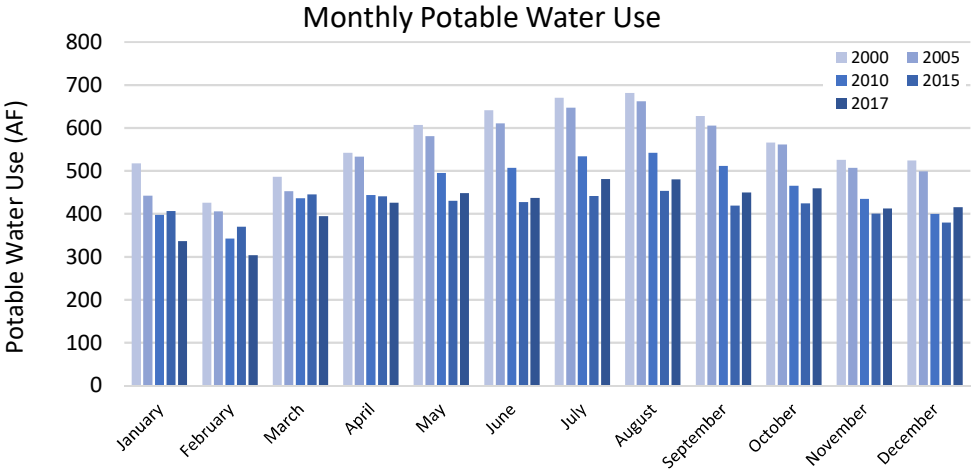
GS CULVER CITY

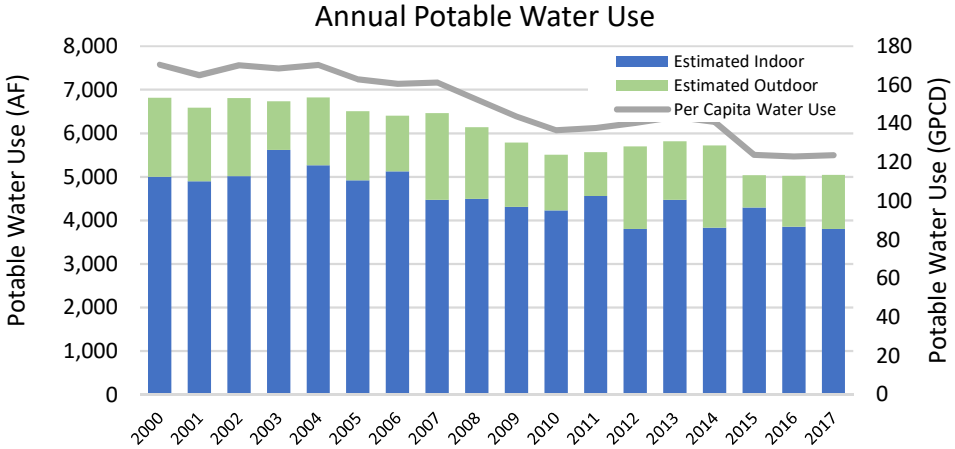




2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
COM = Commercial
GOV = Government
GPCD = gallons per capita per day
GS = Golden State Water Company
IND = Industrial
IRR = Dedicated Irrigation
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area.

Sources

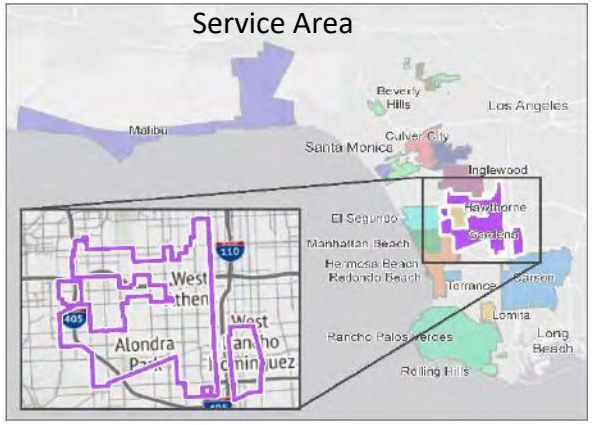
1. Data for water use by sector and population are from the GS Culver City 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.

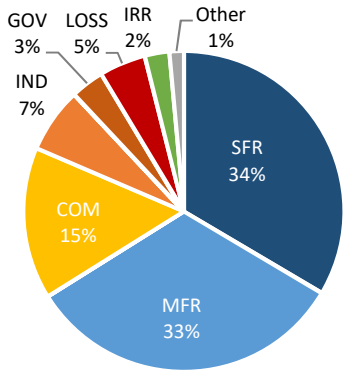
GS Culver City
Water Use Profile

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-11

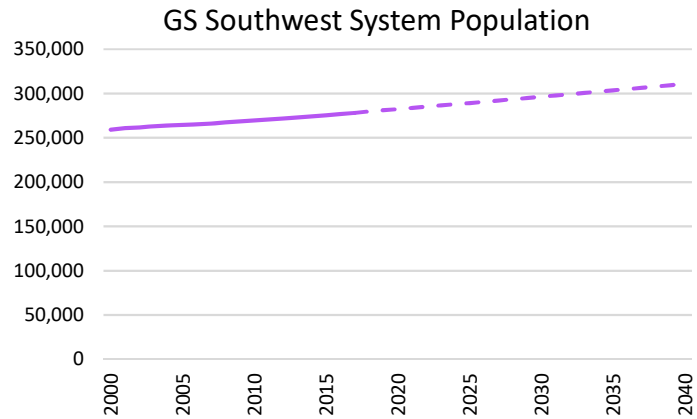
eki environment & water

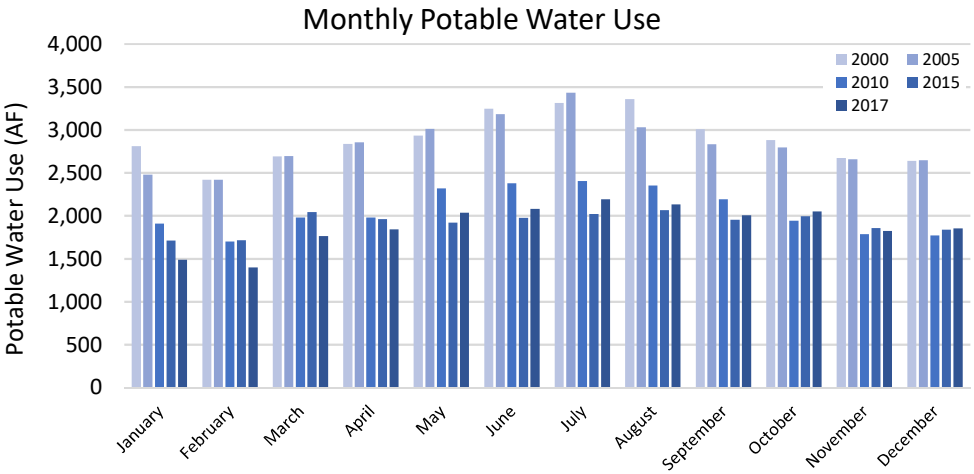
GS SOUTHWEST SYSTEM

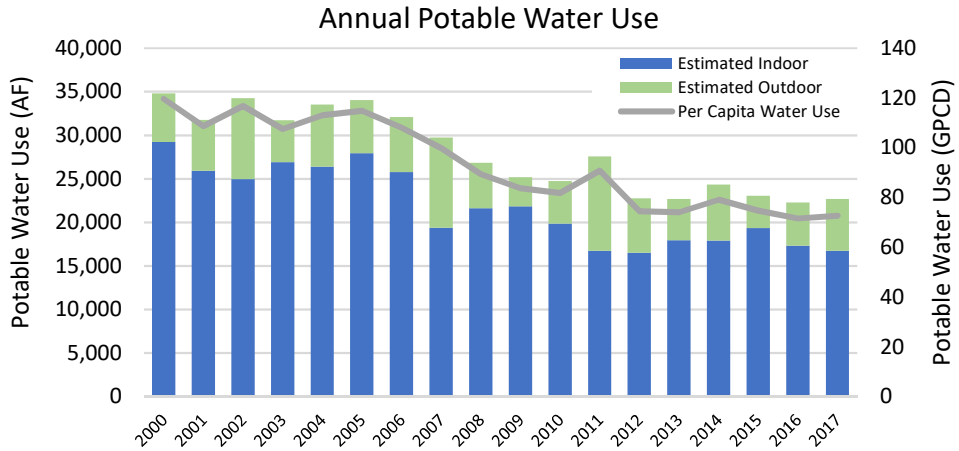




2015 Water Use by Sector







Abbreviations

AF = Acre-Feet
COM = Commercial
GOV = Government
GPCD = gallons per capita per day
GS = Golden State Water Company
IND = Industrial
IRR = Dedicated Irrigation
LOSS = Water Loss
MFR = Multi-Family Residential
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area. Outdoor water use may be overestimated in years when seasonal long term storage was utilized, due to timing of use.

Sources

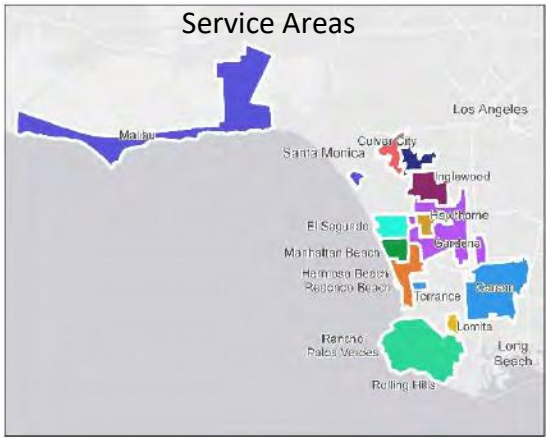
1. Data for water use by sector and population are from the GS Southwest System 2015 UWMP. Values were linearly interpolated for selected years where population was not reported.
2. Historical potable water use reflect total potable water deliveries by West Basin and groundwater sources reported to West Basin, as provided to EKI on 11 December 2017.
interpolated for selected years where population was not reported.

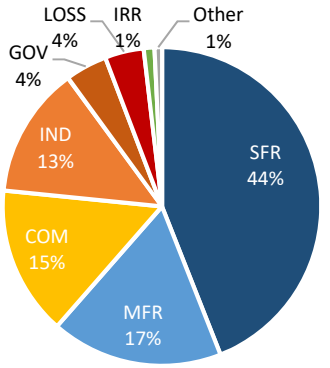
GS Southwest System
Water Use Profile

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-12

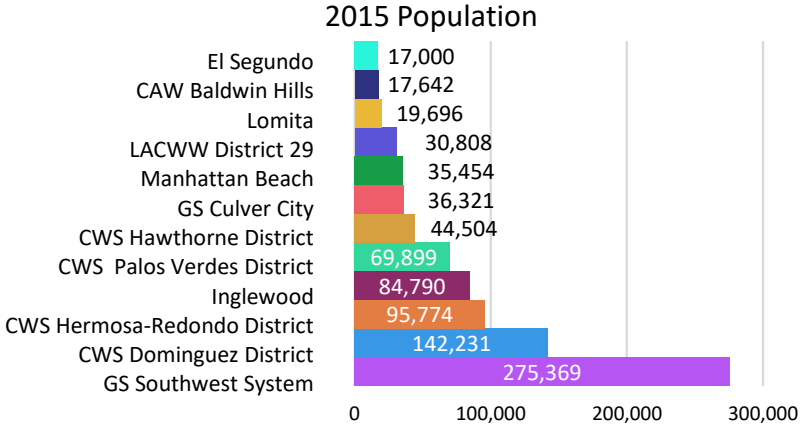
eki environment & water

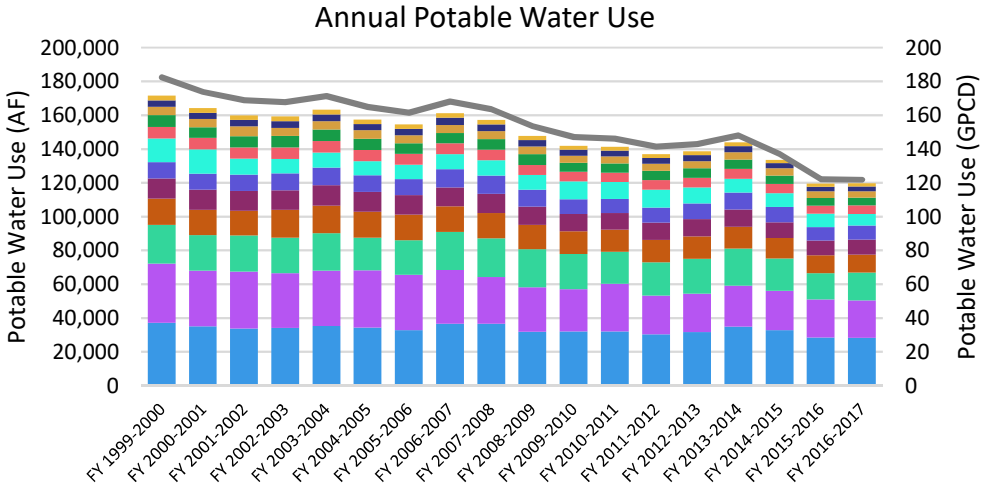
WEST BASIN SERVICE AREA

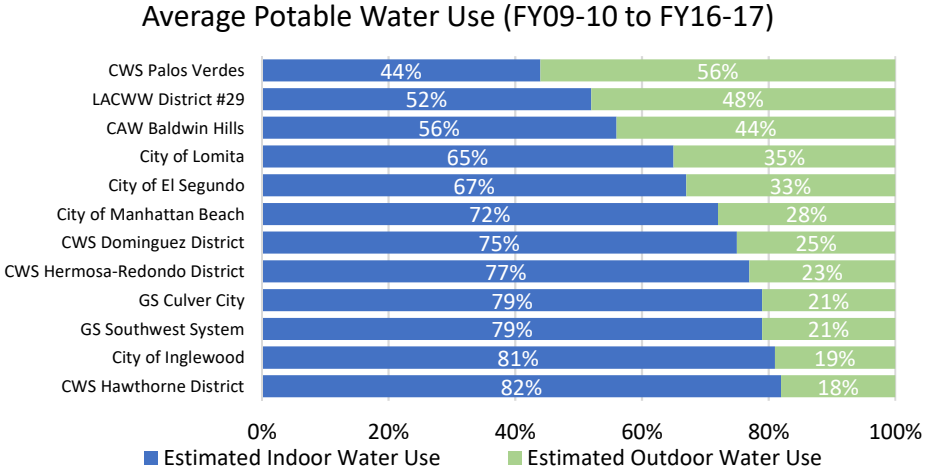




2015 Water Use by Sector







Abbreviations

CAW = California American Water
COM = Commercial
CWS = California Water Service
GOV = Government
GS = Golden State
IND = Industrial
IRR = Dedicated Irrigation
LACWW = Los Angeles County Waterworks
LOSS = Water Loss
MFR = Multi-Family Residential
R-GPCD = Residential gallons per capita per day
SFR = Single Family Residential
UWMP = Urban Water Management Plan

Notes

1. Outdoor water use is estimated based on historical seasonal fluctuations in recycled water use for the West Basin service area.

Sources

1. Data for water use by sector and population are from agencies' 2015 UWMPs. Values were linearly interpolated for selected years where population was not reported.
2. Monthly potable water use data provided by West Basin Municipal Water District on 11 December 2017.

West Basin Service Area
Water Use Profile

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 2-13

eki environment & water

factor, and projected over the course of the year. This irrigation scaling factor was estimated based on recycled water deliveries to predominantly large landscape customers[2] within the West Basin service area (West Basin, 2017). Outdoor water use was estimated to be the difference between total annual water use and the estimated annual indoor water use adjusted by the irrigation scaling factor.

2.2. Total Water Use and Trends

Total water use and per capita water use is decreasing across the service area. Specifically, per capita water use in FY 1999-2000 for the West Basin service area was 182 gallons per capita per day ("GPCD") as compared to 122 GPCD in FY 2016-2017. This reduction represents a 33% reduction in water use on a per capita basis.

During this same time period, while population within the West Basin service area increased by approximately 4.5%, total water use decreased by approximately 52,000 acre-feet per year ("AFY") or 30%. This reduction in water use can be attributed to a number of factors, including active and passive water conservation, customer conversion to recycled water, regulatory requirements (e.g., minimum water efficiency requirements for selected water using devices sold in California), drought conditions, economic influences, and a greater public awareness of responsible water use.

A sharp reduction in potable water use was observed from FY 2013-2014 to FY 2015-2016, over the course of the historic drought period, during which all Californians were required to reduce their overall water use. Water use in FY 2016-2017 for the West Basin service area as a whole is generally consistent with use during FY 2015-2016, indicating that a wide-spread post-drought rebound effect had not occurred. Such a rebound effect may be forthcoming, however, as some customer agencies did experience a water use increase in 2017.

Monthly water use is the highest during the summer, although the degree to which this seasonal variation occurs differs significantly among the customer agencies and over time. The seasonal difference in water use is primarily driven by the increased use of water for outdoor irrigation during summer months, relative to that in winter months. The significant decrease in potable water use in summer months observed between 2000 and 2010 in several customer agencies' profiles is the result of recycled water being utilized for irrigation purposes, thus offsetting potable water use. The observed reduction in seasonal variation in water use during 2015 is likely the result of reduced outdoor irrigation during the historic drought conditions.

2.3. Residential Water Use

Within the West Basin service area, the residential sector uses the largest volume of potable water, although this proportion varies greatly among customer agencies, as shown in **Figure 2-14**. In total, residential water use represented 61% of the 2015 water use across the service area, or nearly 84,000

[2] Recycled water deliveries by West Basin are only available on a customer agency basis. Therefore, deliveries to customer agencies whose recycled water users use recycled water for predominantly landscape irrigation purchases were used. That is, customer agencies who serve large industrial users of recycled water were excluded. This scaling factor was calculated and applied on an annual basis to account for seasonal fluctuations in irrigation, including that during winter months. This method is an estimate, intended for relative comparison of water use, and is conservatively more likely to overestimate indoor use than outdoor water use. As a result, one can have a high level of confidence that outdoor water use is *at least* as much as estimated, but may potentially be higher.

AFY.[3] Single-family residential water use by individual customer agencies ranges from 12% and 73% of a given agency's annual water use while multi-family residential ranges from 3% to 35%.

Given the broad range in residential water use among the West Basin customer agencies, WUE programs that target residential water use would be expected to be more beneficial to some agencies than others. This is of particular importance given the weight of residential water use in determining compliance with future UWMP water use targets (discussed in Section 4.1 below). **Figure 2-15** shows water use by sector as a proportion of each customer agency's total water use in 2015, by single-family and multi-family accounts. In particular, programs that target residential water use would be expected to have the greatest benefit for those agencies with upwards of 50% of water use by the residential sector, and limited benefit for those with less residential water use (i.e., City of El Segundo and CWS Dominquez District). In addition, the proportion of single-family to multi-family residential water user varies significantly among the customer agencies. The agencies with a substantial proportion of water use by multi-family accounts

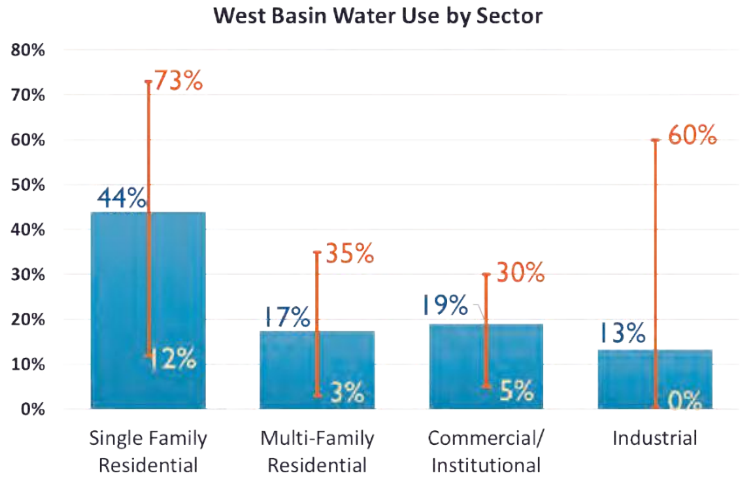


Figure 2-14. Blue bars indicate the relative percentage of water use by sector within the West Basin service area. The orange bars indicate the range in water use by individual customer agencies for each sector.

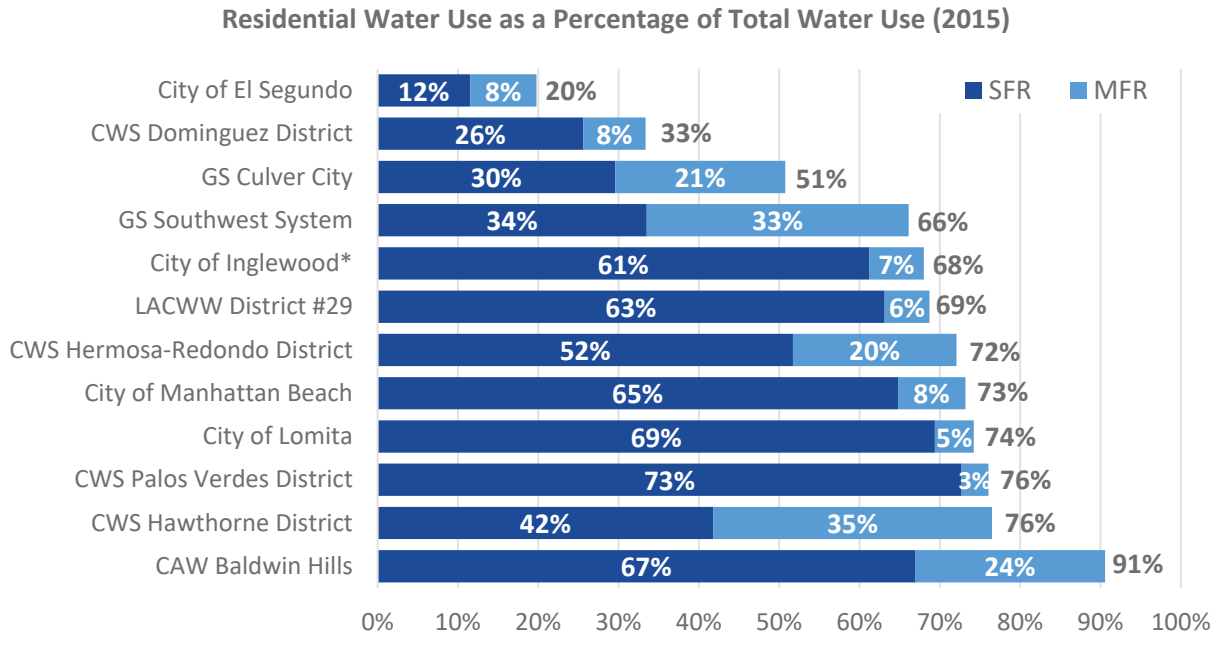


Figure 2-15. Percentage of total water use by customer agency in 2015 used by single-family and multi-family residential customers. City of Inglewood reports residential water use as combined single- and multi-family use; multi-family residential water use is therefore estimated based on the number of multi-family accounts relative to single-family accounts.

[3] Commercial, institutional, and industrial ("CII") uses comprise approximately 32% of potable water use, and the remaining 7% consists of use by dedicated irrigation meters, distribution system water loss, and other temporary uses.

(i.e., CWS Hathorne District, GS Southwest System, CAW Baldwin Hills, GS Culver City, and CWS Hermosa-Redondo District) are likely to see the greatest benefit from programs that target larger, multi-family buildings and complexes.

2.4. Outdoor Water Use

Outdoor water use also varies significantly among the West Basin customer agencies, with estimated outdoor water use ranging from approximately 18% to 56% of annual potable water use, depending on customer agency. As shown in **Figure 2-16**, in general, the larger the median residential lot size in a customer agency's service area, the higher the proportion of outdoor water use. This same trend is also observed relative to CII lot sizes, but to a lesser extent. This indicates that lot size is a significant driver for outdoor water use for both residential and CII sectors alike. In general, the greatest water savings potential in outdoor water use exists for customers with large lot sizes. But it should be noted that more smaller lots are more numerous across the West Basin service area and therefore may, on the whole, account for more overall water use.

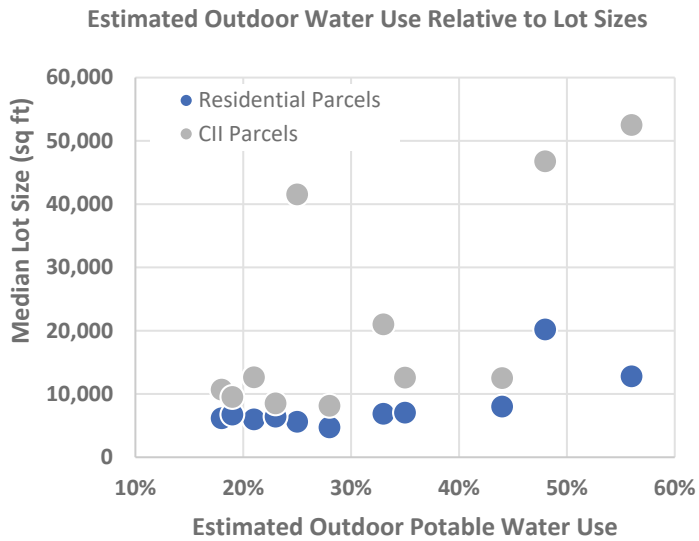


Figure 2-16. Median lot sizes relative to estimated percentage of outdoor water use for West Basin customer agencies. Customer agencies are not identified by name in chart.

As with residential water use, given the variability of outdoor water use among customer agencies, WUE programs that target outdoor water use would also be expected to have varying impacts on a customer agencies' water use. **Figure 2-17** shows the estimated proportion of outdoor water use for each of the customer agencies. Based on this, WUE programs that target outdoor water use would be expected to have a greater benefit for CWS Palos Verdes District, LACWW District #29, and CAW

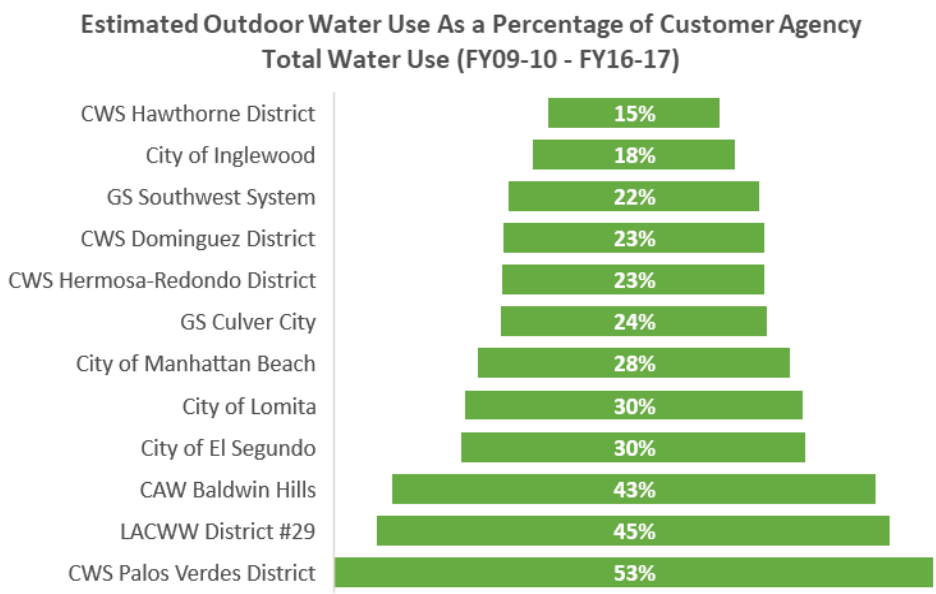


Figure 2-17. Estimated outdoor water use as percentage of total customer agency water use, by customer agency.

Baldwin Hills (which are a part of Director Divisions 1, 2, and 4), while the same programs would be expected to have less overall water demand reduction benefit for CWS Hawthorne District, City of Inglewood, GS Southwest System, and GS Culver City.

2.5. CII Water Use

As shown in **Figures 2-13** and **2-14** above, CII water use represented approximately 32% of the potable water use within West Basin's service area, or 44,000 AFY in 2015. Commercial and institutional water use is somewhat variable between customer agencies, ranging from approximately 5% to 30% of total potable water use. Water use by the industrial sector is significantly more variable, however, ranging from 0% to 60% of total potable water use, depending on the customer agency. It should be noted that CII water use will be treated separately from residential and outdoor irrigation water use for the purposes of compliance with future water use objectives (discussed in Section 4.1 below). Specifically, the CII sector will be subject to CII performance measures (e.g., requirements for conversion of CII meters to dedicated irrigation meters, perform of water audits and water management plans for CII accounts, detailed classification of CII accounts by industry, etc.), rather than a specific amount of water use. Therefore, the particular make-up of the industries that comprise an agency's CII sector would be expected to be a larger factor in determining ability of an agency to meet these targets than the volume of water used by the CII sector alone. The number of CII conservation programs implemented to date may also play a role towards meeting these yet-to-be-developed performance measures.

Figure 2-18 shows CII water use as a proportion of the customer agencies' total water use. While all customer agencies would be expected to be impacted by the future CII performance measure requirements, customer agencies with higher relative CII water use (i.e., City of El Segundo and CWS Dominguez District) may be impacted more significantly by the future requirements than other agencies within the West Basin service area.

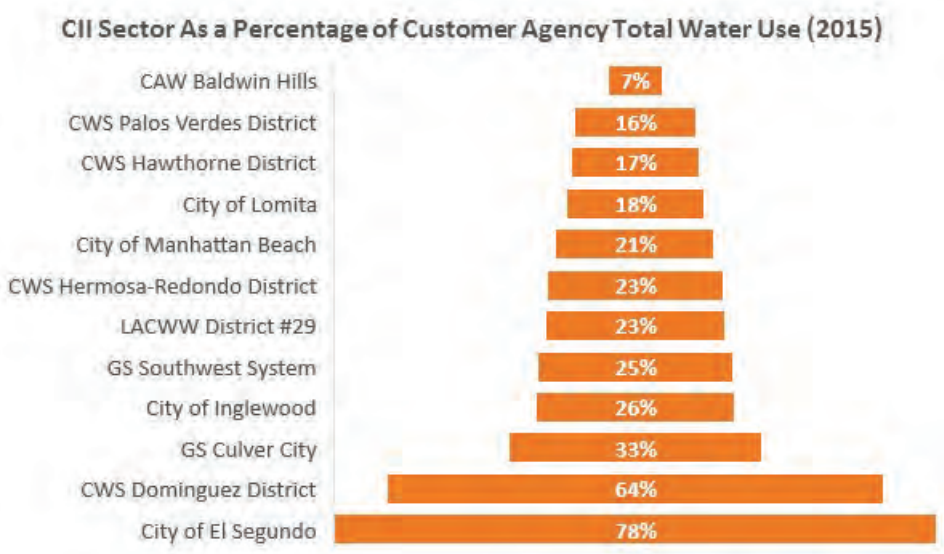


Figure 2-18. CII sector water use as a percentage of total water use by customer

2.6. Distribution System Water Loss

Distribution system water loss has gained increasing regulatory attention since the passage of Senate Bill ("SB") 555 in 2015. Pursuant to SB 555, urban water suppliers are required to perform a detailed water audit of real and apparent losses from their distribution systems on an annual basis.

This audit must now undergo third-party validation, be reported to the Department of Water Resources ("DWR"), and made public. Based on the results of the 2016 water loss audits, there is a broad range in water loss reported among the West Basin customer agencies. As shown in **Figure 2-19**, real water loss ranges from 1 gallon per connection per day ("gal/conn/day") to 106 gal/conn/day and apparent loss ranges from 5 gal/conn/day to 53 gal/conn/day. The real and total losses reported by most customer agencies are below the median real losses reported by all urban water suppliers in California. The apparent losses reported by half of the customer agencies are also below the California median.

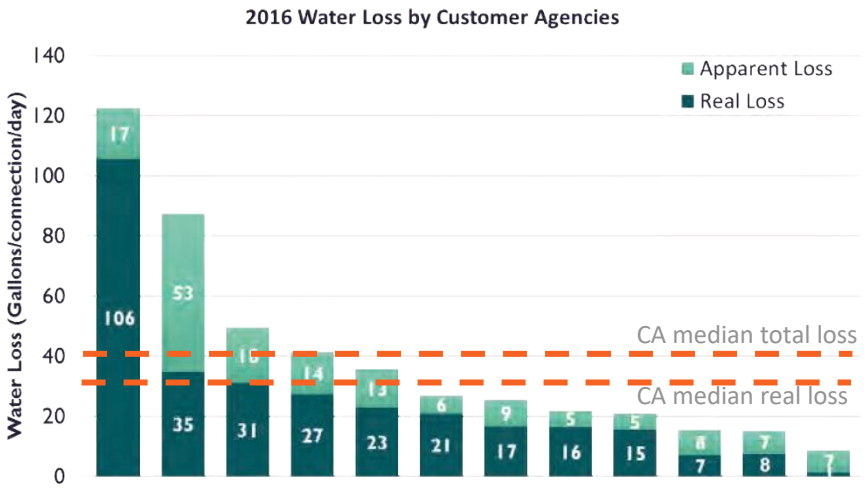


Figure 2-19. 2016 Water loss as reported by customer agencies. California median loss rates: Apparent loss 8.6 gal/con/day, Real loss 31 gal/con/day, and Total loss 40.5 gal/con/day (CA-NV AWWA, 2018). Customer agencies are not identified by name in chart.

As a part of requirements from both SB 555 and the recent legislation that passed related to UWMPs, urban water suppliers will be required to document plans for improving water loss controls. As discussed in Section 4.1, distribution system water losses will also play a significant role in determining an agency's future water use targets and compliance with these targets. While not a part of typical WUE program offerings, WUE programs or services that assist customer agencies with performing audits and developing water loss controls may have significant benefit in the future.

In addition to contributing to overall water use, there are revenue impacts associated with water loss. **Figure 2-20** shows the range in non-revenue water as a percentage of operating expenses, as reported by the customer agencies. This ranges from approximately 2% to 8% depending on agency and is generally consistent with the distribution among agencies California-wide (CA-NV AWWA, 2018). To the extent that agencies can reduce water loss, agencies may also reduce operating expenses and mitigate customer rate increases.

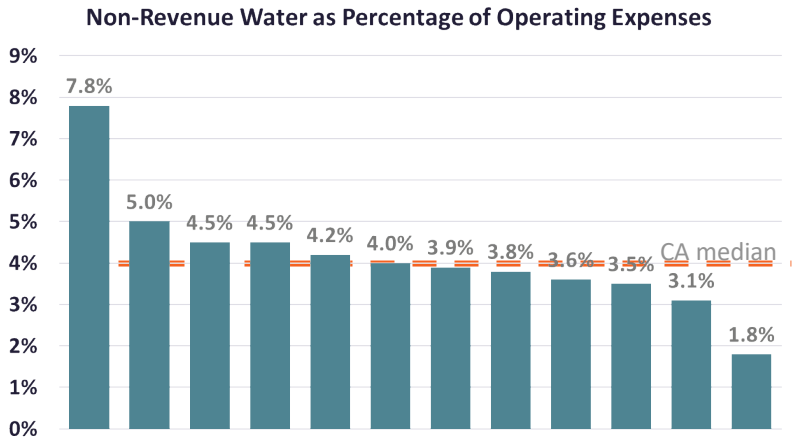


Figure 2-20. 2016 non-revenue water loss as a percentage of operating expenses, as reported by customer agencies. California median is 3.9%. Customer agencies are not identified by name in chart.

3. CUSTOMER AGENCY WATER USE EFFICIENCY PROGRAM SURVEY

West Basin provides a variety of services to support its customer agencies and the cities within its service area, including a variety of WUE programs, services, and coordination efforts. As a wholesale water agency, West Basin has no direct relationship with water users. Likewise, while West Basin has its own drivers for increasing WUE, West Basin does not face the same water use targets and reporting requirements for UWMP purposes as its customer agencies do.

Given that a key focus of West Basin's WUE program services is to meet the needs of its customer agencies and cities, a comprehensive survey (i.e., the WUE Survey) was conducted to better quantify and understand: (1) what WUE programs agencies and customers are utilizing, (2) what drives the agencies' and customers' needs to increase WUE, and (3) what additional programs the agencies and customers may benefit from. This information is intended to help West Basin understand and identify programs and services that would be most valuable and responsive to the various WUE drivers within its service area.

3.1. Methodology

As part of the WUE Data Study process, West Basin re-initiated regular quarterly meetings with its WUE stakeholders – representatives from customer agencies, cities that do not provide water service, and other interested organizations. The WUE Survey was introduced at the first of these meetings, in January 2018, and subsequently distributed by email. Stakeholders were asked to complete the WUE Survey using an online survey response tool (Survey Monkey), a copy of which is provided in Appendix B.

The WUE Survey was organized in three sections (Current Water Use Efficiency Programs, Water Use Efficiency Drivers, and Potential Future Programs) the goals of which were clearly explained within the survey itself. The WUE Survey included a variety of multiple choice questions to facilitate consistent and comparable results from respondents, as well as a number of open-ended questions to allow for a breadth of additional information to be shared. Following the collection of survey responses, the results were compiled and presented to stakeholders at the subsequent WUE Workgroup meeting in April 2018.

3.2. Review of Current WUE Programs

The WUE Survey aimed to increase understanding of what programs were most utilized by customer agencies and water customers, and also to understand how effective and useful the programs are viewed to be.

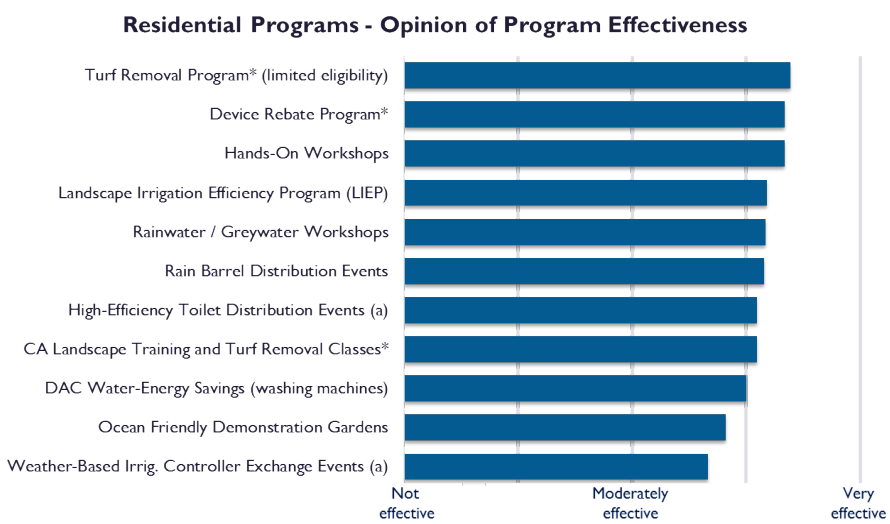


Figure 3-1. Residential Programs – Opinion of Program Effectiveness. An asterisk (*) indicates the program is administered through MWD. Note (a) indicates that the program has recently concluded.

For each WUE program currently or recently offered by West Basin or MWD, stakeholders were asked to rank how effective the programs are/were. Stakeholders were also asked to indicate if they were not aware of or did not utilize each program.

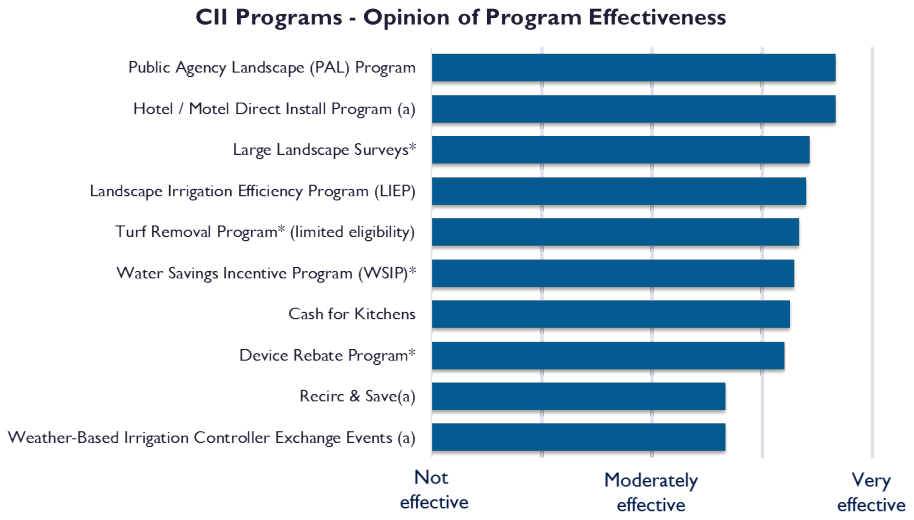


Figure 3-2. CII Programs – Opinion of Program Effectiveness. An asterisk (*) indicates the program is administered through MWD. Note (a) indicates that the program has recently concluded.

Residential Program Effectiveness

A summary of the stakeholders' opinions of effectiveness of the residential sector WUE programs is shown in **Figure 3-1**. Based on the survey responses, all residential programs were considered to be effective. The programs ranked as being most effective were the Turf Removal Rebate Program, the MWD Device Rebate Programs, and the West Basin Hands-On Workshops. Approximately one-third of the stakeholders indicated that they were not aware of the Hands-On Workshop or the Weather-Based Irrigation Controller ("WBIC") Exchange Events. This is particularly notable given the relative high effectiveness ranking of the Hands-On Workshop program, and suggests an untapped potential in certain customer agency service areas.

CII Program Effectiveness

Stakeholders were asked the same questions regarding awareness and effectiveness of WUE programs that target the CII sector. The results of this are shown in **Figure 3-2**. As with the residential programs, stakeholders generally find the CII programs to be effective. The Hotel/Motel/School HE Toilet Installation program[4] and the Public Agency Landscape ("PAL") programs were identified as being the most effective. Although thought to be very effective programs, 40% or more agencies reported that they were not aware of or had not been using the Hotel/Motel Direct Installation, PAL, Large Landscape Surveys, Water Savings Incentive Program ("WSIP"), or the Recirc & Save programs. Given that many stakeholders were unaware of so many CII programs, including those that are considered to be most effective, this represents an opportunity for West Basin to work to increase awareness and outreach for these and similar programs.

Customer Feedback

Stakeholders were also asked to report feedback that they have received from their customers on the WUE program offerings. Based on comments provided by survey respondents, customers in general provide very positive feedback. People enjoy the WUE programs and appreciate the no-cost services and the incentive-based programs. Some respondents mentioned that the regional rebate website was not user-friendly, and some noted that there should be greater incentives for converting to drip irrigation and to convert to grey water systems.

[4] Eligible entities originally include hotel, motel, and school facilities. However, eligibility was expanded to other CII entities to more fully utilize the available funding.

Management Feedback

Similarly, stakeholders were asked to report feedback that they have received from their management and governing bodies regarding WUE programs. Below is a summary of the feedback reported by stakeholders:

- Positive feedback and comments from multiple agencies that the WUE programs are very well received.
- Hosting programs, such as workshops and exchange events, locally is key to getting people to participate.
- There was some concern regarding the cost-effectiveness of programs.
- There was mention of the revenue reductions due to the mandated targets during the drought and how there is less focus on water reduction efforts right now, especially without the mandated targets.
- Governing bodies appreciate hearing about participation and results in programs. By working together, there may be ways to share activities on high-level basis to better inform governing bodies.
- Rebate programs should promote devices and technology that save the most water. In particular, newer technology and devices that focus on the CII sector and on landscaping were highlighted.

3.3. Agency Drivers

Regulatory Drivers

The WUE Survey was conducted in February 2018, during which two key pieces of water legislation (Assembly Bill ["AB"] 1668 and SB 606) that would greatly affect future UWMP water use targets were being developed and debated in the legislature. These two bills stemmed from the governor's 2016 *Executive Order Making Water Conservation a California Way of Life* (EO B-37-16) and called for a significant change in the methodology agencies would be required to use to calculate their water use targets beyond 2020. Specifically, the new legislation requires all agencies to calculate their targets (now "water use objectives") via a service-area-wide water budget comprised of residential use, outdoor irrigation, and system water loss standards.

In order to understand how big of a WUE driver AB 1668 and SB 606 (which have now become law) were perceived to be, stakeholders were asked how well they felt their agencies were currently positioned to meet the new water use targets and if they anticipated making changes to their WUE approaches as a result. The results from these questions are shown in **Figure 3-3**. Less than half of the respondents reported that they felt their agency was well positioned to meet the future water use targets and over half of the respondents reported that they anticipated making changes to the way their agencies approached WUE

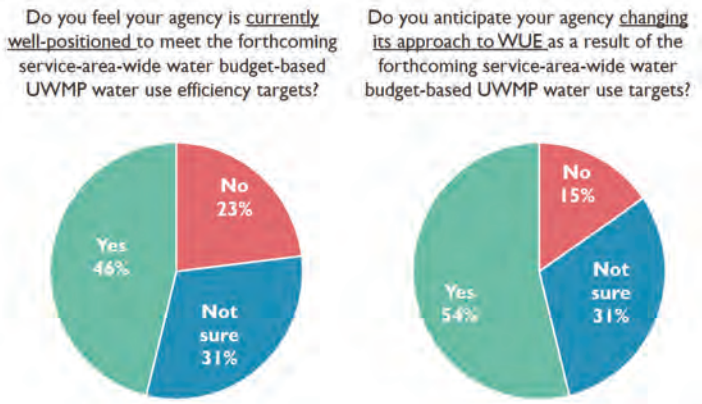


Figure 3-3. Responses to questions regarding anticipated UWMP water use target changes

as a direct result of the new legislation.

Local WUE Drivers

Stakeholders were also asked to rank a variety of common WUE drivers in terms of impact for their agency. As shown in **Figure 3-4**, on average, the agencies felt at least moderate pressure from all drivers listed. The strongest driver was the need to address long-term supply reliability, which is closely coupled with the second strongest driver related to the costs and challenges of obtaining new water supplies. The need to reduce greenhouse gases through energy use reduction was identified by an agency as an additional driver beyond the ones listed in the survey. A quantifiable amount of energy and greenhouse gasses can be saved through water use reduction, a concept referred to as the "Water-Energy Nexus."

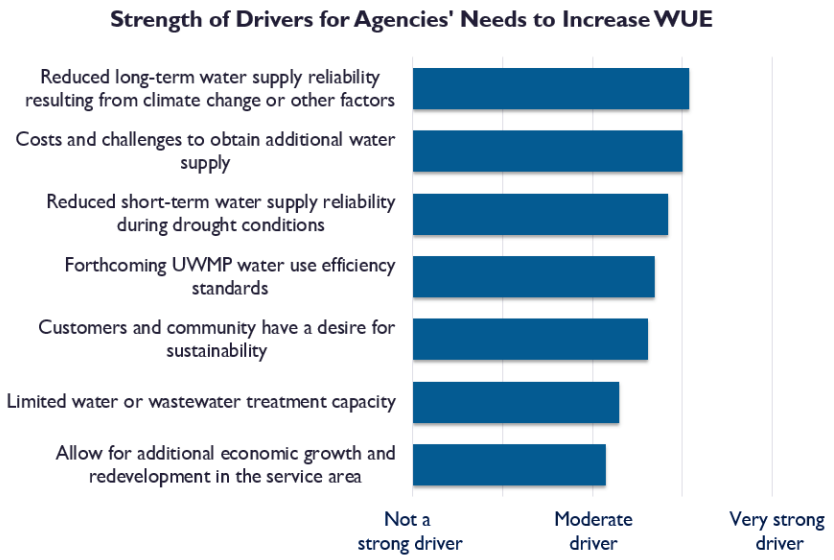


Figure 3-4. Results of questions regarding the strength of various drivers for agencies' needs to increase WUE

Future Supply Reliability

As part of various planning efforts, retail agencies project future water demands for their service areas and assess these demands relative to anticipated future water supplies. As shown on **Figure 3-5**, each stakeholder was asked how this future supply reliability is characterized in their planning documents. All but one respondent reported that the planning documents anticipate their current supply portfolios being sufficient to meet anticipated water demands with current practices (including continued WUE efforts).

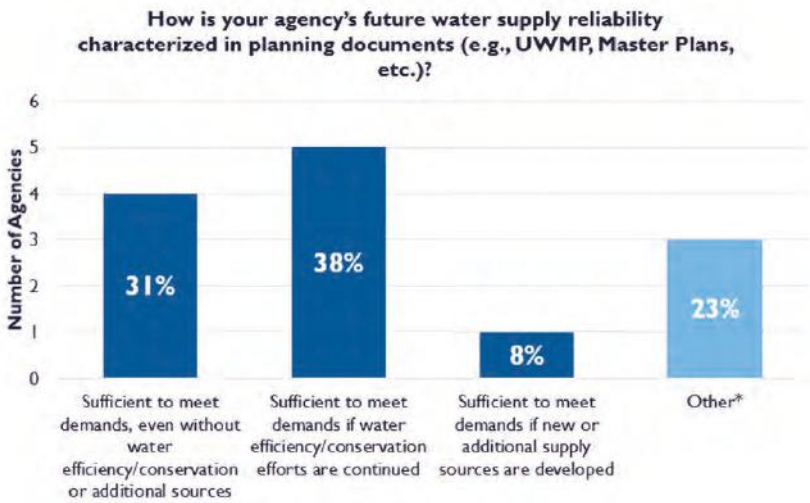


Figure 3-5. Agency characterization of their ability to meet future water supply needs. *Other: Question not applicable for cities that do not provide water retail service. One agency indicated that their reliability is 100% dependent on the State Water Project reliability and deliveries.

Reduction of water demands through increased WUE (or "demand management") can offset or delay the need for expensive supply development and is effectively considered to be a "supply" itself. Survey respondents were asked what water supply development or related activities, if any, their agencies are currently planning. Based on the responses, several agencies are actively looking to develop additional water supplies. For example:

- One respondent is looking to develop new emergency and drought-relief water supply sources and expand the use of recycled water.

- One respondent is looking to develop groundwater supply and is currently installing a new groundwater well.
- Another respondent is looking into the development of new water supplies through transfer agreements and well rehabilitation. They are launching an Environmental Task Force in the coming months and "smart water management" will be a component of that work.
- A respondent is looking to develop new supplies through transfers or agreements, groundwater supplies, emergency/drought-relief supplies, and expanding recycled water use.

3.4. Preferences and Priorities for Future Programs

Stakeholders were asked several questions regarding their preferences and opportunities they see for future WUE programs, including how much opportunity to increase WUE they felt exists in each of several water use sectors.

Identification of Potential Opportunities

As shown in **Figure 3-6**, stakeholders ranked outdoor water use in both residential and CII sectors as having the greatest overall potential for increased WUE. For both indoor and outdoor water use, the residential sector is seen as having higher potential for increased WUE than CII. Stakeholders also indicated potential opportunities for increased WUE through expansion of recycled water and water loss control programs. As mentioned previously, water loss control is gaining increased public and regulatory attention but has not traditionally played a significant part in WUE program offerings. Given this increased attention and the significant recent advances in water loss control technologies, development of more water loss control programs and services may be a significant opportunity for West Basin to provide support to its customer agencies in the future.

Ranking of Future Programs

Stakeholders were also asked to identify how highly WUE programs should be ranked in consideration of future WUE program offerings. The results of these questions for residential and CII programs are shown on **Figure 3-7** and **Figure 3-8**, respectively. Among residential programs, stakeholders feel that turf and landscape programs should in general be prioritized very high. This is consistent with agencies' opinion that outdoor water use has the highest potential for savings. Of the outdoor irrigation focused programs, stakeholders felt less of a desire to prioritize Ocean Friendly Demonstration Gardens, Rain Barrel Distribution Events, and WBIC Exchange Events. MWD's device rebate programs, which include both indoor and outdoor water savings devices, were ranked by stakeholders as the highest program to prioritize in the future.

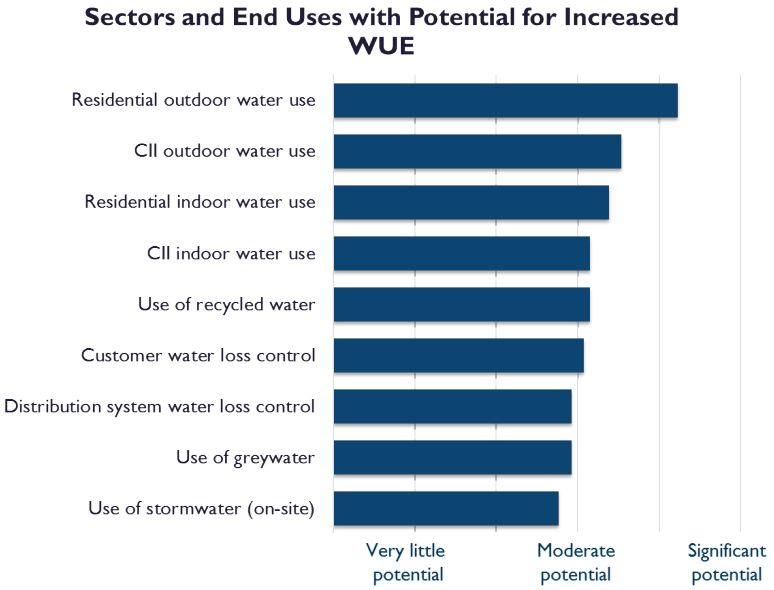


Figure 3-6. Sectors and End Uses with Potential for Increased WUE.

Top priority residential programs include a mix of public outreach/education classes and those that result in a more direct change to customer devices and landscapes (device or turf removal programs).

Stakeholders' opinions of CII program priorities were similar to that of residential programs. Outdoor irrigation-focused programs were ranked with the highest priorities, and the MWD Device Rebate program was overall ranked highest priority. Programs that target indoor water use for CII customers were predominantly ranked as medium priority, include the Recirc & Save and Hotel/ Motel/School HE Toilet Installation,[5] WSIP, and Cash for Kitchens programs. This may be related to the fact that many agencies reported not being aware of these particular programs.

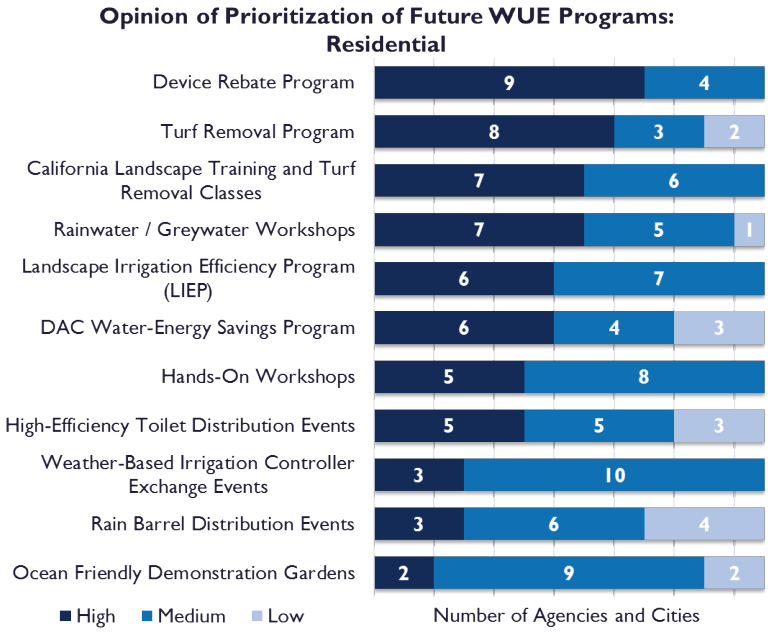


Figure 3-7. Opinion of Prioritization of Future WUE Programs - Residential

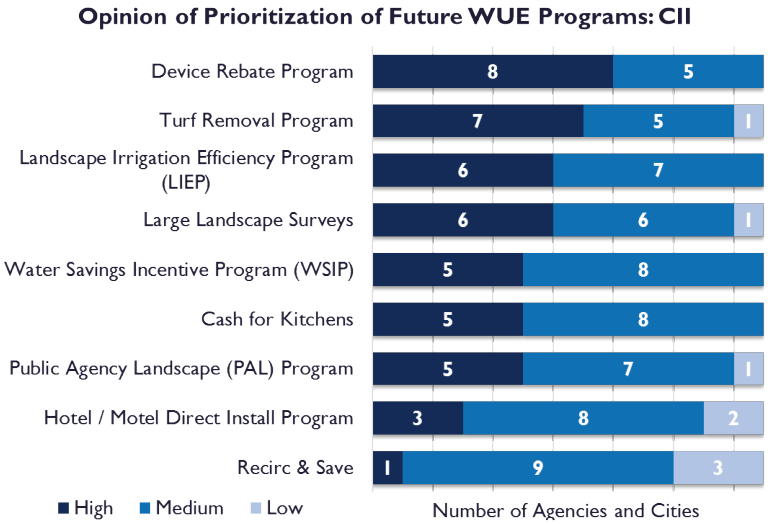


Figure 3-8. Opinion of Prioritization of Future WUE Programs - CII

Implementation of Future Programs

Stakeholders were asked to consider a broad set of types of potential WUE programs and services and how they would foresee potentially implementing them in the future. Specifically, stakeholders were asked to indicate: (1) Would like to partner with West Basin to implement such programs, (2) My agency is currently implementing, (3) My agency would like to implement such programs on its own, or (4) Do not foresee my agency implementing or participating in. These results are summarized in **Figure 3-9** below.

[5] Eligible entities originally include hotel, motel, and school facilities. However, eligibility was expanded to other CII entities to more fully utilize the available funding.

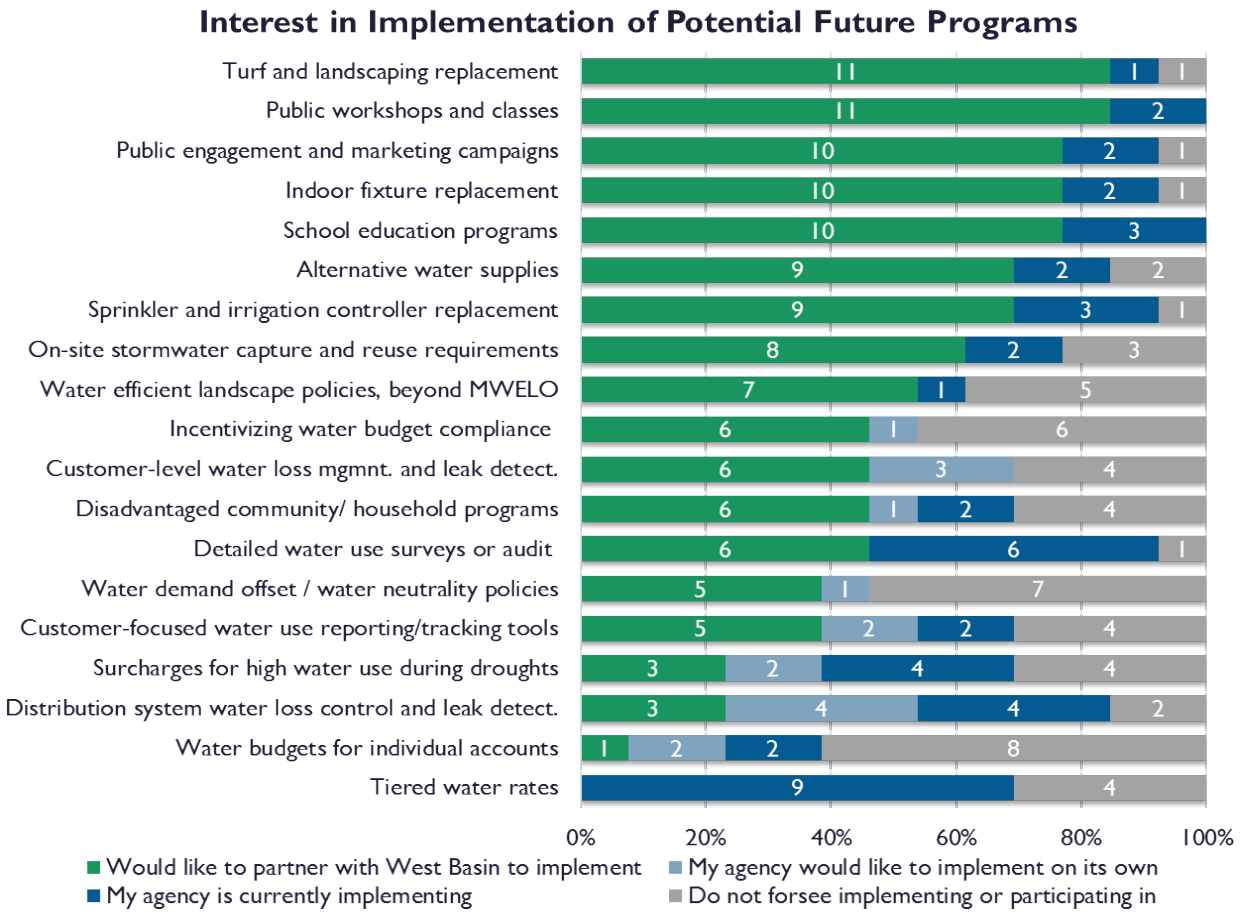


Figure 3-9. Interest in Implementation of Potential Future Programs

Stakeholders expressed a broad desire to partner with West Basin for the implementation of many types of programs. In general, the programs that stakeholders expressed the highest interest for partnership with West Basin were public engagement and marketing campaigns, public education (school-age and adult), and device and landscape replacement programs. Of these programs with high interest for partnership with West Basin, there are several types of programs that are not currently offered, such as the development of water-efficient landscaping policies (beyond the Model Water Efficient Landscape Ordinance ["MWELO"] requirements) and incentivizing customer compliance with water budgets. To a lesser extent, stakeholders expressed interest in developing further programs that target disadvantaged communities or households, customer-level water loss management and leak detection, water demand offset (or water neutrality) policies, and customer-focused water use reporting and tracking tools.

Overcoming Barriers to WUE Program Implementation

In order to identify opportunities where West Basin could provide further WUE support, stakeholders were asked to identify the barriers they face when trying to develop and implement new WUE programs. As shown in **Figure 3-10**, the ability to secure funding, availability of sufficient staff resources, and challenges in designing a suitable program were consistently identified as barriers for most stakeholders.

West Basin has had great success identifying and winning grant funding to support WUE programs and other programs that benefit the region (e.g., multi-benefit projects through the Integrated Regional Water Management Program ["IRWMP"] process). To the extent that West Basin can continue to leverage this ability to securing funding for new and continued programs and the administration of such

programs on a regional basis, West Basin can assist its agencies with overcoming its largest barriers to new WUE program implementation.

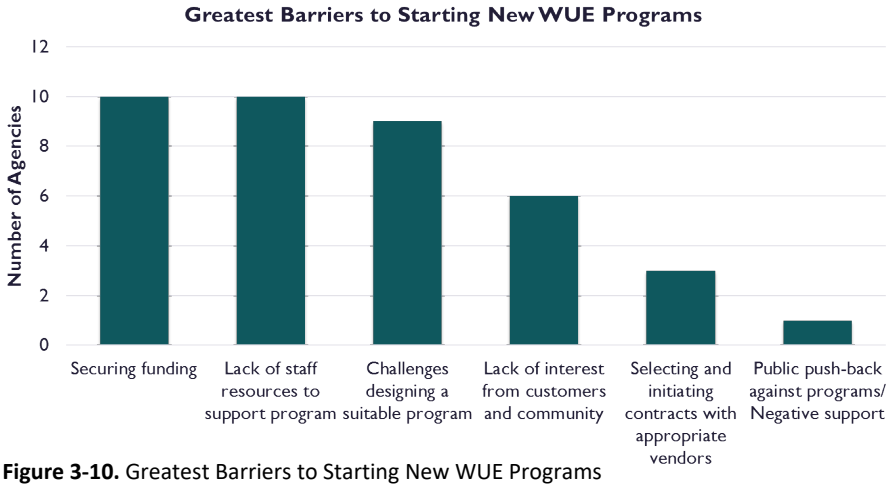


Figure 3-10. Greatest Barriers to Starting New WUE Programs

The other significant barrier identified by stakeholders was the challenge to design a suitable program, which respondents clarified, was the challenge of designing a program in a way that reaches and engages with the desired customer audience. The results of WUE program and implementation trend and demographic analysis included in this WUE Data Study are intended to assist West Basin with the identification of strategic policies and direction for the design and targeting of WUE programs. These results are presented and documented in a way to be able to support West Basin and its customer agencies with program design and outreach into the future.

Other comments provided by stakeholders regarding challenges to implementing WUE programs include:

- Some respondents expressed that there is a challenge with expanding conservation programs, while trying to maintain the cost of water supplies.
- Difficulty promoting outdoor water savings when local ordinances or homeowners associations ("HOAs") do not allow it (e.g., brown lawn prohibitions, mandatory plant lists, etc.).
- Higher income customers are less sensitive to volumetric water rates or drought surcharges.
- Concerns about revenue impacts of long-term and short-term (drought) conservation.
- Concerns about the effects of water conservation on water rates and the California Public Utilities Commission ("CPUC") Office of Ratepayer Advocates.

3.5. Survey Takeaways

Based on the results of this WUE Survey, stakeholders appear supportive of West Basin's WUE programs and efforts and have a broad interest in continuing existing or similar programs, as well as being open to new and different programs.

The survey also provided key insight as to additional support that West Basin could provide its customer agencies. For example, the customer agencies indicated that they would appreciate having West Basin develop templates to present WUE program implementation metrics on a regular and predictable basis which the agencies could then share with their local management and customers, without having to independently mine large datasets. The customer agencies also expressed a strong interest in having West Basin provide regional support for drought response planning and meeting conservation targets.

The WUE Survey also highlighted a gap in knowledge among some customer agencies, cities, and other stakeholders about the full scope of the current WUE program offerings. The reinstated quarterly WUE Workgroup meetings are the first step towards bridging this gap, but this highlights a benefit that may be achieved by increasing outreach efforts to stakeholders in the community.

4. WATER USE EFFICIENCY DRIVERS

WUE is ever-increasingly important in the Western United States, and in particular for the Southern California region. Many factors are driving the need for water retail agencies to encourage more efficient use of water at the statewide, regional, and local scales. These drivers are identified and discussed in the following section.

4.1. Regulatory Drivers

In 2016, Governor Brown signed Executive Order B-37-16 *Making Water Conservation a California Way of Life* ("EO"), which as further detailed in the April 2017 report, *Making Water Conservation a California Way of Life, Implementing Executive Order B-37-16, Final Report*. The overall goals of the EO are to encourage Californians to: (1) use water more wisely, (2) eliminate water waste, (3) strengthen local drought resilience, and (4) improve agricultural WUE and drought planning. The EO builds on the UWMP process and the water use targets developed in response to the Water Conservation Act of 2009 (Senate Bill X7-7), and looks past 2020 with a new approach for setting urban water supplier-specific water use targets.

Figure 4-1. EO Objectives

Two pieces of legislation, AB 1668 and SB 606 were signed into law on 31 May 2018. These bills add some clarity and specificity to the policies outlined in the EO, and relate to requirements from SB 555 on water loss management. The elements of these laws that have the most relevance to West Basin and its customer agencies are those that address: (1) urban water use objectives (similar to the UWMP water use targets), (2) water loss audits and water loss control, and (3) increased requirements for Water Shortage Contingency Plans ("WSCPs") and annual drought risk assessment.

4.1.1. Urban Water Use Objectives

In 2009, SB X7-7 set requirements for urban water suppliers to meet water use targets by 2020, with the collective statewide goal of reducing water use by 20% by 2020. Agencies are required to report their progress towards this and a 2015 interim target in their UWMPs, produced every five years. Beginning in 2023, urban water suppliers will be required to calculate an urban water use objective for their service area and report water use relative to this objective on an annual basis. The annual water use objectives are similar in concept to the previous UWMP water use targets, but will be calculated by a different method.

The previous UWMP water use targets took a relatively top-down approach to calculating efficient water use (i.e., reducing per capita water use relative to a baseline period). However, the EO and new legislation requires that water use objectives be calculated by a more bottom-up approach based on standards developed specifically for: (1) indoor residential water use, (2) outdoor water use, (3) CII performance measures, and (4) water lost through leaks. The water use objectives are calculated as essentially a service-area wide water budget consisting of three water use sector components. In general, the calculation method is as follows:

- The residential water use component will be calculated based on service area population and a per capita water standard (currently 55 GPCD, with the potential to change after 2025).
- The outdoor water use component will be calculated relative to evapotranspiration rate, total

irrigable area within a service area (based on measurements supplied by DWR), and a standard to be developed by October 2021.

- The water loss standard component will be calculated based on total water use and a standard to be developed by 2020 (pursuant to SB 555).

While an agency's overall water use objective is calculated relative to these three water use components, compliance is not evaluated relative to each sector. Rather, compliance is evaluated based on total water production exclusive of CII deliveries. Likewise, these standards are not intended to apply to individual water customers, but rather the standards represent an overall service-area-wide average water budget.

Water use by CII customers is excluded from the water use objective calculation and compliance volume. Instead, CII water use will be evaluated relative to performance measures, which are anticipated to be at least somewhat industry-specific. The CII performance measures are required to be developed by DWR by June 2022. DWR in coordination with the State Water Resources Control Board ("SWRCB"), is tasked with developing these CII performance measures and the other water use standards identified above through an open and transparent stakeholder process over the next several years.

In October 2018, DWR and SWRCB put out a call for stakeholders to become a part of the Urban Advisory Group ("UAG") as a way for stakeholders to provide "advice for development of urban water use standards; urban water use variances; commercial, industrial, institutional performance measures; urban drought planning; guidelines and methodologies for calculating water use objectives; data streamlining; and other related actions." The first UAG meeting is expected to be held in early 2019, with meetings anticipated to run through 2021. DWR has said that technical workgroups made up of interested UAG members and other technical experts may also be formed to address specific issues, and that the UAG and technical workgroup meetings will also be open to participation by interested parties and the public.[6]

4.1.2. Water Shortage Contingency Planning

The focus of this WUE Data Study is on long-term increases in efficiency, rather than short-term conservation in response to drought or other temporary water shortage conditions. However, given that the two are closely related and that long-term WUE contributes to an agency's ability to respond under drought conditions, the recently enacted changes to the WSCP requirements are briefly summarized here.

Pursuant to AB 1668/SB 606, urban water suppliers will need to provide additional information in the WSCPs that they update on a five-year basis and incorporate into their UWMPs. Among other things, future WSCPs will be required to include the following information:

- Procedures to conduct an annual water supply and demand assessment that include a written decision-making process that an urban water supplier will use each year to determine its water supply reliability and the assessment methodology to be used to evaluate water supply reliability for the current year and one dry year, including all of the following:
    - Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.
    - Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.

[6] Letter to prospective UAG members, from DWR and SWRCB, dated 4 December 2018.

  - Existing infrastructure capabilities and plausible constraints.
  - A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.
  - A description and quantification of each source of water supply.

- Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.
- Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:
  - Supply augmentation actions.
  - Demand reduction actions to adequately respond to shortages.
  - Operational changes.
  - Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.
  - For each action, *an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.*
- Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments.
- A description of the financial consequences of, and responses for, drought conditions.
- Monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.
- Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the WSCP in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.

4.1.3. Documentation of System Water Losses

SB 555 on Water Loss Management was passed in 2015 and set a requirement for water retail agencies to perform a systematic audit of water loss within their agency's distribution system annually. Water loss audits prepared for 2016 and beyond are required to be validated by a certified validator.

SB 555 also established a requirement for the SWRCB to develop water loss performance standards by 2020. These standards will in turn be applied to the water loss component of the water use objectives described in Section 4.1.1.

This increased regulatory attention to water loss and the explicit incorporation of water loss into the water use objectives emphasizes the importance of water loss in the context of WUE. While customer-level leak detection has long been a component of several WUE programs, distribution system water loss programs have not been a focus of traditional WUE programs, including those provided by West Basin. This shift presents an opportunity for West Basin to potentially provide assistance to its customer

agencies, leveraging its resources and ability to obtain grant funding at a regional scale for programs that relate to
water loss controls such as meter replacement, pressure management approaches, condition assessments for transmission and distribution pipelines, and utilization of water loss detection devices.

4.2. West Basin Drivers

West Basin's mission is "To provide a safe and reliable supply of high-quality water to the communities we serve." The district has a long-standing culture of innovation, particularly when it comes to WUE. As described previously, since 1995 West Basin has provided WUE programs and services to its customer agencies, including coordinated efforts with other entities providing regional programs and services, including MWD and SoCalGas Company. Since 1995, these WUE programs are estimated to have saved over 27,000 acre feet (8,500 million gallons) of water within the West Basin service area (Section 5.6.4).

Another hallmark example of West Basin's work to ensure regional supply reliability is the operation of its Edward C. Little Water Recycling Facility, which provides recycled water to offset potable water use in the region. Since the facility began operating in 1995 it has produced more than 200 billion gallons of recycled water.[7] West Basin is continuing its pioneering role in Southern California water supply reliability through researching the feasibility of ocean water desalination technology. West Basin completed an Ocean Water Desalination Pilot Project in 2009 and is currently undergoing environmental review for a possible full-scale ocean water desalination plant.[8]

West Basin's focus on water supply reliability is part of a greater Southern California regional push to decrease its dependence on imported water supplies. This push is motivated by a number of natural and regulatory factors that are introducing further uncertainty into long-term supply reliability, including: (1) predictions of increasing and more severe droughts due to climate change, (2) implications of the 2014 Sustainable Groundwater Management Act ("SGMA"), which will likely necessitate the reduction in groundwater usage in some parts of the state to ensure long-term sustainability and viability of groundwater and interconnected surface water systems, and (3) necessary changes to the way water is managed through the San Francisco Bay Delta in order to achieve the "coequal goals" of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem per California Water Code § 85054.

Figure 4-2. Current DWR Statewide Priorities for Funding

Notably, in 2015, the Los Angeles Department of Water and Power ("LADWP"), a West Basin recycled water customer agency, announced a plan to reduce imported water by 50% by 2025 and produce half of the city's water supply

[7] "West Basin Reaches Milestone of Producing 200 Billion Gallons of Recycled Water," 20 June 2018, https://www.prweb.com/releases/2018/06/prweb15574311.htm.
[8] http://westbasindesal.org/draft-eir.html

locally by 2035. This plan by LADWP boldly articulated this overall need that is shared among many Southern California water suppliers.

West Basin's proactive and innovative WUE programs are integral to its customer agencies' efforts to increase local supply reliability. West Basin also takes into close account the priorities articulated by state and federal agencies (see **Figure 4-2**), which allows West Basin to develop WUE programs that are well positioned to be eligible for state and federal grant funding. This is key to West Basin's past funding successes and has allowed the district to leverage these resources for the benefit of its customer agencies and the communities they serve.

In November 2018, Los Angeles County voters passed Measure W, a parcel tax of 2.5 cents per square foot of "impermeable space" for parcels located within the county. Revenue generated from Measure W is intended to be used to pay for regional and municipal projects that increase stormwater capture and reduce urban runoff pollution (which may increase water supply), improve water quality, and provide community investment benefits, among other things. To the extent that a project offsets a potable water demand (e.g., stormwater capture and onsite reuse), water efficiency programs may be eligible for Measure W funds.

State and federal grant funding opportunities are continually evolving, and specific opportunities should be evaluated as they are made available. Therefore, this WUE Data Study does not include a detailed inventory of such opportunities. Possible funding opportunities may include Proposition 1 Integrated Regional Water Management ("IRWM") Implementation grant program, Proposition 3 SGMA implementation grant program, and other future grant programs not yet established.

4.3. Customer Agency Drivers

As described in Section 3, the WUE Survey asked the stakeholders to identify which, if any, of the following drivers were impacting their need for increased WUE:

- Reduced long-term reliability resulting from climate change or other factors;
- Cost and challenge to obtain additional water supply;
- Reduced short-term water supply reliability during drought conditions;
- Forthcoming UWMP WUE standards;
- Customers and communities have a desire for sustainability;
- Limited water or wastewater treatment capacity; and
- Allow for economic growth and redevelopment in the service area.

Based on the WUE Survey, the strongest driver for increased WUE was the need to address long-term supply reliability, which is closely coupled with the second strongest driver related to the costs and challenges of obtaining new water supplies. WUE programs remain a relatively cost-effective way to increase water supply reliability and to extend existing supplies.

Interestingly, while most respondents indicated that the new UWMP regulations (AB 1688 / SB 606) were only moderate drivers on their need for increased WUE, less than half of the survey respondents reported that they felt their agency was well positioned to meet the future water use targets and over half of the respondents reported that they anticipated making changes to the way their agencies approached WUE as a direct result of the new legislation. It is clear that West Basin can continue to add value to its agencies by helping understand the legislation and its potential impacts, and to support the agencies in achieving compliance with the new water use objectives.

5. WATER USE EFFICIENCY PROGRAM ANALYSIS

West Basin offers a proactive and comprehensive set of WUE program services to its customer agencies for the variety of reasons discussed in Section 4.2. These services include the administration and securing of funding for WUE programs unique to West Basin as well as coordination with MWD for the administration and outreach of MWD's regional programs within the West Basin service area. This section provides a summary of the current and recent programs offered within the West Basin service area and provides several evaluations and analyses of trends in past program participation for selected WUE programs. The primary goals of this analysis are to better understand which customers are participating in these programs and to inform the strategic design, selection and marketing of future WUE programs and services.

5.1. Current and Recent WUE Programs

A wide variety of WUE programs are available to customers within the West Basin service area, see **Table 5-1**. These programs are offered by West Basin or through West Basin's partnerships with other entities like MWD and the SoCalGas Company. As indicated in **Table 5-1**, this portfolio includes programs that are designed to reduce both indoor and outdoor water use, and includes a broad variety of program types, including those that: (1) facilitate the replacement of water using devices or landscapes with more efficient versions through rebates or direct installation; (2) provide survey and water audit services specific to individual homes and businesses, often identifying leaks and resulting in correction of leaks; (3) provide education and engagement with the public about WUE practices, typically providing detailed and specific information on how customers can make significant changes to their water use practices; and (4) facilitate the use of alternative water supplies (i.e., rainwater, greywater, or recycled water) to offset potable water use. A discussion and recommendations for future program offerings are provided in Section 6.

Given this broad set of WUE programs, the analyses in the following sections were limited to a subset of these programs. The programs selected for these analyses are described below:

- **Regional Device Rebate Program ("MWD Device Rebates")**. This program is offered to customers within the greater MWD service area, which extends across much of Southern California. This program includes rebates for a variety of high efficiency ("HE") water using devices and is available to both residential and CII customers. These devices include HE toilets, HE clothes washers, rotating sprinkler nozzles, weather-based irrigation controllers ("WBICs" or "Smart Irrigation Controllers"), rain barrels and cisterns, ultra-low and zero water urinals, plumbing flow control valves, connectionless food steamers, air-cooled ice machines, and large rotary nozzles. More information about the currently available rebates can be found at: http://www.socalwatersmart.com/ and http://www.bewaterwise.com/.
- **Residential HE Clothes Washer Programs**. Program analyses for HE clothes washers includes two different programs focused on HE clothes washers. Specifically, rebates provided by MWD through the MWD Device Rebate program and direct installation of HE washers to qualifying low-income households by the SoCalGas Company. Currently, MWD provides a rebate of $85 for the purchase of a HE clothes washer with an integrated water factor ("WF") of 3.7 or less. The SoCalGas Company program provides an HE clothes washer and installation to qualified customers free of charge as part of their Low-Income Home Energy Assistance program. This program includes devices and services that reduce energy and water use.
- **Turf Removal Rebate Program**. This program has been provided to customers within the MWD service area and has been relaunched with a $2 per square foot rebate instead of the previous $1

per square foot rebate. Through this program, customers are offered a rebate to replace turf with an alternative water-efficient landscaping.

- **Smart Irrigation Controller Programs**. Program analyses for smart irrigation controllers includes three different programs focused on WBICs. Specifically, rebates provided by MWD through the MWD Device Rebate program, no-cost WBICs provided by West Basin through the WBIC Exchange Events, and WBICs provided to large landscape customers. From 2008 - 2016, West Basin provided residents with free WBICs through one-day exchange events where residents brought in their older irrigation timers and received smart irrigation controllers with weather sensor technology.
- **Landscape Irrigation Efficiency Program ("LIEP")**. West Basin's LIEP is a program for large landscape water users (residential and CII) in West Basin's service area. The LIEP program provides outdoor water evaluations, which identify leaks, broken sprinklers & pipes, unnecessary runoff, sprinkler controller issues, and other water wasting problems in landscapes. The program includes sprinkler nozzle retrofits and an outdoor water-use report, complete with recommendations on more efficient outdoor watering habits for residents and businesses.
- **Cash for Kitchens Program**. Through the Cash for Kitchens Program (C4K), West Basin provides restaurants and other kitchen facilities with free water-use surveys to assess their current water usage. These surveys include strategies on how to conserve water, free conservation devices, a water-use report, and information about current commercial device rebates offered by utility agencies. From 2009-2016, West Basin distributed free faucet aerators and pre-rinse spray valves to restaurants. In late 2016, West Basin was awarded a Water-Energy grant from DWR-EPA to directly install 10 "air-cooled" ice-machines to replace older water-cooled ice-machines, in addition to doing direct installations of 300 Pre-Rinse Spray Valves, 3,000 Faucet Flow Restrictors, 35 high-temperature Energy Start dishwashers, and 10 connectionless food steamers.
- **West Basin Hotel/Motel/School HE Toilet Installation Program.** Funded by a grant from the USBR, West Basin administers a program offering the direct installation of HE toilets to hotel, motel, and school facilities. Given the rate of participation, and to fully utilize the available grant funds, this program has been expanded to include other CII customers. Over 70 CII customer facilities have benefited from this program. Under a previous USBR grant-funded program, the Complete Restroom Retrofit Program, over 180 CII customers received water efficient restroom retrofits, which included HE toilet, urinal, and faucet control valve replacements.
- **MWD Water Savings Incentive Program ("WSIP")**. The WSIP is a collaborative effort between MWD, its member agencies, and large water-using customers to improve water use efficiency. The water savings potential of individualized projects helps Southern California's businesses, agriculture, and institutions achieve their efficiency goals. The WSIP provides financial incentives for customized water efficiency projects for primarily CII customers. Such projects include installation of commercial or industrial high-efficiency equipment; industrial process improvements; agricultural and landscape water efficiency improvements; and water management services.[9] Only one customer within the West Basin service area has taken advantage of the WSIP.
- **MWD Large Landscape Survey Program.** MWD offers on-site surveys of irrigation efficiency to CII customers with large landscapes. Surveys include a review of the irrigation system including system pressure; controllers; site conditions and irrigation scheduling; and issues that cause high water use such as valve malfunctions, high or low pressure, sprinkler misalignment, poor drainage, breaks, leaks and runoff. Participation in this program within the West Basin service area has been limited, with only 7 facilities having participated in the program.

[9] http://www.bewaterwise.com/water-savings-incentive-program.html

Program participants considered in the temporal and geospatial evaluations described in the following sections were limited to those located within the West Basin potable water service area and for which participant addresses could be positively matched to Los Angeles County Assessor parcels. Los Angeles County has over 2 million parcels. Given the size of this dataset, it is noted that the data may have some inaccuracies, however, it is of sufficient quality for assessing large scale trends and opportunities.

Table 5-1
Summary of Current and Recent WUE Programs

WUE Program	Primary Administrator	Program Status	Water Use		Program Type				
			Indoor	Outdoor	Device or Landscape Replacement	Survey/Audit	Public education and Engagement	Alternative Water Supply	Customized Program
Residential-Focused Programs									
California Landscape Training and Turf Removal Classes	MWD	Ongoing		X			X		
Disadvantaged Communities Water-Energy Savings Program (HE Clothes Washers)	WB	Potential	X		X				
High-Efficiency Toilet Distribution Events	WB	Concluded	X		X				
Landscape Irrigation Efficiency Program (LIEP)	WB	Ongoing		X	X	X			
Low Income HE Clothes Washer Direct Installation Program	SoCalGas	Ongoing	X		X				
Ocean Friendly Program									
Ocean Friendly Demonstration Gardens	WB	Ongoing		X			X		
California Friendly Landscape Classes and Hands-On Workshops	WB	Ongoing		X			X		
Rain Barrel Distribution Events	WB	Ongoing		X			X	X	
Rainwater / Greywater Workshops	WB	Ongoing		X			X	X	
Turf Removal Program	MWD	Limited		X	X				
CII-Focused Programs									
Cash for Kitchens	WB	Ongoing	X		X	X			
Hotel / Motel HE Toilet Installation Program	WB	Concluded	X		X				
Large Landscape Surveys	MWD	Ongoing		X		X			
Recirc & Save	WB	Concluded	X						X
Recycled Water	WB	Ongoing	X	X				X	
Water Savings Incentive Program (WSIP)	MWD & WB	Ongoing	X	X					X
Both Residential & CII Programs									
Landscape Irrigation Efficiency Program (LIEP)	WB	Ongoing		X	X	X			
Water Efficient Landscaping Ordinance (WELO) Education Classes	WB/ MWD	Ongoing		X			X		
Ocean Safe Car Washes	WB	Concluded		X			X		
Qualified Water Efficient Landscaper (QWEL) Certification	WB/ MWD	Potential		X			X		
Regional Device Rebate Program	MWD	Ongoing	X	X	X				
WBIC Exchange Events	WB	Concluded		X	X				

5.2. Temporal Trends in Program Participation

Total participation in selected WUE programs or program groups by customers within the West Basin service area are plotted on **Figures 5-1** through **5-6**. Each figure shows the geographic distribution for each program over time and includes a chart showing the total participation by each year for each program or program group.

Tables 5-2 through **5-7** below show the breakdown of participation within each customer agency's service area and provides the total participation within each customer agency's service area relative to the total number of residential parcels (as applicable). The blue shading in the tables is provided as a visual mechanism to compare relative participation, where darker blue indicates a higher level of participation in a given year or customer agency service area.

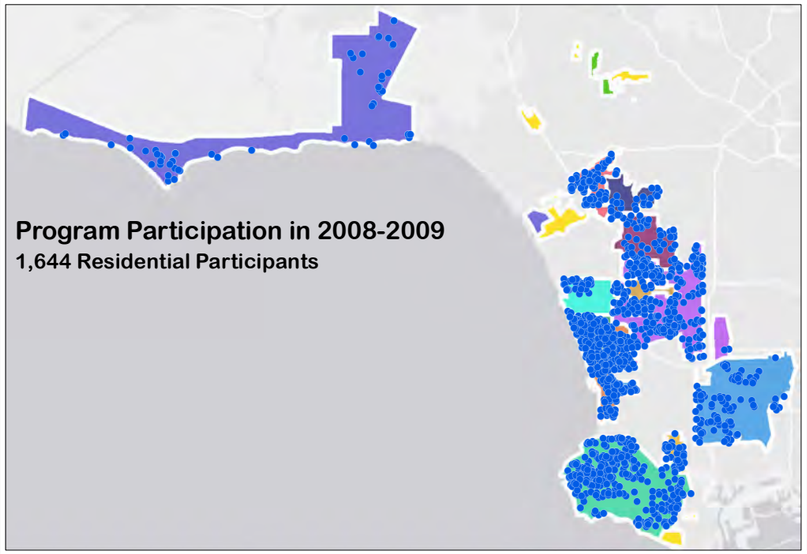
MWD Device Rebates

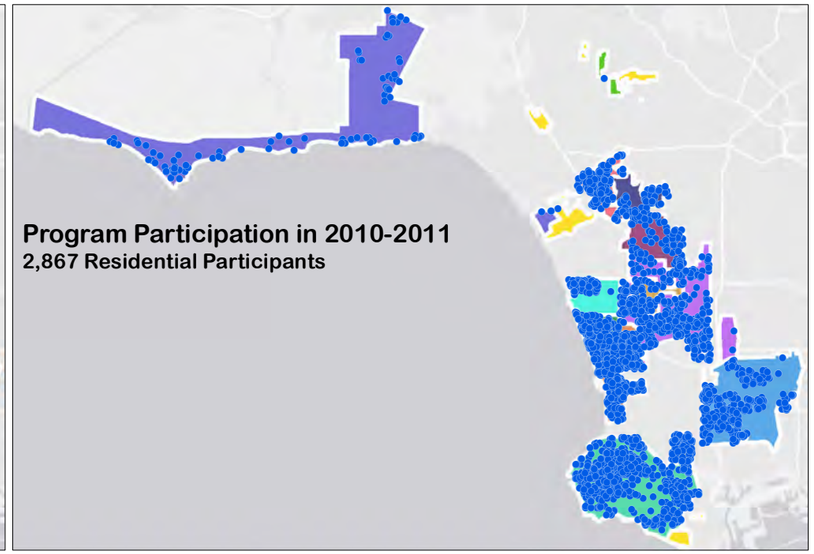
As shown on **Figures 5-1a** and **5-1b** and in **Table 5-2**, the MWD Residential Device Rebate programs have been very successful, with over 10,000 participants in the various residential device programs analyzed (i.e., HE clothes washers, HE toilets, rain barrel and cisterns, sprinkler nozzles, and WBICs). This represents roughly 5% of the total number of residential parcels within the West Basin service area.

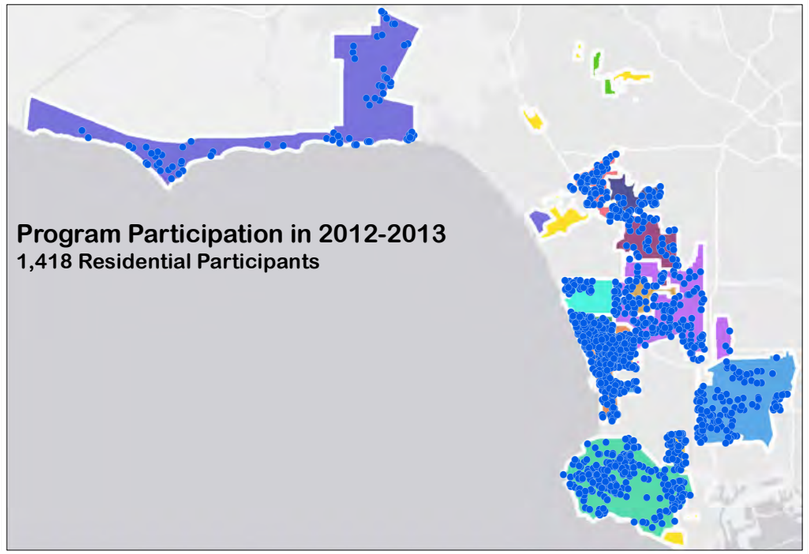
From its start in 2008, the program had an increase in participation through 2011, with a drop off in 2012-2014. In 2015, at the height of the drought, the participation almost doubled relative to the previous year. Since the drought, participation appears to be in decline. Relative to the overall number of residential parcels in each customer agency service area, customers in the City of Manhattan Beach and California Water Service Company ("CWS") Palos Verdes District have had the highest overall rates of participation, while those in the City of Inglewood and CWS Hawthorne District have had the lowest.

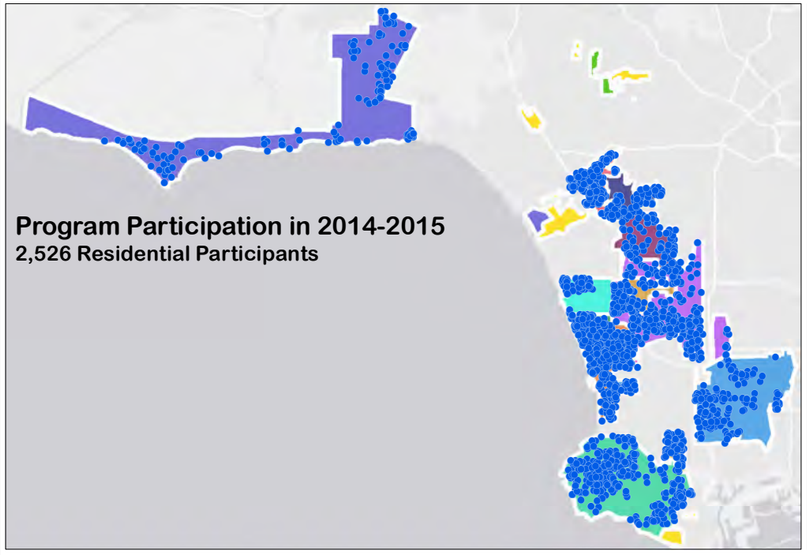
Table 5-2
Summary of Participation in MWD Residential Device Rebate Program

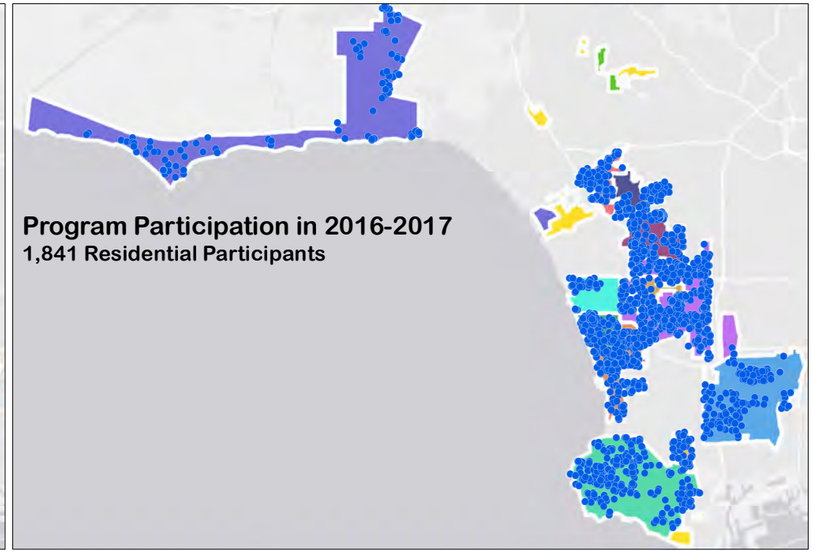
Customer Agency	Year										Total	Percentage of Res. Parcels
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
CWS Dominguez District	32	109	155	217	105	55	80	123	139	82	1,097	4.9%
CWS Hawthorne District	9	26	20	29	15	11	11	30	24	17	192	3.6%
CWS Hermosa-Redondo District	69	188	245	265	168	90	135	235	109	57	1,561	8.4%
CWS Palos Verdes District	135	211	349	309	144	95	116	260	142	94	1,855	8.3%
CAW Baldwin Hills	6	20	38	36	14	36	42	88	49	28	357	6.0%
City of El Segundo	12	22	36	37	18	18	29	45	24	15	256	7.2%
City of Inglewood	29	38	46	55	17	30	43	66	146	38	508	3.9%
City of Lomita	14	16	36	47	22	31	32	35	17	20	270	7.1%
City of Manhattan Beach	56	118	136	137	81	112	89	145	75	60	1,009	8.6%
GS Culver City & Southwest	98	373	277	301	128	150	255	492	379	208	2,661	5.9%
LACWW District 29	18	45	46	46	42	36	44	131	72	46	526	4.9%
West Basin Service Area (Potable Water)	**478**	**1,166**	**1,384**	**1,479**	**754**	**664**	**876**	**1,650**	**1,176**	**665**	**10,292**	**6.3%**

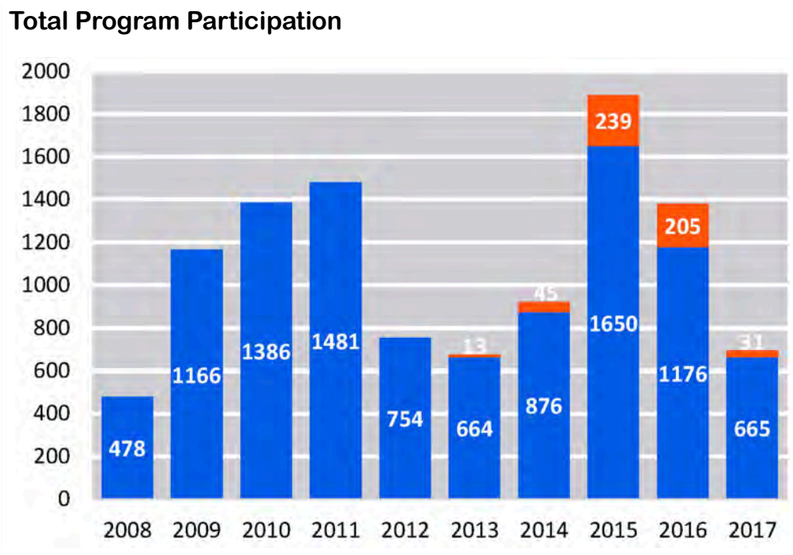












Legend

Program Participation

- Residential Device Rebate

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only residential program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. MWD device rebates include all deliverable programs offered by MWD and provided in Source 1.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

N

0 10 20
(Scale in Miles)

MWD Device Rebate Program
Residential Participation

eki environment & water

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 5-1a

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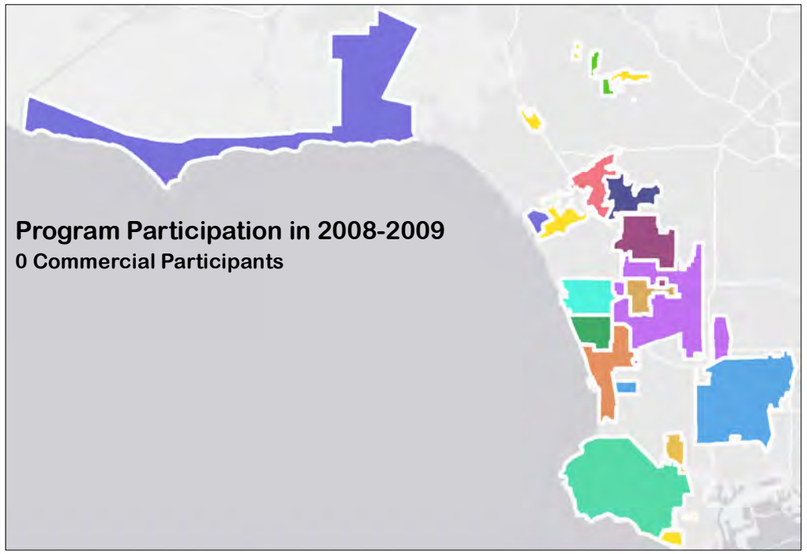
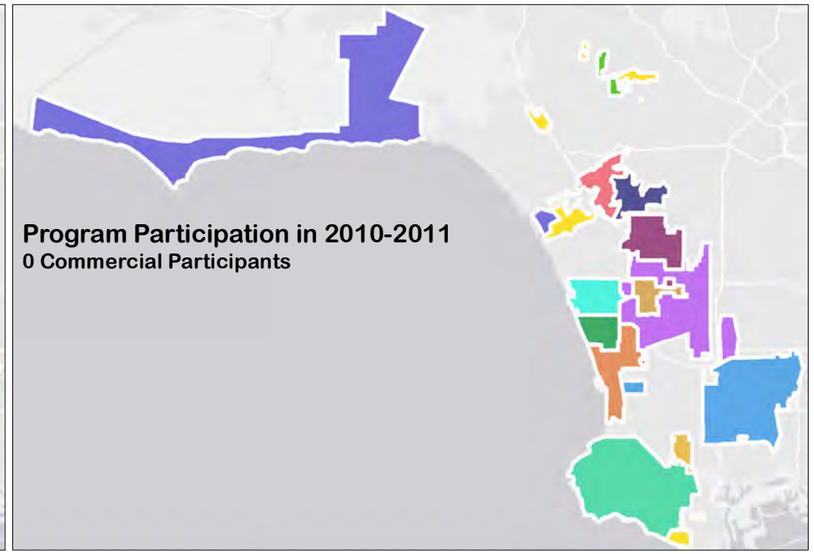
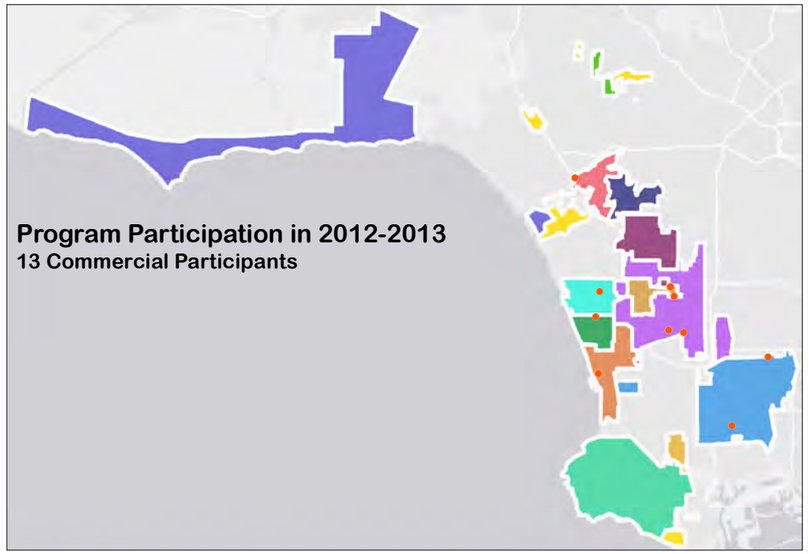
Figure 5-1b and **Table 5-3** present a summary of participation by CII customers in the MWD Device Rebate program. This program began in 2013 and has reached over 500 CII customers through several CII device rebate programs, including rebates for cooling towers, flow regulators and restrictors, ice machines, soil moisture censors, sprinkler nozzles, HE toilets and urinals, and WBICs. Participation by CII customers in 2015 and 2016 was significantly higher than in the prior years of the program, representing over 80% of total participation. This may have been driven by the increased overall awareness of WUE and more active program marketing efforts by MWD during the drought.

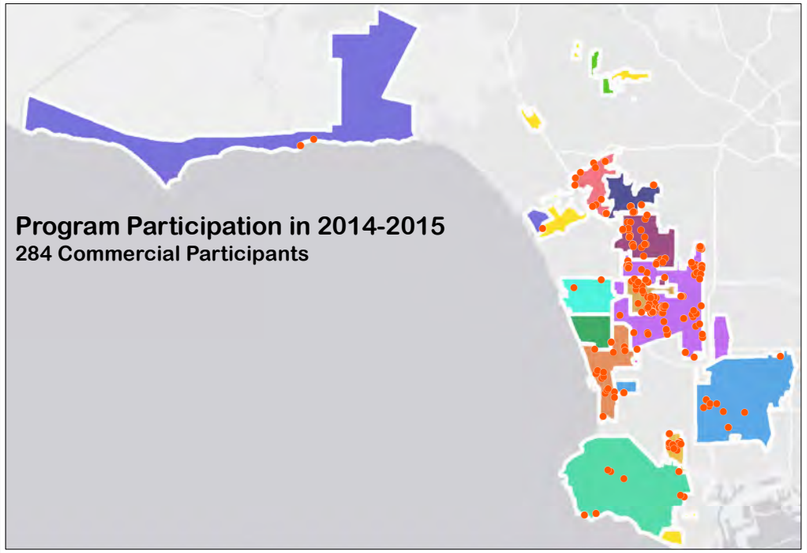
Table 5-3
Summary of Participation in MWD CII Device Rebate Program

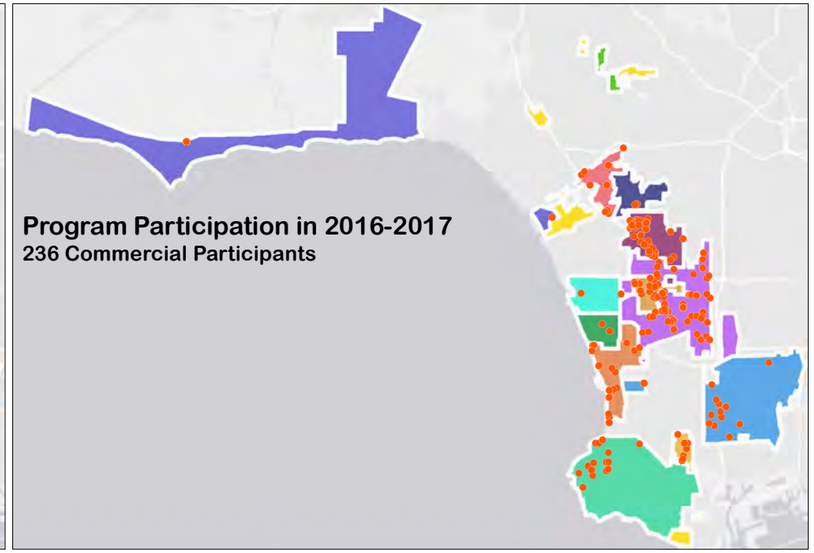
	Year					
Customer Agency	**2013**	**2014**	**2015**	**2016**	**2017**	**Total**
CWS Dominguez District	2	4	11	7	8	**32**
CWS Hawthorne District	4	0	21	14	1	**40**
CWS Hermosa-Redondo District	2	1	16	21	4	**44**
CWS Palos Verdes District	0	5	5	14	2	**26**
CAW Baldwin Hills	0	4	13	2	0	**19**
City of El Segundo	1	1	1	1	1	**5**
City of Inglewood	0	5	23	58	1	**87**
City of Lomita	0	3	18	4	5	**30**
City of Manhattan Beach	1	0	1	1	1	**4**
GS Culver City & Southwest	3	22	126	77	7	**235**
LACWW District 29	0	0	4	6	1	**11**
West Basin Service Area (Potable Water)	**13**	**45**	**239**	**205**	**31**	**533**

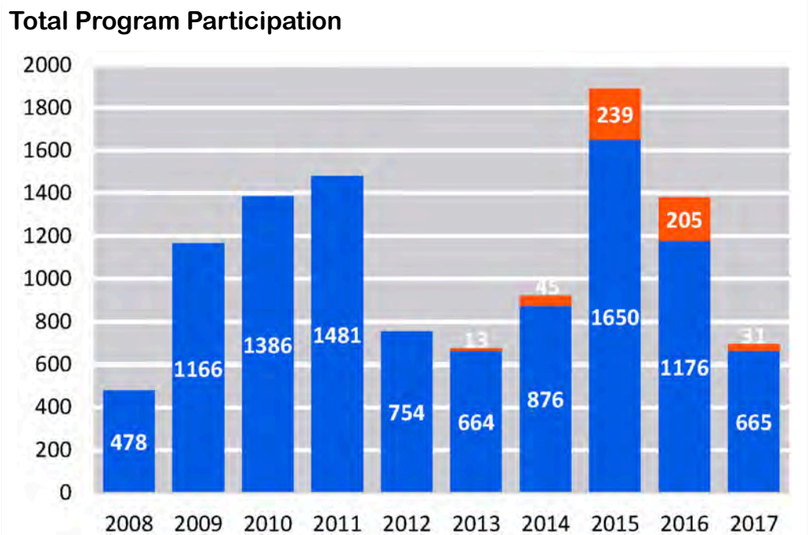












Legend

Program Participation

- Commercial Device Rebate

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only commercial program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. MWD device rebates include all deliverable programs offered by MWD and provided in Source 1.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

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MWD Device Rebate Program
Commercial Participation

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West Basin Municipal Water District
January 2019
EKI B70108.00

Figure 5-1b

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Residential HE Clothes Washer Programs

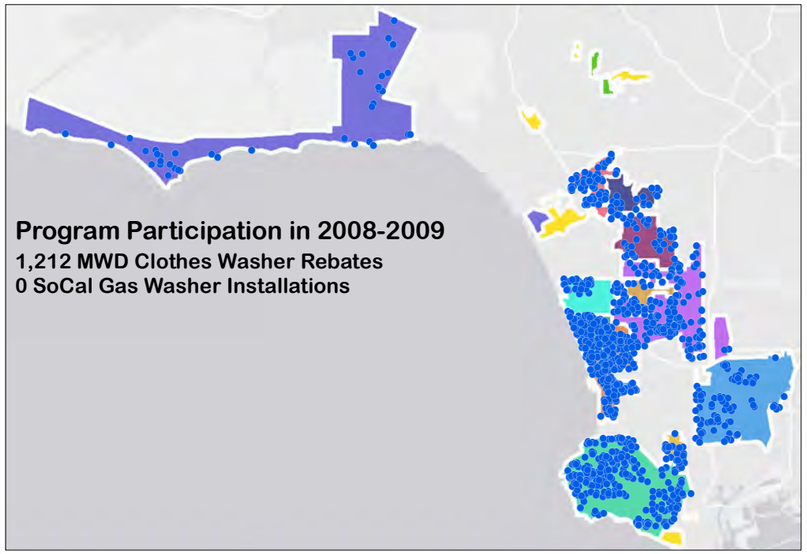
Figure 5-2 and **Table 5-4** present a summary of participation in the two residential HE clothes washer programs: (1) HE clothes washer rebates offered by MWD (i.e., as subset of the program described above), and (2) a direct-installation program offered to low income households by SoCalGas Company that includes the provision and installation of an HE clothes washer at no cost to the customers.

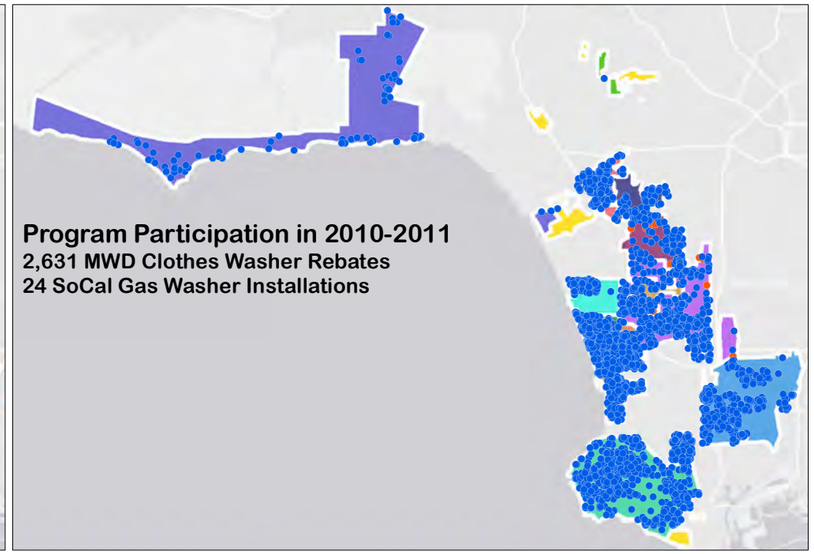
These programs have also been quite successful, reaching almost 9,800 participants and approximately 5% of the residential parcels in the West Basin service area. Over time these programs have shown similar trends to the MWD residential device rebates, but it is notable that the MWD rebates had a drop off in participation in 2012 and then remained at a relatively constant level through 2017, while the SoCalGas program experienced an increase through 2014 and subsequent decline. Given that there was not a significant increase in HE clothes washer rebate participation during the drought, this suggests that the increase seen in the MWD residential device rebates discussed above was driven almost entirely by rebates for devices other than HE clothes washers.

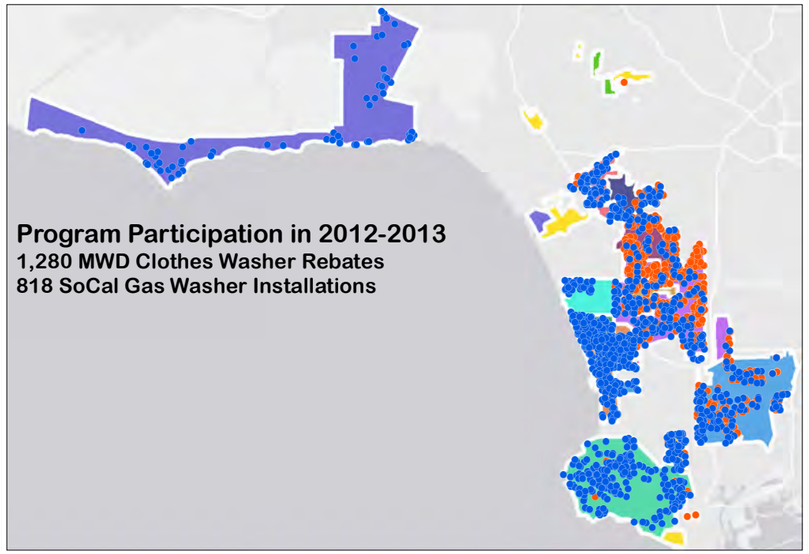
Relative to the overall number of residential parcels in each customer agency's service area, participation is relatively well distributed with the highest participation in the CWS Dominguez District, and notably lower participation in the LACWW District 29 area.

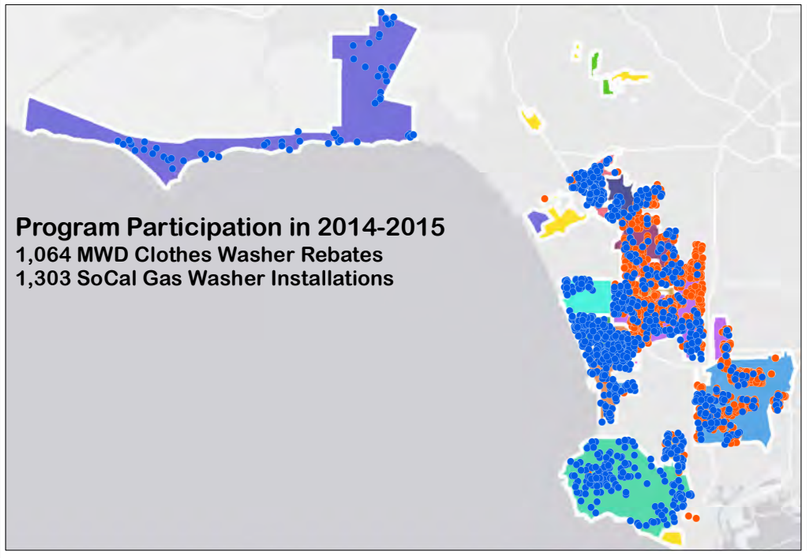
Table 5-4
Summary of Participation in Residential HE Clothes Washer Programs

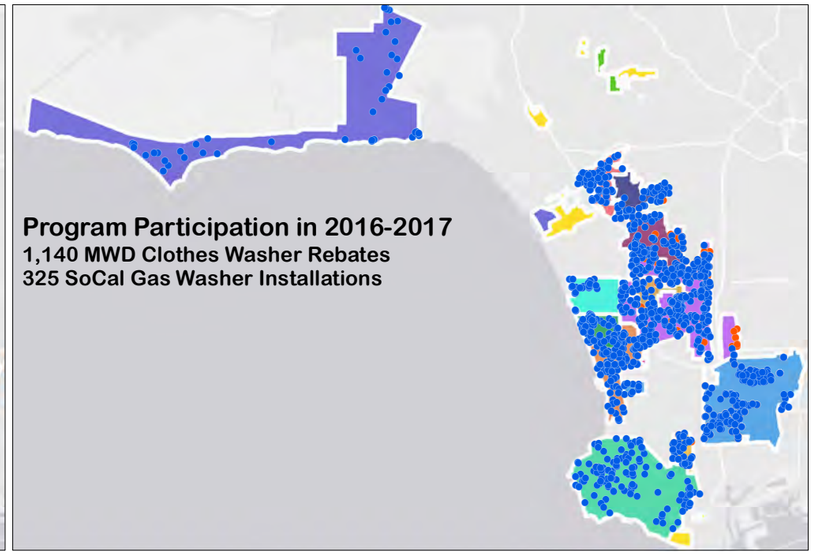
Customer Agency	Year										Total	Percentage of Res. Parcels
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
CWS Dominguez District	27	87	139	218	142	175	313	176	179	98	**1,554**	**7.0%**
CWS Hawthorne District	6	21	18	31	29	49	79	35	21	24	**313**	**5.8%**
CWS Hermosa-Redondo District	65	164	212	260	158	83	76	96	56	44	**1,214**	**6.5%**
CWS Palos Verdes District	120	149	278	291	146	77	79	74	66	60	**1,340**	**6.0%**
CAW Baldwin Hills	6	13	35	29	13	41	60	30	24	21	**272**	**4.6%**
City of El Segundo	11	20	34	33	18	17	17	14	12	11	**187**	**5.2%**
City of Inglewood	15	29	42	63	44	132	141	44	93	54	**657**	**5.1%**
City of Lomita	14	14	35	46	25	24	34	14	20	22	**248**	**6.6%**
City of Manhattan Beach	54	101	117	135	81	101	52	52	38	42	**773**	**6.6%**
GS Culver City & Southwest	76	179	248	307	183	493	575	336	314	219	**2,930**	**6.5%**
LACWW District 29	11	30	37	43	36	28	30	34	21	26	**296**	**2.8%**
West Basin Service Area (Potable Water)	**405**	**807**	**1,195**	**1,456**	**875**	**1,220**	**1,456**	**905**	**844**	**621**	**9,784**	**6.0%**

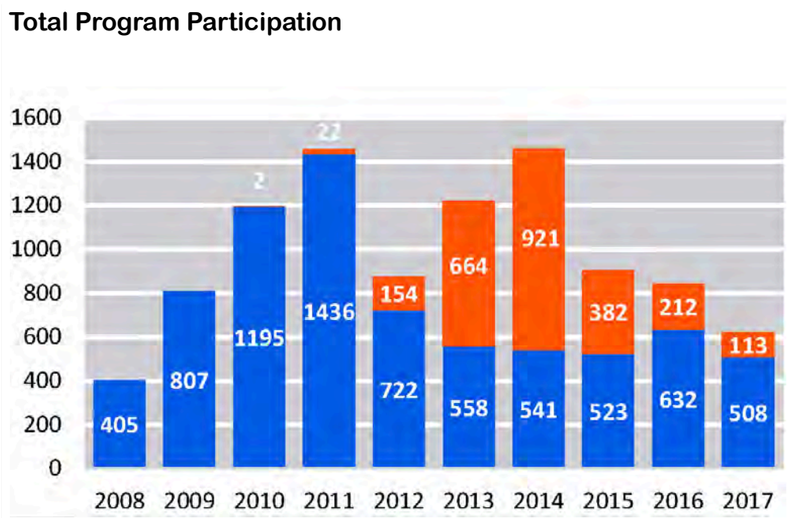












Legend

Program Participation

- SoCal Gas Washer Installation (Low Income)
- MWD Clothes Washer Rebate

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. MWD device rebates include all deliverable programs offered by MWD and provided in Source 1.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

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(Scale in Miles)

Residential Clothes Washer Program Participation

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West Basin Municipal Water District
January 2019
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Figure 5-2

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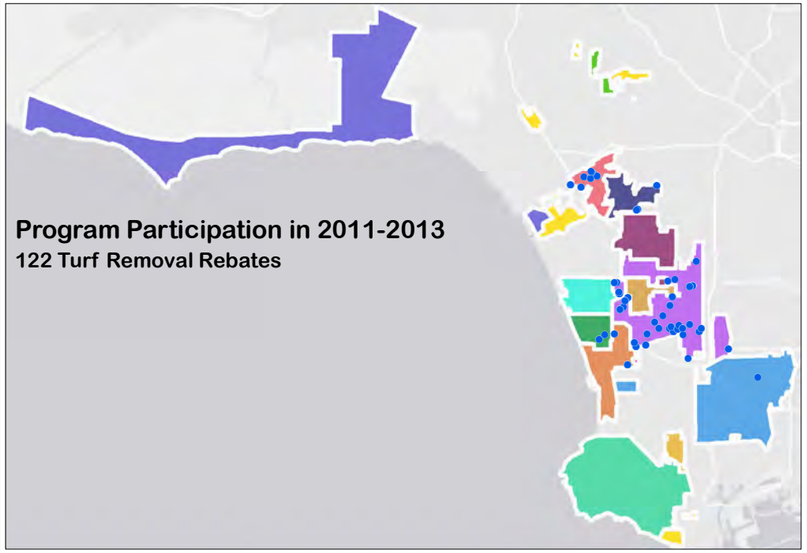
Turf Removal Rebate Program

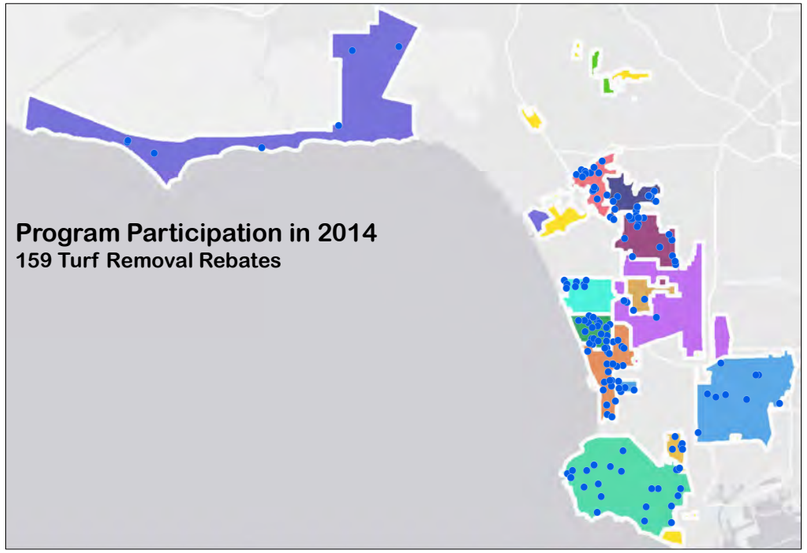
Figure 5-3 and **Table 5-5** summarize participation in the MWD turf removal rebate program by residential customers. While administered by MWD, the turf removal rebate program does not incentivize the use of a *device* and is therefore not included in the MWD device rebate programs discussed above. Since its start, over 2,000 residential landscapes in the West Basin service area have been converted from turf to a water-efficient landscape through this program, representing just over 1% of residential parcels. This program had a dramatic increase in participation in 2015 and high participation in 2016 (i.e., during the drought). Following 2016, the program was suspended, but was reinstated in FY 2018-2019 with some modifications, including temporarily renaming the program to the "Landscape Transformation Program" and adjustments to the project requirements.

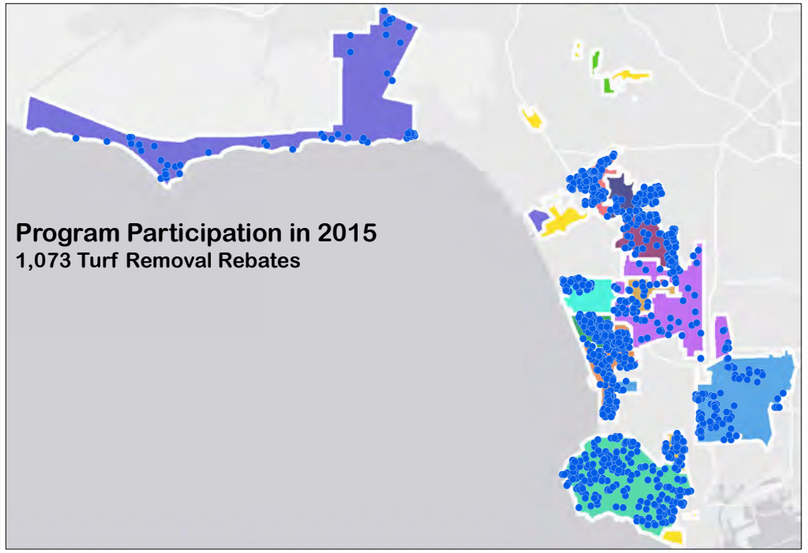
Relative to the overall number of residential parcels in each customer agency's service area, the highest participation has been by customers in the California American Water ("CAW") Baldwin Hills area, and notably lower participation in the CWS Dominguez District and CWS Hawthorne District areas.

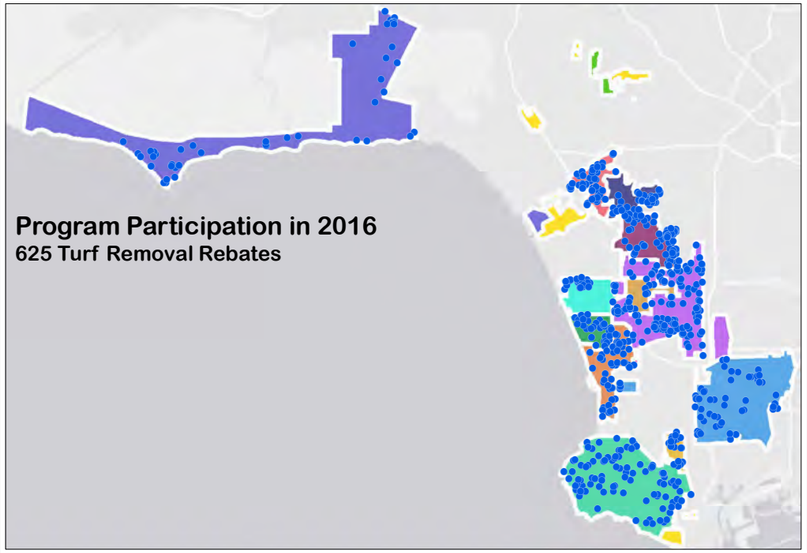
Table 5-5
Summary of Participation in Turf Removal Rebate Program

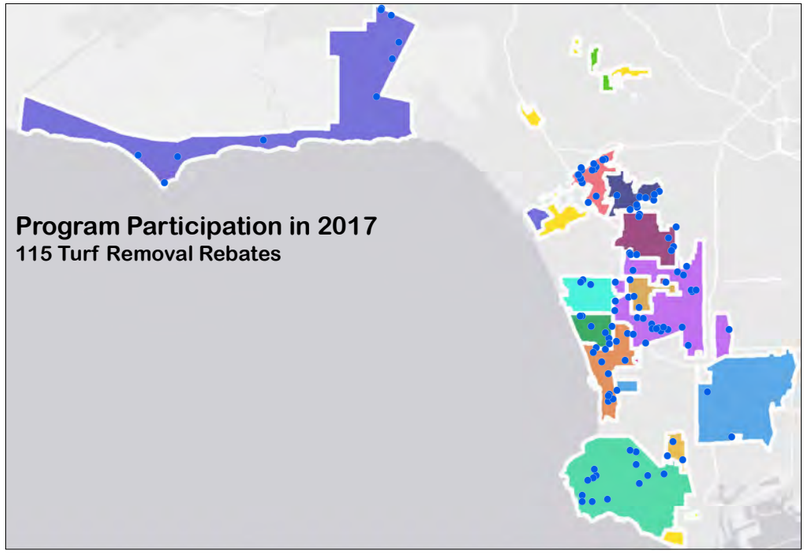
Customer Agency	Year								Percentage of Res. Parcels
	2011	2012	2013	2014	2015	2016	2017	Total	
CWS Dominguez District	0	0	1	14	94	55	3	**167**	**0.8%**
CWS Hawthorne District	0	0	0	2	20	7	3	**32**	**0.6%**
CWS Hermosa-Redondo District	0	0	6	23	160	48	10	**247**	**1.3%**
CWS Palos Verdes District	0	0	0	25	209	99	14	**347**	**1.6%**
CAW Baldwin Hills	0	0	7	14	74	40	9	**144**	**2.4%**
City of El Segundo	0	0	0	8	44	21	3	**76**	**2.1%**
City of Inglewood	0	0	0	17	90	76	8	**191**	**1.5%**
City of Lomita	0	0	0	6	35	19	3	**63**	**1.7%**
City of Manhattan Beach	0	0	3	24	88	31	9	**155**	**1.3%**
GS Culver City & Southwest	9	58	38	19	200	184	43	**551**	**1.2%**
LACWW District 29	0	0	0	7	59	45	10	**121**	**1.1%**
West Basin Service Area (Potable Water)	**9**	**58**	**55**	**159**	**1,073**	**625**	**115**	**2,094**	**1.3%**

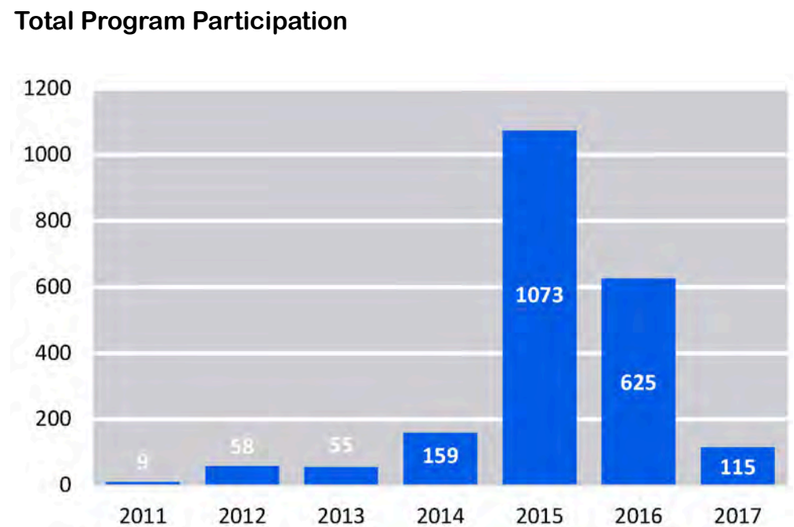












Legend

Program Participation

- MWD Turf Removal

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

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LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. MWD device rebates include all deliverable programs offered by MWD and provided in Source 1.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

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MWD Turf Removal Program Participation

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West Basin Municipal Water District
January 2019
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Figure 5-3

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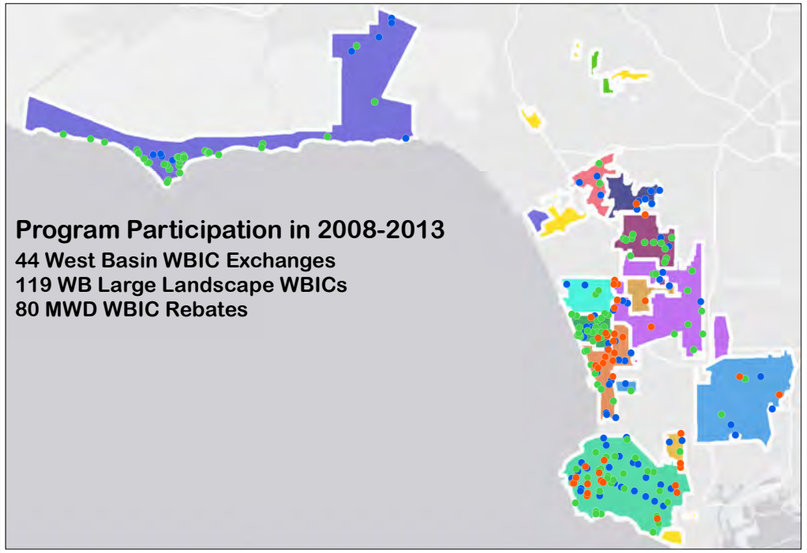
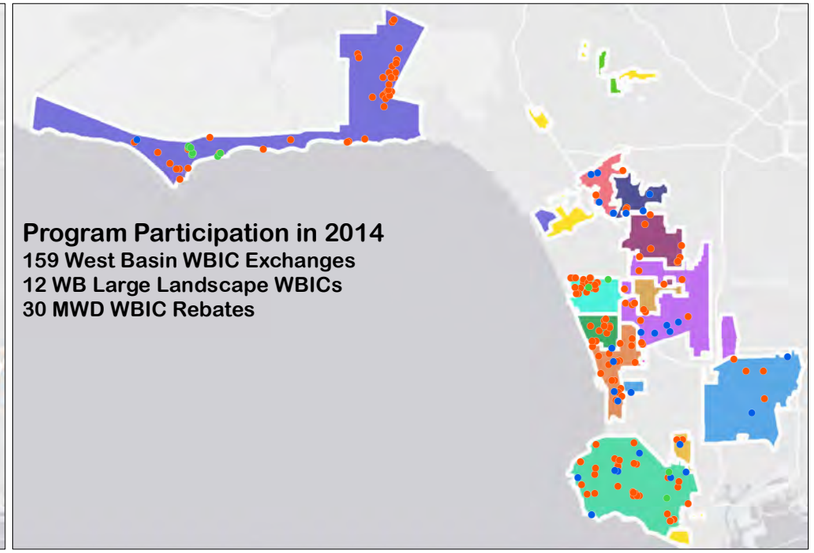
Smart Irrigation Controller Programs

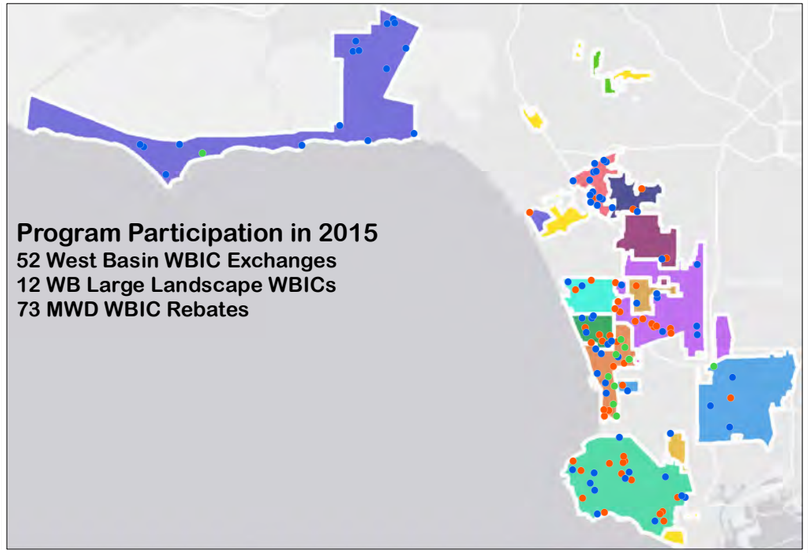
Participation in the three WBIC programs is shown on **Figure 5-4** and **Table 5-6**. These programs include a combination of WBIC rebates offered by MWD and no-cost WBICs provided by West Basin, and include a mix of residential and CII customers. Combined, these programs have reached approximately 1,000 accounts in the West Basin service area. The MWD rebate program has shown a fairly steady increase in participation, particularly over the last five years. This increase appears to be independent of drought conditions and may reflect the maturing market, awareness, and availability of this relatively new technology. During the four-year period they were offered, the West Basin WBIC Exchange Events were very popular, and accounted for half of the WBICs among the three programs over the last ten years.

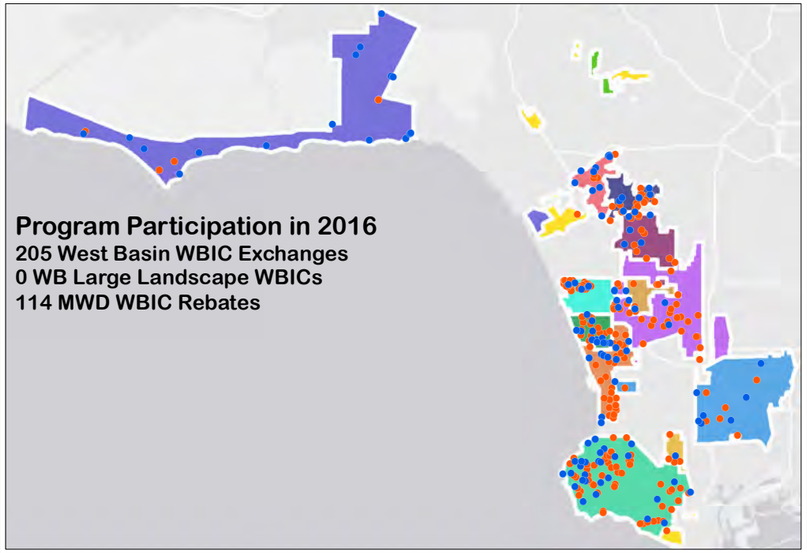
Table 5-6
Summary of Participation in Smart Irrigation Controller Programs

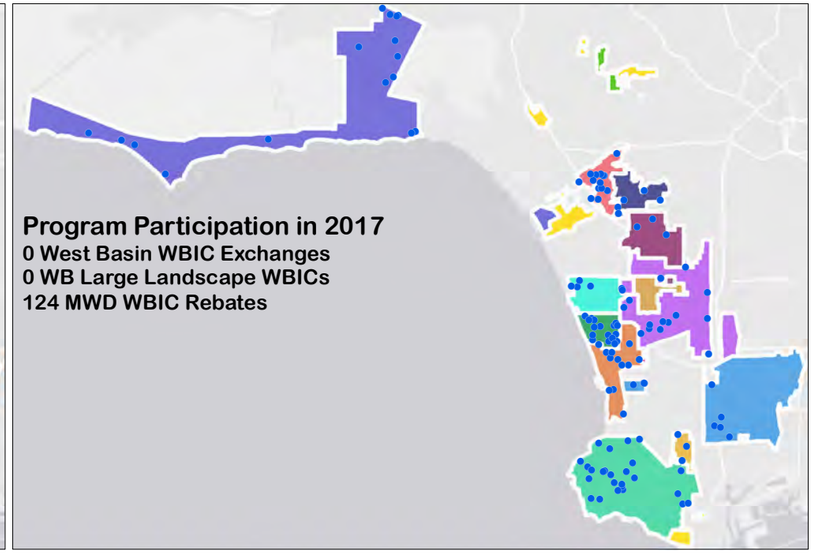
Customer Agency	Year										Total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
CWS Dominguez District	0	2	0	1	1	6	7	8	15	9	**49**
CWS Hawthorne District	0	0	0	0	0	2	2	2	7	0	**13**
CWS Hermosa-Redondo District	0	0	3	6	4	15	23	22	36	12	**121**
CWS Palos Verdes District	1	4	11	19	13	17	42	26	85	25	**243**
CAW Baldwin Hills	0	0	0	2	1	4	5	4	23	5	**44**
City of El Segundo	0	0	0	1	1	3	22	4	31	4	**66**
City of Inglewood	0	0	4	0	2	9	9	2	18	3	**47**
City of Lomita	0	0	1	1	0	4	3	1	4	3	**17**
City of Manhattan Beach	2	2	1	2	3	27	11	14	25	17	**104**
GS Culver City & Southwest	1	2	4	3	4	12	25	35	52	30	**168**
LACWW District 29	1	3	3	5	13	17	52	19	21	16	**150**
West Basin Service Area (Potable Water)	**5**	**13**	**27**	**40**	**42**	**116**	**201**	**137**	**317**	**124**	**1,022**

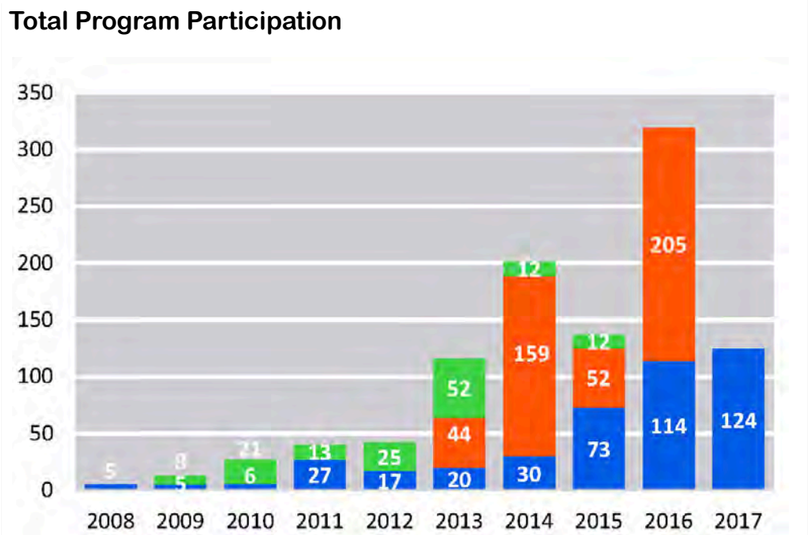












Legend

Program Participation

- WB WBIC Exhange Recipient
- WB Large Landscape WBICs
- MWD WBIC Rebates

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District
WB - West Basin Municipal Water District
WBIC - Weather-based irrigation controller

Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. MWD device rebates include all deliverable programs offered by MWD and provided in Source 1.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

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(Scale in Miles)

Smart Irrigation Controller Program Participation

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West Basin Municipal Water District
January 2019
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Figure 5-4

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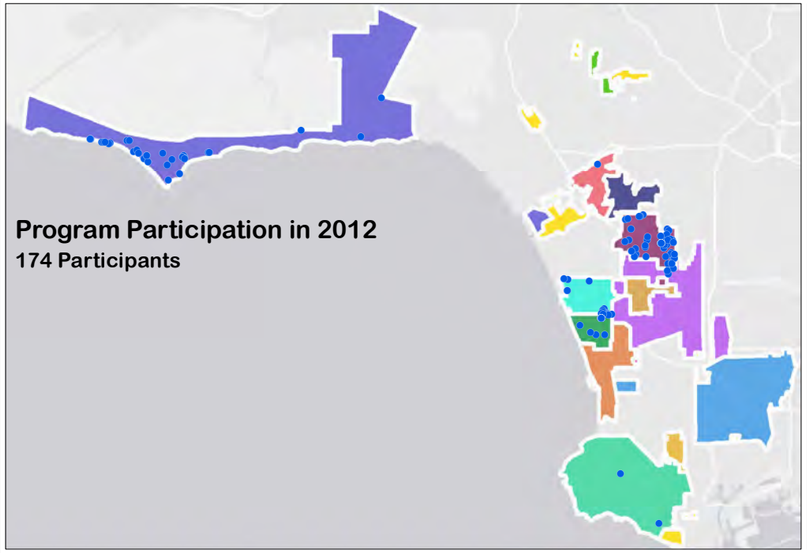
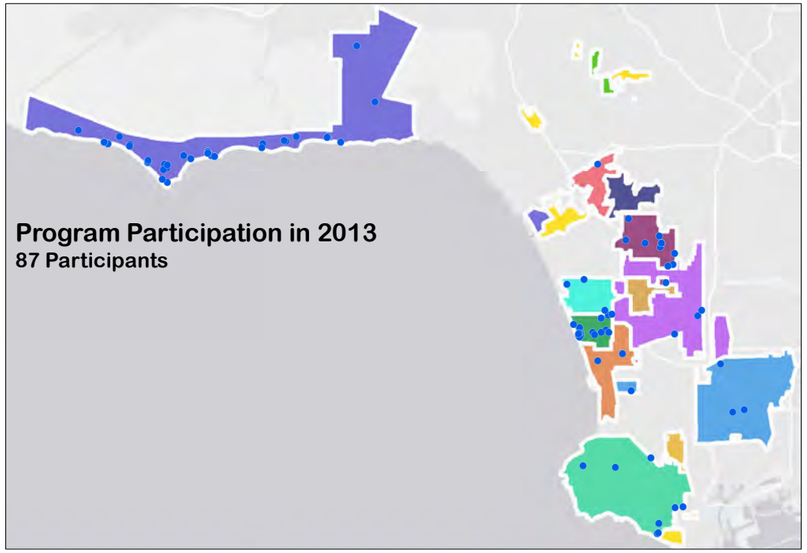
Landscape Irrigation Efficiency Program

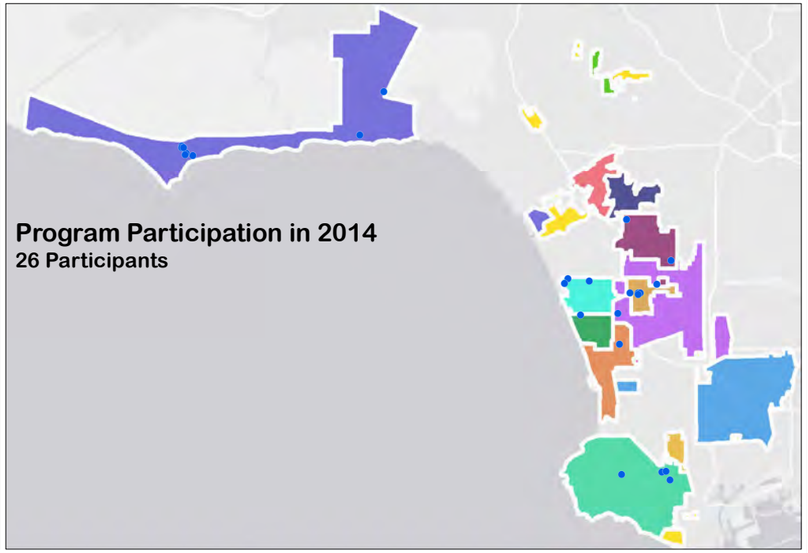
Participation in West Basin's LIEP is shown on **Figure 5-5** and **Table 5-7**. This program is offered to both residential and CII customers, although to date, approximately 85% of participants have been residential customers. This program experienced a very high rate of participation at its start in 2012, followed by a relatively steady decline through 2016. Given that only about 300 large landscape water users in the West Basin service area have been reached through this program, there may be an opportunity to adjust the marketing and outreach for this program to identify new participants. It may also be beneficial for West Basin to contact the earliest program participants in the event that property ownership or management has changed in the last five years.

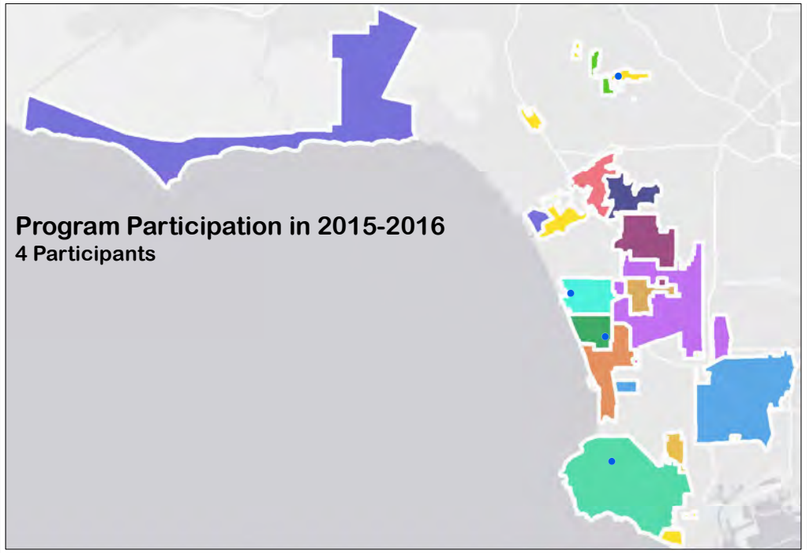
Table 5-7
Summary of Participation in LIEP Program

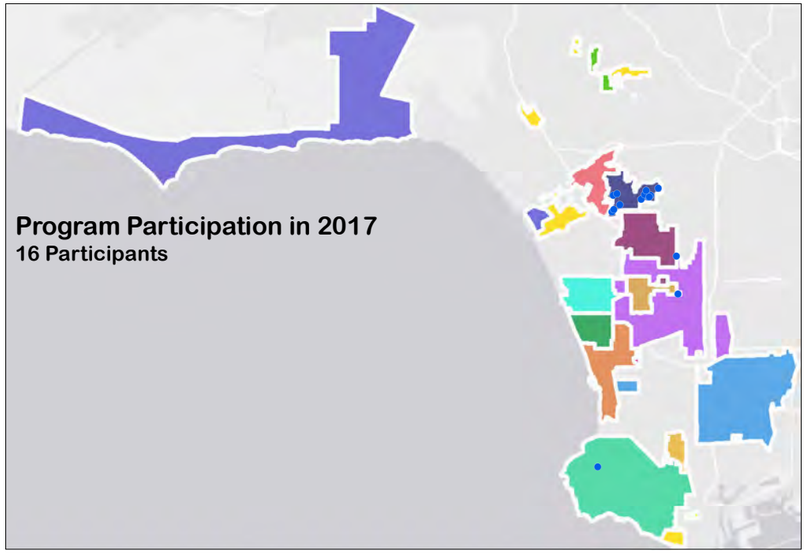
Customer Agency	Year						Total
	2012	2013	2014	2015	2016	2017	
CWS Dominguez District	0	4	0	0	0	0	**4**
CWS Hawthorne District	0	0	4	0	0	1	**5**
CWS Hermosa-Redondo District	0	2	1	0	0	0	**3**
CWS Palos Verdes District	2	8	4	1	0	1	**16**
CAW Baldwin Hills	0	0	0	0	0	13	**13**
City of El Segundo	18	3	3	1	0	0	**25**
City of Inglewood	91	11	3	0	0	1	**106**
City of Lomita	0	0	0	0	0	0	**0**
City of Manhattan Beach	28	18	1	1	0	0	**48**
GS Culver City & Southwest	3	4	1	0	0	0	**8**
LACWW District 29	32	37	9	0	0	0	**78**
West Basin Service Area (Potable Water)	**174**	**87**	**26**	**3**	**0**	**16**	**306**

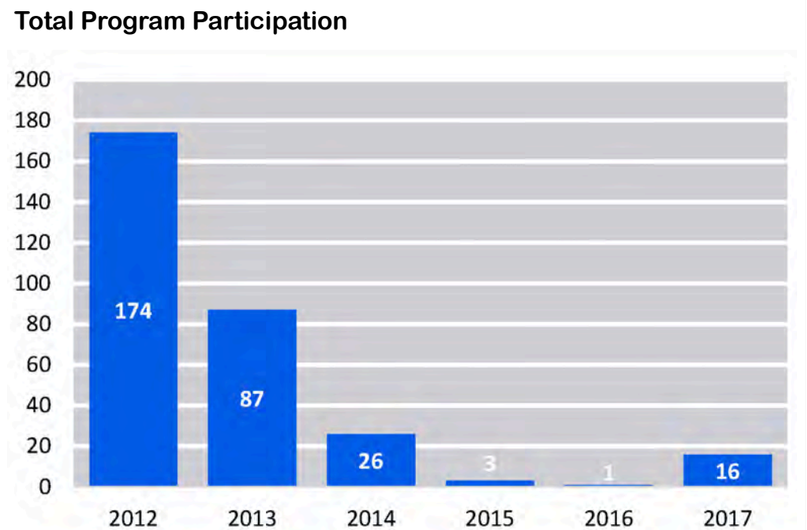












Legend

Program Participation

- LIEP Program Participant

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
LIEP - Landscape Irrigation Efficiency Program
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. MWD device rebates include all deliverable programs offered by MWD and provided in Source 1.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

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(Scale in Miles)

Landscape Irrigation Efficiency Program Participation

West Basin Municipal Water District
January 2019
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Figure 5-5

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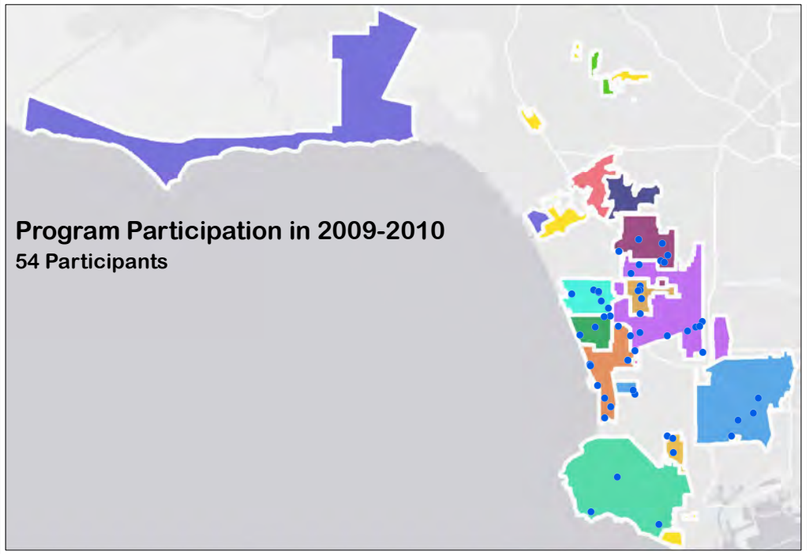
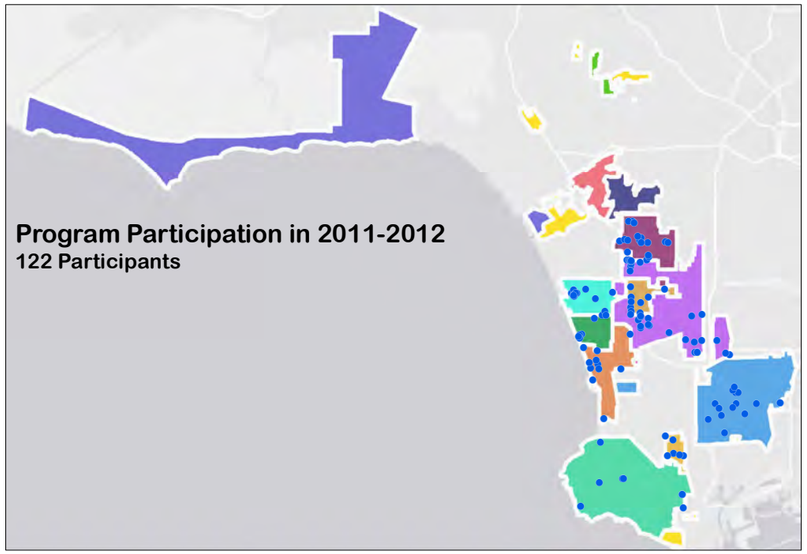
Cash for Kitchens Program

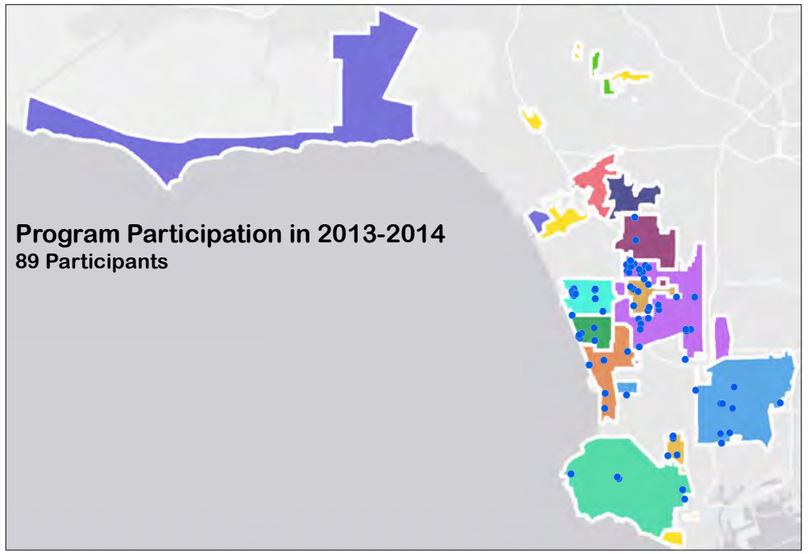
Participation in West Basin's Cash for Kitchens program is shown on **Figure 5-6** and **Table 5-8**. Participation in this program has been relatively steady since it began in 2009, with a somewhat increased level of participation in 2015 and 2017. The Cash for Kitchens program has reached over 400 commercial kitchen participants since its start.

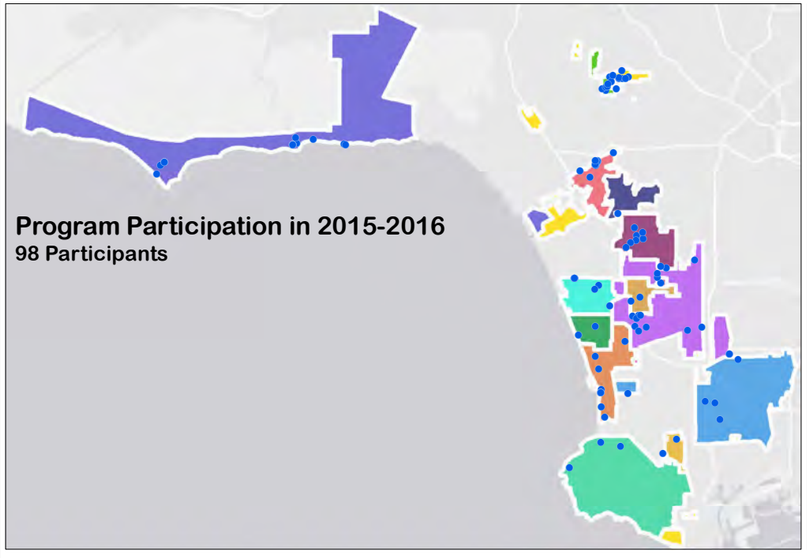
Table 5-8
Summary of Participation in Cash for Kitchens Program

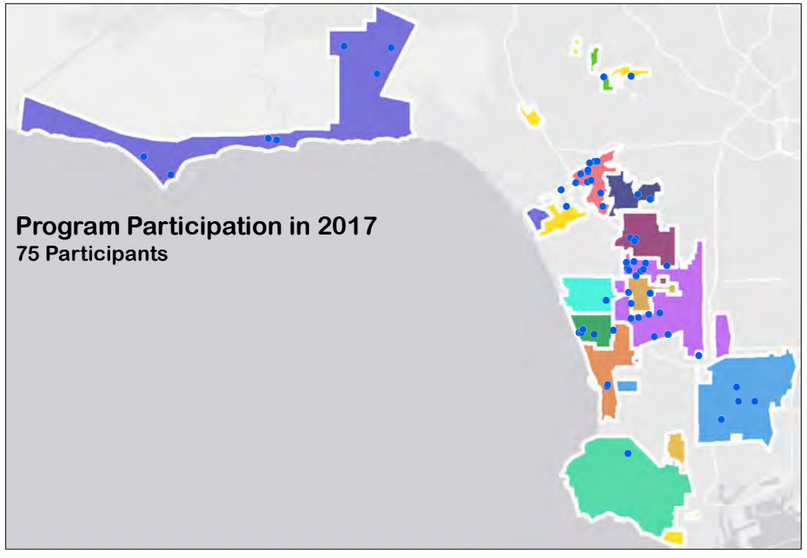
Customer Agency	Year									Total
	2009	2010	2011	2012	2013	2014	2015	2016	2017	
CWS Dominguez District	5	1	6	9	5	5	0	5	5	**41**
CWS Hawthorne District	3	2	4	4	1	7	1	1	4	**27**
CWS Hermosa-Redondo District	6	4	6	4	7	0	6	3	5	**41**
CWS Palos Verdes District	2	1	3	5	7	1	0	3	2	**24**
CAW Baldwin Hills	0	0	0	0	0	0	0	0	2	**2**
City of El Segundo	5	1	12	7	12	3	8	1	1	**50**
City of Inglewood	3	3	7	10	3	0	9	2	4	**41**
City of Lomita	3	0	3	3	4	0	0	1	0	**14**
City of Manhattan Beach	3	1	4	4	2	5	0	2	7	**28**
GS Culver City & Southwest	6	5	15	16	16	11	14	12	31	**126**
LACWW District 29	0	0	0	0	0	0	14	0	10	**24**
West Basin Service Area (Potable Water)	**36**	**18**	**60**	**62**	**57**	**32**	**52**	**30**	**71**	**418**

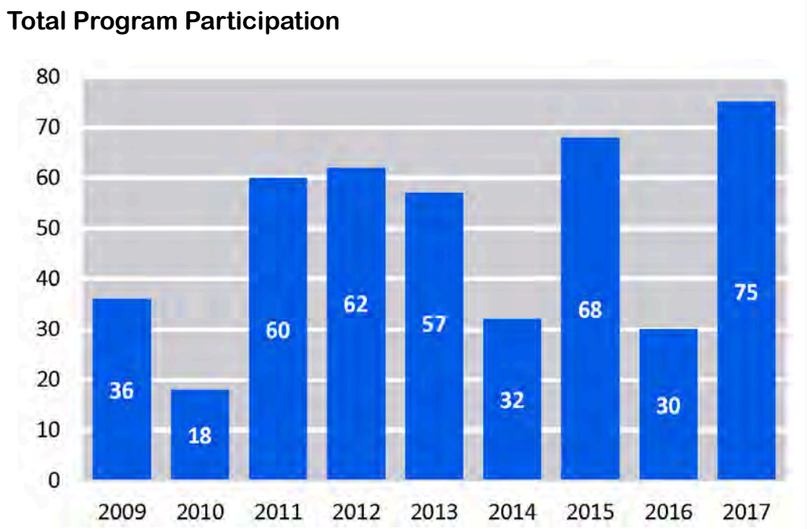












Legend

Program Participation

- Cash for Kitchens Program Participant

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. MWD device rebates include all deliverable programs offered by MWD and provided in Source 1.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

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Cash for Kitchens Program Participation

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January 2019
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Figure 5-6

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5.3. Program Participation by West Basin Director Division

Although each West Basin Director Division represents similar populations (between 160,000 and 190,000 people), the proportion of participation in a given program can vary significantly. As discussed in other sections, both customer demographics and property characteristics appear to drive the difference in participation for residential programs. Participation by CII accounts, however, appear to be more driven by factors related to business operations and industry. **Tables 5-9a** and **5-9b** below show the relative proportion of participation in WUE programs within each Division. The blue shading in the table is provided as a visual mechanism to compare relative participation, where darker blue indicates a higher level of participation in a given year or customer agency service area. As discussed above, participation in selected residential programs are mapped on **Figures 5-1** through **5-6.** Participation in additional selected CII programs is discussed in Section 5.7.

The highest number of residential program participants are located in Divisions 1 and 3, accounting for approximately 50% of all residential WUE program participation. A similar trend is observed with CII WUE programs, with the highest participation being in Divisions 2 and 4, and accounting for approximately 46% of all CII program participation. In order to better understand the differences in program participation observed across the West Basin service area, and between Divisions, drivers and participation trends are evaluated and discussed in Sections 5.4 through 5.6.

Table 5-9a
Overall Residential Program Participation by Director Division

WUE Program	Division 1	Division 2	Division 3	Division 4	Division 5
Residential Programs					
HE Clothes Washer Rebate	1,948	604	2,510	1,263	1,000
Rain Barrel and Cistern Rebates	118	35	115	167	79
SoCalGas Low Income HE Clothes Washer Direct Installation	701	797	92	131	760
Sprinkler Nozzle Rebate	29	10	22	50	13
HE Toilet Rebate	409	399	496	407	271
Turf Removal Rebates	453	278	537	619	207
West Basin WBIC Exchange	130	30	110	137	53
WBIC Rebate	82	18	85	138	26
Rain Barrel Distribution Event	300	209	301	331	307
Total	4,170	2380	4,268	3,243	2,716
Percentage	**25%**	**14%**	**25%**	**19%**	**16%**

Table 5-9b
Overall CII Program Participation by Director Division

WUE Program	Division 1	Division 2	Division 3	Division 4	Division 5
CII Programs					
Cash for Kitchens	63	69	86	125	91
Centralized Irrigation Controller Systems, CII sites (OFG Program)	13	5	12	7	1
Cooling Tower Rebate	-	-	-	1	1
Flow Regulator/ Restrictor Rebate	-	-	2	1	6
Hotel/Motel/School HE Toilet Installation	2	4	5	6	18
Ice Machine Rebate	1	1	-	2	1
LIEP	19	111	50	118	9
MWD Device Rebates	2	5	5	9	29
MWD Large Landscape Survey	4	-	1	1	-
Recirc & Save	5	1	-	-	-
Complete Restroom Retrofit	19	36	44	26	49
Soil Moisture Censor Rebate	-	-	-	5	-
Sprinkler Nozzle Rebate	2	-	9	9	1
MWD Commercial and Multi-Family HE Toilet Rebates	8	152	56	32	162
Turf Removal Rebates	44	10	9	7	2
Urinal Rebates	1	-	3	4	1
WB Large Landscape Irrigation Controllers	35	16	42	48	5
WBIC Rebate	30	3	24	10	5
WSIP	-	1	-	-	-
Total	248	414	348	411	381
Percentage	14%	23%	19%	23%	21%

5.4. Geographic Distribution of WUE Program Participation

West Basin covers a large service area and most of the WUE programs analyzed here have had high levels of participation. Given the large amount of participation data spread across such a large area, it can be difficult to ascertain whether participation in these programs has been evenly distributed across the service area, or if participation tends to be clustered in certain parts of the service area. In order to better understand the spatial distribution of WUE program participation a statistical "hot spot" analysis was performed for selected residential and CII programs and is described in the following sections. The results of this hot spot, or participation density, analysis are provided in **Figures 5-7** through **5-12**. Corresponding figures for each Division are provided in Appendix A.

5.4.1. Methodology

A geostatistical analysis was performed to identify program participation density for WUE programs in the West Basin service area.[10] This analysis identifies participation "hot spots," which are areas where a

[10] The ESRI ArcGIS 10.3.1 Optimized Hot Spot Analysis tool was used for spatial hot spot analysis of program participation. The hot spot analysis calculates a Getis Ord GI* statistic for each cell. This statistical z-score evaluates how the event (in this case,

higher density of participation is observed than would be expected by randomly distributed participation. Similarly, "cold spots," or areas of lower than expected participation, are identified. High density participation areas are identified in red on the attached figures and low density participation areas are identified in blue. In selected cases, program participation in the LACWW District #29 area was too low to allow for the performance of this analysis and therefore no results are shown in the attached figures for this part of the service area. The size of the cluster analysis grid cells is a function of the amount of participation data included in the analysis; therefore, larger grid cells are shown in the attached figures for WUE programs with lower overall participation.

5.4.2. Participation Density (Cluster) Analyses

MWD Device Rebates

The results of the participation density analysis for the MWD device rebate program are shown on **Figure 5-7**. The left panel shows participation density by residential customers and the right panel shows participation density by CII customers. Clear areas of high and low participation by residential customers were identified. The highest density of participation has occurred in the Golden State Water Company ("GS") Culver City, Manhattan Beach, and Hermosa Beach areas, with smaller pockets of high density participation in the Hawthorne, south Gardena and central Palos Verdes areas. Areas of low density participation are present in the Inglewood, north Gardena, Carson, Rolling Hills, and outer Palos Verdes areas. Due to the smaller overall program size, the analyses for CII program participants provides results at a lower resolution than for residential areas. An area of statistically significant higher density participation for commercial devices was identified in the Gardena area.

Residential HE Clothes Washer Programs

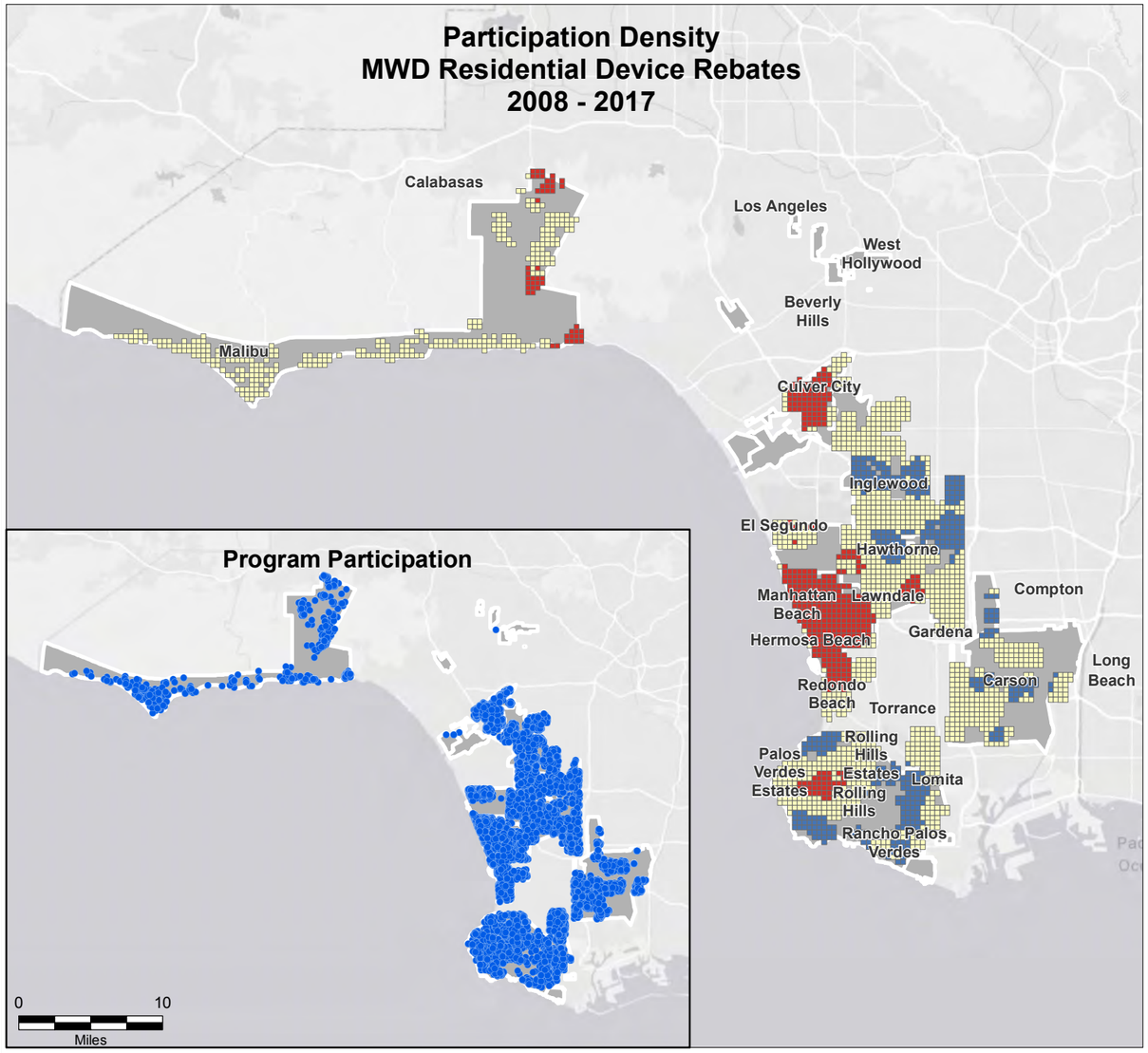
Figure 5-8 shows the results of the participation density analysis for the MWD residential HE clothes washer rebate program (left panel) and the SoCalGas low income HE clothes washer direct installation program (right panel). Participation density for these programs were evaluated separately given that the two programs are structured very differently, which would be expected to result in a different geographic distribution in participation. Participation density in the MWD HE clothes washer rebate program is very similar to that in the MWD residential device rebate program described above.[11] Given that the SoCalGas program requires customers to be within certain income limits, it would be expected that the distribution and density of participants may show different trends than programs without income qualification requirements. As shown in the comparison on **Figure 5-8**, participation density for the SoCalGas program is quite different, with very low participation density along the coast and in the northern portion of the service area around Culver City and high participation density generally throughout the GS Southwest System, CWS City of Hawthorne District, and portions of the CWS Dominguez District.

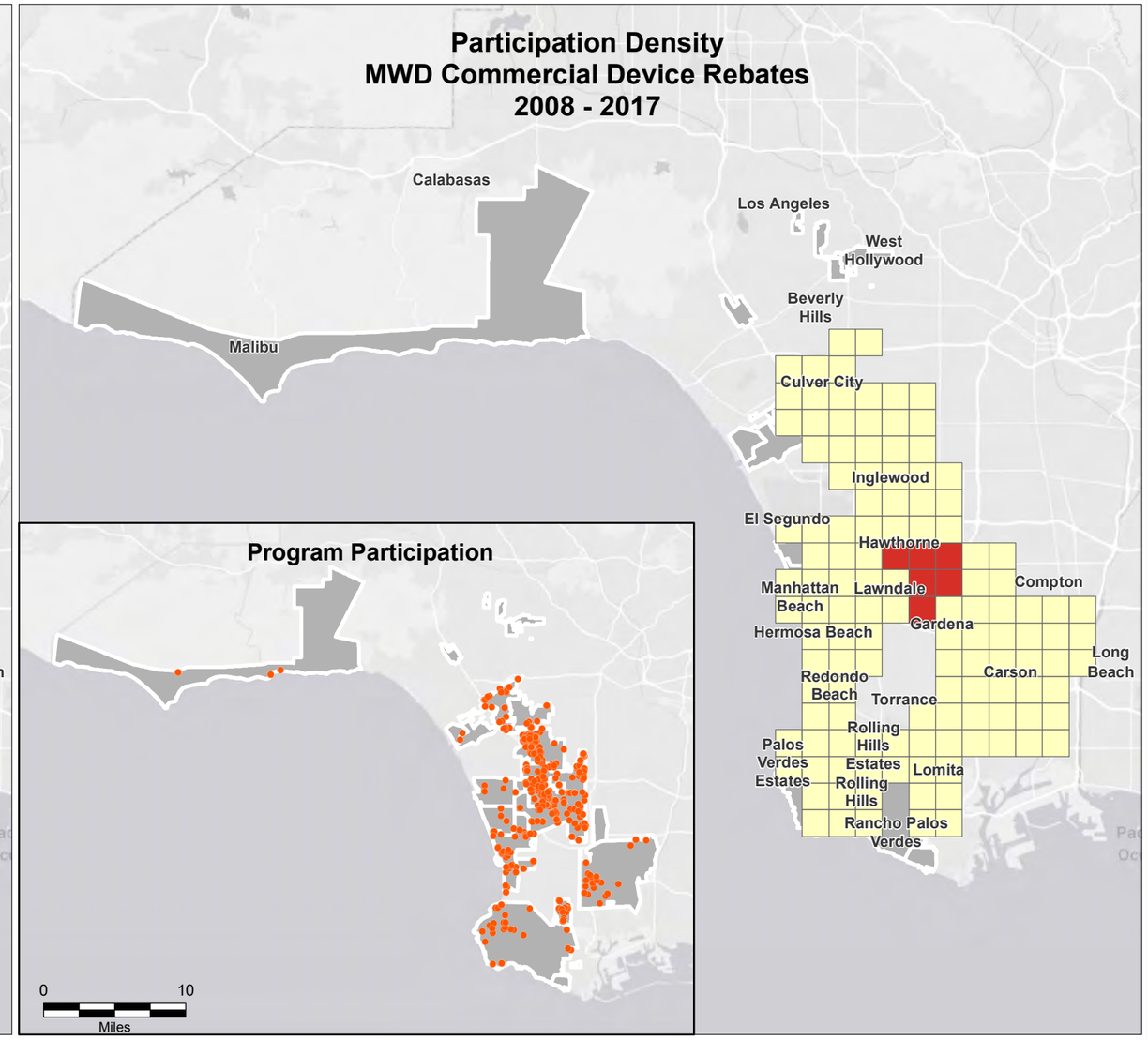
Turf Removal Rebate Program

Participation density for the turf removal rebate program is presented on **Figure 5-9** and shows a somewhat different participation density trend than for the other residential rebate programs analyzed. High participation density for turf removal rebates is observed in the northern coastal areas and in the Culver City and Baldwin Hills areas. In general, these areas tend to have smaller lot sizes and higher income residents. A low density of participation was observed in the eastern and southern portions of

participation in the program) clusters spatially, by looking at the cell in the context of the neighboring cells. For the purposes of this study, hot and cold spots are identified as cells with a 90% or greater level of statistical confidence.

[11] HE clothes washer rebates make up a substantial portion of the MWD residential device rebate programs and therefore would be expected to produce similar results.





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Customer Water Agency

Participation Hot and Cold Spots

Cold Spot (≥90% Confidence)

Neither Hot nor Cold Spot

Hot Spot (≥90% Confidence)

Program Participation

Commercial Device Rebate

Residential Device Rebate

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

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Participation Density for MWD Device Rebate Program

West Basin Municipal Water District
January 2019
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Figure 5-7

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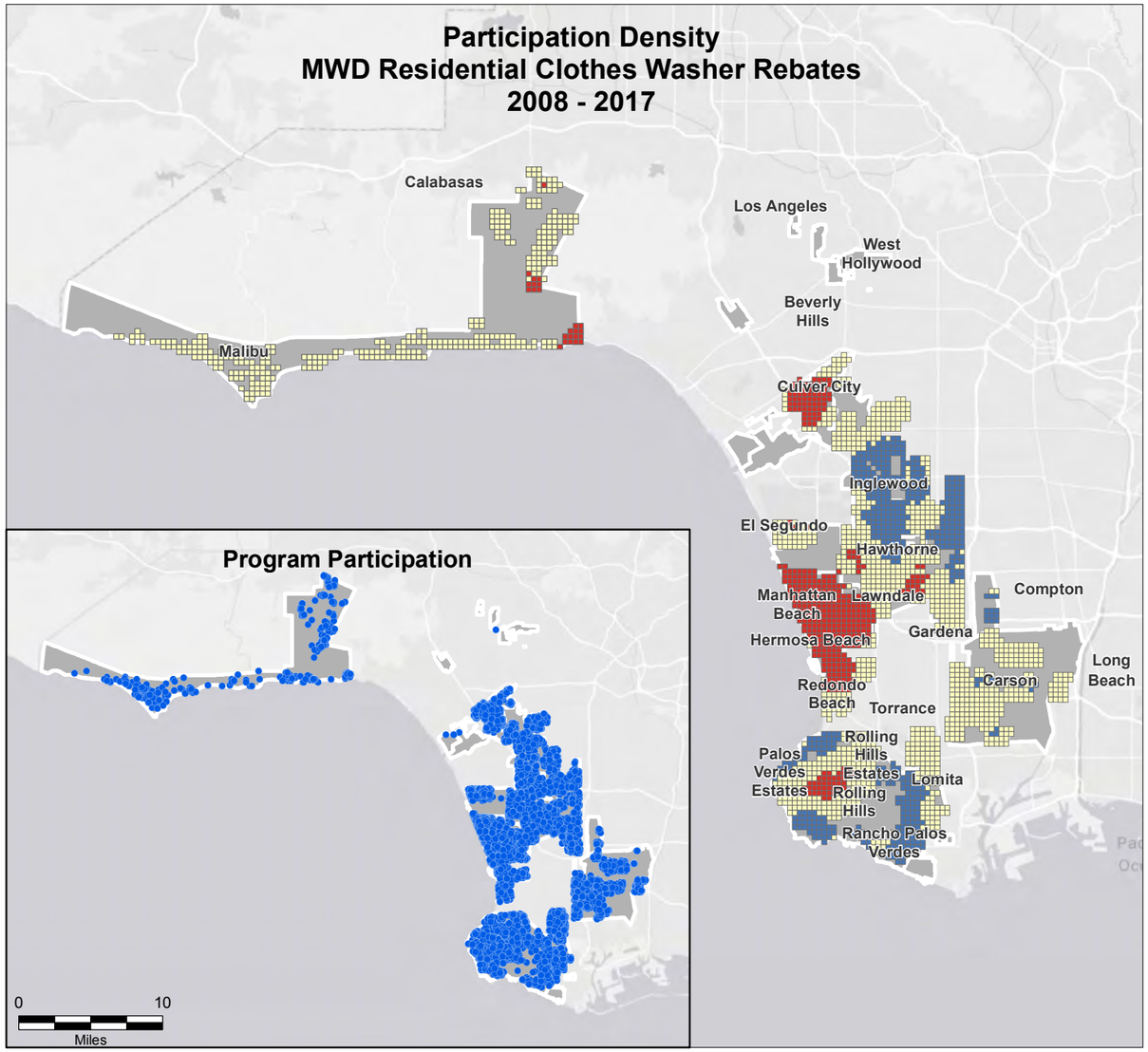

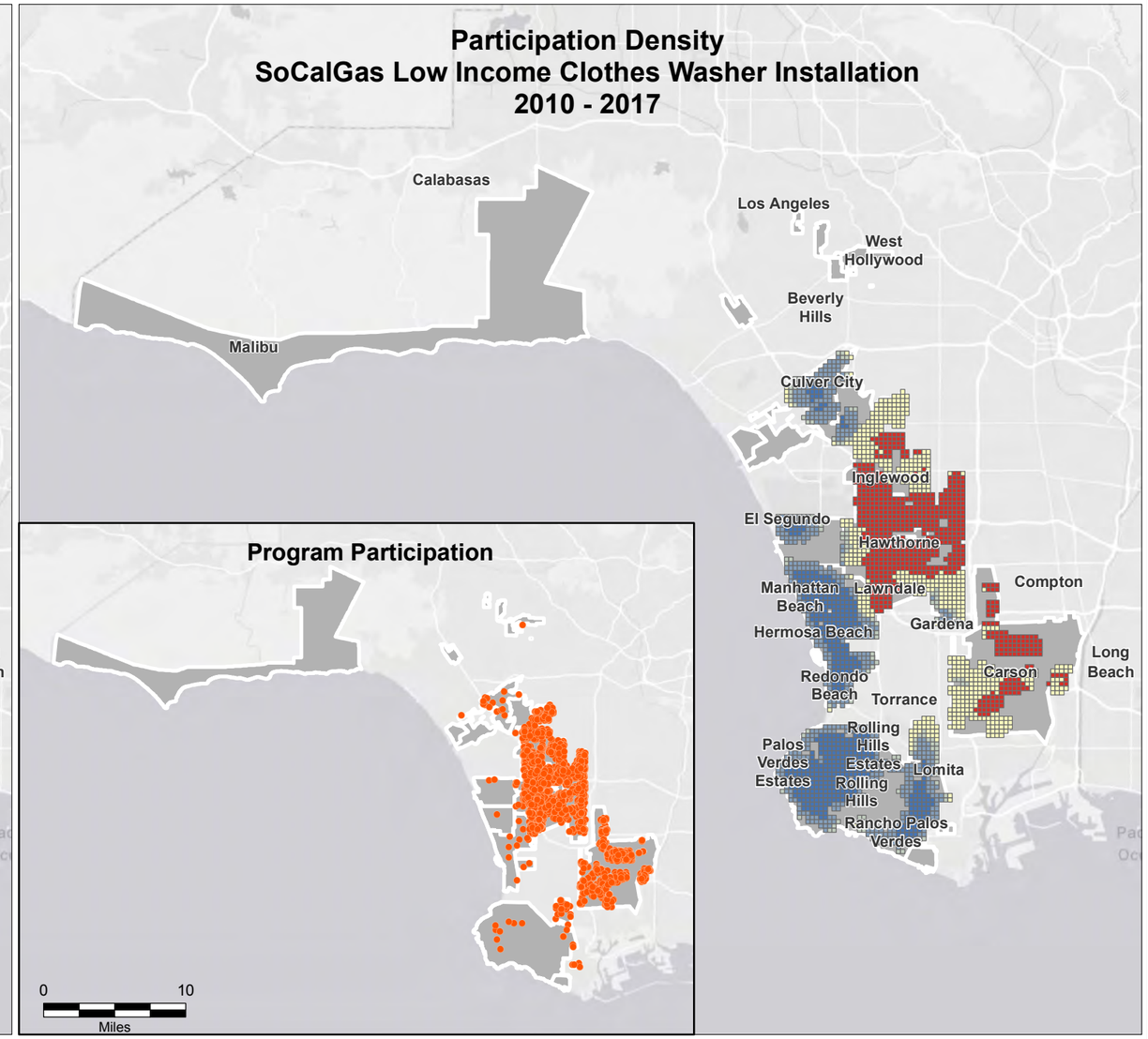

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Customer Water Agency

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Program Participation

- MWD Clothes Washer Rebate
- SoCalGas Low Income Washer Installation

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

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Participation Density for Residential Clothes Washer Rebate and Installation Programs

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 5-8

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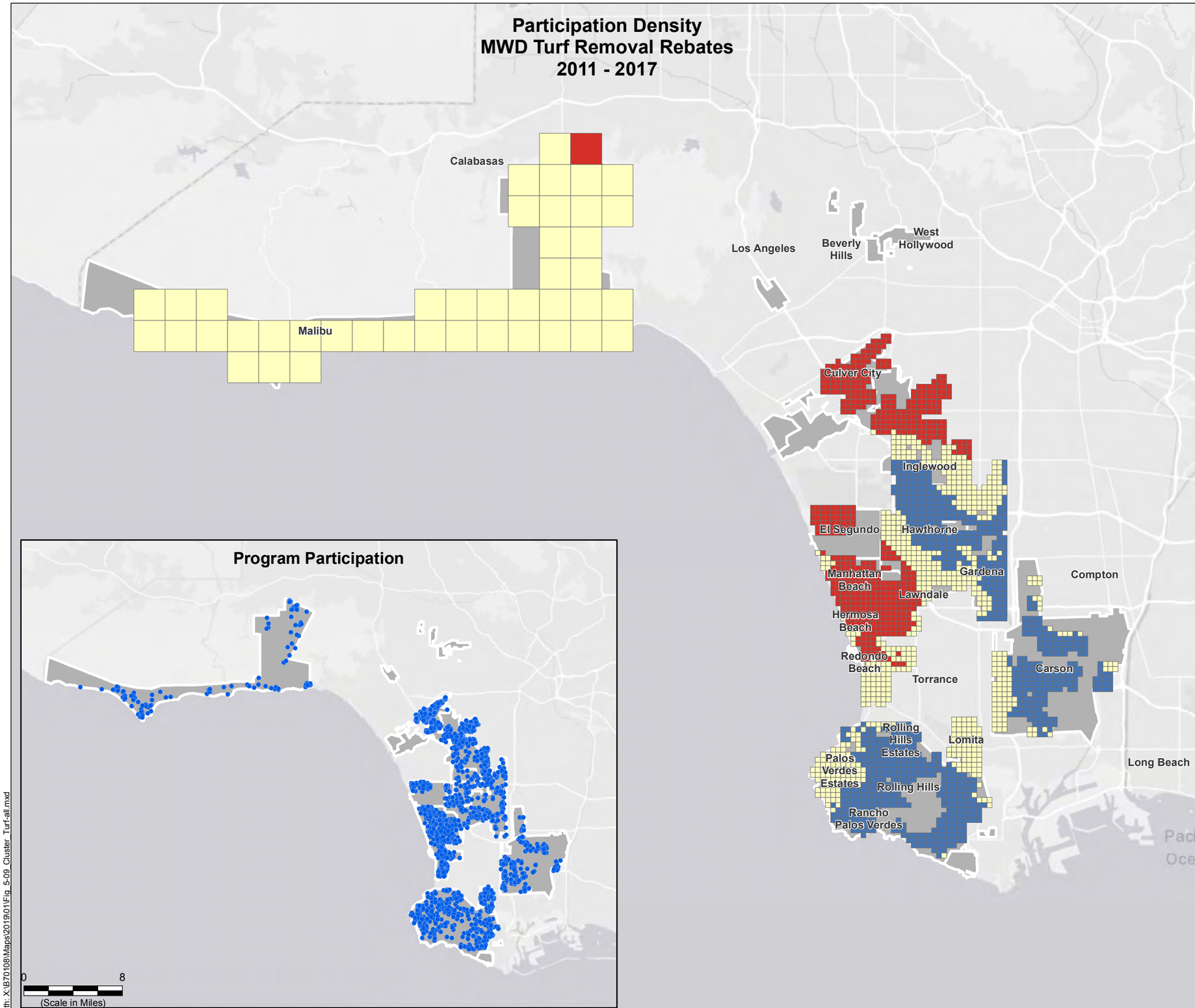

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Customer Water Agency

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Program Participation

- MWD Turf Removal Rebate

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

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(Scale in Miles)

Participation Density for Turf Removal Rebate Program

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West Basin Municipan Water District
January 2019
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Figure 5-9

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the service area. These areas tend to either have smaller lot sizes and lower income residents, or higher income residents with larger lot sizes. Further analysis of program participation with respect to lot sizes and household income is discussed in Sections 5.5.1 and 5.6.2 below.

Smart Irrigation Controller Programs

The participation density results for the WBIC programs are shown on **Figure 5-10.** Given that the WBIC and turf removal rebate programs are both landscape-focused programs, comparing the two sets of results can provide further insights. Similar to participation in the turf removal rebate program, low participation density for the WBIC programs is observed in the eastern areas of the service area, and high density of participation is observed in the coastal areas from El Segundo to Redondo Beach. However, participation in the Culver City and Baldwin Hills area for the WBIC program is neither high nor low, whereas it was uniformly high for the turf removal rebate program. The Palos Verdes area, which showed a generally low density in turf removal rebate participation, shows a high density of participation in the WBIC programs. Taken together, these data suggest that customers trend towards *either* WBICs or turf removal in certain portions of the service area. Based on this high level overview, it may be that customers with smaller yards tend to participate in turf removal-based programs, but that those with large yards are more apt to participate in WBIC programs.

Landscape Irrigation Efficiency Program

Figure 5-11 shows the results of the participation density analysis for the LIEP program. This analysis revealed two large clusters of high participation density in the Inglewood and the Manhattan Beach / El Segundo areas, and one smaller area in Malibu.

Cash for Kitchens Program

Figure 5-12 shows the results of the participation density analysis for the Cash for Kitchens program. This analysis revealed a broader area of high participation density in the Manhattan Beach, El Segundo, and Hawthorne areas.

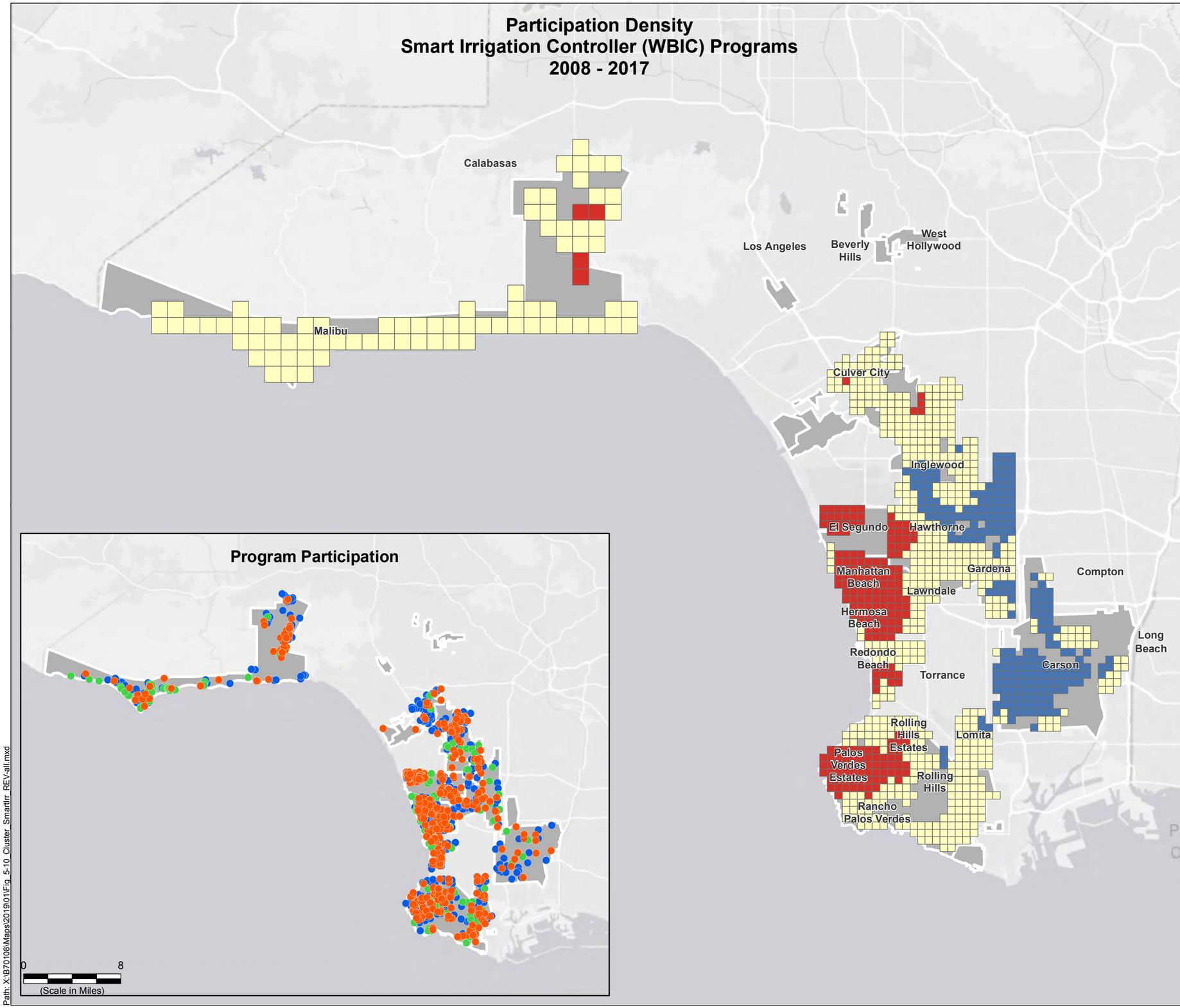
5.5. Building Stock Characteristics

Certain characteristics related to building age can influence, or at least be correlated with, water use. In general, older homes and businesses tend to have higher water using fixtures that were installed prior to the passage of key changes to the Federal and California Plumbing, Energy, and Building Codes; these accounts represent an opportunity to increase WUE. Homes and business on larger lots tend to use more water because they have larger irrigated landscaped areas. Similarly, larger homes tend to have more occupants and, therefore, more water use.

5.5.1. West Basin Service Area

In order to assess the distribution of housing stock and other key water use characteristics, service area-wide data were evaluated based on Los Angeles County Assessor parcel data. These data included lot and building sizes, as well as the building construction date. These data are summarized in **Table 5-10** and on **Figure 5-13** by customer agency and on a service area-wide basis for residential and CII parcels.

Based on review of these data, it appears that the CWS Palos Verdes District and LACWW District #29 service areas tend to have the largest median residential lot sizes, CWS Palos Verdes District and CAW



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Customer Water Agency

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Program Participation

- MWD WBIC Rebate
- WB WBIC Exchange
- WB Large Landscape WBIC

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

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(Scale in Miles)

Participation Density for Smart Irrigation Controller Programs

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Figure 5-10

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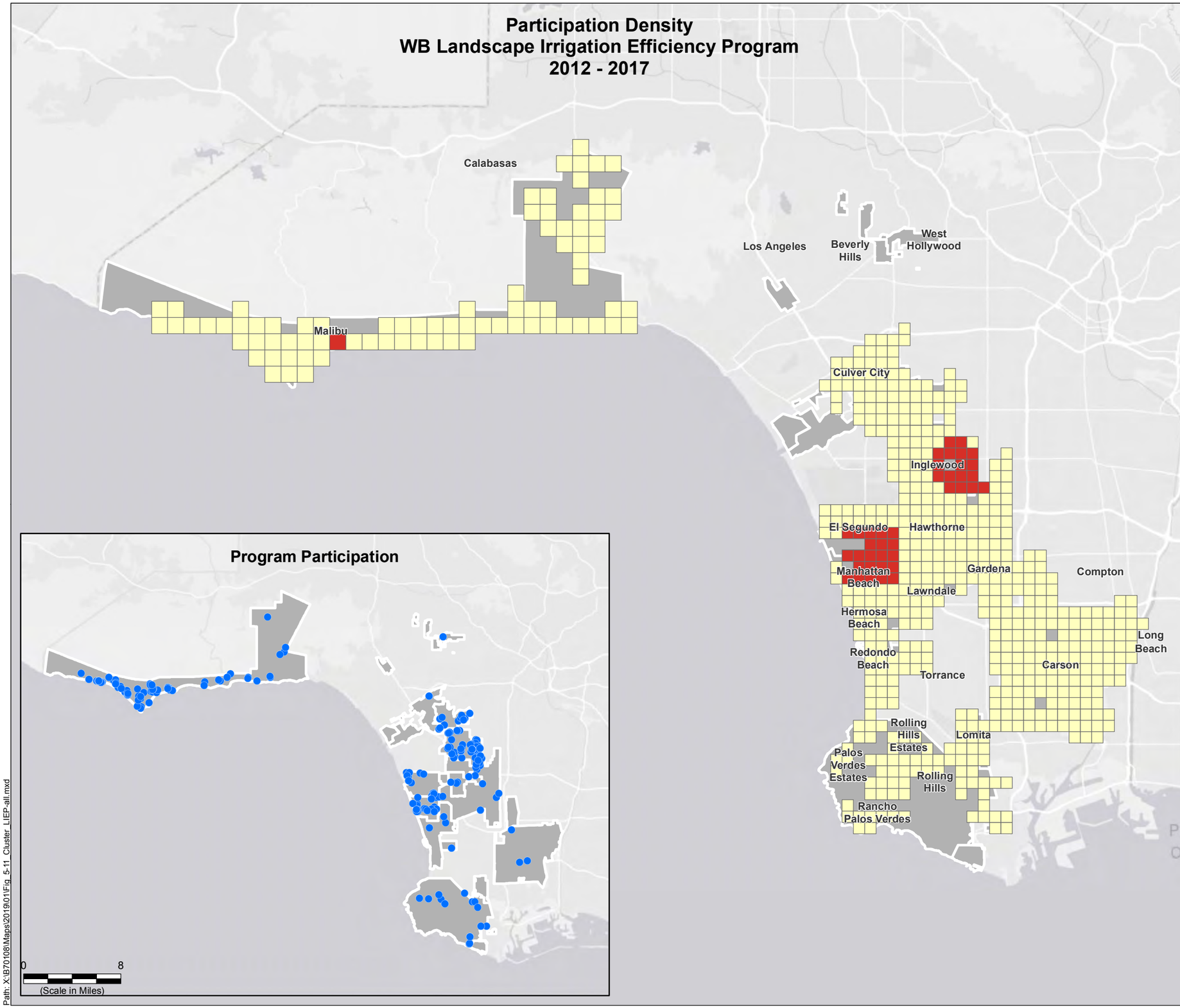

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Customer Water Agency

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Program Participation

- Landscape Irrigation Efficiency Program (LIEP)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

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2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

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(Scale in Miles)

Participation Density for Landscape Irrigation Efficiency Program (LIEP)

West Basin Municipan Water District
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Figure 5-11

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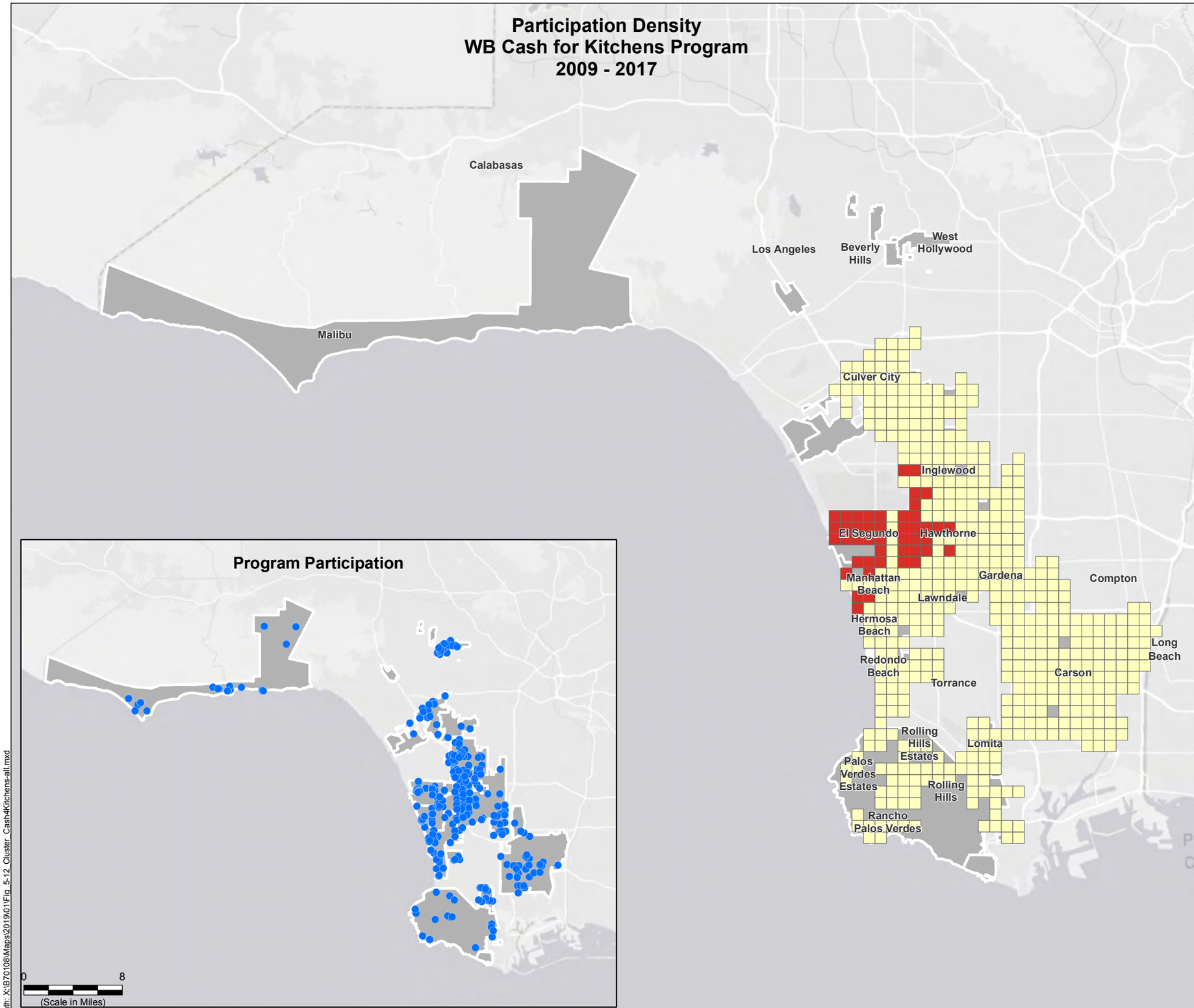

Legend

Customer Water Agency

Participation Hot and Cold Spots

Cold Spot (≥90% Confidence)

Neither Hot nor Cold Spot

Hot Spot (≥90% Confidence)

Program Participation

Cash for Kitchens Program

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

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(Scale in Miles)

Participation Density for Cash For Kitchens Program

West Basin Municipan Water District
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Figure 5-12

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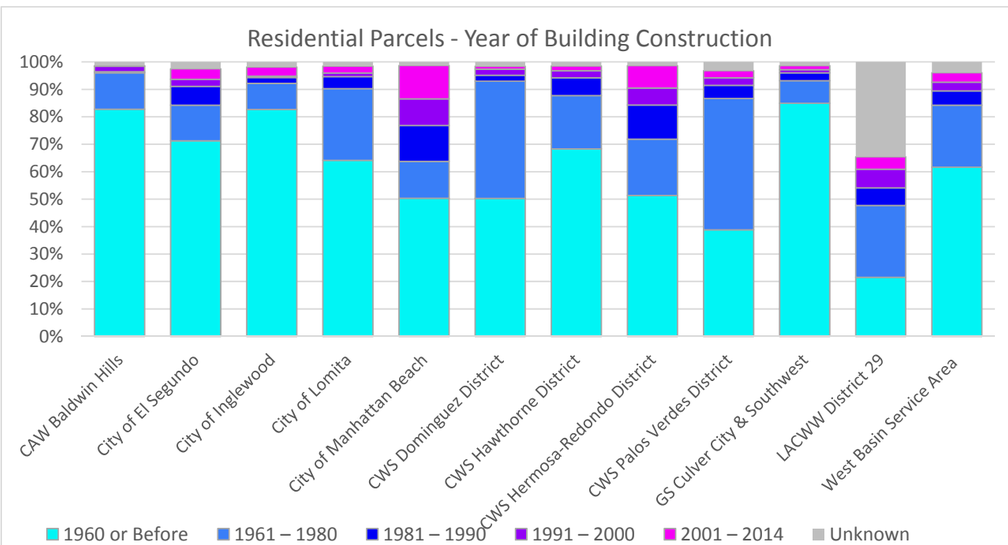
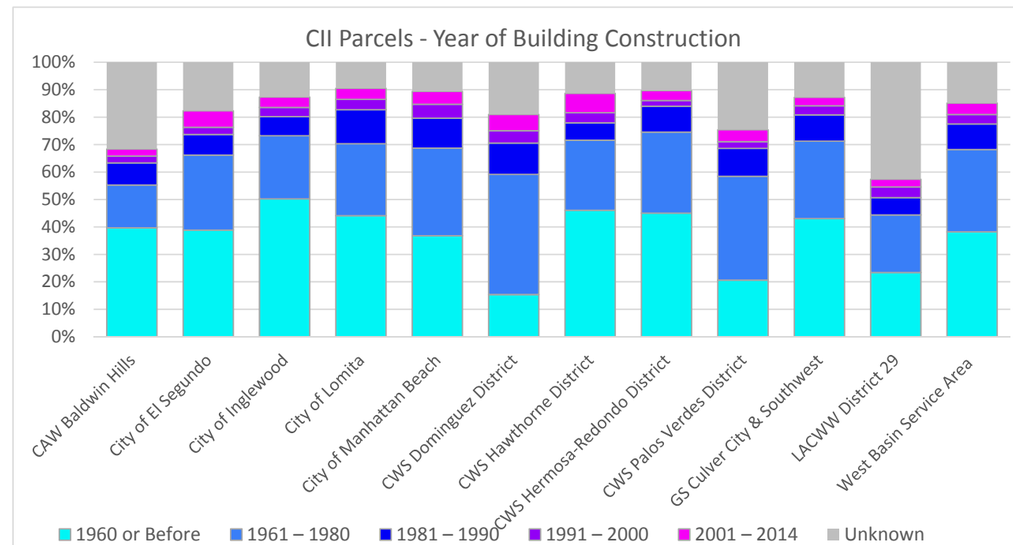
Table 5-10
Distribution of Building Stock by Customer Agency

Customer Agency	Residential Parcels										CII Parcels									
	Number of Parcels	Median Year Built	Median Interior Size (sq ft)	Median Lot Size (sq ft)	Year of Construction						Number of Parcels	Median Year Built	Median Interior Size (sq ft)	Median Lot Size (sq ft)	Year of Construction					
					Unknown	1960 or Before	1961 – 1980	1981 – 1990	1991 – 2000	2001 – 2014					Unknown	1960 or Before	1961 – 1980	1981 – 1990	1991 – 2000	2001 – 2014
CAW Baldwin Hills	5,966	1949	2,280	7,716	1%	83%	13%	0.4%	2.0%	0.3%	199	1958	4,251	11,816	32%	40%	16%	8.0%	2.5%	2.5%
City of El Segundo	3,572	1952	1,889	6,437	3%	71%	13%	7%	2.6%	3.8%	790	1962	8,388	12,886	18%	39%	27%	7.5%	2.7%	6%
City of Inglewood	12,978	1940	1,616	6,384	2%	83%	10%	2%	0.5%	3.3%	1,427	1957	4,959	9,615	13%	50%	23%	6.9%	3.4%	3.8%
City of Lomita	3,778	1954	1,678	6,323	2%	64%	26%	4.3%	1.4%	2.5%	347	1961	3,979	12,467	10%	44%	26%	12%	3.7%	4.0%
City of Manhattan Beach	11,739	1959	2,085	4,721	1%	50%	13%	13%	10%	12%	451	1966	4,482	7,459	11%	37%	32%	11%	5.1%	5%
CWS Dominguez District	22,231	1960	1,512	5,399	2%	50%	43%	2.2%	2.2%	1.1%	2,035	1972	19,260	43,059	19%	15%	44%	11%	4.5%	5.8%
CWS Hawthorne District	5,355	1950	1,722	6,130	1%	68%	19%	6.5%	2.6%	1.7%	729	1960	5,047	9,266	11%	46%	26%	6%	3.7%	7.0%
CWS Hermosa-Redondo District	18,612	1958	1,846	5,427	1%	51%	21%	12%	6.2%	8%	1,061	1960	3,501	6,909	10%	45%	30%	9%	2.1%	4%
CWS Palos Verdes District	22,384	1962	2,390	11,035	3%	39%	48%	4.8%	2.7%	2.6%	325	1969	7,795	24,333	25%	21%	38%	10.2%	2.5%	4%
GS Culver City & Southwest	44,834	1950	1,460	5,747	1%	85%	8%	2.9%	1.2%	1.4%	5,045	1961	6,000	13,140	13%	43%	28%	10%	3.3%	3.1%
LACWW District 29	10,711	1955	2,387	16,499	35%	22%	26%	6.4%	7%	4.5%	286	1965	4,628	36,380	43%	23%	21%	6%	3.8%	2.8%
West Basin Service Area	**162,160**	**1959**	**1,640**	**6,684**	**4%**	**62%**	**23%**	**5.2%**	**3.1%**	**3.5%**	**12,695**	**1963**	**7,772**	**17,350**	**15%**	**38%**	**30%**	**9%**	**3.5%**	**4.1%**



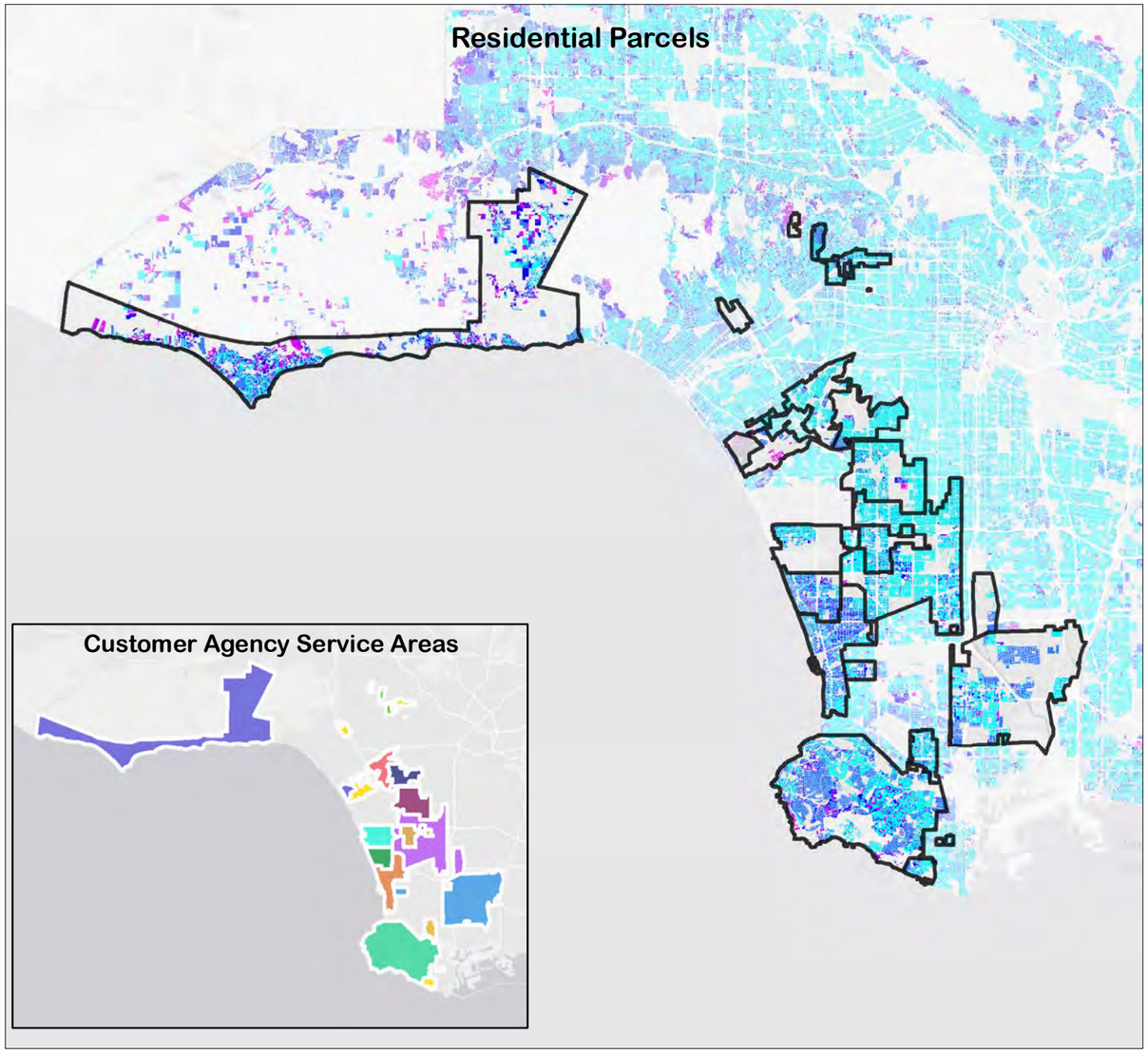


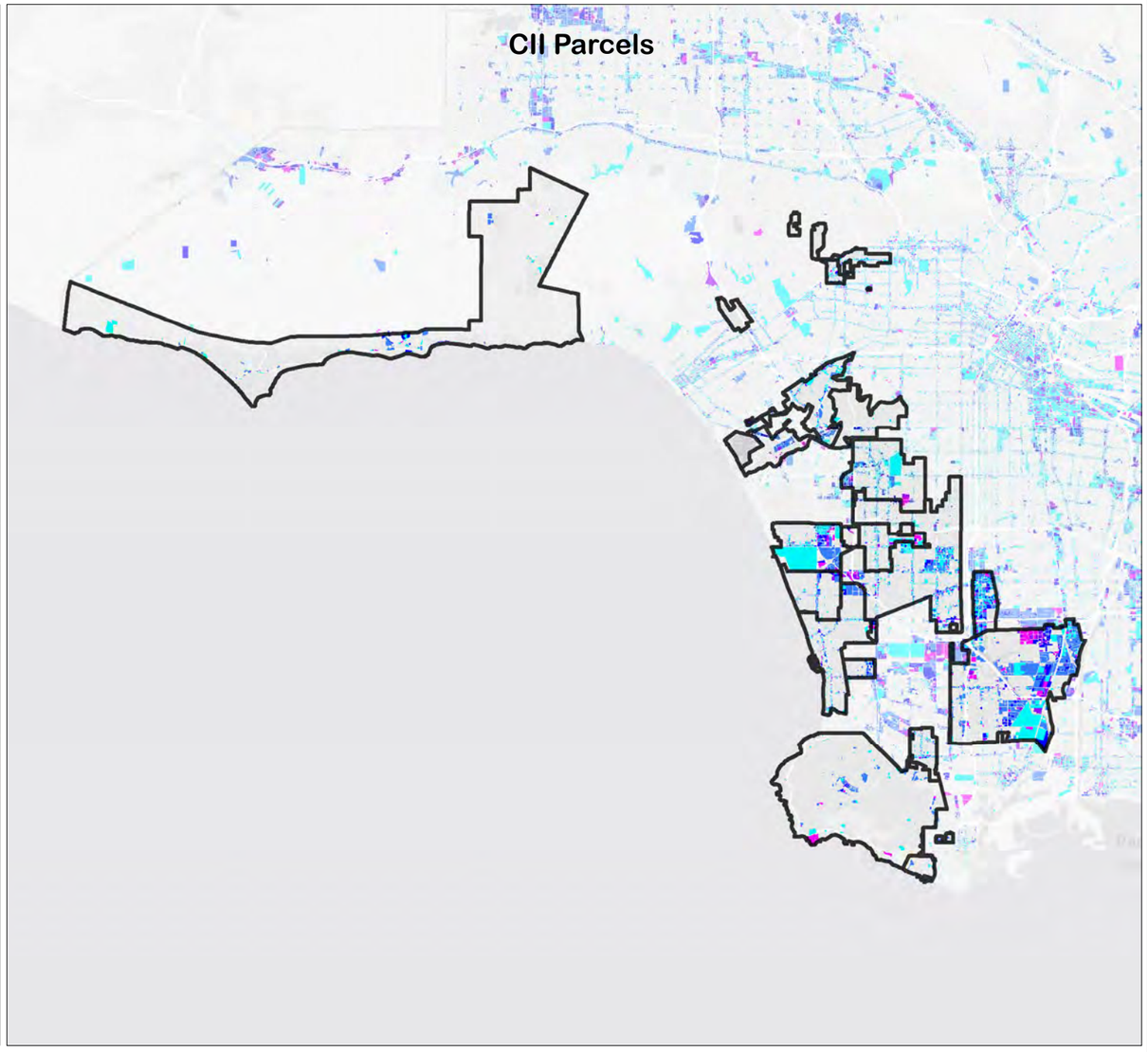
Abbreviations:

CAW = California-American Water Company
CII = commercial, industrial, institutional
CWS = California Water Service Company
GS = Golden State Water Company
LACWW = Los Angeles County Water District
sq ft = square feet

References:

Los Angeles County Assessor's Office Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.





Legend

Date of Construction

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

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Age of Building Stock

West Basin Municipal Water District
January 2019
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Figure 5-13

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Baldwin Hills have the largest house sizes, while the median residential lots and house sizes are within the GS Culver City and Southwest Systems and CWS Dominguez District service areas tend to be among the smallest. Although median house size in the City of Manhattan Beach is among the largest of all customer agencies, its median lot size is the smallest.

For CII parcels, the CWS Dominguez District has the largest median lot and building sizes. The LACWW District #29 service area tend to have a small median CII building size with a large median lot size. The median CII parcel and buildings in the CWS Hermosa-Redondo District service area are the smallest.

Approximately 90% of housing and CII property in the West Basin service area was built prior to 1990. The age of building stock is similar between residential houses and CII property, with more new CII development having occurred in the past 15 years (i.e. approximately 8% of the CII properties were built in the past 15 years compared to 5% of residential houses).

The age of housing stock varies from agency to agency. More new development in both residential and CII properties have occurred in the Manhattan Beach, and in the CWS Hermosa-Redondo District service areas than in other customer agency areas. In addition, a higher proportion of new residential development has been constructed in the Manhattan Beach service area and a higher proportion of new CII development has been constructed in the CWS Hawthorne District service area. Overall, CAW Baldwin and GS Culver City & Southwest has the oldest building stock with up to 96% of residential houses, and CWS Hermosa-Redondo District up to 84% of CII buildings constructed prior to 1990.

5.5.2. WUE Program Participants

The results of building stock analysis by WUE program is presented in **Table 5-11** and summarized below.

MWD Device Rebates

The relative age of building stock of MWD Device Rebates participants is consistent with that of the West Basin service area and indicates that these programs are attracting customers with newer buildings at the same rate as they are with those with older buildings.

HE Clothes Washer Programs

As with the broader grouping of MWD device rebate programs, participants in the HE Clothes Washer Rebate program have homes of the same relative age breakdown as those in the greater West Basin service area. Based on this, it does not appear that the program attracts participants with older homes at a higher rate than those with newer homes.

In comparison, based on median home age, participants in the SoCalGas low income HE clothes washer direct installation program tend to have older homes than those that participate in the HE clothes washer rebate program and those in the greater West Basin service area (i.e., the median age of a SoCalGas participant's home was 1947 versus 1959 for the West Basin service area as a whole). Approximately 80% of the SoCalGas program participants have homes built before 1960 and about 98% have homes built before 1990.

Turf Removal Rebate Program

Turf Removal Rebate Program participants, on average, have similar parcel and lot sizes as well as built year as the median for the West Basin service area. The median lot size for program participants is

Table 5-11
Building Stock Characteristics by WUE Program

Water Use Efficiency Program	Median Year Built	Median Interior Size (sq ft)	Median Lot Size (sq ft)	Year of Construction				
				1960 or Before	1961 – 1980	1981 – 1990	1991 – 2000	2001 – 2014
MWD Device Rebates Programs	1958	1,856	6,655	55%	25%	9.2%	5.5%	4.9%
Residential HE Clothes Washer Programs								
Clothes Washer Rebate	1959	1,822	6,453	54%	25%	9.4%	6.0%	6.1%
SoCalGas Low-Income Washer Installation	1947	1,440	5,893	80%	15%	3.3%	1.3%	0.7%
Turf Removal Rebates	1954	1,777	6,465	69%	18%	4.2%	3.9%	4.1%
Smart Irrigation Controller Programs	1960	2,099	7,802	50%	28%	8.7%	7.1%	5.9%
WB LIEP	1964	2,036	8,511	42%	34%	8.4%	9.1%	6.4%
WB Cash for Kitchens	1964	5,558	21,563	45%	30%	16%	4.4%	3.9%

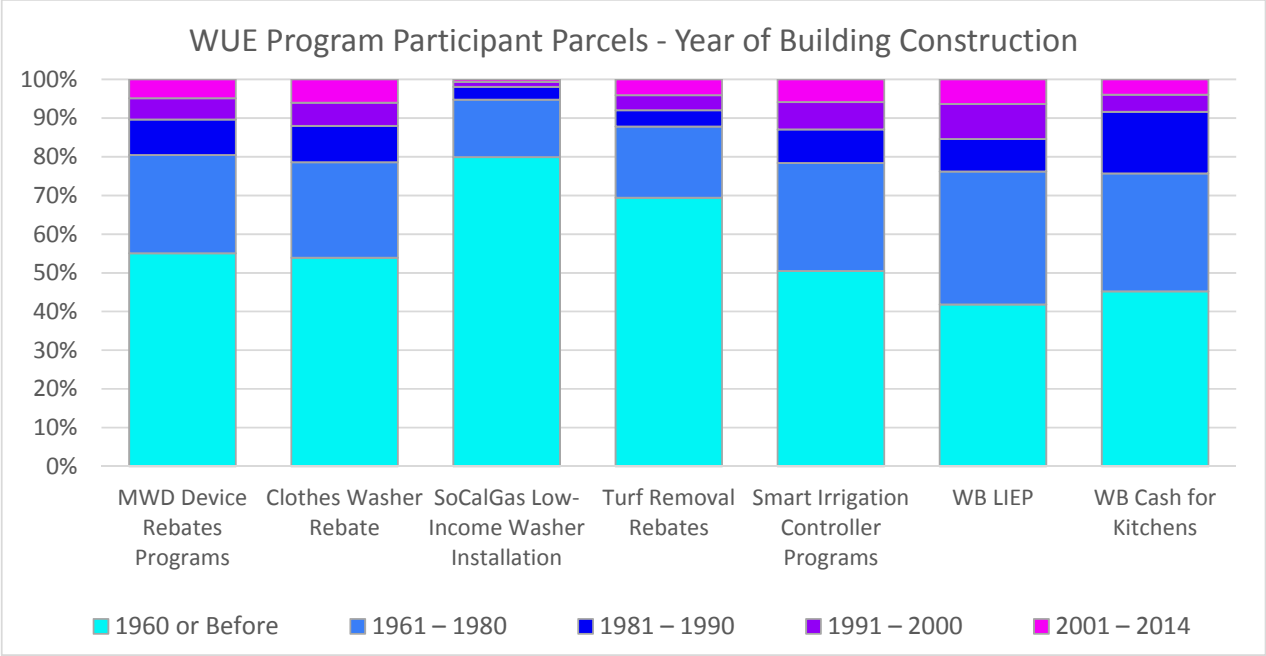


Table 5-11
Building Stock Characteristics by WUE Program

Abbreviations:

CII = commercial, industrial, institutional
LIEP = Landscape Irrigation Efficiency Program
WUE = Water Use Efficiency
MWD = Metropolitan Water District of Southern California
sq ft = square feet
WB = West Basin Municipal Water District

References:

WUE program participation data provided by West Basin in March and April 2018.
Los Angeles County Assessor's Office Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

approximately 6,500 square feet ("sf"), as compared to the median residential lot size of 6,700 sf for the West Basin service area. Turf Removal Rebate Program participants have slightly higher proportion of homes built before 1960 (69% of the participants compared to 60% of the entire West Basin service area), indicating that customers with older homes may be more likely to participate in the turf removal rebate program.

Smart Irrigation Controller Programs

Participants of the Smart Irrigation Controller programs have, on average, larger lot sizes compared to the greater West Basin service area and relative to participants in the Turf Removal Rebate program. Smart Irrigation Controller program participants had a median lot size of 7,800 sf, compared to the median for turf removal rebates of 6,500 sf. This is consistent with the correlation observed in the participation density results discussed in Section 5.4.2. The age of the program participants building stock are similar to that of the West Basin service area.

Landscape Irrigation Efficiency Program

The LIEP is a program targeted specifically for large landscape water users. By their nature these are difficult to evaluate relative to property address and parcel number alone because the actual landscaped area frequently spans multiple parcels, or the address given is for a facility office that is located on a separate parcel. That being said, based on the available information, the median lot size for LIEP program participants is approximately 8,500 sf, which is somewhat larger than the West Basin service area median. However, if LIEP program participants were evaluated on a case-by-case basis, the actual affected landscape area would likely be larger than reflected by the 8,500 sf median value.

Cash for Kitchens Program

The median building age for the Cash for Kitchens program participants is 1964, which is consistent with that of other CII parcels in the West Basin service area. Only 4% of program participants were located in buildings constructed since 2001. Building stock from this same time period makes up 8% of CII parcels in the West Basin service area. Based on this, it does appear that the age of construction for program participants does skew older than that of the overall West Basin building stock.

5.6. Demographic Characteristics of Residential WUE Program Participation

With the exception of the low income HE clothes washer direct installation program offered through SoCalGas,[12] the residential WUE programs are broadly offered to all residents in the West Basin service area. Although the programs are available to all residents, those with certain demographic characteristics tend to participate at higher rates than others in some WUE programs. The analyses described in the following sections were performed in order to better understand trends in customer demographics among residential WUE program participants in the West Basin service area -- specifically, income, age, and whether the home occupants rent or own the property.

5.6.1. Methodology

Household income data were based on the estimated 2014 median household income by Census Block Group (Census, 2016).[13] The average median persons per household for the West Basin Service Area is 2.8 (Census, 2016). The estimated 2014 median household income by Census Block Group was

[12] For a limited time period the turf removal rebate program was available to residents in the LACWW District 29 area.
[13] Census Block Group is the smallest geographical unit for which the United States Census Bureau publishes income data.

compared to 2014 California Department of Housing and Community Development ("HCD") income levels for a 3-person household in Los Angeles County (HCD, 2014). These income levels are defined as follows: very low income (<38,450/year), low income ($38,451-$61,500/year), moderate income ($61,501-$70,000), high income ($70,001-$140,000), and very high income (>$140,001). For these purposes, very high income is considered to be greater than two times the County-wide median income. The following sections discuss the breakdown of program participation in residential programs by income classification. Given that these classifications reflect the median of all households in a given Census Block Group, this reflects the predominant income for that area but does not mean that every participant or household in that area falls within the same income group.

Household median age was similarly based on the estimated 2014 median household age by Census Block Group (Census, 2016). This reflects the median all household members including children. Thus, a Census Block Group with a median household age of <25 reflects an area with a number of households with small children, while a median household age of >55 reflects an area with few children and more retirement-age households.

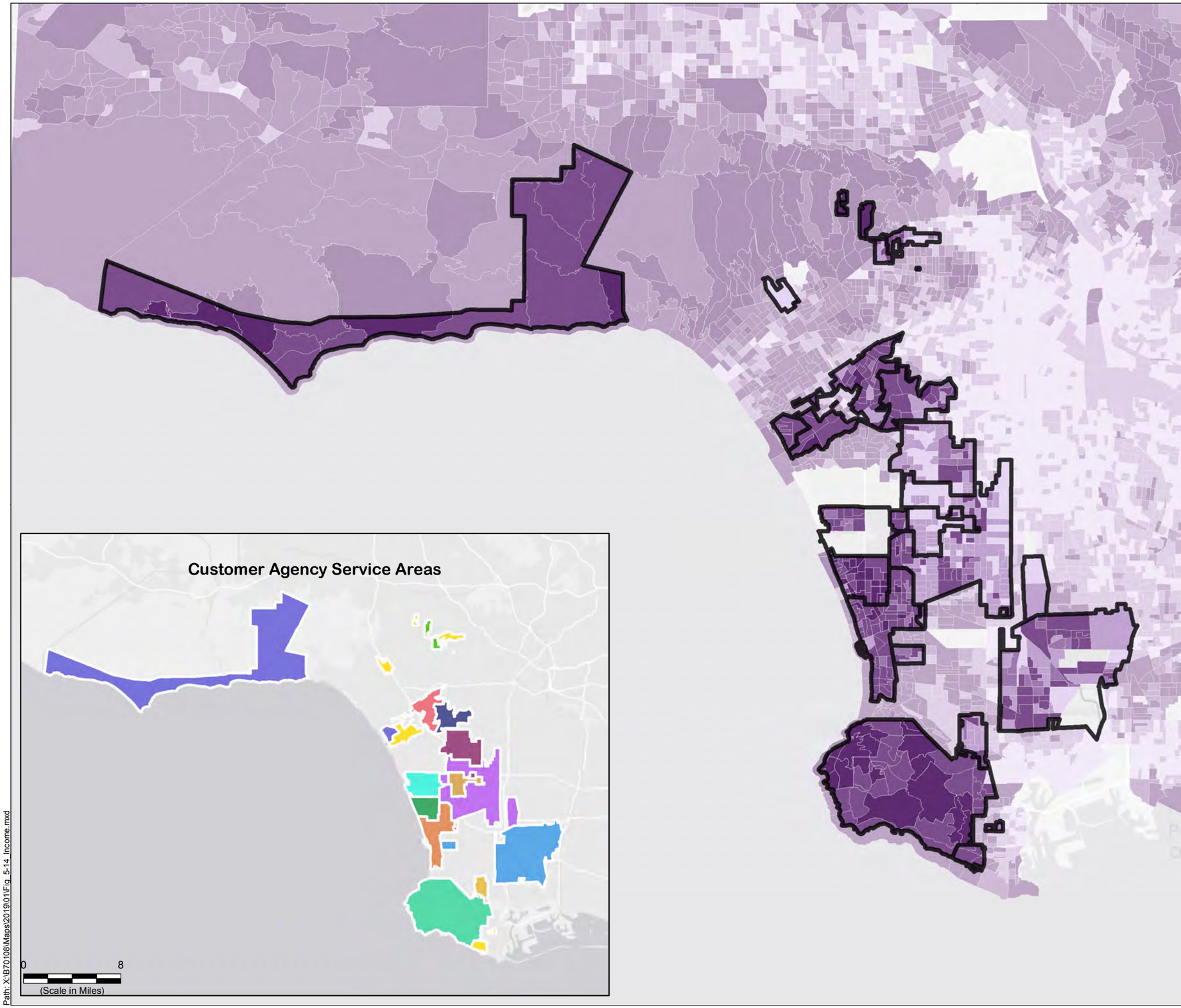
Rentership status was based on 2014 Census estimates of the number of people living within a Census Block Group which rent the home they occupy (Census, 2016). Thus, a Census Block Group with a rentership population of less than 25% indicates that the area consists primarily of owner-occupied homes, while a rentership population of greater than 75% indicates that the area is predominantly made up of those who rent their homes.

Housing type is based on land use types provided in the Los Angeles County Assessor's parcel dataset. This dataset identifies residential parcels as: (1) single-family residences, (2) double, duplex, or two units, (3) three units, (4) four units, (5) five or more units or apartments, and (6) manufactured home. For purposes of analyses, these have been grouped as: (1) single-family residences, (2) two to four unit homes, (3) five or more unit homes, and 4) manufactured homes.

5.6.2. Household Income Trends

Figure 5-14 shows the distribution of median household income by Census Block Group across the West Basin service area and **Table 5-12** shows the distribution of residential WUE program participants by income level. The first chart in **Table 5-12** shows the percentage of participants in each program that live in areas of each income level grouping. With the exception of the SoCalGas low income HE clothes washer installation program, the majority of participants (45% to 53%) in every WUE program are from high income areas. With the exception of the SoCalGas program, each program had a similar proportion of participants from low and very high income areas (13%-24%). Nearly 80% of participants in the SoCalGas program live in areas of moderate to very low income.

The second chart on **Table 5-12** shows participation rates controlled for the number of parcels within the West Basin service area within each income group. When the relative proportion of number of parcels within each income group is controlled for, the MWD device rebate and MWD clothes washer programs show a clear trend that households in higher income areas are more likely to participate than those in lower income levels, although this difference appears to be relatively minimal, with households in very high income areas only about 6% more likely to participate and those in lower income areas about 4% less likely. As would be expected, participation in the SoCalGas low income HE clothes washer direct installation program is much higher in low and very low income areas. Between the turf removal rebate



Legend

Median Household Income By Census Block Group

- Very Low <$38,450
- Low $38,451-$61,500
- Moderate $61,501-$70,000
- High $70,001 - $140,000
- Very High >$140,001

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Household income is based on estimated 2014 median household income by Census Block Group, per Census (2016). Income level groupings are based on California Department of Housing and Community Development ("HCD") income levels for Los Angeles County for a 3-person household in 2014 (HCD, 2014). Very high income is shown as greater than two times the Couinty-wide median household income.

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

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Median Household Income

West Basin Municipan Water District
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Figure 5-14

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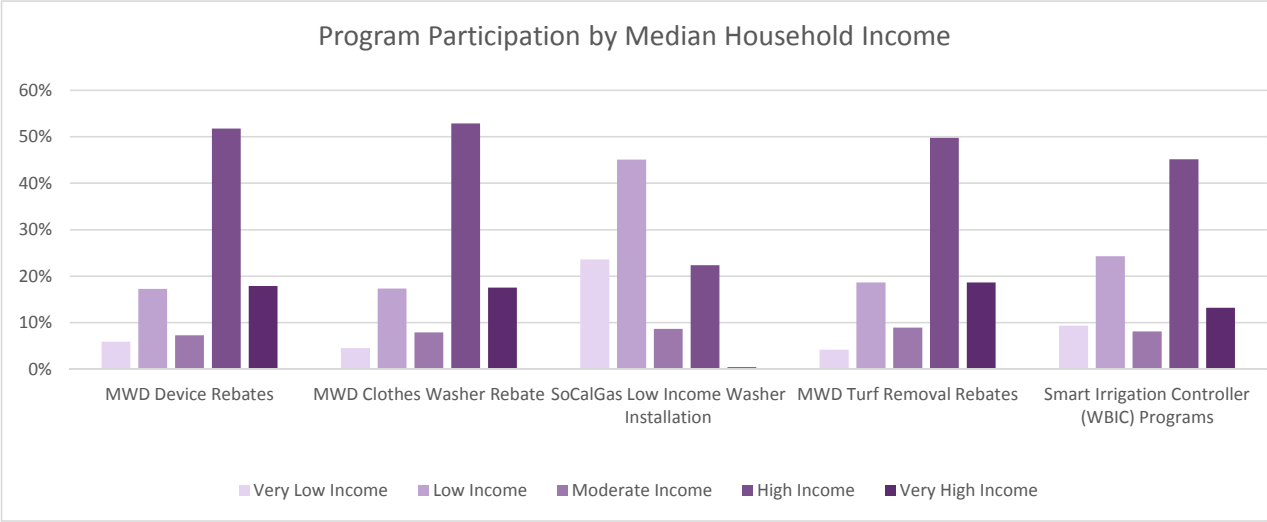
Table 5-12
Residential Program Participation by Median Household Income

Median Household Income (a)		Percentage of Residential Parcels	Percentage of Participating Residential Accounts (b)				
			MWD Device Rebates	MWD Clothes Washer Rebate	SoCalGas Low Income Washer Installation	MWD Turf Removal Rebates	Smart Irrigation Controller (WBIC) Programs
Very Low Income	<$38,450	9%	6%	5%	24%	4%	9%
Low Income	$38,451-$61,500	21%	17%	17%	45%	19%	24%
Moderate Income	$61,501-$70,000	9%	7%	8%	9%	9%	8%
High Income	$70,001-$140,000	50%	52%	53%	22%	50%	45%
Very High Income	>$140,001	11%	18%	17%	0.4%	19%	13%



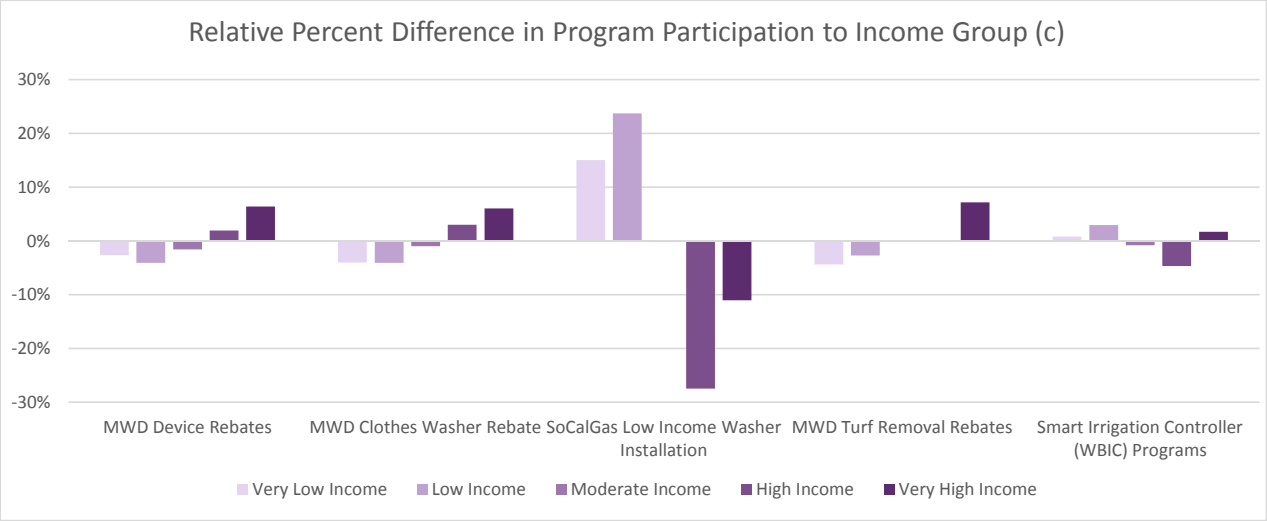


Table 5-12
Residential Program Participation by Median Household Income

Abbreviations:

MWD = Metropolitan Water District
WB = West Basin
WBIC = weather-based irrigation controller

Notes:

(a) Household income is based on estimated 2014 median household income by Census Block Group, per Census (2016). Income level groupings are based on California Department of Housing and Community Development ("HCD") income levels for Los Angeles County for a 3-person household in 2014 (HCD, 2014). Low income includes HUD extremely low income, and very low income classifications. Very high income is shown as greater than two times the County-wide median household income. The average median persons per household for the West Basin Service Area is 2.8 (Census, 2016).
(b) Program participation rates are summarized in the report text.
(c) Relative difference is calculated as the percentage of program participation by income group minus the overall percentage of residential parcels by income group within the service area.

References:

Census, 2016. *2010-2014 American Community Survey (ACS) 5-year estimates,* TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau, accessed 8 September 2016.
HCD, 2014. *Memorandum: State Income Limits for 2014,* California Department of Housing and Community Development, dated 28 February 2014.

program and the WBIC programs, turf removal rebate program participants are more likely to be from very high income areas. The WBIC programs, which include West Basin's no-cost WBIC Exchange Events, had a higher level of participation by those in very low and low income areas than seen in any other program other than the SoCalGas program.

Given that most of the WUE programs evaluated are rebate programs, which also require a monetary investment from the customer, it is logical that households with higher incomes would participate at higher rates. When a WUE program such as the WBIC programs include a no-cost offering, higher participation is seen in customers from low incomes. This indicates that there is a willingness and interest from low income customers to participate in WUE programs but that the cost-sharing investment in rebate-type programs can be prohibitive.

5.6.3. Household Age Trends

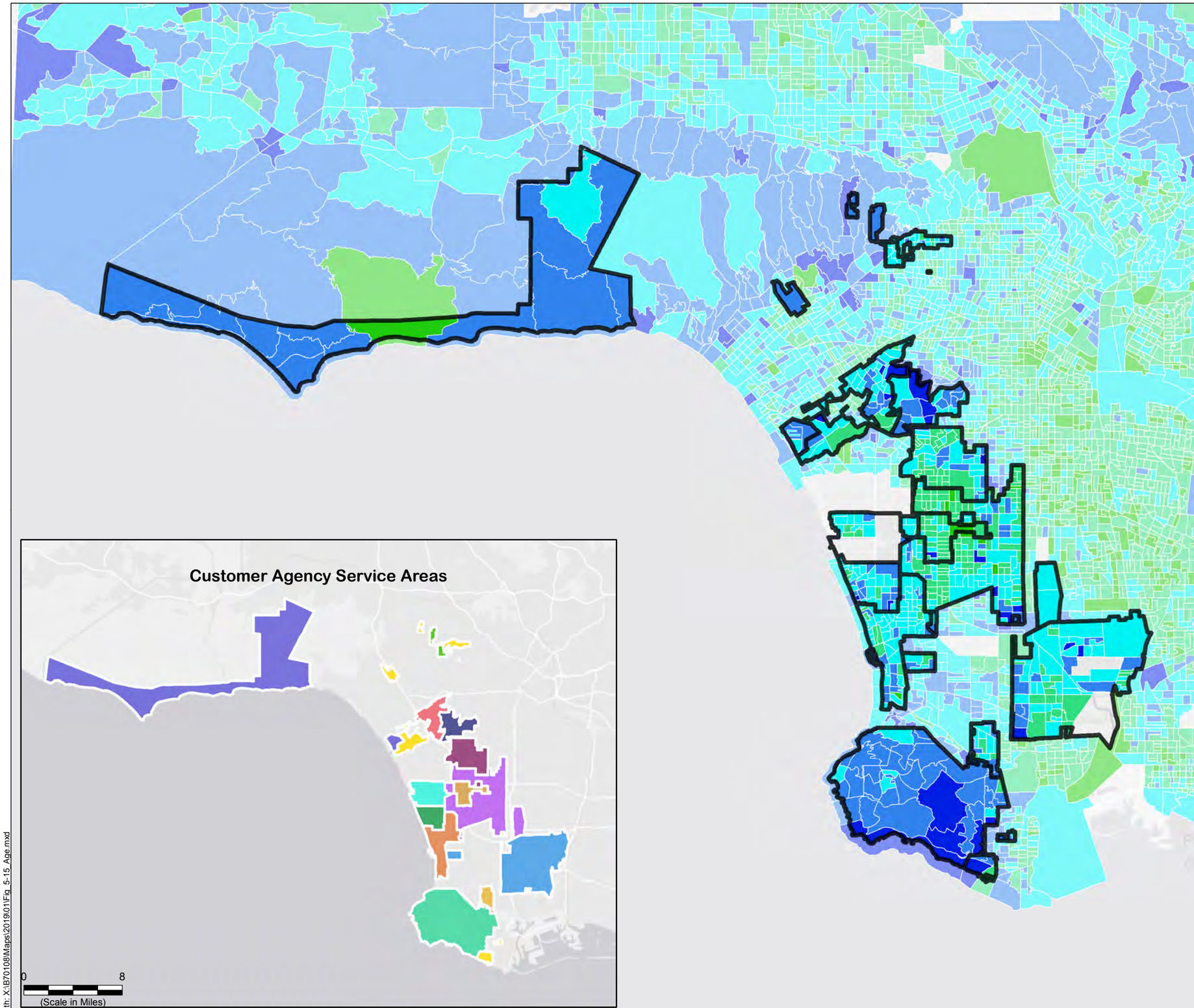
Figure 5-15 shows the distribution of median household age by Census Block Group across the West Basin service area and **Table 5-13** shows the distribution of residential WUE program participants by age group. The first chart in **Table 5-13** shows the percentage of participants in each program that live in areas of each household age grouping. With the exception of the SoCalGas low income HE clothes washer installation program, the majority of participants (72% to 84%) in every WUE program are from areas with median household ages in the 35 to 55 years old range. Participants in the SoCalGas program, however, tended to be from younger households, with over 80% of participants in areas with median household ages in the 25 to 45 years old range.

The second chart on **Table 5-13** shows participation rates controlled for the number of parcels within the West Basin service area within each median household age group. When the relative proportion of number of parcels within each income group is controlled for, the MWD device rebate, HE clothes washer rebate, and turf removal rebate programs show similar trends in participation with respect to household age. The lowest relative level of participation is observed in the 25 to 35 year old range, while participation is higher for the 35 to 45 year old range and higher still for the 45 to 55 year old range. Customers in areas with household ages greater than 55 participate at the lowest rate. Participants in the SoCalGas program in areas with household ages between 25 to 35 years old participate at a 20% higher rate than other age groups, while those in the 45 to 55 years old range participate at about a 20% lower rate. Participants in the WBIC programs participate at approximately the same rates regardless of median household age.

There could be a number of reasons why younger households have the lowest participation rates in most WUE programs, including a correlation between younger household age and lower income and because younger households tend to be renters rather than homeowners. In order to increase participation in younger households, in addition to considerations for reaching lower income households, West Basin could evaluate marketing and communication strategies aimed specifically at younger households, such as increasing the use of social media targeted advertising and partnering with children's extracurricular groups such as kids scouting organizations, sporting leagues, and schools.

5.6.4. Housing Characteristic Trends

Figures 5-16a through **5-16d** show the proportion of population living in various housing types – single-family homes, two to four unit homes, five+ unit homes, and mobile homes, respectively – within the West Basin Service area. The relative proportion of population by housing types are summarized in charts by customer agency and Divisions in **Figures 5-17** and **5-18**, respectively. **Figure 5-19** shows the



Legend

Median Household Age by Census Block Group

- <25
- 25-35
- 35-45
- 45-55
- >55

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
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DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Household age is based on the estimated 2014 median age of household members by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

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(Scale in Miles)

Median Household Age

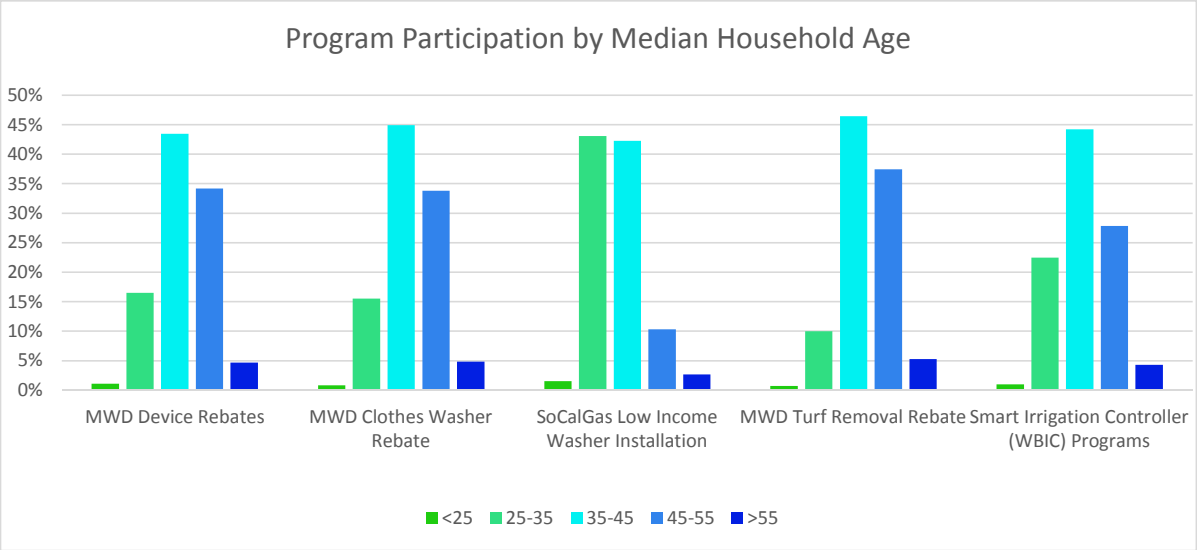
West Basin Municipan Water District
January 2019
EKI B70108.00
Figure 5-15

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_5-15_Age.mxd

Table 5-13
Residential Program Participation by Median Household Age

Median Household Age (a)	Percentage of Residential Parcels	Percentage of Participating Accounts (b)				
		MWD Device Rebates	MWD Clothes Washer Rebate	SoCalGas Low Income Washer Installation	MWD Turf Removal Rebate	Smart Irrigation Controller (WBIC) Programs
<25	1%	1%	1%	2%	1%	1%
25-35	22%	17%	16%	43%	10%	22%
35-45	43%	43%	45%	42%	46%	44%
45-55	29%	34%	34%	10%	37%	28%
>55	5%	5%	5%	3%	5%	4%



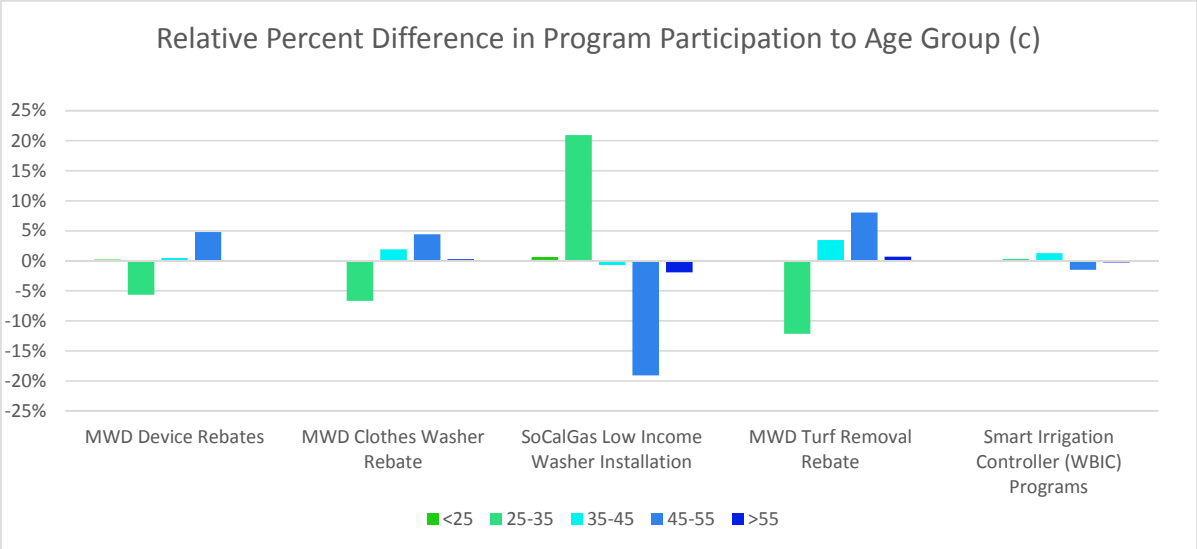
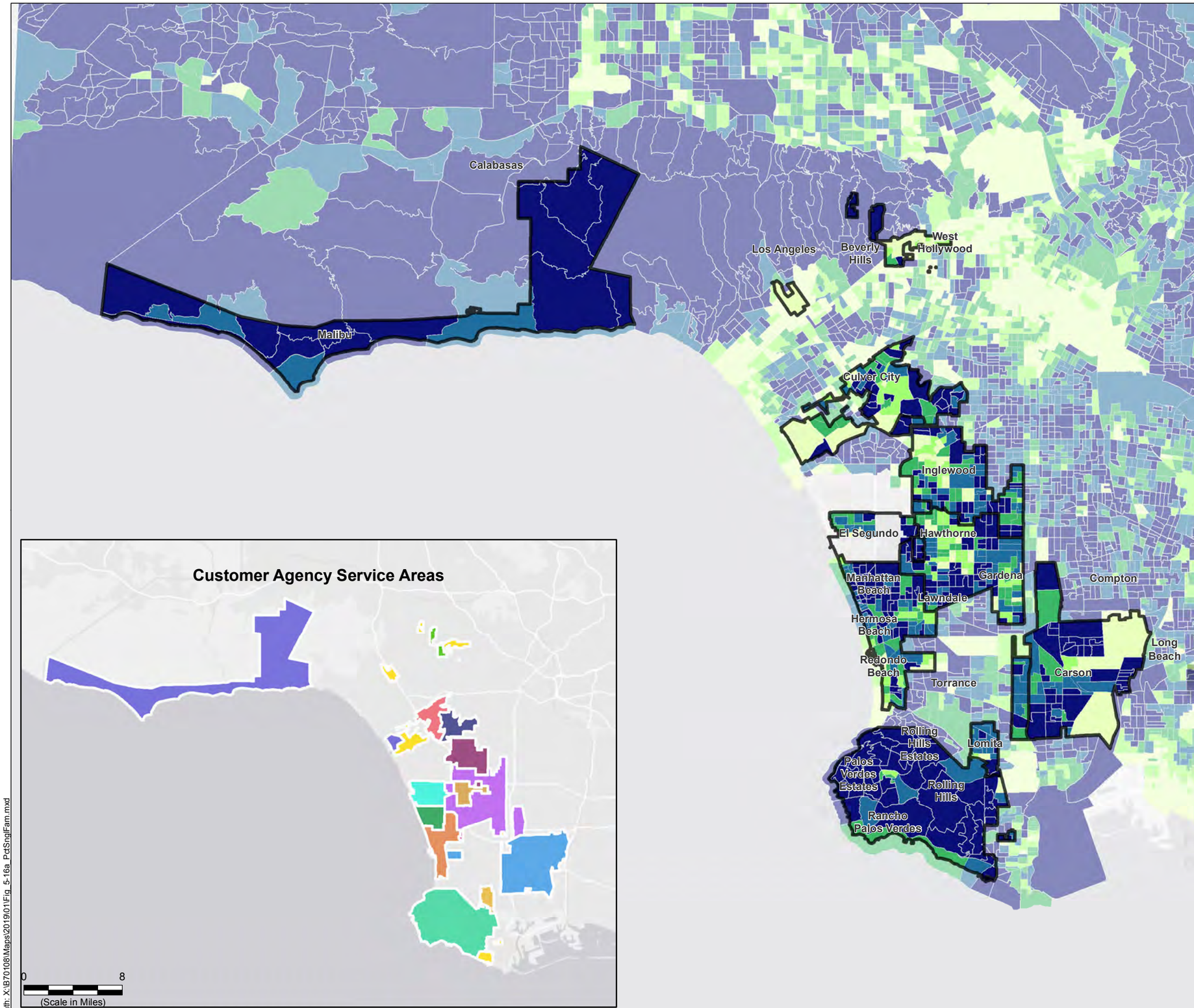


Table 5-13
Residential Program Participation by Median Household Age

Abbreviations:
MWD = Metropolitan Water District
WB = West Basin
WBIC = weather-based irrigation controller

Notes:
(a) Household age is based on estimated 2014 median household age by Census Block Group, per Census (2016).
(b) Program participation rates are summarized in the report text.
(c) Relative difference is calculated as the percentage of program participation by income group minus the overall percentage of residential parcels by age group.

References:
Census, 2016. *2010-2014 American Community Survey (ACS) 5-year estimates,* TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau, accessed 8 September 2016.



Legend

West Basin Director Division Boundaries

Percentage of Population in Single-Family Units

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Percentage of population in single-family homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 4 8
(Scale in Miles)

Percentage of Population in Single-Family Homes

West Basin Municipan Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-16a

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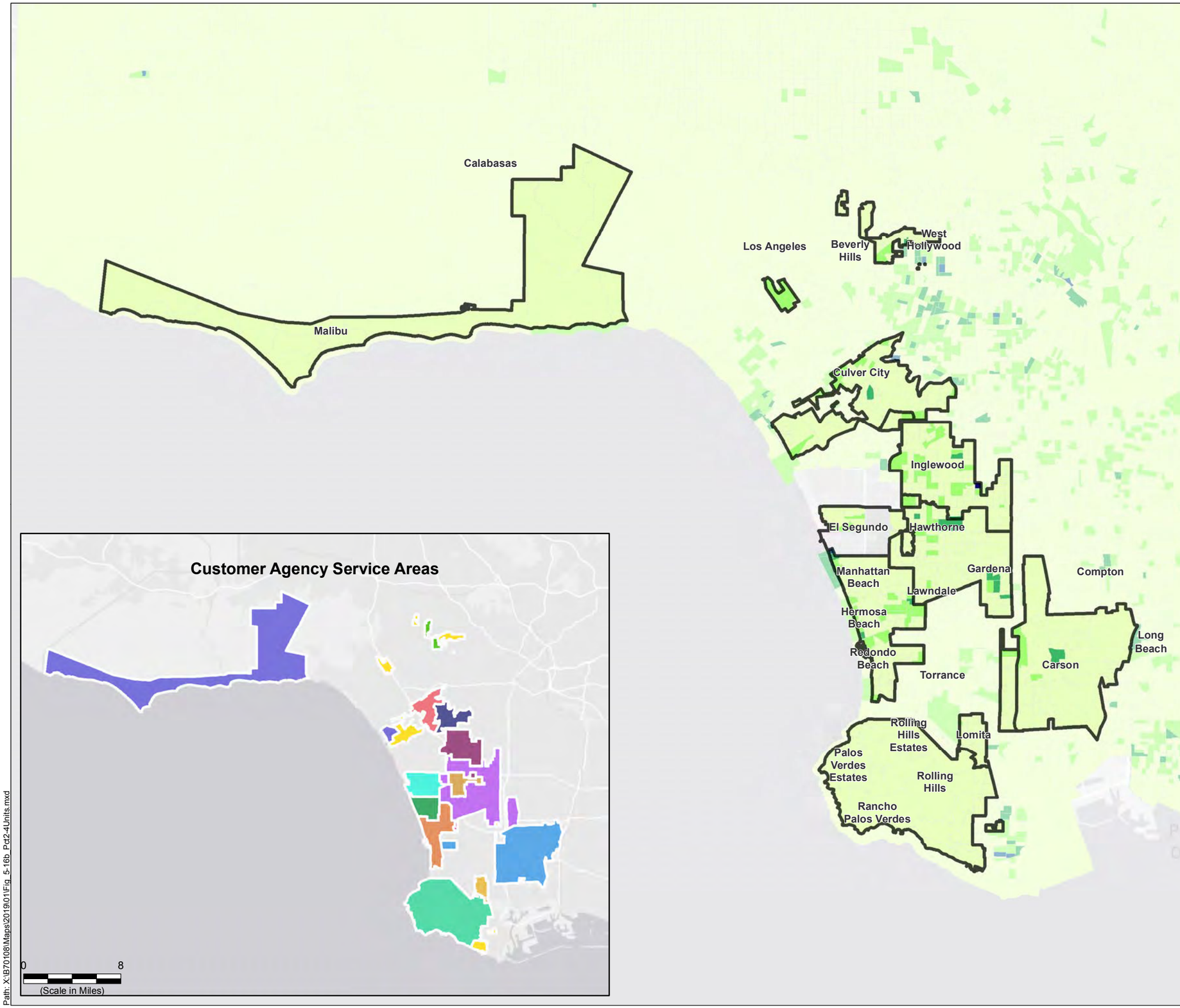

Legend

West Basin Director Division Boundaries

Percentage of Population in 2-4 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Percentage of population in multi-family housing consisting of 2 to 4 units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 4 8
(Scale in Miles)

Percentage of Population in Multi-Family Homes (2-4 Units)

West Basin Municipan Water District
January 2019
EKI B70108.00

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Figure 5-16b

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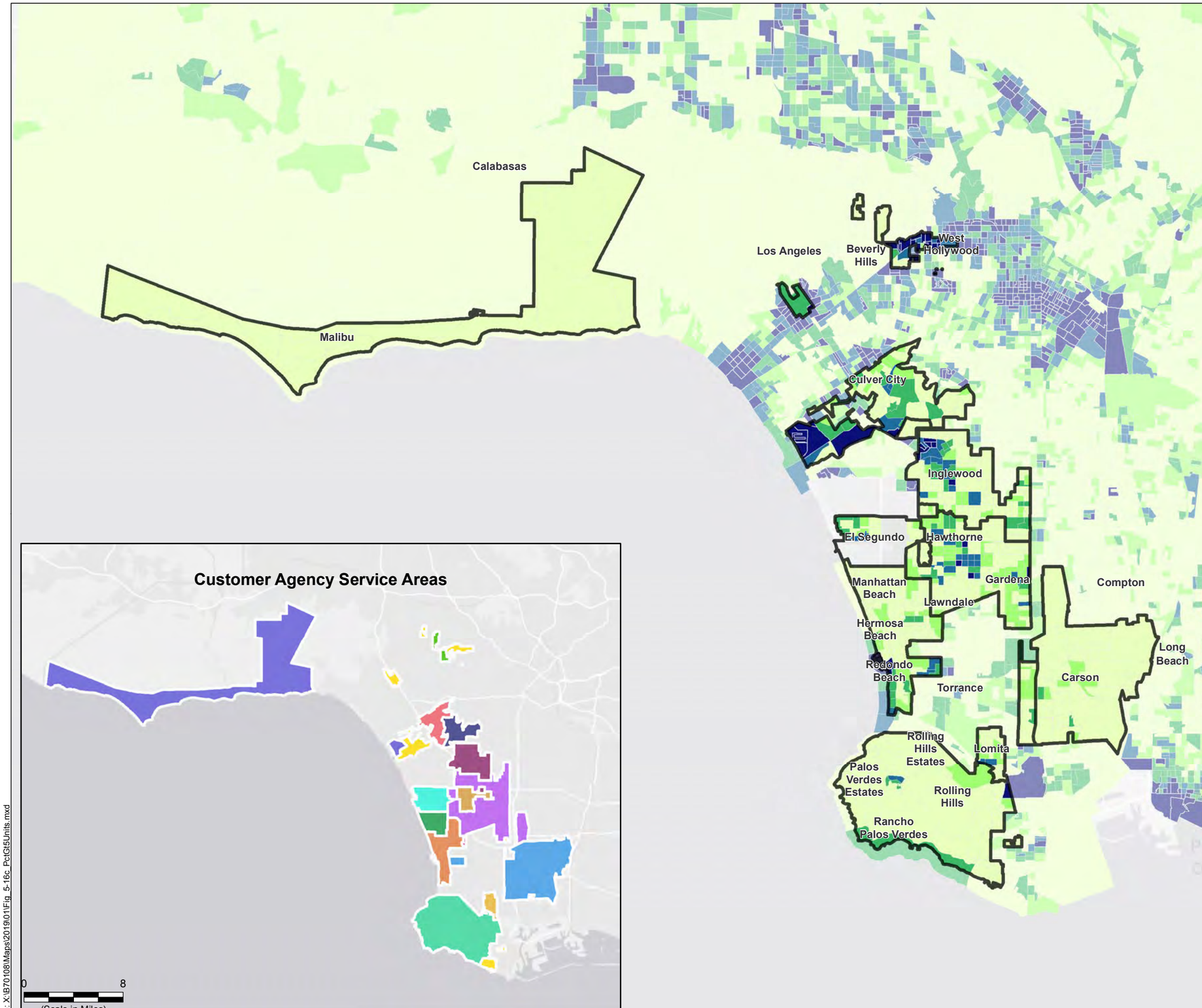

Legend

West Basin Director Division Boundaries

Percentage of Population in ≥5 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of 5 or more units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 4 8
(Scale in Miles)

Percentage of Population in Multi-Family Homes (≥5 Units)

West Basin Municipan Water District
January 2019
EKI B70108.00

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Figure 5-16c

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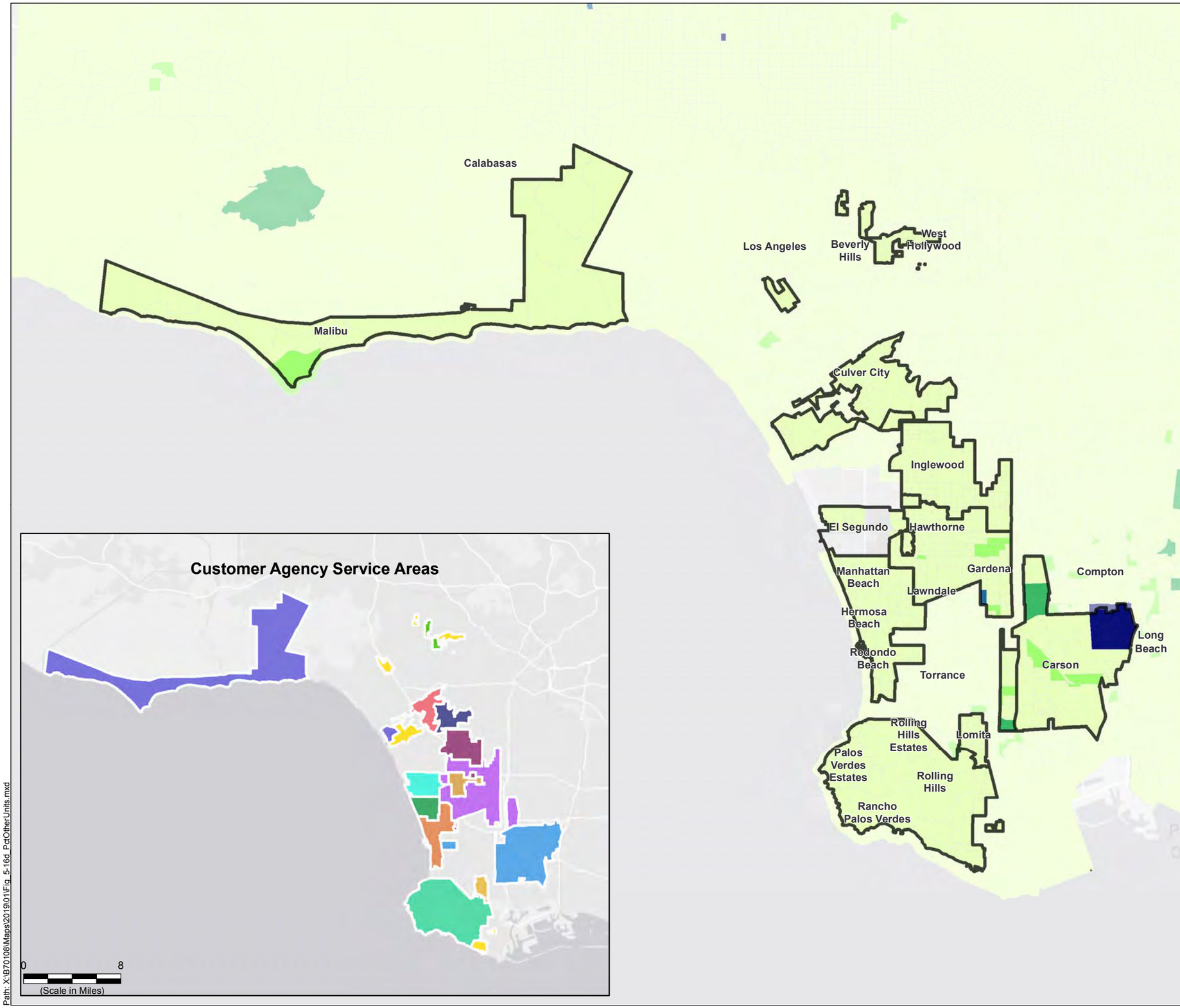

Legend

West Basin Director Division Boundaries

Percentage of Population in Mobile Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of mobile homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 4 8
(Scale in Miles)

Percentage of Population in Mobile Home Housing

West Basin Municipan Water District
January 2019
EKI B70108.00

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Figure 5-16d

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distribution of renter population across the service area. Across the West Basin service area, approximately 63% of the population live in single-family residential homes, 9% live in two to four unit homes, 26% live in five+ unit homes, and 2% live in mobile homes. The proportion of the population living in single-family homes varies significantly between customer agency and Division. The population living in single-family homes ranges from approximately 41% in the CWS Hawthorne District area to 89% in the CWS Palos Verdes District, and from 49% in Director Division 4 to 85% in Director Division 1. Correspondingly, over 40% of the population in the City of Inglewood, CWS Hawthorne District, LACWW District #29, and City of El Segundo service areas live in multi-family residential and mobile homes. Division 4 has the highest proportion of population in multi-family residential homes, with over 50% living in non-single-family homes.

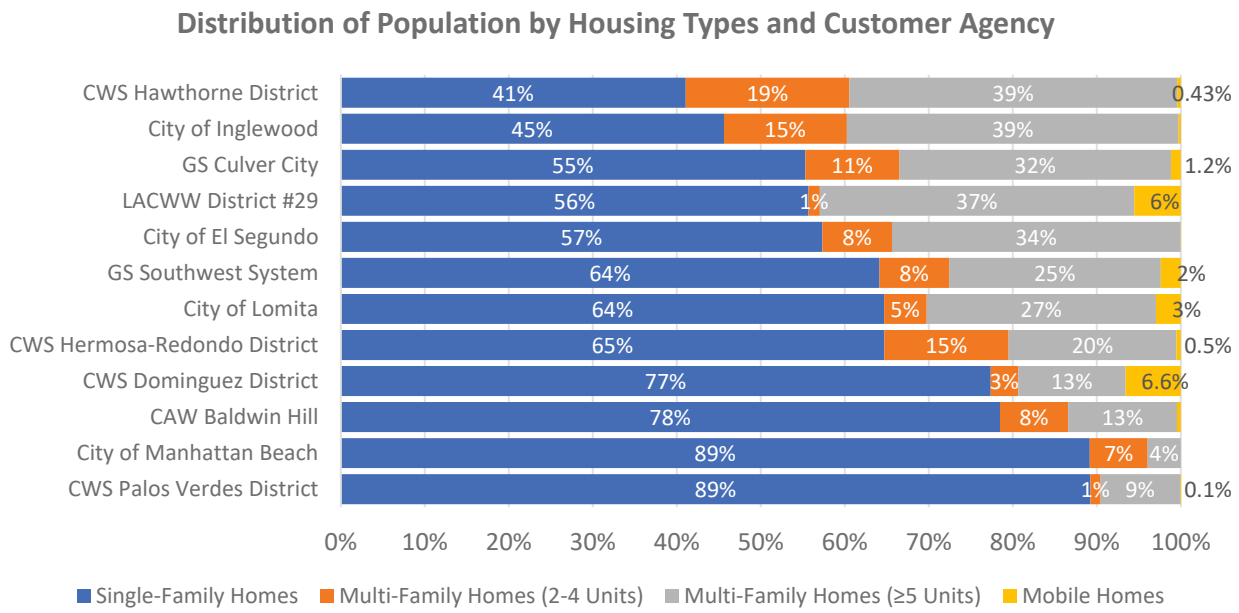


Figure 5-17. Proportion of population within customer agency service areas living in specified housing types, based on Census data.

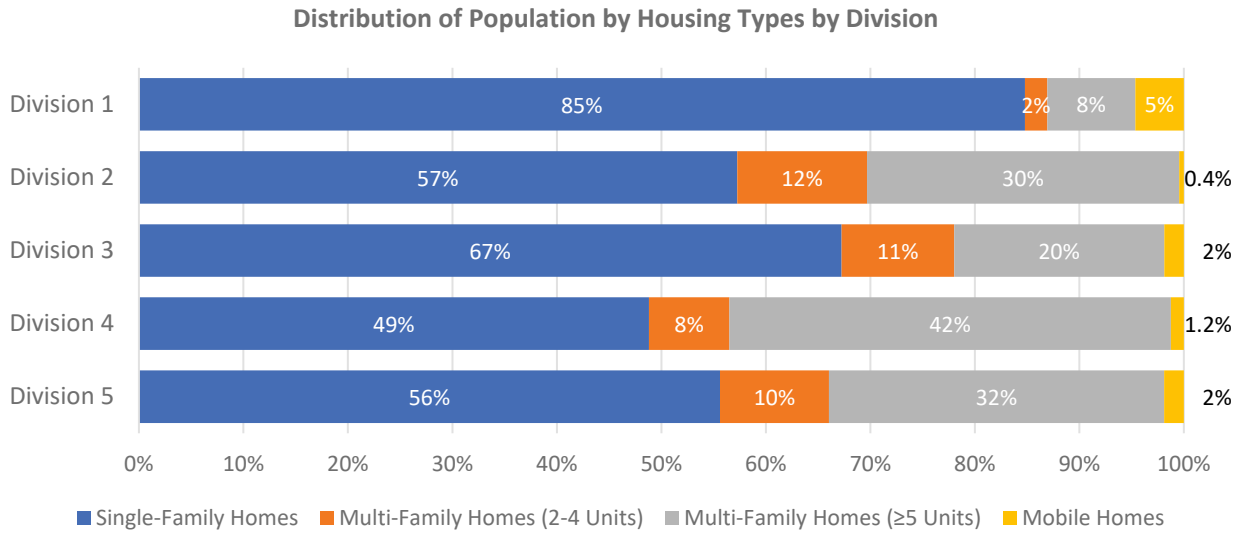
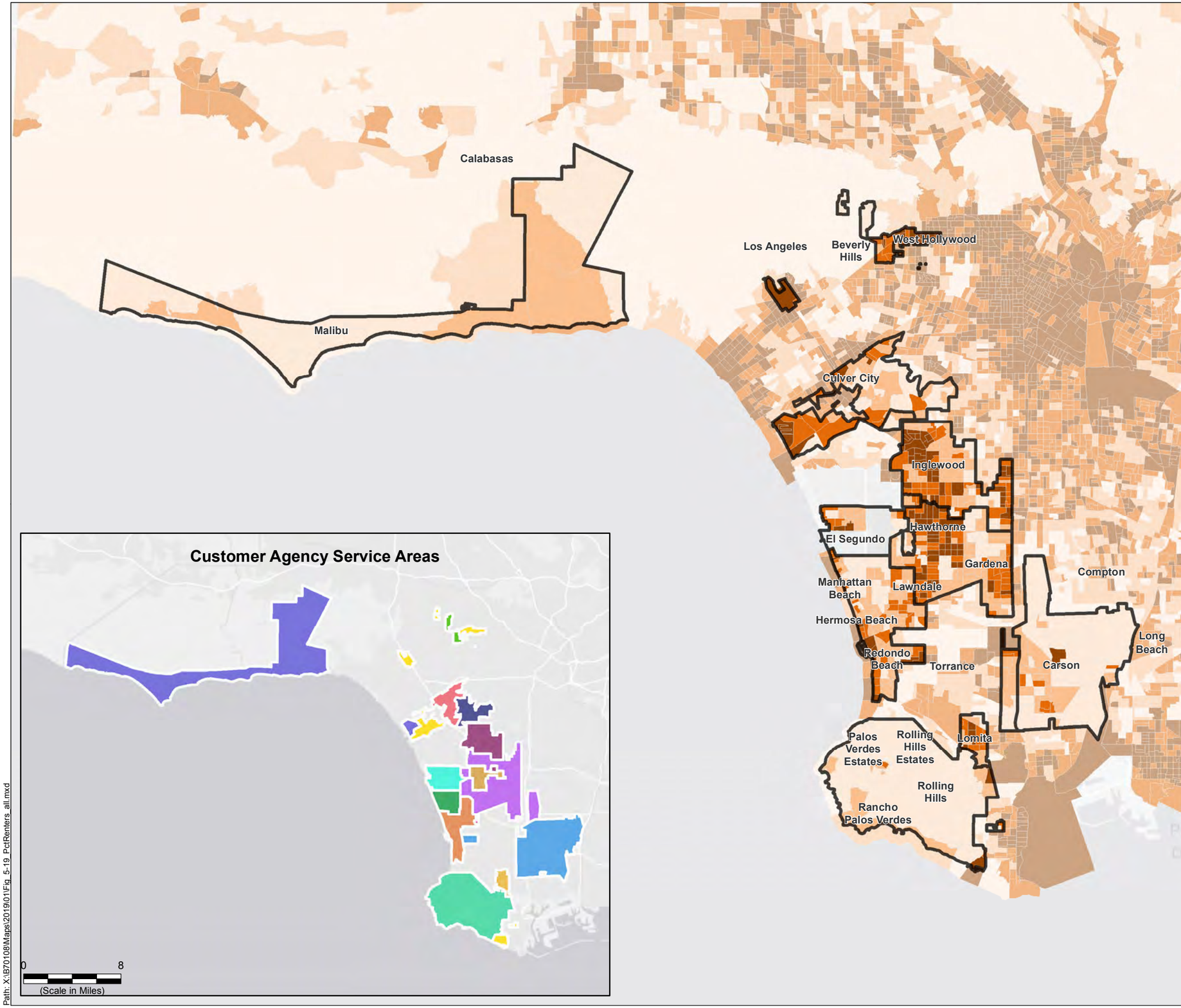


Figure 5-18. Proportion of population within Director Divisions living in specified housing types, based on Census data.



Legend

West Basin Director Division Boundaries

Percentage of Renters

- ≤25%
- 25.1% - 50%
- 50.1% - 75%
- ≥75%

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Percentage of renter-occupied housing units is based on the estimated 2014 number of renter-occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 4 8
(Scale in Miles)

Percentage of Renter-Occupied Housing Units

West Basin Municipan Water District
January 2019
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Figure 5-19

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Participation in residential WUE programs relative to housing type is summarized in **Table 5-14** below. The vast majority of participation in these programs has been by those living in single-family homes. Although approximately 63% of the service area population lives in single-family homes, customers in single-family homes make up 86% of the program participation. This highlights a substantial opportunity to increase WUE program participation in multi-family residential households. Given that multi-family homes tend to have higher rates of rentership than single-family homes, this suggests that whether a home is owner-occupied or renter-occupied may be a program participation driver.

Table 5-14
Residential WUE Program Participation by Housing Type

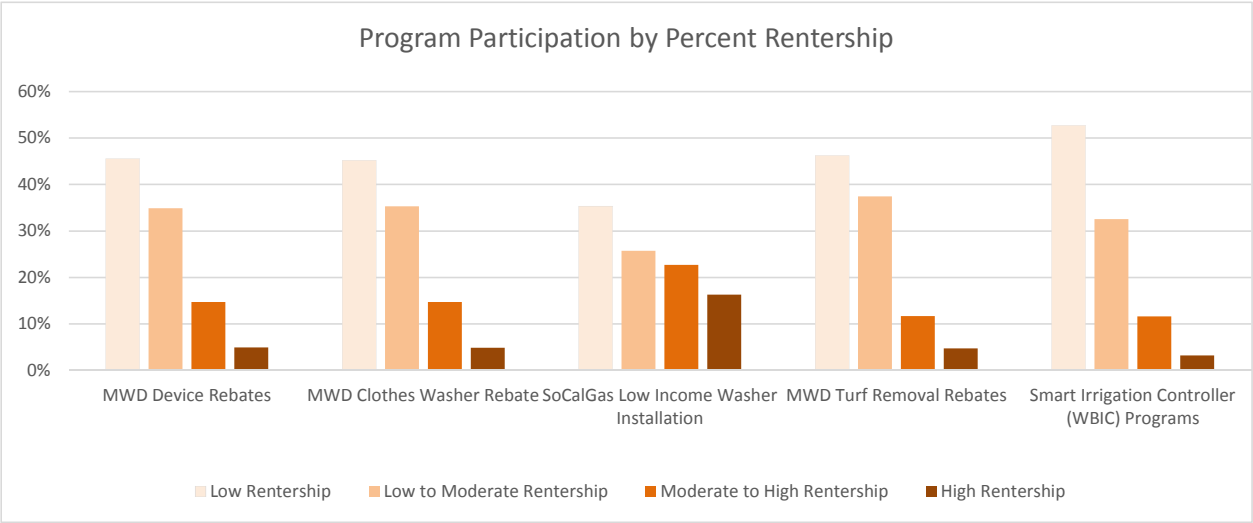
WUE Program	Number of Participants by Housing Type			
	Single-Family	2-4 Units	5 or More Units	Manufactured / Mobile
All MWD Residential Device Rebates	91%	7.6%	0.8%	0.8%
HE Clothes Washer Rebate	92%	6.1	0.7%	0.9%
HE Toilet Rebate	83%	15%	1.5%	0.5%
WBIC Rebate	97%	2.9%	0%	0%
Rain Barrel and Cistern Rebates	93%	6.2%	0.7%	0.5%
Sprinkler Nozzle Rebate	94%	6.1%	0%	0%
Landscape Irrigation Efficiency Program (LIEP), Residential	96%	3.0%	1.1%	0%
SoCalGas Low Income HE Clothes Washer Direct Installation Program	73%	20%	3.4%	3.2%
Turf Removal Rebates	94%	5.6%	0.4%	0%
West Basin WBIC Exchange	90%	6.4%	3.2%	0.2%
Total	**86%**	**11%**	**1.5%**	**1.3%**

In order to evaluate whether homeownership appears to be a significant driving factor, program participation was compared to the percent of population that rent homes, based on Census data. **Table 5-15** shows the distribution of residential WUE program participation by the percentage of the population that live in renter-occupied homes ("rentership"). The first chart in **Table 5-15** shows the percentage of participants in each program that live in areas of each percent rentership grouping. For every WUE program analyzed, the majority of participants are from owner-occupied homes (low rentership). This trend was consistent, but less pronounced, for the SoCalGas low income HE clothes washer direct installation program.

The second chart on **Table 5-15** shows participation rates controlled for the number of parcels within the West Basin service area within each rentership group. When the relative proportion of number of parcels within each income group is controlled for, all programs except for the SoCalGas program show a clear trend that low rentership (high home ownership) areas are more likely to participate than those in high rentership areas. The SoCalGas program, however, shows the opposite trend: program participants are more likely to live in areas with high rentership. These results are generally consistent with the results of the household income analysis and suggest that customers in low income areas (that also consist predominantly of renters) have historically been underrepresented in program participation for rebate-based programs that require an investment from the customer, but that they participate at high rates in no-cost programs when available.

Table 5-15
Residential Program Participation by Percent Rentership

Percent Rentership (a)		Percentage of Residential Parcels	Percentage of Participating Residential Accounts (b)				
			MWD Device Rebates	MWD Clothes Washer Rebate	SoCalGas Low Income Washer Installation	MWD Turf Removal Rebates	Smart Irrigation Controller (WBIC) Programs
Low Rentership	≤25%	37%	46%	45%	35%	46%	53%
Low to Moderate Rentership	25.1%-50%	32%	35%	35%	26%	37%	33%
Moderate to High Rentership	50.1%-75%	22%	15%	15%	23%	12%	12%
High Rentership	≥75%	9%	5%	5%	16%	5%	3%



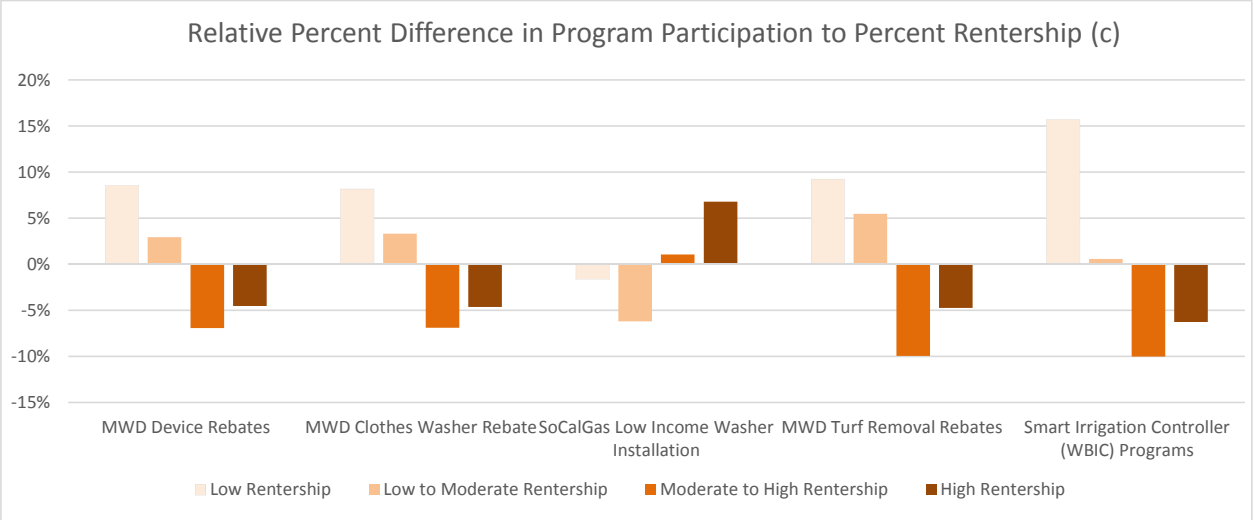


Table 5-15
Residential Program Participation by Percent Rentership

Abbreviations:
MWD = Metropolitan Water District
WBIC = weather-based irrigation controller

Notes:
(a) Percent rentership reflects the proportion of population within a given Census Block Group that lives in renter-occupied homes. Low rentership indicates an area consists predominantly of owner-occupied homes; high rentership indicates an area consists predominantly of renter-occupied homes. Rentership is based on estimated 2014 median household rentership by Census Block Group, per Census (2016).
(b) Program participation rates are summarized in the report text.
(c) Relative difference is calculated as the percentage of program participation by percent rentership minus the overall percentage of residential parcels by income group within the service area.

References:
Census, 2016. *2010-2014 American Community Survey (ACS) 5-year estimates,* TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau, accessed 8 September 2016.

5.7. CII WUE Program Participation

More so than residential WUE programs, CII WUE programs are targeted to specific types of business, such as the Cash for Kitchens program that assists business and institutions that operate commercial kitchens. In order to better understand what types of businesses and organizations have taken advantage of these programs to date, participation data were evaluated relative to land use type, as identified by County Assessor parcel data. The decision process for WUE program adoption for multi-family residential homes, is very similar to that for CII, because the property owners and decision-makers have a much more business-minded view of WUE than that of a typical home owner. Given this, multi-family residential customer participation and land use are also considered in this section. Participation in these programs is shown relative to the service area in **Figures 5-20** through **5-26** and summarized by sector in **Figure 5-27** below. **Table 5-16** summarizes program participation by CII sector and more discrete land use categories.

5.7.1. Methodology

In the following sections, participation in CII programs is summarized based on land use classifications provided in Los Angeles County Assessor's parcel data. It should be noted that, given the size of the Los Angeles County Assessor's parcel dataset (over 2 million parcels), not all parcels are attributed with their land use type, and some inaccuracies may exist. Therefore, the total number of program participants included in **Tables 5-16** and **5-17** may be less than the overall number of participants within the West Basin service area. Although the parcel dataset has some limitations, it is still appropriate for identifying overall participation trends and opportunities. In the assessment below, the percentage of participation was calculated based on the total number of parcels in the service area. Many businesses, particularly those with large facilities, are associated with more than one parcel. Therefore, the calculated percentage of participation may be lower than the actual value. However, the percentage of parcels provides the overall availability of each land use type for different CII WUE programs.

Table 5-16 shows the number of participants and participation percentage of selected CII WUE programs by sector and more discrete land use types, as well as participation percentage associated with parcels in the West Basin service area. The CII land use designations include commercial, industrial, institutional, recreational, multi-family residential, other residential, and miscellaneous lands.

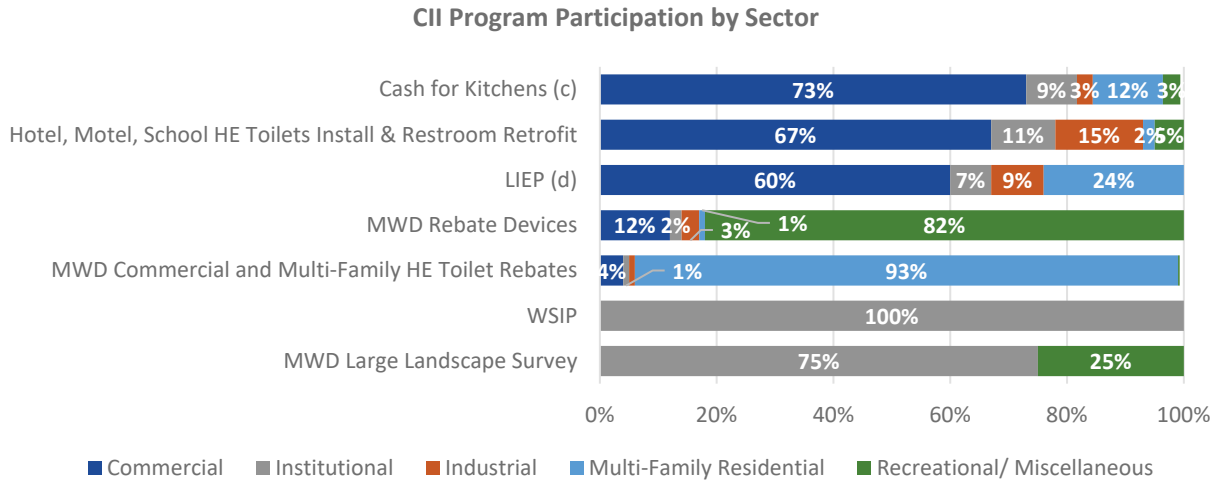
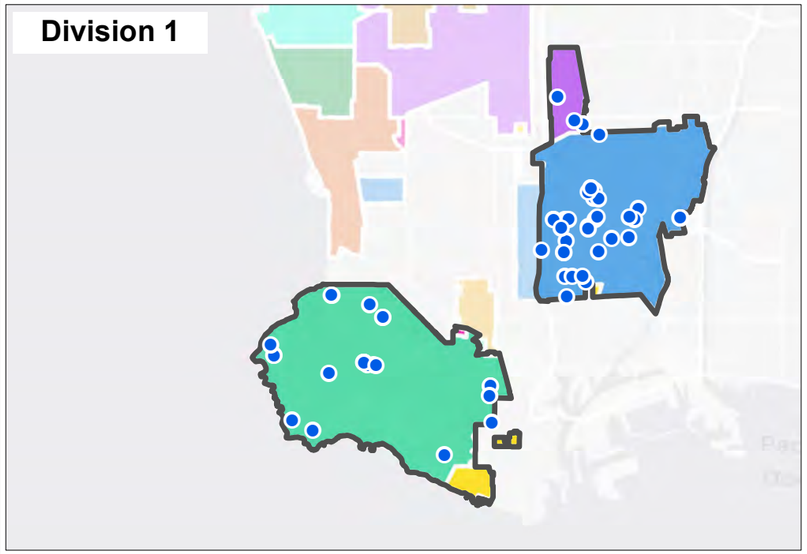
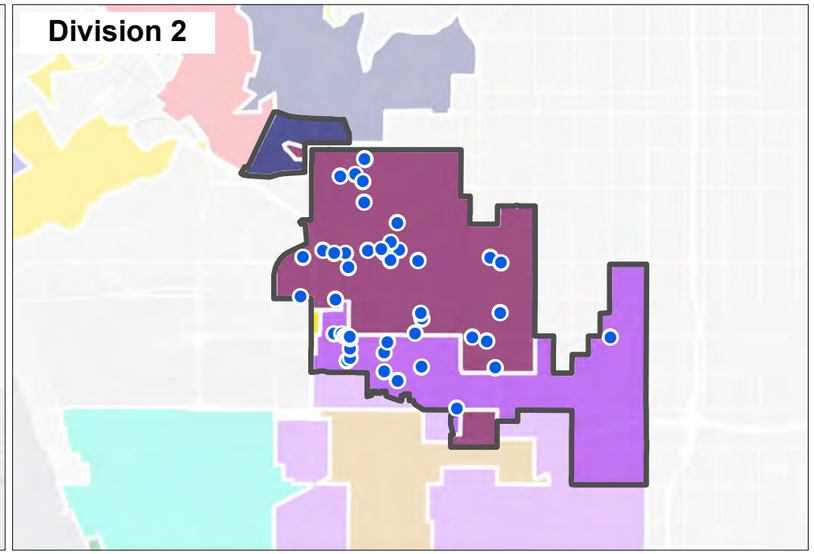
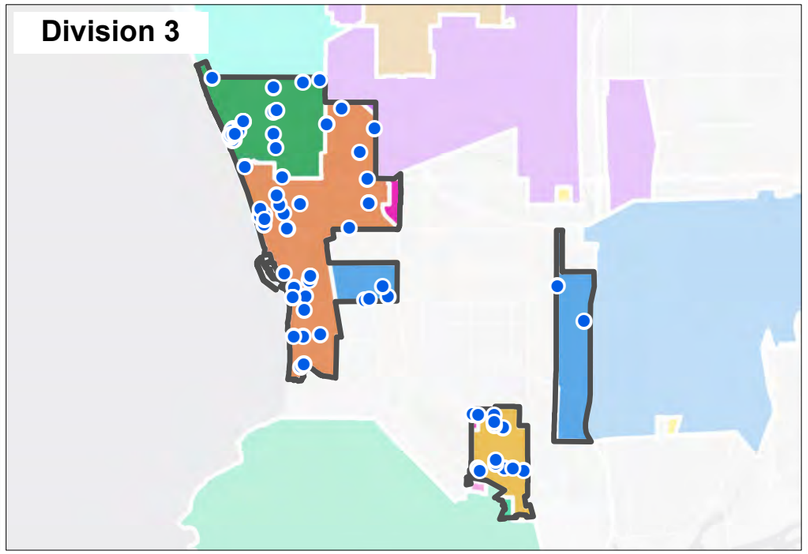
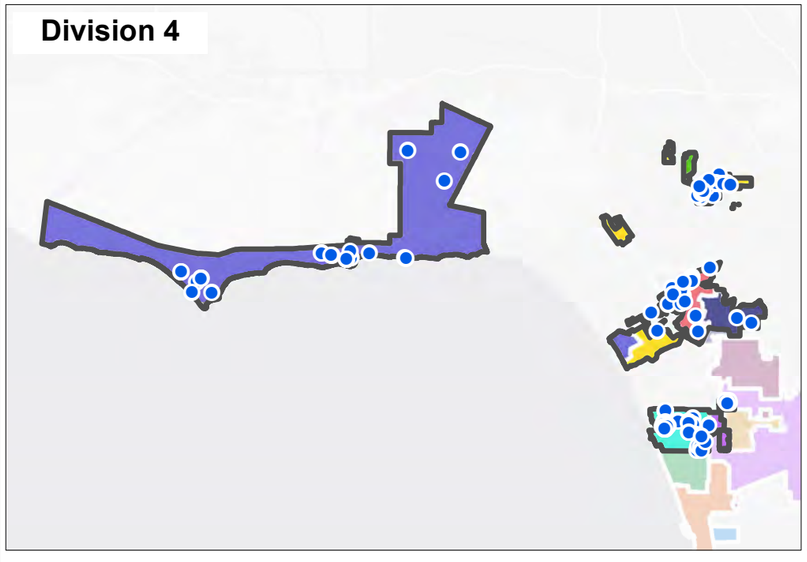


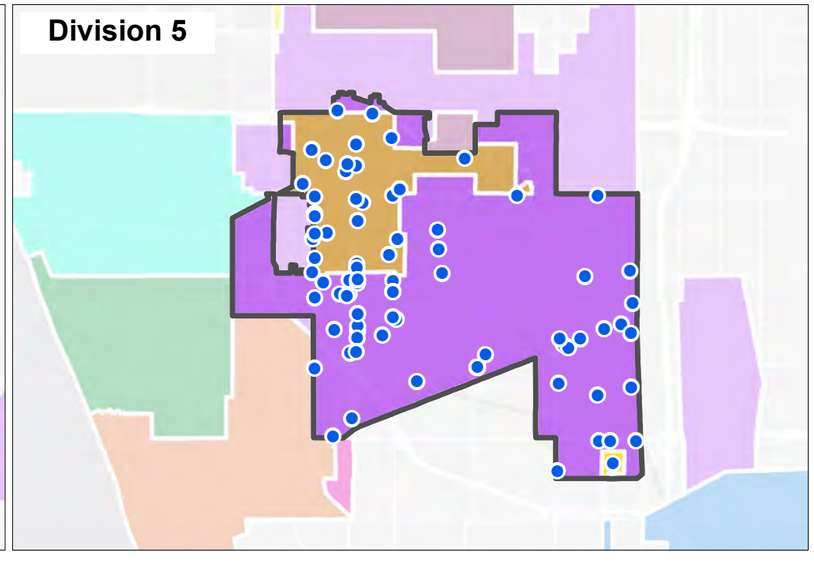
Figure 5-27. Proportion of CII program participation by customer sector.

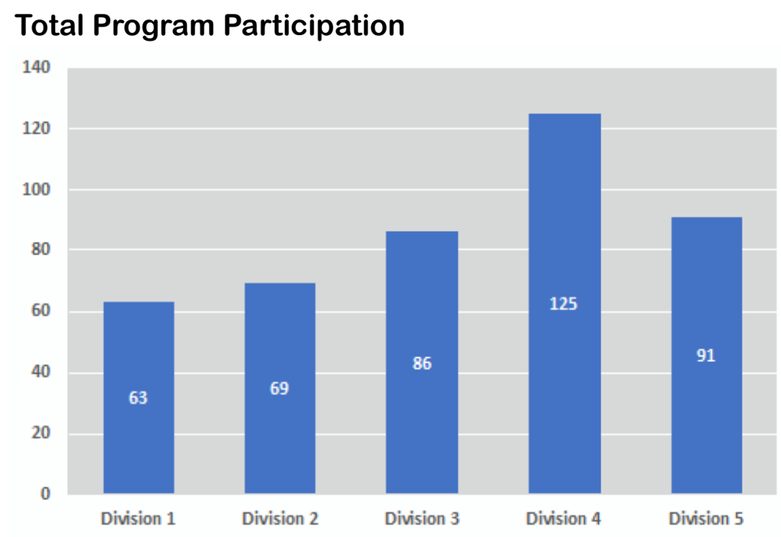












Legend

Program Participation

- Program Participants

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. Due to the range of Division sizes, each panel is shown at a different scale.
4. Cash for Kitchens program has both recycled water and potable water customer participants. All customers are summerized here.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

N

Cash for Kitchens

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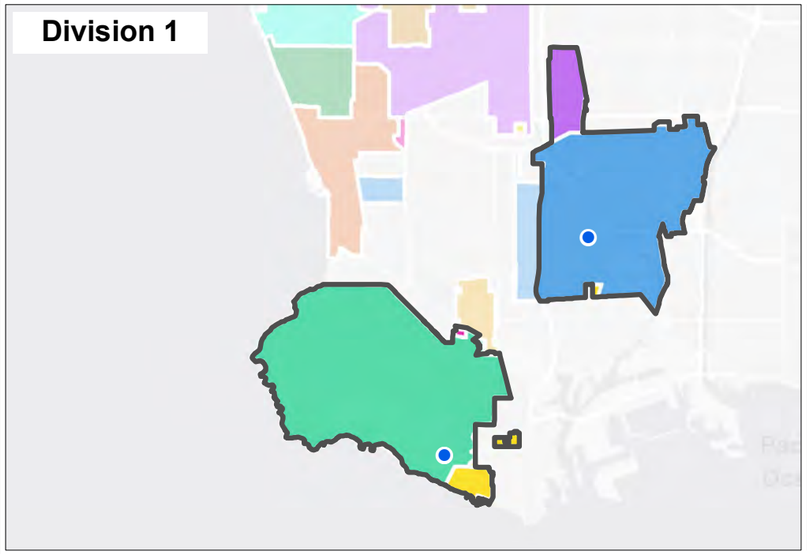
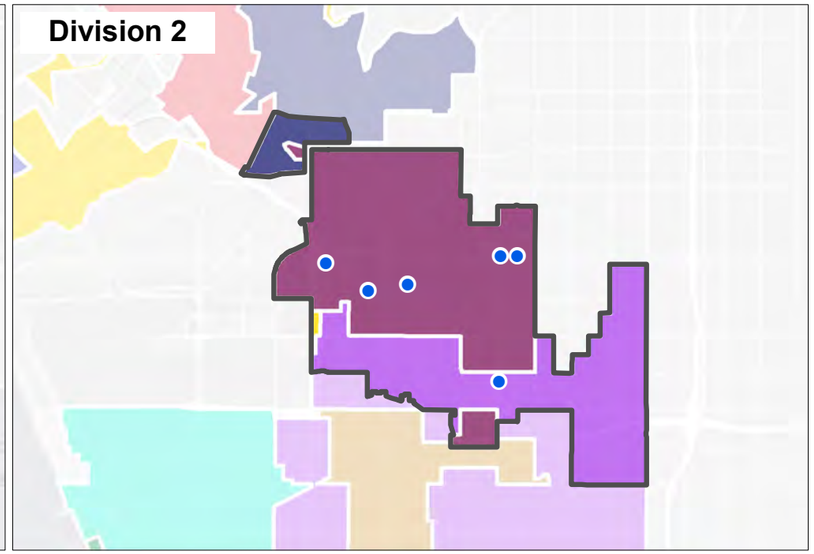
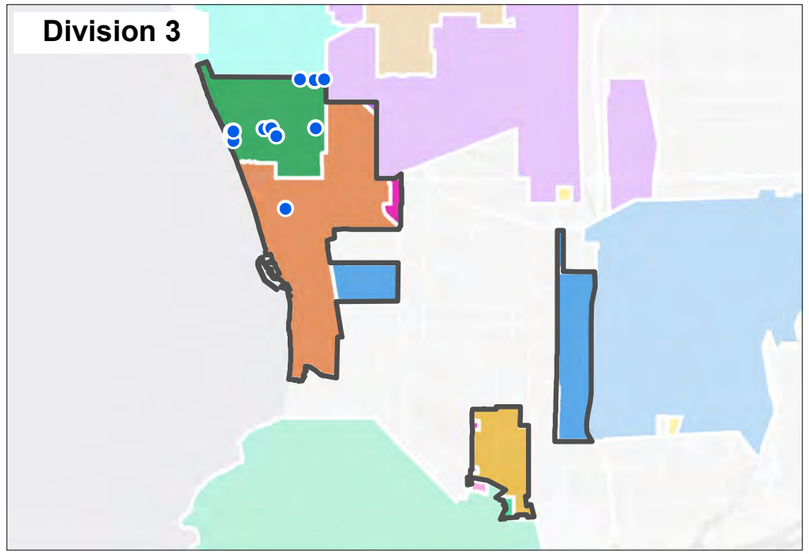
West Basin Municipal Water District
January 2019
EKI B70108.00

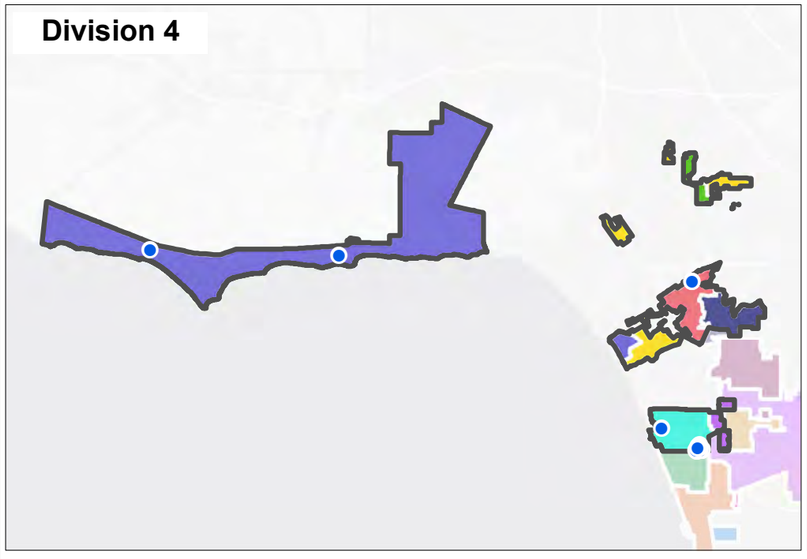
Figure 5-20

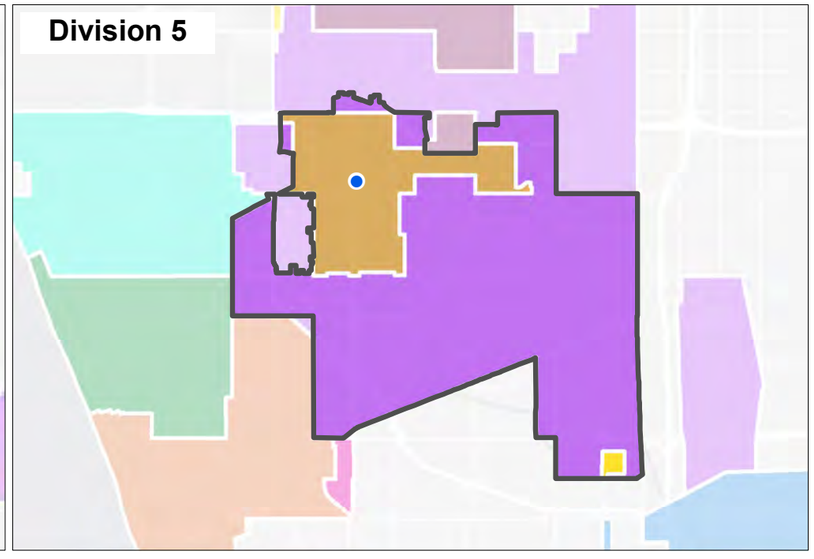
Path: X:\B70108\Maps\2019\01\Fig_5-20_CashforKitchens.mxd

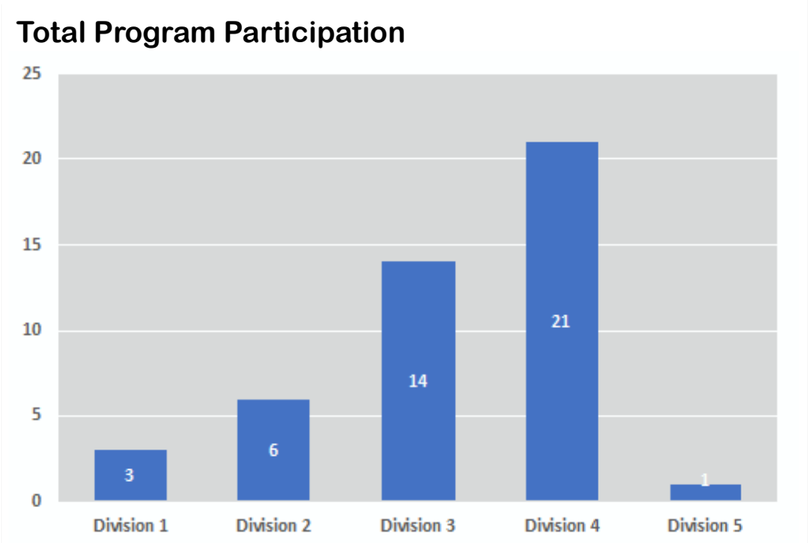












Legend

Program Participation

- Program Participants

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks
MWD - Metropolitan Water District

Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. Due to the range of Division sizes, each panel is shown at a different scale.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

N

Landscape Irrigation Efficiency Program (LIEP)

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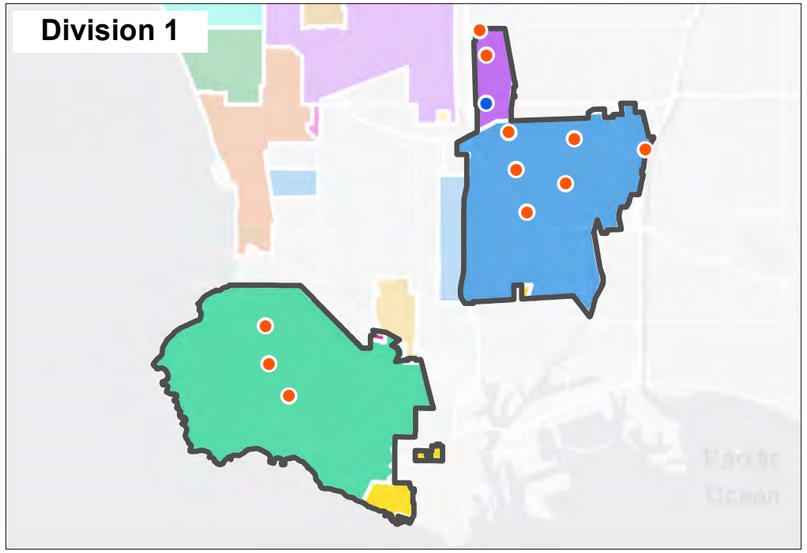
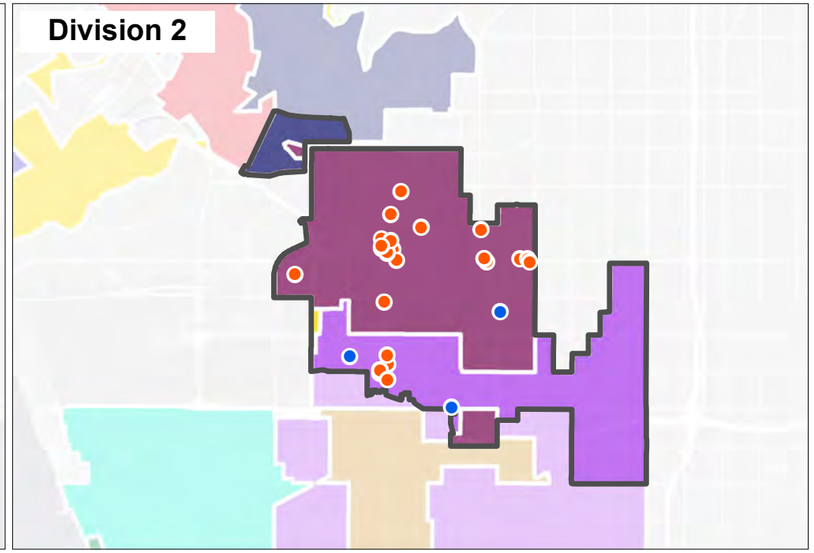
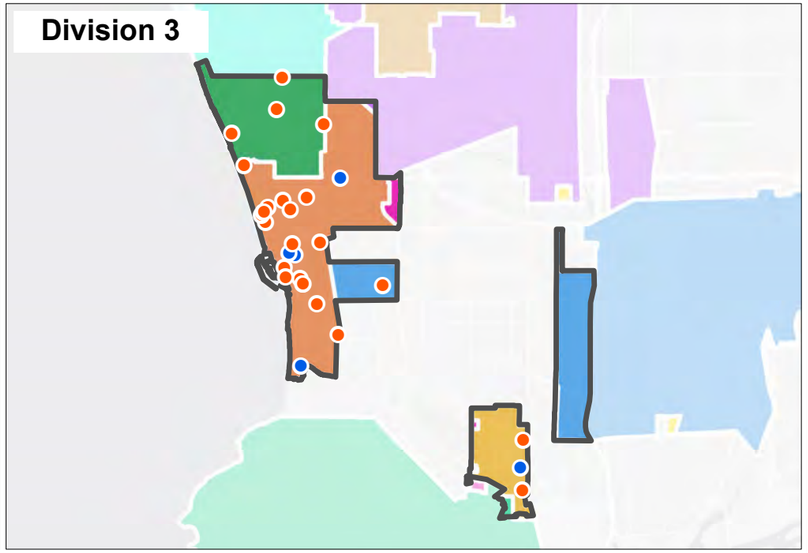
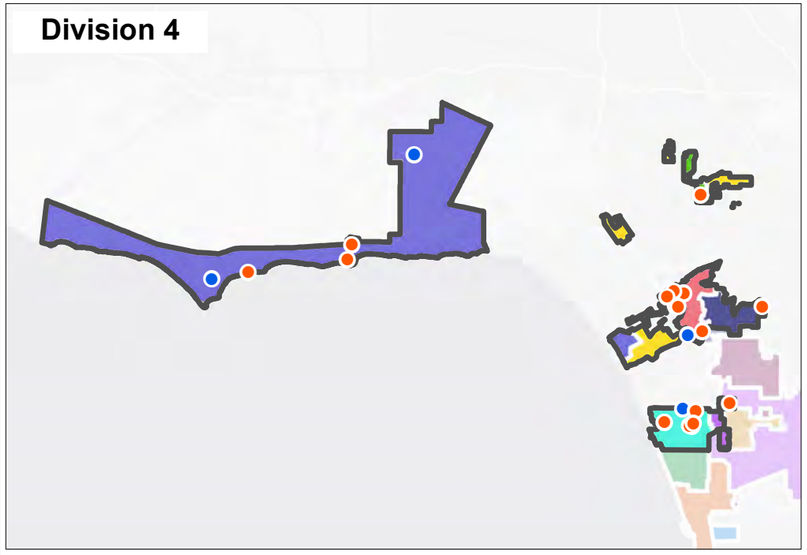
West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 5-21

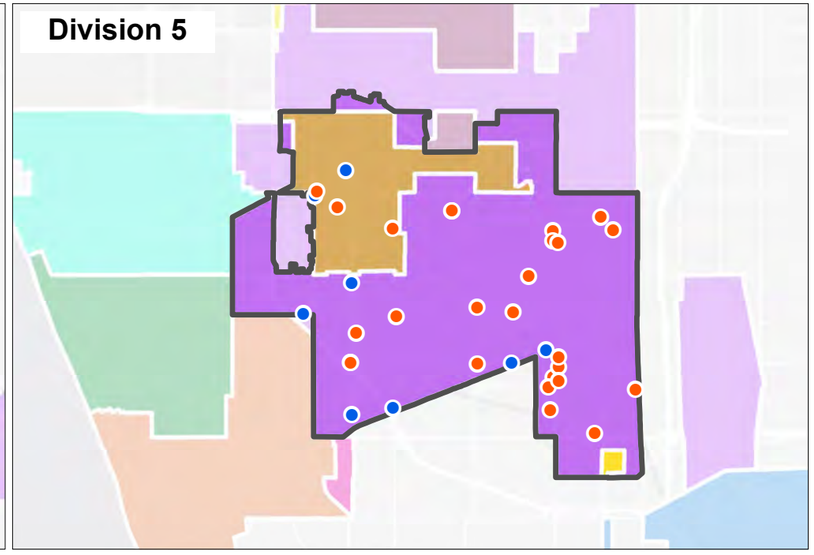
Path: X:\B70108\Maps\2019\01\Fig_5-21_LIEP.mxd

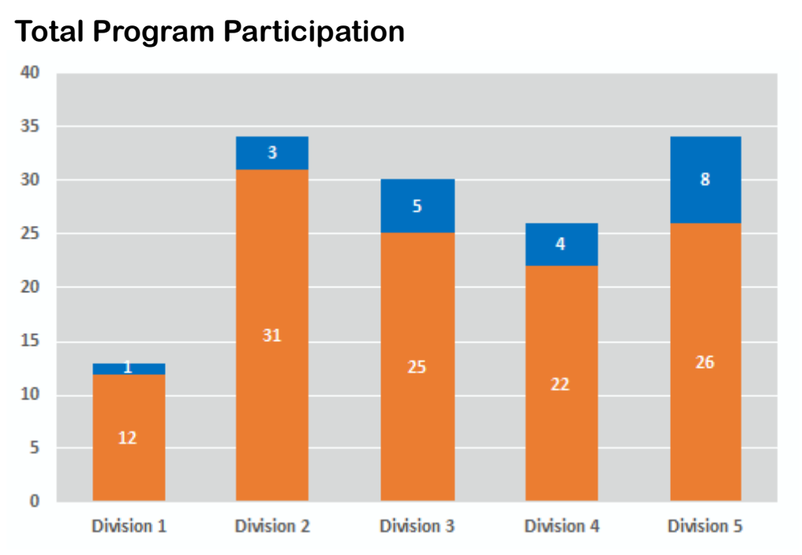












Legend

Program Participation

- Hotel, Motel, School HE Toilets Install
- Complete Restroom Retrofit

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

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Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. Due to the range of Division sizes, each panel is shown at a different scale.
4. West Basin HE Toilet Hotel/Motel/School Direct Installation Program and Complete Restroom Retrofit Program have both recycled water and potable water custormer participants. Only potable water customers are summerized here.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

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West Basin HE Toilet Hotel/Motel/School Direct Installation Program and Complete Restroom Retrofit Program

West Basin Municipal Water District
January 2019
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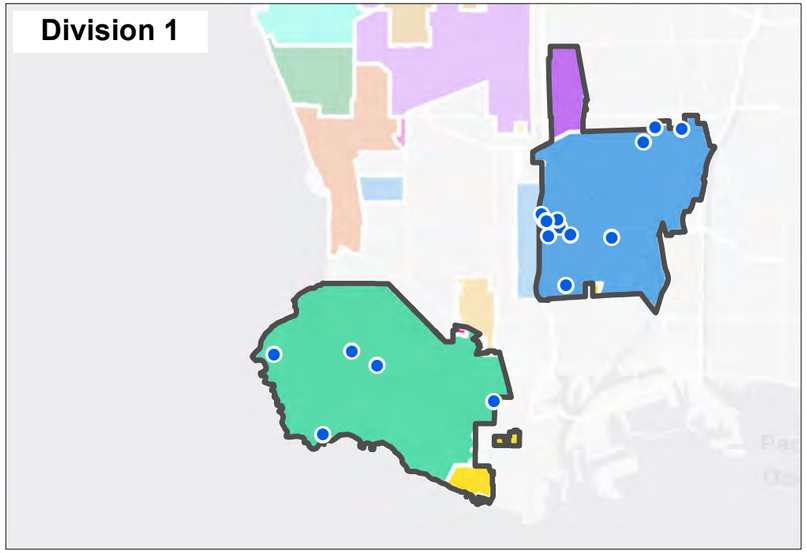
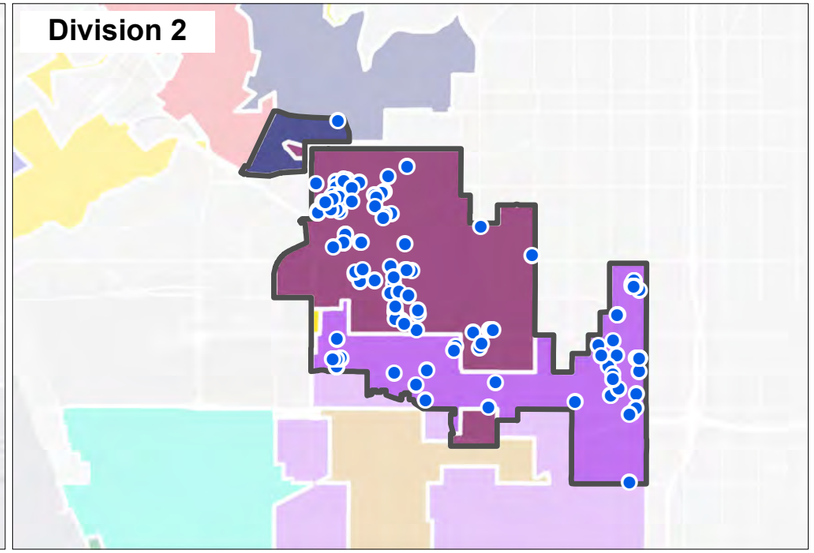
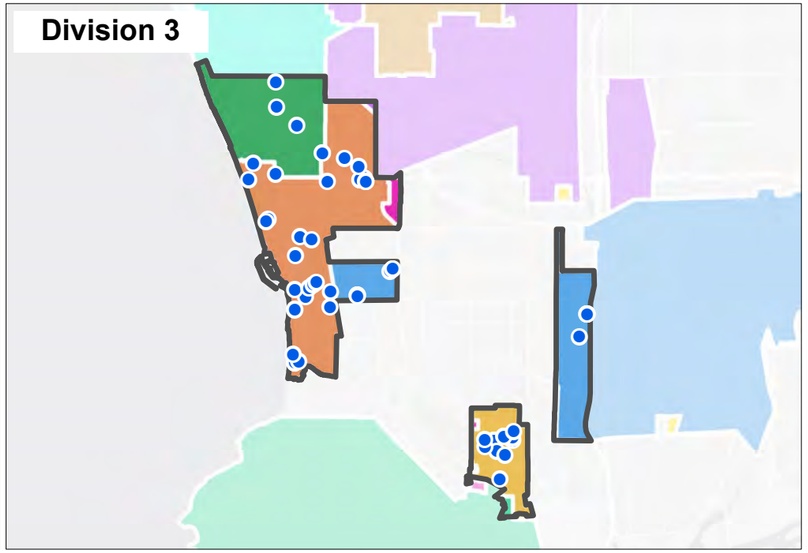
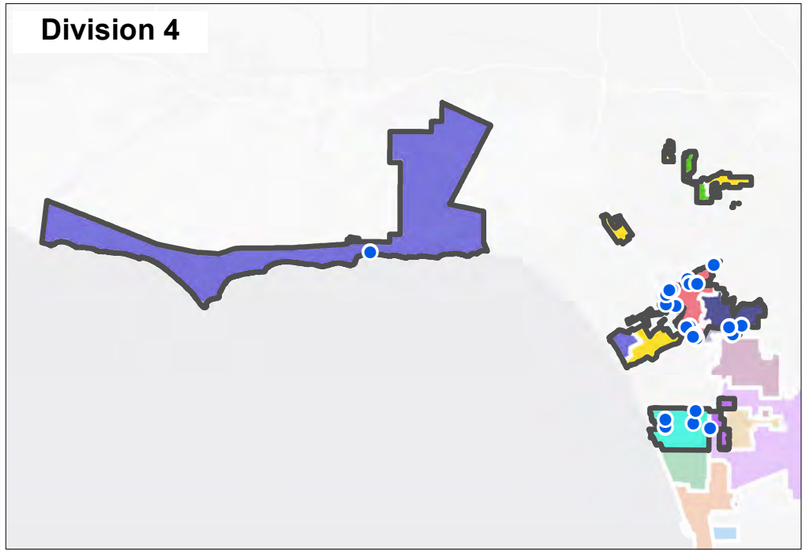
Figure 5-22

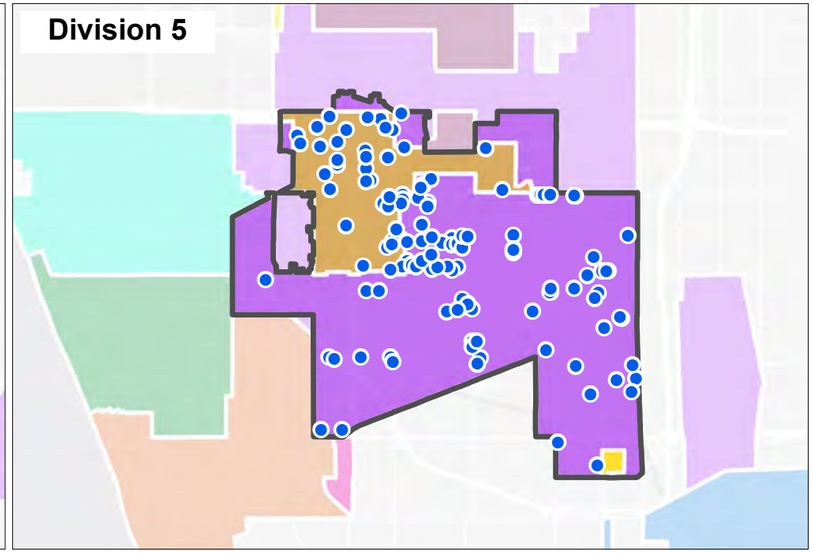
Path: X:\B70108\Maps\2019\01\Fig_5-22_ToiletInstall_RestroomRetrofit.mxd

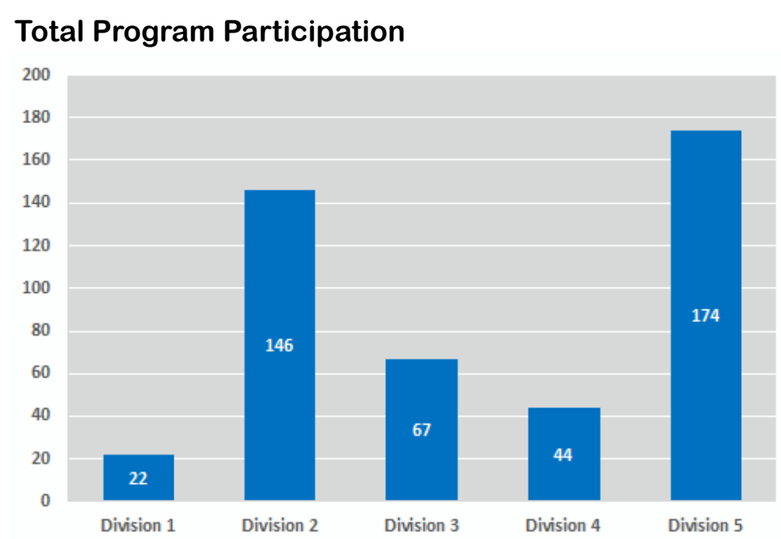












Legend

Program Participation

- Program Participants

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
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Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. Due to the range of Division sizes, each panel is shown at a different scale.
4. MWD Commercial Device Rebates program has both recycled water and potatble water customer participants. Only potable water custormers are summerized here.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

N

MWD Commercial Device Rebates

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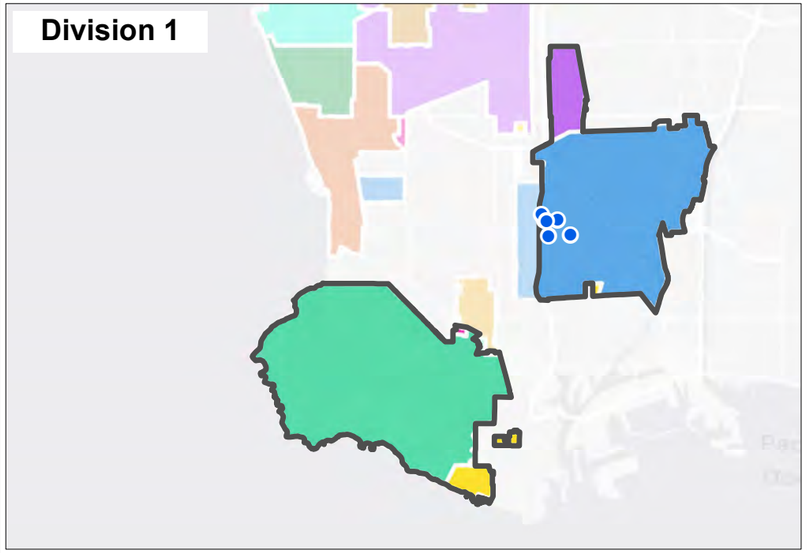
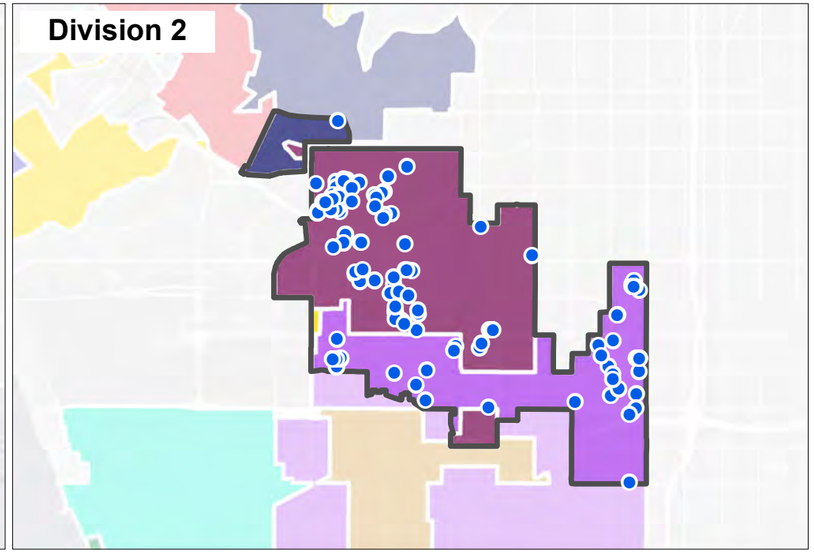
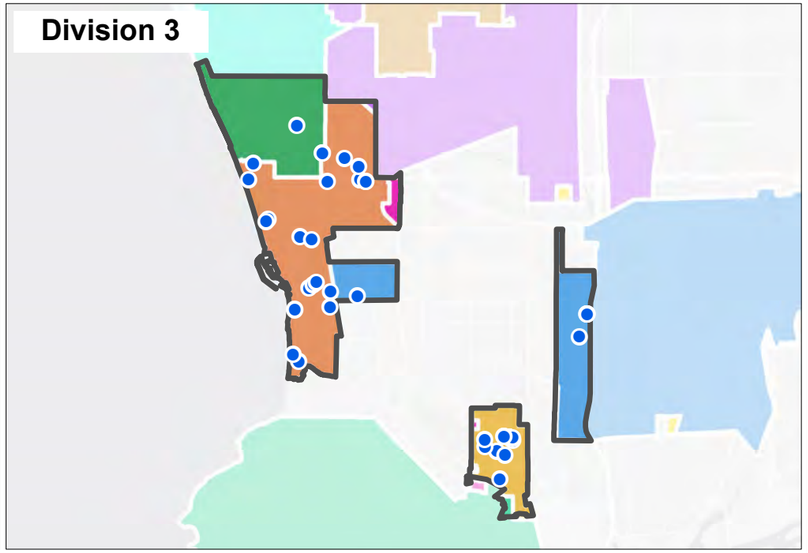
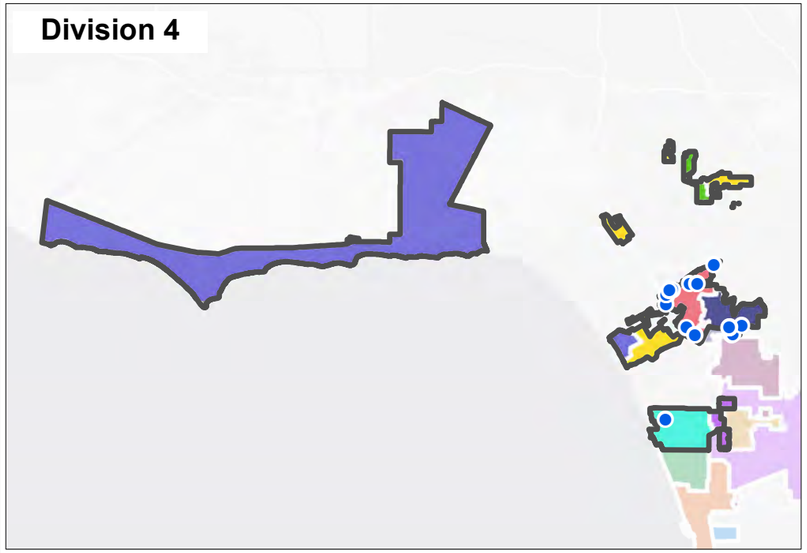
January 2019
EKI B70108.00
Figure 5-23

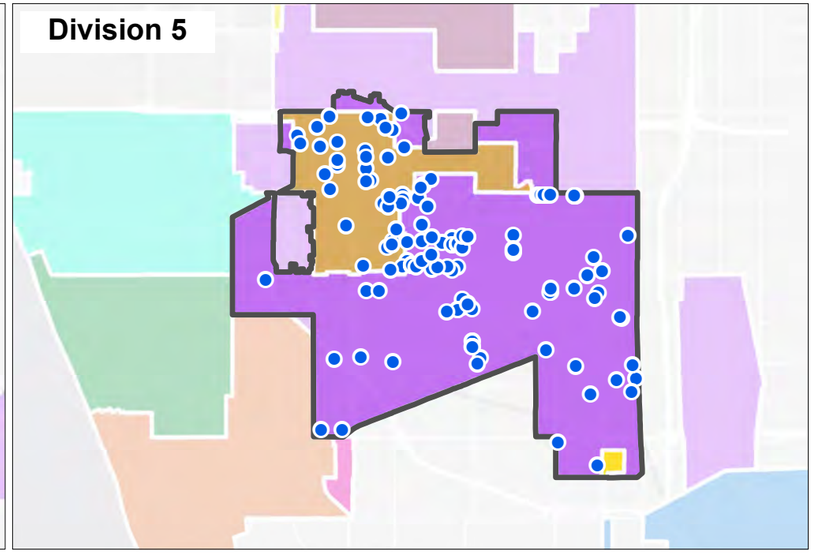
Path: X:\B70108\Maps\201901\Fig_5-23_MWD_Rebates.mxd

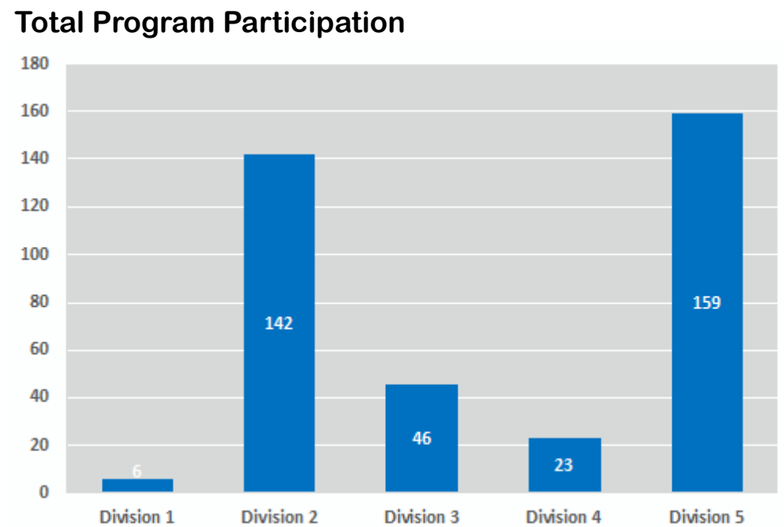












Legend

Program Participation

- Program Participants

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
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Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. Due to the range of Division sizes, each panel is shown at a different scale.
4. MWD Commercial and Multi-Family HE Toilet Rebates program has both recycled water and potatble water customer participants. Only potable water custormers are summerized here.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

N

MWD Commercial and Multi-Family HE Toilet Rebates

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January 2019
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Figure 5-24

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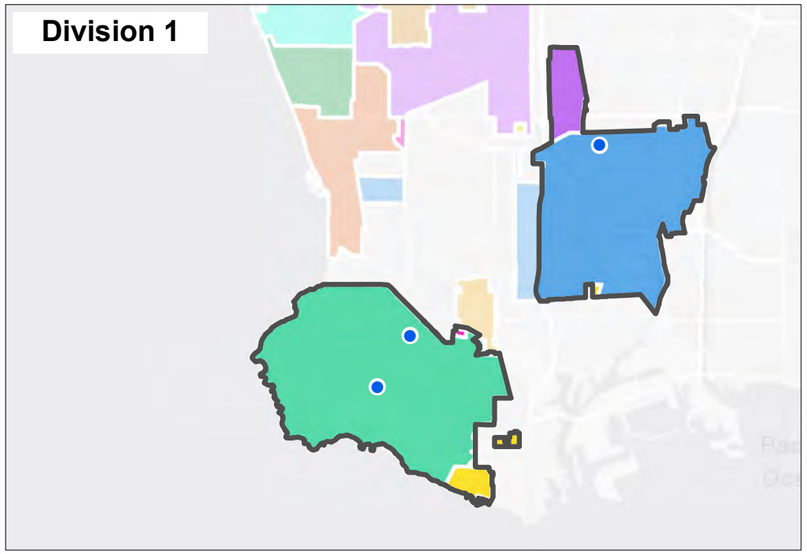

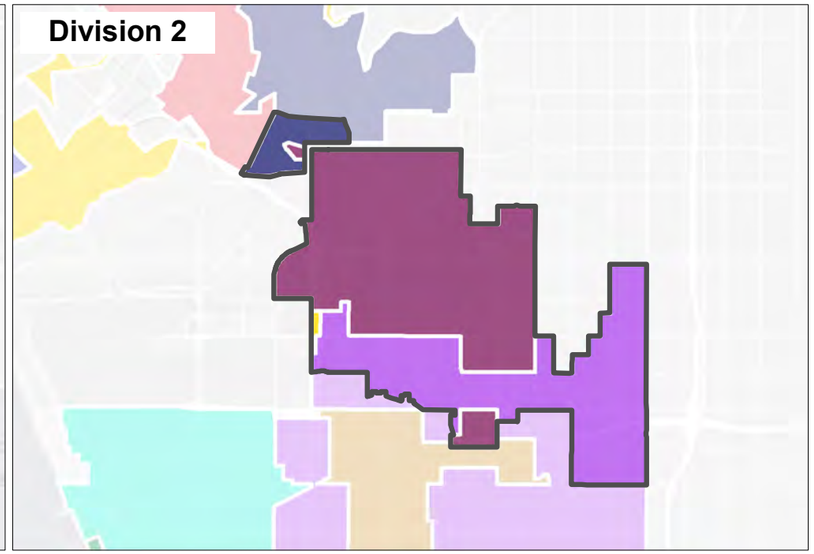

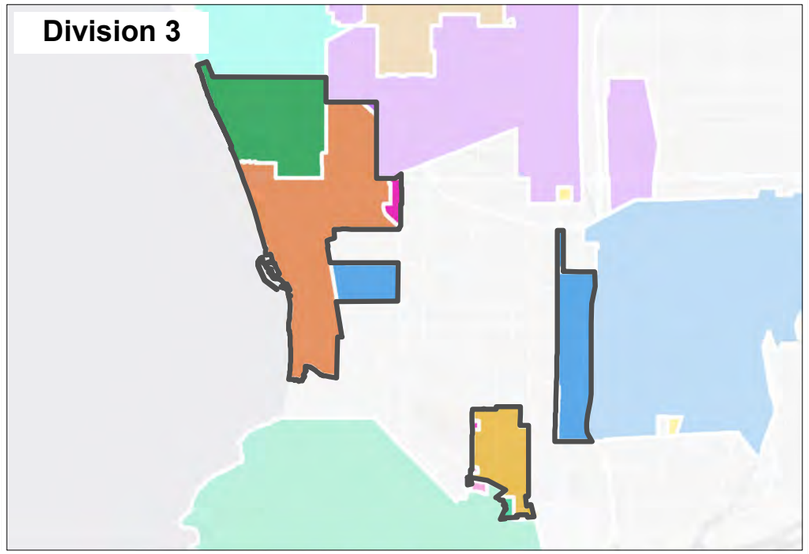

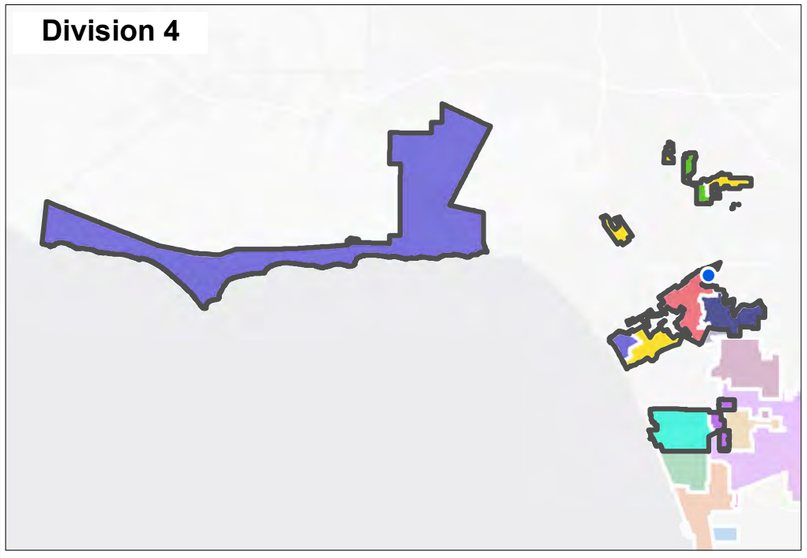

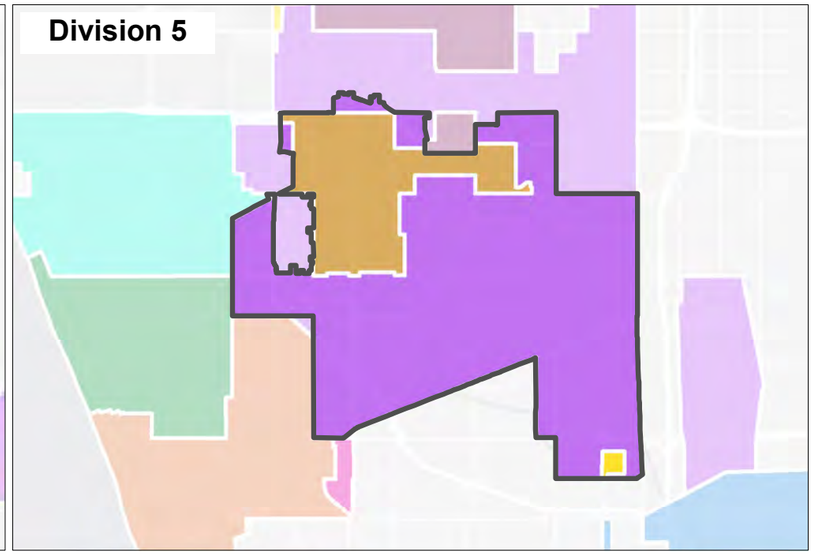

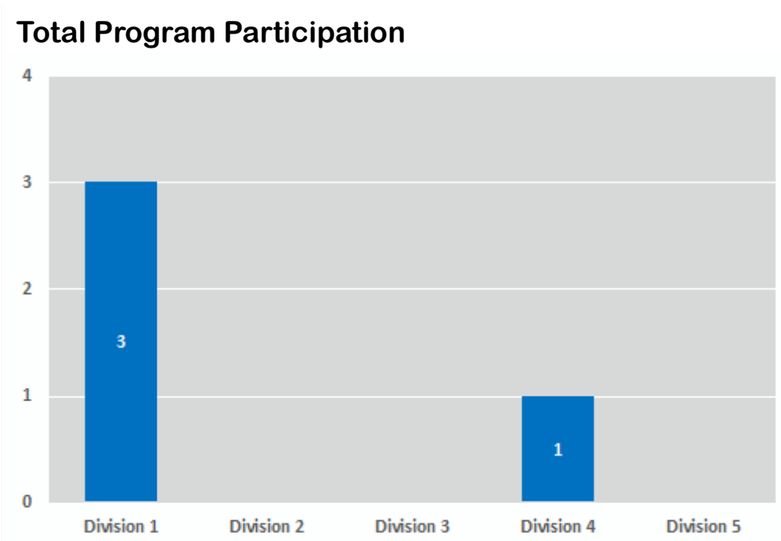

Legend

Program Participation

- Program Participants

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
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3. Due to the range of Division sizes, each panel is shown at a different scale.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

N

MWD Large Landscape Survey

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 5-25

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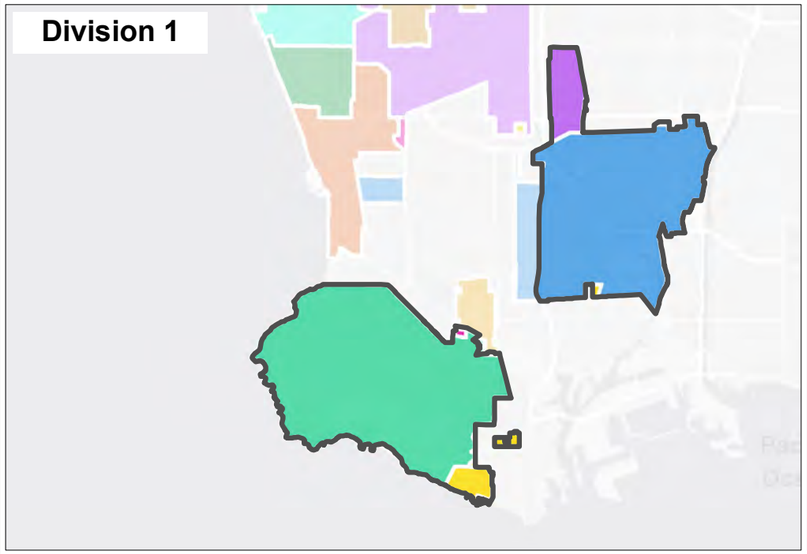

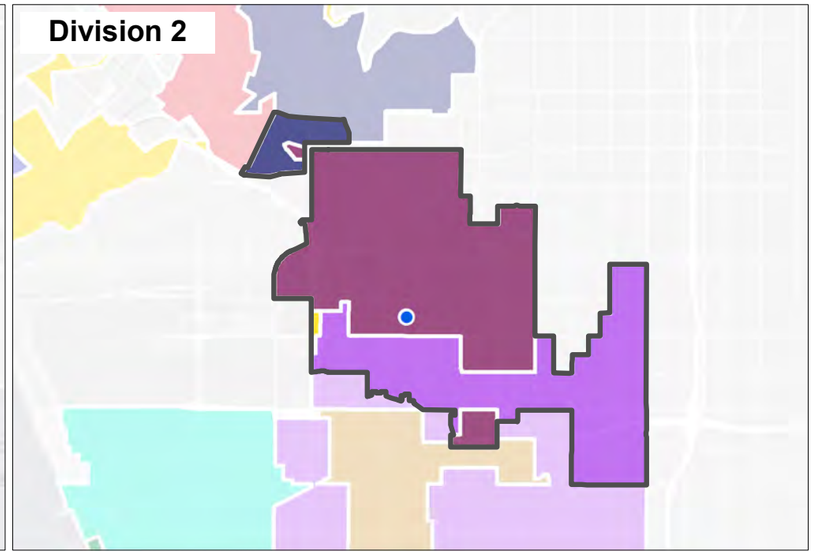

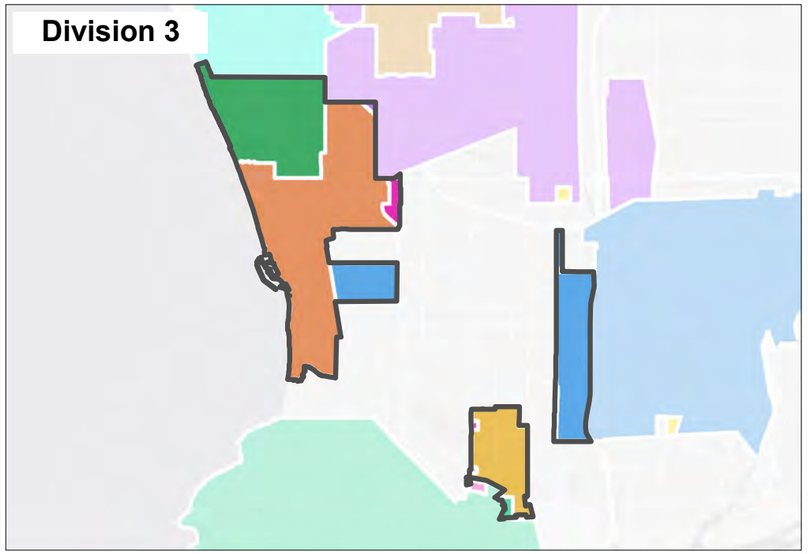

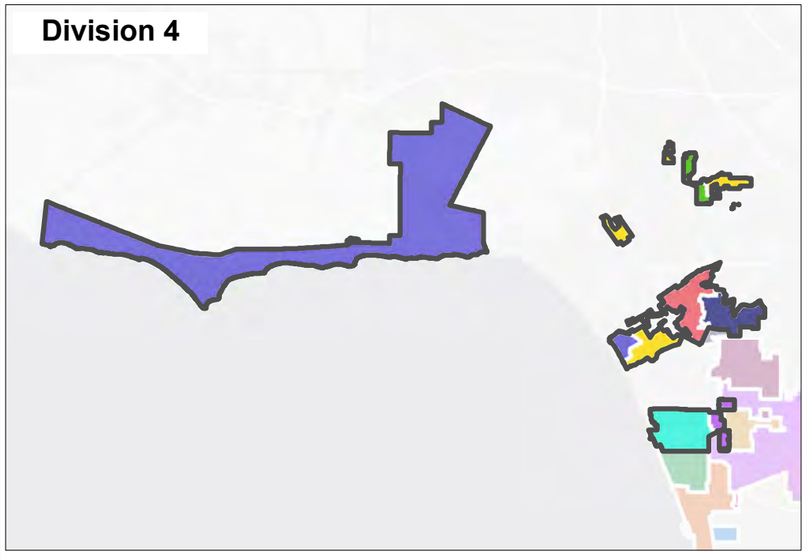

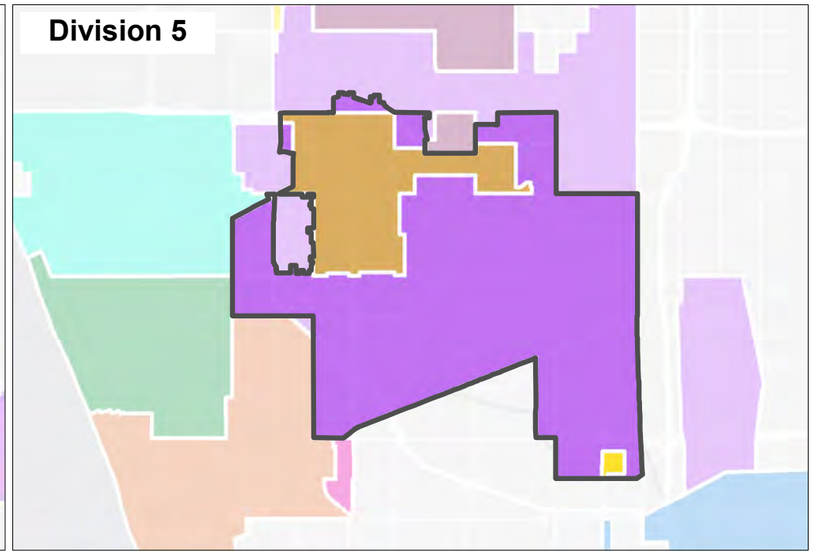

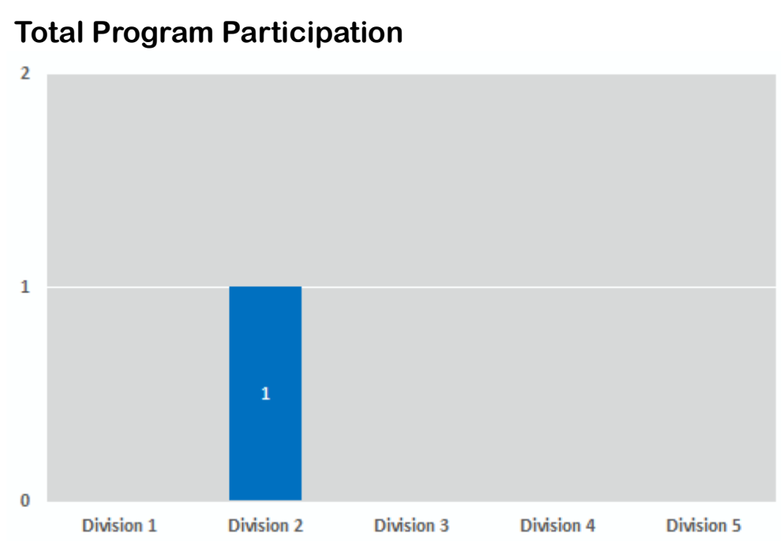

Legend

Program Participation

- Program Participants

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

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Notes

1. All locations are approximate.
2. Only program participation within the West Basin service area, based on available address and Los Angeles county parcel records, are shown.
3. Due to the range of Division sizes, each panel is shown at a different scale.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Basemap provided by ESRI.

N

MWD Water Savings Incentive Program

eki environment & water

West Basin Municipal Water District
January 2019
EKI B70108.00

Figure 5-26

Path: X:\B70108\Maps\2019\01\Fig_5-26_MWD_WSIP.mxd

5.7.2. West Basin Service Area CII Land Use

Figure 5-28 identifies the detailed land use types and locations of CII parcels (including larger multi-family residential properties), as identified by the Los Angeles County Assessor's parcel data. **Table 5-17** provides a further breakdown by CII land use type and Division and includes the qualitative prioritization for potential WUE program outreach, which is further discussed in Section 6.2.4. In the West Basin service area, over half of the CII land use by area (56%) is designated as industrial. Commercial land use comprises approximately 28%, institutional comprises approximately 6%, and 11% consists of areas classified as recreational and miscellaneous.

Figure 5-29 shows the location of publicly owned lands within the West Basin service area, based on information made available by the Los Angeles County Assessor's office.[14] These publicly owned lands include parcels owned by a wide variety of public agencies and employed for a variety of uses, including irrigated parks, office buildings, rights-of-way, schools, hospitals, and natural open space. **Table 5-18** provides a detailed breakdown of these lands, by Division. This table also includes prioritization rankings for WUE outreach opportunities, which are discussed in Section 6.2.4. Of the five Divisions, Division 4 has the largest area of land owned by public agencies; however, this appears to be primarily due to the large conservancy open space areas, which would not be expected to have much, if any, water use.

5.7.3. Participation by Program and Land Use

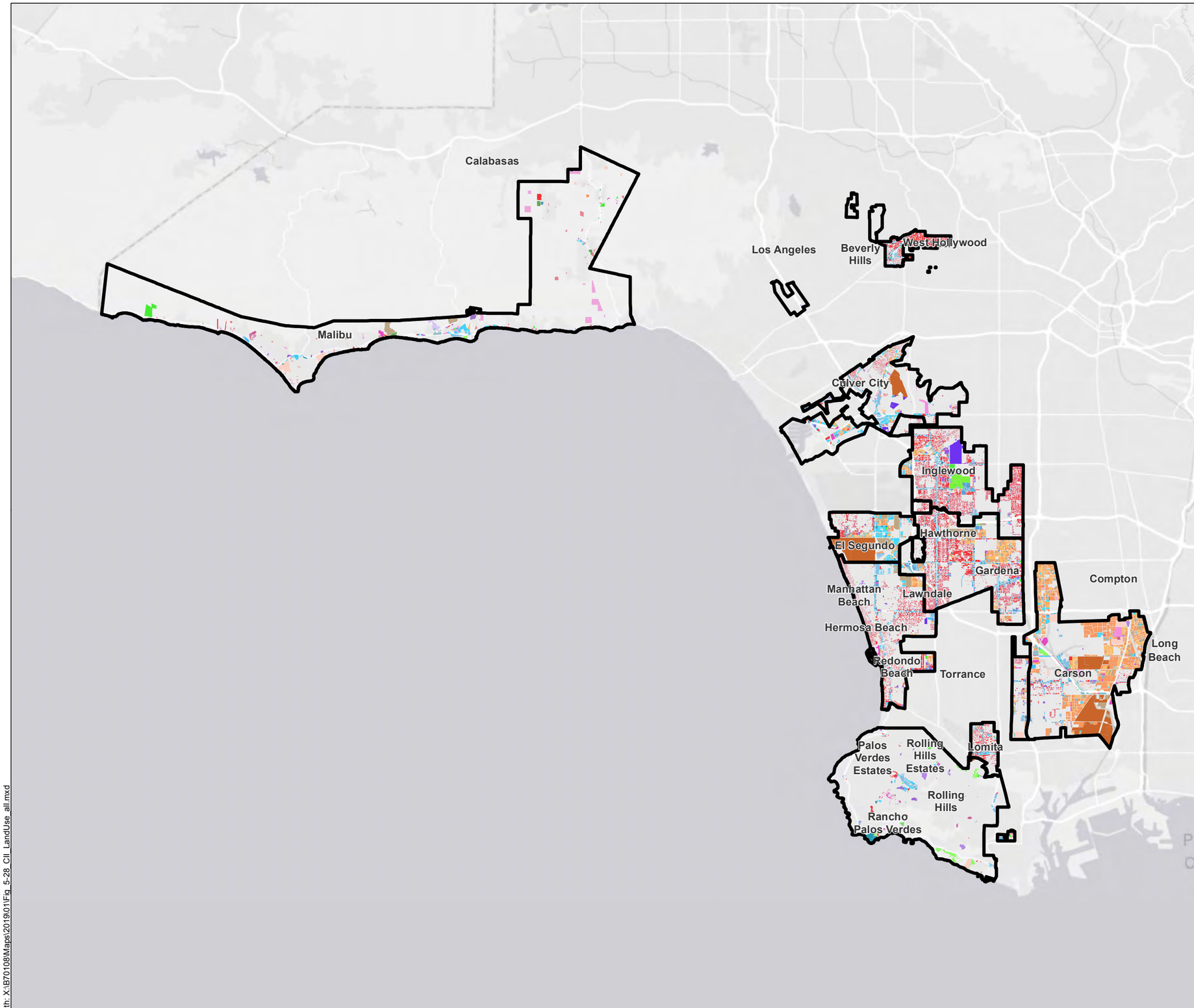
West Basin Cash for Kitchens

As shown in **Table 5-16**, 366 customers within the West Basin service area have participated in the Cash for Kitchens program. Among the participants, 73% are from the commercial sector, and 24% of the commercial customers are restaurants. Other major commercial participants include parcels designated as stores (16%) and shopping center (12%), which are also likely to be restaurants, coffee shops, and other food service facilities. Of the over 600 parcels identified as restaurants within the West Basin service area, only 14% have participated in the Cash for Kitchens program, which indicates that substantial opportunity remains to expand this program to restaurant properties through targeted marketing and outreach. Other CII customers that may benefit from this program include hotels and motels, office buildings, churches, and some types of multi-family developments.

West Basin Landscape Irrigation Efficiency Program (LIEP)

West Basin's LIEP provides outdoor water evaluations for large landscape water users, including both residential and CII customers. Approximately 45 CII customers have participated in the LIEP program, 40% of which are associated with parcels identified as office buildings. Within the West Basin Service area, over 1,500 parcels are identified as office building properties, representing a substantial opportunity to expand this program to other, similar office building properties through targeted outreach. Other CII customers that may benefit substantially from this or other outdoor WUE programs are indicated in **Table 5-17**.

[14] https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp



Legend

West Basin Director Division Boundaries

Multi-Family Residential
- Multi-Family Residential - 2-4 Units
- Multi-Family Residential - 5+ Units
- Residential - Mobile Home/Other

Commercial
- Animal Kennel
- Auto Service Station
- Bank, Savings and Loan
- Car Sales/Service
- Car Wash
- Commercial Unknown/Miscellaneous
- Department or Warehouse Store
- Hotel and Motel
- Non-Auto Shop, Paint Shop, or Laundry
- Office Building
- Parking Lot/Structure
- Professional Building
- Restaurant
- Shopping Center
- Store
- Supermarket
- Wholesale and Manufacturing Outlet

Institutional
- Adult Care Facility
- Cemetery, Mausoleum
- Children's Day Care Center
- Church
- College, University
- Convalescent Hospital, Nursing Home
- Hospital
- Mortuary, Funeral Home
- Public School
- School (Private)

Industrial
- Cement, Rock and Gravel Plant
- Food Processing Plant
- Heavy Manufacturing
- Light Manufacturing
- Lumber Yard
- Other Mineral Processing
- Radio/Television Transmission Facility
- Warehousing, Distribution, Storage

Recreational
- Athletic/Amusement/Recreational Facility
- Golf Course
- Horse Stables
- Ice Skating Rink
- Movie or Stage Theater
- Race Track
- Recreational Unknown/Miscellaneous

Miscellaneous
- Agriculture
- Other Unknown/Miscellaneous
- Petroleum and Gas Mining/Processing
- Utility/Rights of Way
- Wireless Communication Tower

Notes

1. All locations are approximate.
2. Land use type classifications are based by Assessor's parcel records.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 4 8
(Scale in Miles)

CII Land Use Types

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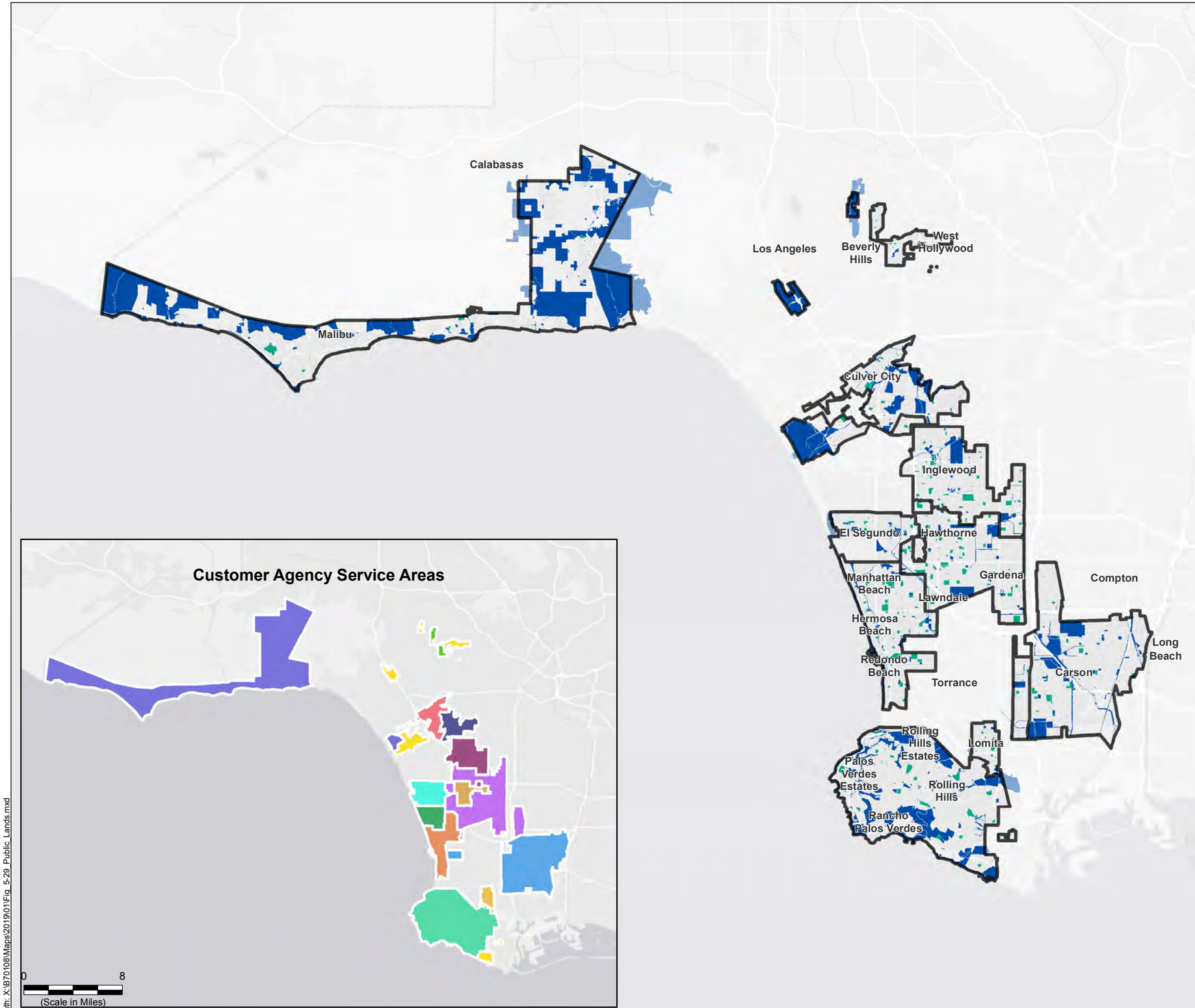
West Basin Municipan Water District
January 2019
EKI B70108.00

Figure 5-28

Path: X:\B70108\Maps\201901\Fig_5-28_CII_LandUse_all.mxd



Legend

- West Basin Director Division Boundaries
- Publicly Owned Parcels Designated as Schools
- Other Publicly Owned Parcels

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Parcels indicated as schools are based on the provided agency name. Publicly owned parcels include those owned by cities, the state, and other agencies, including but not limited to property used for offices, operations, parks, parking, etc.

Sources

1. Assessor - Publicly Owned Parcels Listing, updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 4 8
(Scale in Miles)

Publicly-Owned Lands

West Basin Municipan Water District
January 2019
EKI B70108.00
Figure 5-29

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_5-29_Public_Lands.mxd

Table 5-16
CII Program Participation Rates by Land Use Type

Land Use Type	Description	Program Participants (a)	Participation Percentage (b)	Number of Parcels in Service Area	Percentage of Parcels (%)
Cash for Kitchens (c)					
Commercial	Auto Service Station	7	1.9%	165	4%
	Bank, Savings and Loan	2	0.5%	96	2%
	Car Sales/Service	8	2.2%	713	1%
	Commercial Unknown/Miscellaneous	4	1.1%	754	1%
	Hotel and Motel	11	3.0%	269	4%
	Office Building	35	9.6%	1,564	2%
	Parking Lot/Structure	8	2.2%	1,390	1%
	Professional Building	1	0.3%	357	0.3%
	Restaurant	87	24%	612	14%
	Shopping Center	43	12%	426	10%
	Store	59	16%	1,823	3%
	Supermarket	4	1.1%	64	6%
Industrial	Heavy Manufacturing	2	0.5%	142	1%
	Industrial Unknown/Miscellaneous	2	0.5%	657	0.3%
	Light Manufacturing	4	1.1%	2,008	0.2%
	Other Mineral Processing	1	0.3%	55	2%
	Warehousing, Distribution, Storage	1	0.3%	1,380	0.1%
Institutional	Adult Care Facility	3	0.8%	91	3%
	Cemetery, Mausoleum	2	0.5%	19	11%
	Church	17	4.6%	401	4%
	College, University	3	0.8%	17	18%
	Hospital	4	1.1%	35	11%
	School (Private)	3	0.8%	179	2%
Miscellaneous	Other Unknown/Miscellaneous	1	0.3%	89	1%
	Utility/Rights of Way	1	0.3%	122	1%
Recreational	Athletic, Amusement or Recreational Facility	8	2.2%	116	7%
	Recreational Unknown/Miscellaneous	1	0.3%	8	13%
Multi-Family Residential	Multi-Family Residential - 2-4 Units	13	3.6%	20,583	0.1%
	Multi-Family Residential - 5+ Units	29	7.9%	7,513	0.4%
Other Residential	Residential - Mobile Home/Other	2	0.5%	179	1%
	Total	**366**	**100%**	**41,827**	**0.9%**

Table 5-16 (continued)
CII Program Participation Rates by Land Use Type

Land Use Type	Description	Program Participants (a)	Participation Percentage (b)	Number of Parcels in Service Area	Percentage of Parcels (%)
LIEP (d)					
Commercial	Commercial Unknown/Miscellaneous	1	2%	754	0.1%
	Hotel and Motel	1	2%	269	0.4%
	Office Building	18	40%	1,564	1%
	Professional Building	1	2%	357	0.3%
	Restaurant	4	9%	612	1%
	Store	2	4%	1,823	0.1%
Industrial	Heavy Manufacturing	2	4%	142	1%
	Other Mineral Processing	2	4%	55	4%
Institutional	Church	1	2%	401	0.2%
	School (Private)	2	4%	179	1%
Multi-Family Residential	Multi-Family Residential - 2-4 Units	8	18%	20,583	0.04%
	Multi-Family Residential - 5+ Units	3	7%	7,513	0.04%
	Total	**45**	**100%**	**34,252**	**0.1%**
MWD Large Landscape Survey					
Institutional	College, University	1	25%	17	6%
	Church	1	25%	401	0.2%
	Adult Care Facility	1	25%	91	1%
Miscellaneous	Wireless Communication Tower	1	25%	53	2%
	Total	**4**	**100%**	**144**	**2.8%**
MWD Rebate Devices (e)					
Commercial	Auto Service Station	1	0.2%	165	0.6%
	Bank, Savings and Loan	10	2%	96	10.4%
	Car Sales/Service	3	0.6%	713	0.4%
	Commercial Unknown/Miscellaneous	2	0.4%	754	0.3%
	Hotel and Motel	15	3%	269	5.6%
	Office Building	14	3%	1,564	0.9%
	Professional Building	1	0.2%	357	0.3%
	Restaurant	2	0.4%	612	0.3%
	Shopping Center	2	0.4%	426	0.5%
	Store	6	1%	1,823	0.3%
Industrial	Heavy Manufacturing	1	0.2%	142	0.7%
	Industrial Unknown/Miscellaneous	1	0.2%	657	0.2%
	Light Manufacturing	3	1%	2,008	0.1%
	Warehousing, Distribution, Storage	9	2%	1,380	0.7%

Table 5-16 (continued)
CII Program Participation Rates by Land Use Type

Land Use Type	Description	Program Participants (a)	Participation Percentage (b)	Number of Parcels in Service Area	Percentage of Parcels (%)
Institutional	Adult Care Facility	4	1%	91	4.4%
	Cemetery, Mausoleum	1	0.2%	19	5.3%
	Church	2	0.4%	401	0.5%
	Hospital	1	0.2%	35	2.9%
	School (Private)	1	0.2%	179	0.6%
Miscellaneous	Wireless Communication Tower	2	0.4%	53	3.8%
Multi-Family Residential	Multi-Family Residential - 2-4 Units	40	9%	20,583	0.2%
	Multi-Family Residential - 5+ Units	342	73%	7,513	4.6%
Other Residential	Residential - Mobile Home/Other	4	1%	179	2.2%
	Total	**467**	**100%**	**40,019**	**1.2%**
Hotel, Motel, School HE Toilets Install and Restroom Retrofit (e)					
Commercial	Bank, Savings and Loan	3	2%	96	3.1%
	Car Sales/Service	5	4%	713	0.7%
	Hotel and Motel	11	8%	269	4.1%
	Office Building	19	13%	1,564	1.2%
	Parking Lot/Structure	2	1%	1,390	0.1%
	Professional Building	4	3%	357	1.1%
	Restaurant	9	6%	612	1.5%
	Shopping Center	11	8%	426	2.6%
	Store	30	21%	1,823	1.6%
	Supermarket	1	1%	64	1.6%
Industrial	Food Processing Plant	1	1%	38	2.6%
	Heavy Manufacturing	2	1%	142	1.4%
	Light Manufacturing	13	9%	2,008	0.6%
	Other Mineral Processing	1	1%	55	1.8%
	Warehousing, Distribution, Storage	4	3%	1,380	0.3%
Institutional	Adult Care Facility	6	4%	91	6.6%
	Church	7	5%	401	1.7%
	Hospital	1	1%	35	2.9%
	School (Private)	2	1%	179	1.1%
Miscellaneous	Wireless Communication Tower	2	1%	53	3.8%
Recreational	Athletic, Amusement or Recreational Facility	4	3%	116	3.4%
	Movie or Stage Theater	1	1%	8	12.5%
Multi-Family Residential	Multi-Family Residential - 5+ Units	3	2%	7,513	0.0%
	Total	**142**	**100%**	**19,333**	**0.7%**

Table 5-16 (continued)
CII Program Participation Rates by Land Use Type

Land Use Type	Description	Program Participants (a)	Participation Percentage (b)	Number of Parcels in Service Area	Percentage of Parcels (%)
MWD Commercial and Multi-Family HE Toilet Rebates (e)					
Commercial	Bank, Savings and Loan	1	0.3%	96	1.0%
	Car Sales/Service	1	0.3%	713	0.1%
	Commercial Unknown/Miscellaneous	2	1%	754	0.3%
	Hotel and Motel	11	3%	269	4.1%
	Office Building	1	0.3%	1,564	0.1%
	Restaurant	1	0.3%	612	0.2%
Industrial	Light Manufacturing	1	0.3%	2,008	0.0%
	Warehousing, Distribution, Storage	3	1%	1,380	0.2%
Institutional	Adult Care Facility	1	0.3%	91	1.1%
	Church	2	1%	401	0.5%
	School (Private)	1	0.3%	179	0.6%
Miscellaneous	Wireless Communication Tower	1	0.3%	53	1.9%
Multi-Family Residential	Multi-Family Residential - 2-4 Units	35	9%	20,583	0.2%
	Multi-Family Residential - 5+ Units	325	83%	7,513	4.3%
Other Residential	Residential - Mobile Home/Other	4	1%	179	2.2%
	Total	**390**	**100%**	**36,395**	**1.1%**
WSIP					
Institutional	Hospital	1	100%	35	2.9%
	Total	**1**	**100%**	**35**	**2.9%**

Notes
(a) Given the size of the Los Angeles County Assessor's parcel dataset (over 2 million parcels), not all parcels are attributed with their land use type, and some inaccuracies may exist. Therefore, the total number of program participants included in this table may be less than the overall number of participants within the West Basin service area. Although the parcel dataset has some limitations, it is still appropriate for identifying overall participation trends and opportunities.
(b) The percentage of participation is calculated based on the total number of parcels in the service area. Many businesses, particularly those with large facilities, are associated with more than one parcel. Therefore, the calculated percentage of participation may be lower than the actual value.
(c) Cash for Kitchens program has both recycled water and potable water customer participants. Only potable water customers are summarized here.
(d) LIEP is open to both commercial and residential customers, 85% of participants have been single-family residential customers. Only commercial customers are summarized here.
(e) Hotel/Motel/School HE Toilets Installation program, Restroom Retrofit program, MWD Commercial Device Rebates program, and MWD Commercial and Multi-Family HE Toilet Rebates program have both recycled water and potable water customer participants. All customers are summarized here.

Table 5-18
Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties

Public Agency	Approximate Area Owned (acres)	Outreach Priority	Potential WUE Opportunities				
			Residential Indoor	CII Indoor	Outdoor	School Programs	Low Income
DIVISION 1							
Carson City	101	High	X	X	X		
Green Hills Memorial Park	121	High			X		
LA City	70	High	X	X	X		
LA County Housing Authority	12	High	X		X		X
LA Unified School Dist	213	High		X	X	X	
Miraleste Recreation And Park Dist	43	High			X		
Palos Verdes Estates City	786	High	X	X	X		
Palos Verdes Library Dist	4	High		X		X	
Palos Verdes Peninsula Unified School Dist	341	High		X	X	X	
Rancho Palos Verdes City	1,595	High	X	X	X		
Redevelopment Agency Of Carson City	17	High	X	X			
Rolling Hills City	26	High	X	X	X		
Rolling Hills Estates City	99	High	X	X	X		
California Public Employees Retirement System	9	Medium		X			
Carson City Housing Authority	1	Medium	X		X		X
Carson Successor Agency	7	Medium	X	X			
LA County	655	Medium	X	X	X		
Lomita City	1	Medium	X	X	X		
Ridgecrest Ranchos Recreation And Park Dist	1	Medium			X		
Westfield Park Recreation And Parkway District No 12	1	Medium			X		
Carson Reclamation Authority	296	Low		X	X		
Alameda Corridor Transportation Authority	0.03	Low					
California Joint Powers Insurance Authority	6	Low		X			
Co Sanitation District No 5	115	Low		X	X		
Co Sanitation District No 8	345	Low		X	X		
D And M Eight Limited Ptnshp	0.2	Low					
Dominguez Fire Pro District Of LA Co	0.5	Low		X			
LA County Consolidated Fire Pro Dist	4	Low		X			
LA County Flood Control Dist	185	Low		X	X		
LA County Metropolitan Transportation Authority	55	Low		X	X		
State Of California	352	Low		X	X		
US Govt	91	Low		X			
US Postal Service	2	Low		X			
West Basin Mun Water Dist	5	Low		X			
Division 1 - Total Publicly Owned Area	**5,558**						

Table 5-18 (continued)
Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties

Public Agency	Approximate Area Owned (acres)	Outreach Priority	Potential WUE Opportunities				
			Residential Indoor	CII Indoor	Outdoor	School Programs	Low Income
DIVISION 2							
Inglewood City	165	High	X	X	X		
Inglewood City Library	0.1	High		X		X	
Inglewood Park Cemetery	291	High			X		
Inglewood Unified School Dist	168	High		X	X	X	
LA County Housing Authority	11	High	X		X		X
LA Unified School Dist	72	High		X	X	X	
Lennox Elementary School Dist	3	High		X	X	X	
Lennox School Dist	39	High		X	X	X	
Todays Fresh Start Inc	2	High		X	X	X	
El Camino Community College Dist	1	High		X	X	X	
Los Angeles Community College Dist	64	High		X	X	X	
Culver City	0.002	Medium	X	X	X		
Inglewood City Housing Authority	1	Medium	X		X		X
LA County	31	Medium	X	X	X		
LA County Community Development Commission	3	Medium		X			
Redevelopment Agency Of Inglewood City	2	Medium	X	X			
Co Sanitation District No 5	0.3	Low		X			
Inglewood Water Dept	0.02	Low		X			
LA County Consolidated Fire Pro Dist	1	Low		X			
LA County Flood Control Dist	11	Low		X			
LA County Metropolitan Transportation Authority	22	Low		X			
State Of California	23	Low		X			
US Govt	1	Low		X			
US Postal Service	1	Low		X			
Division 2 - Total Publicly Owned Area	**912**						
DIVISION 3							
Beach Cities Health Dist	10	High		X			
Hermosa Beach City	110	High	X	X	X		
Hermosa Beach City School Dist	22	High		X	X	X	
LA County Housing Authority	15	High	X		X		X
LA Unified School Dist	37	High		X	X	X	
Lomita City	14	High	X	X	X		
Manhattan Beach City	114	High	X	X	X		
Manhattan Beach Unified School Dist	92	High		X	X	X	
Pacific Crest Cemetery Co Inc	17	High			X		
Redondo Beach City	158	High	X	X	X		
Redondo Beach Unified School Dist	103	High		X	X	X	

Table 5-18 (continued)
Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties

Public Agency	Approximate Area Owned (acres)	Outreach Priority	Potential WUE Opportunities				
			Residential Indoor	CII Indoor	Outdoor	School Programs	Low Income
South Bay Union High School Dist	113	High		X	X	X	
Torrance City - Cal Water Service Area	14	High	X	X	X		
Torrance Unified School Dist	49	High		X	X	X	
Cypress School Dist	0.4	Medium		X	X	X	
LA County	177	Medium	X	X	X		
Lomita City Housing Authority	2	Medium	X		X		X
Redevelopment Agency Of Redondo Beach City	4	Medium	X	X			
South Bay Hospital Dist	2	Medium		X			
Redondo Beach City Parking Authority	6	Low	n/a				
LA County Consolidated Fire Pro Dist	0.3	Low		X			
LA County Flood Control Dist	28	Low		X			
LA County Metropolitan Transportation Authority	29	Low		X			
South Bay Cities San Dist	0.1	Low		X			
State Of California	16	Low		X			
US Govt	4	Low		X			
Division 3 - Total Publicly Owned Area	**1,138**						
DIVISION 4							
Culver City	127	High	X	X	X		
Culver City Unified School Dist	76	High		X	X	X	
El Segundo City	91	High	X	X	X		
El Segundo Unified School Dist	48	High		X	X	X	
LA Unified School Dist	21	High		X	X	X	
Lennox School Dist	32	High		X	X	X	
Malibu City	455	High	X	X	X		
Roman Catholic Archbishop Of LA Holy Cross Cemetery	193	High			X		
Temple Israel Of Hollywood	41	High		X	X	X	
Wiseburn School Dist	44	High		X	X	X	
Los Angeles Community College Dist	84	High		X	X	X	
California Joint Powers Insurance Authority	2	Medium		X			
Culver City Housing Authority	1	Medium	X		X		X
LA County	1,468	Medium	X	X	X		
LA County Community Development Commission	0.2	Medium		X			
LA County Housing Authority	0.1	Medium	X		X		X
Lennox Elementary School Dist	0.4	Medium		X	X	X	
Redevelopment Agency Of Culver City	2	Medium	X	X			
Regents Of The University Of Ca	1	Medium		X	X	X	

Table 5-18 (continued)
Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties

Public Agency	Approximate Area Owned (acres)	Outreach Priority	Potential WUE Opportunities				
			Residential Indoor	CII Indoor	Outdoor	School Programs	Low Income
Successor Agency To The Culver City Redevelopment Agency	4	Medium	X	X			
US Govt Navy Dept	47	Medium	X	X	X		
Baldwin Hills Regional Conservation Authority	124	Low		X			
Calif Dept Of Transportation	0.4	Low			X		
LA County Consolidated Fire Pro Dist	3	Low		X			
LA County Flood Control Dist	72	Low		X			
LA County Metropolitan Transportation Authority	31	Low		X			
LA County Waterworks District No 29	34	Low		X			
Mountains Recreation And Conservation Authority	3,317	Low		X			
Santa Monica Mountains Conservancy	953	Low		X			
State Coastal Conservancy	0.2	Low		X			
State Of California	4314	Low		X	X		
State Of California Dept Of Parks And Recreation	17	Low			X		
State Of California Dept Of Transportation	1	Low		X			
State Of California Parks	1918	Low			X		
US Govt	1311	Low		X	X		
US Postal Service	3	Low		X			
West Basin Mun Water Dist	23	Low		X			
Division 4 - Total Publicly Owned Area	**14,858**						
DIVISION 5							
Centinela Valley Union High School Dist	97	High		X	X	X	
Gardena City	83	High	X	X	X		
Hawthorne City	139	High	X	X	X		
Hawthorne School Dist	66	High		X	X	X	
LA County Office Of Education	6	High		X	X	X	
LA County Park	203	High			X		
LA Unified School Dist	105	High		X	X	X	
Lawndale Elementary School Dist	9	High		X	X	X	
Lawndale School Dist	84	High		X	X	X	
Wiseburn School Dist	33	High		X	X	X	
El Camino Community College Dist	99	High		X	X	X	
California School Boards Assn Finance Corp	4	Medium		X	X	X	
Hawthorne City Ex At Acq	1	Medium		X			
Hawthorne City Park	7	Medium			X		
LA County	130	Medium	X	X	X		
Lawndale City	7	Medium	X	X	X		

Table 5-18 (continued)
Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties

Public Agency	Approximate Area Owned (acres)	Outreach Priority	Potential WUE Opportunities				
			Residential Indoor	CII Indoor	Outdoor	School Programs	Low Income
Lawndale City Housing Authority	1	Medium	X		X		X
Successor Agency To The Lawndale Redevelopment Agency	1	Medium	X	X			
Hawthorne City Parking Authority	20	Low	n/a				
Co Sanitation District No 5	0.1	Low		X			
LA County Consolidated Fire Pro Dist	0.5	Low		X			
LA County Flood Control Dist	57	Low		X			
LA County Metropolitan Transportation Authority	31	Low		X			
South Bay Regional Public Communication Authority	1	Low		X			
State Of California	8	Low		X			
US Govt	12	Low		X			
US Postal Service	6	Low		X			
Division 5 - Total Publicly Owned Area	**1,209**						

Notes
(a) Table reflects property owned by public agencies within the West Basin service area based on LA County data.
(b) Water efficiency program outreach opportunities were prioritized generally based on assumed water using activities, opportunities for increased water efficiency, and relative size of facilities owned by agency.

Source
Los Angeles County, 2018. "Assessor - Publicly Owned Parcels Listing," updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

West Basin Hotel/Motel/School HE Toilet Installation Program and Complete Restroom Retrofit Program

The West Basin Hotel/Motel/School HE Toilet Installation program and Complete Restroom Retrofit program are both grant funded programs administered by West Basin that provide toilet replacements to CII customers. Given their similarities, both programs were evaluated together in order to better understand the customer participation. The highest rates of participation in these programs were from CII customers in parcels identified as stores, office buildings, and hotels or motels. Although directly targeted through this program, participation by hotels and motels represents only 4% of all hotel and motel parcels in the service area. Participation by stores represents only 1.6% of store parcels in the service area, and participation by office buildings represents only 1.2%. Other CII customers that may benefit substantially from this or similar WUE programs are indicated in **Table 5-17**.

MWD Commercial Device Rebates (all devices)

Over 400 customers associated with CII parcels have participated in the MWD Commercial Device Rebates program.[15] Of these participants, the majority (73%) are from multi-family residential (five+ unit) parcels. Other customers with relatively high rates of participation include hotels and motel (3%); bank, saving and loan (2%); and office building (3%) parcels.

MWD Commercial and Multi-Family HE Toilet Rebates

The MWD Commercial and Multi-Family HE Toilet Rebates program, which makes up the majority participation of the MWD Commercial Device Rebates program, has had approximately 390 participants. As shown in **Table 5-16**, 92% of participants are from multi-family residential parcels, and 325 out of 360 multi-family participants are from the higher-density (five+ unit) parcels. While multi-family residential parcels make up the majority of participation in this program, this participation represents only 1.3% of multi-family residential parcels in the service area.

MWD Large Landscape Survey

To date, only four customers within the West Basin service area have participated in the MWD Large Landscape Survey program. Of these, three are associated with institutional sector parcels (college, church, and adult care facility) in Division 1. Given this low level of participation to date, there is substantial opportunity to expand this program to additional customers. Other CII customers that may benefit substantially from this or other outdoor WUE programs are indicated in **Table 5-17**.

MWD WSIP Program

To date, only one customer within the West Basin service area has taken advantage of the WSIP program. This customer was a hospital located in Division 2. The WSIP program works with businesses, agriculture, and institutions to develop customized water efficiency projects, encouraged by financial incentives. Given the very limited participation to date, there is great opportunity for West Basin to outreach to high-water using organizations that have more involved process-based uses of water (e.g., uses other than the more common typical bathrooms at kitchens). High water using CII customers, including light and heavy industrial users and other hospitals, could benefit greatly from this program.

[15] Offerings for CII customers include rebates for a variety of HE water using devices such as HE clothes washers, rotating sprinkler nozzles, WBIC, rain barrels and cisterns, ultra-low and zero water urinals, plumbing flow control valves, connectionless food steamers, air-cooled ice machines, and large rotary nozzles.

Table 5-17
Water Use Efficiency Program Outreach Opportunities by Land Use Type

Land Use Description	Approximate Area (acres)						Outreach Priority	Outdoor/ Large Landscape	Indoor
	Division 1	Division 2	Division 3	Division 4	Division 5	Total Area			
RESIDENTIAL									
Single Family Residential	12,523	2,729	4,419	19,025	2,714	41,410	High	X	X
Multi-Family Residential - 2-4 Units	128	939	642	607	883	3,198	High	X	X
Multi-Family Residential - 5+ Units	150	581	356	594	614	2,294	High	X	X
Residential - Mobile Home/Other	387	3	154	204	64	812	High		X
Total Residential Area	**13,188**	**4,252**	**5,570**	**20,430**	**4,274**	**47,714**			
COMMERCIAL									
Hotel and Motel	102	28	34	85	39	287	High		X
Office Building	206	69	132	624	73	1,105	High		X
Restaurant	29	28	48	50	41	195	High		X
Animal Kennel	1	0.3	1	7	1	10	Medium		X
Car Wash	4	4	9	6	7	30	Medium	X	
Department or Warehouse Store	13	49	19	27	71	179	Medium		X
Non-Auto Service and Repair Shop, Paint Shop, or Laundry	1	6	2	2	9	20	Medium		X
Professional Building	24	23	24	27	26	124	Medium		X
Shopping Center	168	72	202	179	150	770	Medium	X	X
Store	62	90	131	125	128	535	Medium		X
Supermarket	10	24	27	24	23	107	Medium		X
Wholesale and Manufacturing Outlet	-	1	0.3	12	0.2	13	Medium		X
Auto Service Station	15	12	14	25	10	75	Low		X
Bank, Savings and Loan	12	4	12	13	16	56	Low		X
Car Sales/Service	109	60	51	33	104	357	Low		X
Parking Lot/Structure	167	157	64	178	103	668	Low	n/a	
Total Commercial Area	**922**	**626**	**769**	**1,415**	**800**	**4,533**			
INDUSTRIAL									
Food Processing Plant	24	3	4	2	13	46	Medium		X
Heavy Manufacturing	340	5	134	480	133	1,092	Medium		X
Light Manufacturing	946	104	168	283	443	1,944	Medium		X
Cement, Rock and Gravel Plant	-	0.6	3	-	-	4	Low		X
Lumber Yard	24	1	4	4	11	44	Low		X

Table 5-17 (continued)
Water Use Efficiency Program Outreach Opportunities by Land Use Type

Land Use Description	Approximate Area (acres)						Outreach Priority	Outdoor/ Large Landscape	Indoor
	Division 1	Division 2	Division 3	Division 4	Division 5	Total Area			
Other Mineral Processing	1,428	2	0.4	1,209	-	2,639	Low		X
Radio/Television Transmission Facility	-	0.1	-	-	-	0.1	Low	n/a	
Petroleum and Gas Mining and Processing	120.1	-	3.6	62.7	0	186.4	Low		X
Warehousing, Distribution, Storage	2,324	88	144	169	298	3,024	Low		X
Total Industrial Area	**5,206**	**204**	**461**	**2,209**	**898**	**8,979**			
INSTITUTIONAL									
Adult Care Facility	33	14	17	41	14	118	High		X
Cemetery, Mausoleum	3	13	18	12	1	47	High	X	
Children's Day Care Center	3	1	-	-	-	4	High		X*
Church	101	68	71	54	62	356	High	X	X
College, University	40	6	-	61	-	106	High	X	X*
Convalescent Hospital, Nursing Home	2	2	5	0.4	2	12	High		X
Hospital	6	32	16	16	13	83	High		X
Public School	-	1	-	-	-	1	High	X	X*
School (Private)	103	19	43	42	33	240	High	X	X*
Mortuary, Funeral Home	-	1	0.4	3	-	4	Medium		X
Total Institutional Area	**290**	**159**	**170**	**229**	**124**	**972**			
RECREATIONAL									
Golf Course	188	-	-	10	-	198	High	X	
Ice Skating Rink	1	-	-	-	-	1	High		X
Movie or Stage Theater	0.4	0.4	0.3	5	0.3	6	High		X
Race Track	-	210	-	-	-	210	High	X	X
Athletic, Amusement or Recreational Facility	28	40	16	142	24	249	Medium	X	X
Horse Stables	27	-	-	-	-	27	Medium	X	X
Unknown/Miscellaneous	-	-	-	52	-	52	Low	n/a	
Total Recreational Area	**244**	**251**	**16**	**209**	**24**	**743**			

Table 5-17 (continued)
Water Use Efficiency Program Outreach Opportunities by Land Use Type

Land Use Description	Approximate Area (acres)						Outreach Priority	Outdoor/ Large Landscape	Indoor
	Division 1	Division 2	Division 3	Division 4	Division 5	Total Area			
MISCELLANEOUS									
Agriculture	20.2	0.6	3.8	339.6	13.8	378	Low	n/a	
Unknown/Miscellaneous	121.2	4.9	36.9	60.9	2.9	226.8	Low	n/a	
Utility/Rights of Way	72.2	18.8	7.5	98.7	2.6	199.8	Low	n/a	
Wireless Communication Tower	45.9	7.5	8.2	1.7	16.2	79.5	Low	n/a	
Total Miscellaneous Area	**260**	**32**	**56**	**501**	**36**	**884**			

Notes
(a) Water efficiency program outreach opportunities were prioritized generally based on assumed water using activities and opportunities for increased water efficiency.
(b) Selected land use categories classifications were consolidated for purposes of this assessment.
(c) Asterisk (*) indicates potentially eligible for school-focused programs.

Source
(a) Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

5.8. Estimated Water Savings per AWE Conservation Tracking Tool

West Basin uses the Alliance for Water Efficiency ("AWE") Conservation Tracking Tool ("AWE Tracking Tool") to track and plan the District's WUE programs. West Basin provided EKI with the most recent version of the tool utilized by the District, Version 1.2. EKI migrated the data provided in Version 1.2 to the latest version of the tool (Version 3.0) and updated the tool with selected information, including projected water demand data through 2035 from customer agency's 2015 UWMPs, among other data. The AWE Tracking Tool provides a high level estimate of water savings based on a series of assumptions, and is intended to be a method to compare the relative benefit of various WUE programs. Based on the AWE Tracking Tool estimates, 12,000 acre feet of water has been saved as a result of the implementation of WUE programs (active water conservation) since West Basin's WUE Master Plan was published in 2011. Since 1995, an estimated 27,000 acre feet of water has been saved through the implementation of these WUE programs.

The AWE Tracking Tool includes a mechanism to estimate water savings for a suite of WUE programs, in addition to the ability for the user to enter estimates for additional programs. **Table 5-19** summarizes the amount of water savings estimated for the interventions included as default activities in the AWE Tracking Tool. The estimated savings is on a per unit basis, over a 10-year time horizon. For interventions with an estimated lifespan of less than 10 years, the total savings reflects only the savings estimated over its useful life.[16] It should be noted that while a great amount of water savings may be

[16] Neither Version 1.2 or Version 3.0 of the AWE Tracking Tool includes estimated cost to implement or administer these programs. Although EKI's scope of work indicated that program cost relative to anticipated water savings would be evaluated based on AWE Tracking Tool Version 3.0 estimates, this cannot be achieved due to the limited information included in the Tool.

achieved by an individual intervention, the total savings achieved is dependent on the rate of participation or adoption. Therefore, potential water savings should always be evaluated in context with program popularity and participation rates.

Table 5-19
Estimated Relative Water Savings for WUE Interventions per AWE Conservation Tracking Tool

Activity Name	Total Water Savings, 10-year Horizon (gallons)
Residential WUE Interventions	
Residential Meter Installation	378,400
Residential 4.0 Washer, MF Common Area	240,000
Residential HE Toilets, MF	198,160
Residential HE Toilet Direct Install, MF	198,160
Residential Irrigation Controller, SF	165,564
Res. Irr. Controller, SF Customer Financed	165,564
Residential ULF Toilets, MF	161,106
Residential HE Toilets, SF	107,706
Residential ULF Toilets, SF	87,566
Residential Surveys, SF	61,865
Residential 4.0 WF Washer, SF	50,000
Residential LF Showerhead, SF	20,623
Residential Surveys, MF	20,075
Residential LF Showerhead, MF	18,980
Residential Efficient Irrigation Nozzles, SF	1,500
CII WUE Interventions	
CII Cooling Tower	1,049,400
CII Food Steamer	815,000
CII Dishwasher	577,570
CII Spray Rinse Valve	282,850
CII Laundromat	240,000
CII Tank-Type HE Toilet	130,196
CII Valve-Type HE Toilet	130,196
CII Tank-Type ULFT Rebate	105,850
CII Valve-Type ULFT Rebate	105,850
CII 1/2 Gallon Urinal	62,060

6. RECOMMENDATIONS FOR WUE PROGRAMS AND SERVICES

The prior sections identified potential future WUE program opportunities based on: (1) regional, local, and regulatory drivers; (2) feedback and preferences provided by the customer agencies; (3) patterns observed in past WUE customer program participation; (4) available housing stock and customer demographics; and (5) the distribution of commercial, industrial, and institutional facilities across the West Basin service area. This section synthesizes these findings and identifies key recommendations and strategies for future WUE programs and services. In addition, the analyses presented throughout this document are intended to be used as tools to guide and inform decisions regarding WUE programs and services over the next several years and to provide objective analyses to support grant applications for available funding sources.

Specifically, this WUE Data Study provides West Basin with:

- A series of analytical results to serve as tools to support future WUE program analysis, reporting, and grant applications;
- A list of recommendations for WUE programs and services; and
- Recommendations for increased services to enhance coordination and communications with the customer agencies and cities, provide more regionalization of drought response, and facilitate reporting to agency decision makers.

6.1. Approach to Identification of Opportunities

The objective of this WUE Data Study process was to provide a plan that: (1) articulated guiding principles and strategies for West Basin's WUE programs and services, and (2) facilitated innovation and adaptability given California's rapidly changing water resources landscape. The recommendations provided below were developed based on the following **guiding principles** that maximize the WUE benefit within the service area and support the pursuit of funding opportunities**:**

1) Provide WUE programs that are highly valued and utilized by West Basin's customer agencies, cities, and their water customers.
2) Align West Basin's WUE program offerings with current California and Federal priorities.
3) Offer WUE programs that are progressive, and encourage the use of new, but proven, WUE technologies and devices as they evolve.
4) Leverage the WUE programs provided by other entities and provide outreach and marketing to target these programs to strategic customer sectors.
5) Rely on objective, quantitative assessment of existing WUE programs, customer demographics, and water use by customer agencies to continually inform decision-making in the future, and adaptively manage WUE programs and services to respond to the changing regulatory and water reliability environment.

6.2. Recommendations for WUE Programs and Services

West basin's customer agencies are facing a growing need to improve WUE as a result of changes in California water efficiency regulations (i.e., the Making Water Conservation a California Way of Life initiative) and the need to enhance long-term water supply reliability in response to changing environmental and regulatory impacts to supplies (Section 3.3). In the WUE Survey, over half of the

customer agencies reported that they anticipate making changes to the way their agencies approach WUE as a direct result of the new legislation (AB 1668/SB 606). Customer agencies also expressed a broad desire to partner with West Basin for the implementation of new and continued WUE programs and look to West Basin for their proven ability to leverage available funding resources and provide regional consistency in services (Section 3.4).

West Basin is in a unique position to respond to its customer agencies' growing need to increase WUE and to provide regional coordination efforts. In light of these drivers, the recommendations detailed below include opportunities for West Basin to expand its role and services to benefit the region. To the extent that West Basin adopts these recommendations, additional staff resources may be warranted to fulfill this expanded role.

The recommendations below are grouped into four categories:

- Communication and Outreach,
- Customer Agency Planning and Regulatory Compliance Support,
- Residential WUE Programs, and
- CII WUE Programs.

Based on the evaluations of past WUE program participation in Section 5 above, certain demographic, and property and business characteristics are correlated with higher or lower rates of participation in particular types of programs. Given the diverse makeup of West Basin's customer agencies, the result is that a WUE program offered across the region would not be expected to have the same level of benefit for all parts of the West Basin service area. Therefore, in the recommendations related to WUE programs included below, evaluations of the areas with the greatest potential opportunity are incorporated into the recommendation, along with supporting maps of the service area. Appendix A includes corresponding maps, focused in each Division.

6.2.1. Communication and Outreach Recommendations

RECOMMENDATION 1: SUPPORT QUARTERLY WUE WORKGROUP MEETINGS AS AN EFFECTIVE MEANS TO ENHANCE AWARENESS OF WUE PROGRAM OFFERINGS AMONG CUSTOMER AGENCIES AND THEIR CUSTOMERS

The WUE Survey highlighted a gap in knowledge among some customer agencies, cities, and other stakeholders about the full scope of the current WUE program offerings within West Basin, even for those programs that were considered to be highly effective (Section 3.2).

The recently-reinstated quarterly WUE Workgroup meetings are the first step towards bridging this knowledge gap as they provide West Basin with a platform to increase the awareness of WUE program offerings to its customer agencies, cities in the region, and by extension water users in the region. These quarterly meetings can also support on-going coordination between West Basin and its customer agencies on a number of related issues (e.g., UWMP preparation and drought response planning).

The customer agencies and cities have strong and direct relationships with water users and customers that West Basin can leverage to increase customer participation in the WUE programs. For example, at the quarterly WUE Workgroup meetings, West Basin can provide the stakeholders with WUE program promotional materials including: (1) materials to be utilized for as bill inserts, (2) email and newsletter materials, and (3) social media promotional writeups. These materials can include factual information on how to access available WUE programs, but also interesting "case studies" highlighting customers who

have utilized and benefited from these programs. Customer agency and city staff can then share these materials with their residents through existing newsletters and social media platforms and share WUE activities with their city councils and boards.

West Basin should additionally use these quarterly WUE Workgroup meetings to solicit ongoing feedback from stakeholders on program effectiveness and the responsiveness of their customers. This ongoing feedback will facilitate West Bain's ability to adaptively manage its WUE programs.

Recommendation: Convene regular meetings of the WUE Workgroup and use this venue to provide regular and consistent information on WUE program offerings to WUE stakeholders, including factual and customer case study informational materials, which can be provided directly to customers through bill inserts, emails and newsletters, and hardcopy fliers. Through the WUE Workgroup meetings, solicit ongoing feedback from WUE stakeholders to allow for adaptive management of WUE programs.

RECOMMENDATION 2: PROVIDE REGULAR UPDATES OF WUE PROGRAM IMPLEMENTATION TO CUSTOMER AGENCIES AND CITIES

As part of the WUE Data Study, customer agencies and cities were surveyed to understand their needs and preferences for WUE program support from West Basin. Through the WUE Survey, and during the follow-on workshop, comments were received indicating that the customer agencies would appreciate having WUE program implementation metrics available to them on a regular and predictable basis to support local reporting (i.e., to present and report progress to their governing bodies and customers, without having to independently mine large datasets; Section 3.5).

This type of regular reporting-out of program implementation and participation to the customer agencies can serve multiple benefits, including: (1) raising the awareness of the work that West Basin does in the region, (2) helping to keep WUE as a "top-of-mind" priority in the region, and (3) increasing transparency of West Basin WUE's activities. Such information can also inform the customer agencies of the relative success of various WUE programs within their service areas and compared to other agencies. Using this information, agencies can then opt to locally manage communication and outreach of WUE programs to meet their needs.

Recommendation: Provide regular, routine updates of WUE program implementation to WUE stakeholders to facilitate local management and prioritization of WUE activities.

RECOMMENDATION 3: SHARE WEST BASIN'S UNIQUE APPROACH TO WUE PLANNING

Following a presentation of WUE Data Study development at the April 2018 quarterly WUE Workgroup meeting, MWD requested that West Basin present its process and results to MWD. The innovative approach West Basin has taken to WUE planning is already of interest to MWD and could become a model for other Southern California agencies. This provides an opportunity for West Basin to demonstrate its leadership in WUE, which may facilitate opportunities for funding and additional partnerships.

Recommendation: Share the approach to, and results of, this WUE Data Study broadly among interested water agencies and sustainability organizations and at WUE-related conferences.

SUMMARY OF COMMUNICATION AND OUTREACH RECOMMENDATIONS

1) Convene regular meetings of the WUE Workgroup and use this venue to provide regular and consistent information on WUE program offerings to WUE stakeholders, including factual and customer case study informational materials, which can be provided directly to customers through bill inserts, emails and newsletters, and hardcopy fliers. Through the WUE Workgroup meetings, solicit ongoing feedback from WUE stakeholders to allow for adaptive management of WUE programs.
2) Provide regular, routine updates of WUE program implementation to WUE stakeholders to facilitate local management and prioritization of WUE activities.
3) Share the approach to, and results of, this WUE Data Study broadly among interested water agencies and sustainability organizations and at WUE-related conferences.

6.2.2. Customer Agency Planning and Regulatory Compliance Support Recommendations

RECOMMENDATION 4: ENGAGE IN STATE-LEVEL WATER USE OBJECTIVE STANDARDS DEVELOPMENT PROCESS

Standards and metrics for calculating the outdoor water use and distribution system water loss components of the future urban water use objectives, as well as the performance standards for which CII water use will be evaluated against, are being developed through public stakeholder processes over the next several years (Section 4.1.1). The outcomes of these stakeholder processes will have significant implications for retail water agencies.

It would be beneficial to the customer agencies if West Basin engaged in the development of these standards in order to: (1) represent the needs and characteristics of their customer agencies, (2) keep customer agencies apprised of developments and possible directions for these standards, and (3) leverage resources at the regional level to provide relief to resource-constrained customer agencies.

Recommendation: Engage in DWR and SWRCB stakeholder processes to develop water use objective standards and to provide regional representation on behalf of customer agencies.

RECOMMENDATION 5: PROVIDE OR COORDINATE WATER SHORTAGE CONTINGENCY PLANNING SUPPORT TO CUSTOMER AGENCIES

One result of the recent passage of AB 1668 and SB 606 is that urban water suppliers will be required to provide a significant new amount of detailed information in their future WSCPs, including: (1) providing an estimate of the amount of water that will be saved through each proposed drought response action, (2) developing locally appropriate procedures and metrics for assessing the risk of drought on an annual basis, and (3) developing a drought communication plan, among other things (Section 4.1.2).

In addition to these new regulatory requirements, in the WUE Survey and the following WUE Workgroup Meeting, the customer agencies identified reduced short-term reliability during droughts to be among the strongest drivers for their need to increase WUE (Section 3.3) and expressed a desire for West Basin to provide regional drought response support.

Given this, it is recommended that West Basin consider providing drought planning assistance to the customer agencies to supplement their WSCP development. Providing regional coordination of drought planning and response efforts not only provides a service to the customer agencies, but can provide consistency for customers who, by virtue of where they live relative to where they work and relative to where their friends and family live, may otherwise be subject to conflicting requirements and restrictions.

Recommendation: Provide or coordinate drought planning assistance for customer agencies to supplement their local WSCP development in light of new requirements and to facilitate regional consistency.

RECOMMENDATION 6: INCORPORATE WATER LOSS CONTROL SUPPORT INTO WUE SERVICES

The incorporation of distribution system water loss as a significant component for the calculation of urban water use objectives emphasizes the importance of water loss in the context of WUE (Section 4.1.3). While customer-level leak detection has long been a component of several WUE programs, distribution system water loss programs have not been a focus of traditional WUE programs, including those provided by West Basin. This shift presents an opportunity for West Basin to potentially provide assistance to its customer agencies, leveraging its resources and ability to obtain grant funding at a regional scale for programs that relate to water loss controls such as:

- Meter replacement and installation: As meters age, they wear out and lose the ability to accurately register the volume of water passing through them, typically as “under-registration”. Inaccurate customer meters that under-register consumption are a major source of apparent water loss (i.e., water loss that is associated with data inaccuracies and unauthorized consumption, and therefore not appropriately billed and recorded in the system). In order to address under-registration, meters need to be tested, repaired, or replaced with new or refurbished meters on a regular schedule. Installing the appropriate size and type of meter according to the customer's use also benefits meter accuracy and reduces apparent loss.

- Pressure management tactics: Reducing excess pressure in the water system lowers the flow rate from leakages and reduces the rate of failure on distribution piping. Additionally, it is a cost-effective means to address background losses that are, by definition, undetectable by traditional acoustic means. Pressure management measures include implementing pump controls, establishing pressure zones, and utilizing pressure-reducing valves in certain sections of a distribution grid.

- Condition assessments for transmission and distribution pipelines: Condition assessments create a record of the state of the infrastructure asset to inform repair and replacement programs, prevent failure, and predict remaining service life. Condition assessments involve direct methods such as close-circuit television (“CCTV”), leak detection (see below), and wall-thickness measurement as well as indirect methods such as desktop analysis of failure history, leakage level, flow testing results, and soil resistivity data. It has become increasing popular to utilize a risk model (e.g. "likelihood of failure" versus "consequence of failure") to prioritize pipes for replacement and inform capital investment. Additionally, machine-learning models

that utilizes pipe parameters, break history, and geographic data have recently become available and yielded promising results in predicting pipe failure.[17]

- Utilization of water loss detection devices: Leak detection devices can be used to pinpoint the location of unreported system leaks and are the essential part of an effective active leakage control program. Acoustic leak detection is the most common way to detect leaks. Examples of acoustic leak detection devices include ground microphones, amplified listening devices, leak noise correlators, leak noise loggers, and inline sensors. Non-acoustic leak detection methods include gas injection, pressure monitoring, ground penetrating radar, thermography, and satellite imagery.

- Utilization of no-discharge flushing trucks: "No-discharge flushing trucks" are a relatively new technology being utilized by water agencies as a replacement for traditional unidirectional water main flushing. These trucks require a capital investment to purchase, but have been found to have a number of benefits including reduction of water lost to system flushing, and improved public perception of agencies' own water use practices, particularly during droughts.[18]

As discussed in Section 2.6, West Basin customer agencies as a whole tend to have levels of water loss consistent with state-wide averages. A number of factors influence the amount of water loss experienced by a water agency, including the size and age of a distribution system, the level of maintenance and infrastructure upgrades performed over the system's lifetime, and the complexity of the system (e.g., number of pressure zones), among other things. As a result, within the West Basin service area, some agencies report a significantly greater level of water loss, and therefore would be expected to benefit more substantially from such support for water loss control and management. **Figure 6-1** shows the distribution of total water loss (both real and apparent water loss) as reported by the agencies in their 2016 validated water loss audits. Based on this, programs directed at reducing

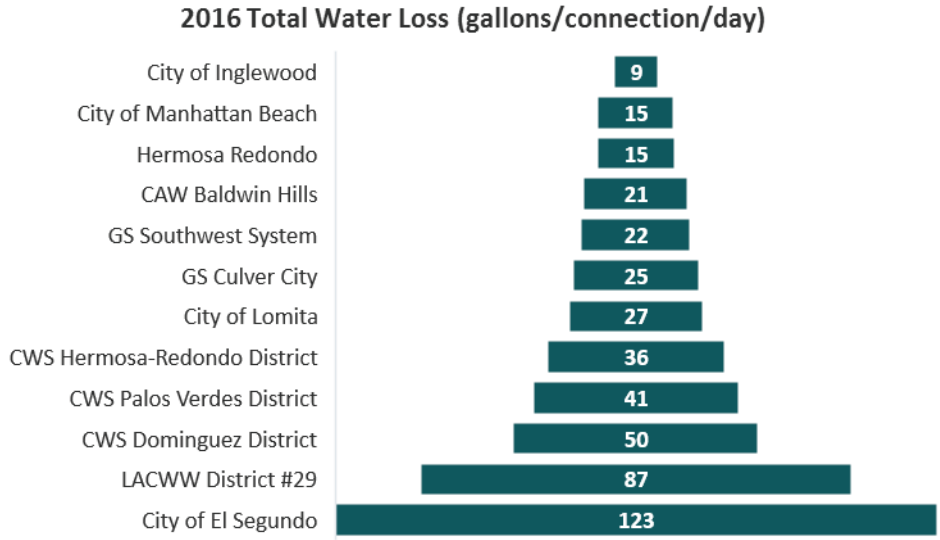


Figure 6-1. Total water loss in gallons per connection per day as reported in customer agencies' 2016 validated water loss audit reports.

[17] https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/waterlosscontrol/EBMUD_SWRCB_SB555Stakeholder2_MachineLearning_01June18.pdf

[18] https://ca-nv-awwa.org/canv/downloads/sc16/Session28/pdf/WillisClaborn.pdf

water loss would be expected have the greatest benefit for the City of El Segundo, LACWW District #29, CWS Dominguez District, and CWS Palos Verdes District, which are a part of Director Divisions 1, 3, and 4.

It is therefore recommended that West Basin consider incorporating water loss control support services into its WUE support services and pursue funding opportunities for leak detection and water loss control technologies as they are made available. In the near term, West Basin should engage with its customer agencies to understand in more detail what water loss control projects would be of most value, with a focus on those agencies experiencing the greatest amount of water loss.

Recommendation: Engage with customer agencies to understand what water loss control projects would be of most value and pursue funding opportunities for leak detection and water loss control technologies as they are made available. This effort should focus on those agencies experiencing the greatest amount of water loss and those that would benefit from regional implementation.

RECOMMENDATION 7: EVALUATE MARKETING APPROACHES AND STRATEGIES

The geospatial WUE program analysis indicates there is significant opportunity for additional water savings and program participation (Section 5). Different marketing and outreach approaches can have different levels of effectiveness relative to different water sectors and customer demographics. In order to better understand what marketing approaches and strategies will be most effective in the West Basin service area, it is recommended that West Basin conduct an evaluation of potential WUE marketing approaches and strategies successfully employed by other water agencies and organizations.

Recommendation: Conduct an evaluation of WUE marketing approaches and strategies to identify methods to achieve West Basin's WUE participation goals.

SUMMARY OF CUSTOMER AGENCY PLANNING AND REGULATORY COMPLIANCE SUPPORT RECOMMENDATIONS

4) Engage in DWR and SWRCB stakeholder processes to develop water use objective standards and to provide regional representation on behalf of customer agencies.
5) Provide or coordinate drought planning assistance for customer agencies to supplement their local WSCP development in light of new requirements and to facilitate regional consistency.
6) Engage with customer agencies to understand what water loss control projects would be of most value and pursue funding opportunities for leak detection and water loss control technologies as they are made available. This effort should focus on those agencies experiencing the greatest amount of water loss and those that would benefit from regional implementation.
7) Conduct an evaluation of WUE marketing approaches and strategies to identify methods to achieve West Basin's WUE participation goals.

6.2.3. Residential WUE Program Recommendations

Residential water use makes up approximately 60% of water use within the West Basin service area. As shown in the results presented in Section 5.2, while participation in available programs has been significant, the amount of participation represents just approximately 5% of residential parcels within the West Basin service area. In order to evaluate the potential for future participation in WUE programs and to understand how these programs could be strategically targeted, residential parcels for customers who have not yet participated in WUE programs were identified and evaluated with respect to key factors identified in Section 5 as having an influence on customer participation rates. These potential target parcels were also evaluated relative to the implementation of key indoor and outdoor water use efficiency California-state regulations. The results of these analyses are an estimate of the proportion of market potential for indoor and outdoor WUE programs by customer agency.

RECOMMENDATION 8: PROVIDE A COMPREHENSIVE SET OF RESIDENTIAL WUE PROGRAMS

Residential water use will play a significant role in the compliance with future water use objectives by customer agencies (Section 4.1.1). Certain demographic and property characteristics are correlated with higher or lower rates of participation in particular types of programs (Sections 5.2 through 5.6). Given the diverse makeup of West Basin's customer agencies, the result is that a WUE program offered across the region does not result in the same level of benefit for all customer agencies.

The amount of residential water use by customer agencies varies significantly both in total volume and as a relative proportion of water use within the service areas (Section 2). Similarly, property and demographic characteristics that contribute to the rates of program adoption and effectiveness also vary among customer agencies (Section 5). Given this overall variability, residential WUE program offerings should be designed to provide a comprehensive set of programs that target indoor and outdoor water use, include both rebate and no-cost programs, and include a mix of device intervention programs and education programs. Recommendations 9 through 11 address the targeting of such programs to reach the customers with the greatest potential savings and result in the greatest potential benefit to customer water agencies, particularly given the Making Water Conservation a California Way of Life requirements (Section 4.1). In addition to programs that result in a direct reduction in water use through the replacement of fixtures or landscape, education and outreach programs can have substantial, but less quantifiable benefits.

Recommendation: Provide a comprehensive set of residential WUE programs that include a range of programs that target indoor and outdoor water use, include both rebate and no-cost programs, and include a mix of device intervention programs and education programs.

RECOMMENDATION 9: PROVIDE SINGLE-FAMILY RESIDENTIAL OUTDOOR WUE PROGRAMS AND FOCUS OUTREACH ON AREAS OF GREATEST OPPORTUNITY

Approximately 60% of the total potable water use in the West Basin service area is used by residential customers (multi-family and single-family). Depending on customer agency, outdoor water use can range from 15% to 53% of their total potable water use. As discussed in Section 4.1, outdoor water use is a major focus of the new state requirements (AB 1668/ SB 606) for urban water use objectives. WUE programs that target residential outdoor water use are generally aimed at: (1) replacing high-water using landscapes with more water efficient landscape through turf replacement and landscape transformation programs such as MWD's current rebate program, or (2) increasing the irrigation efficiency of the existing landscape through device changeouts such as using a smart irrigation controller

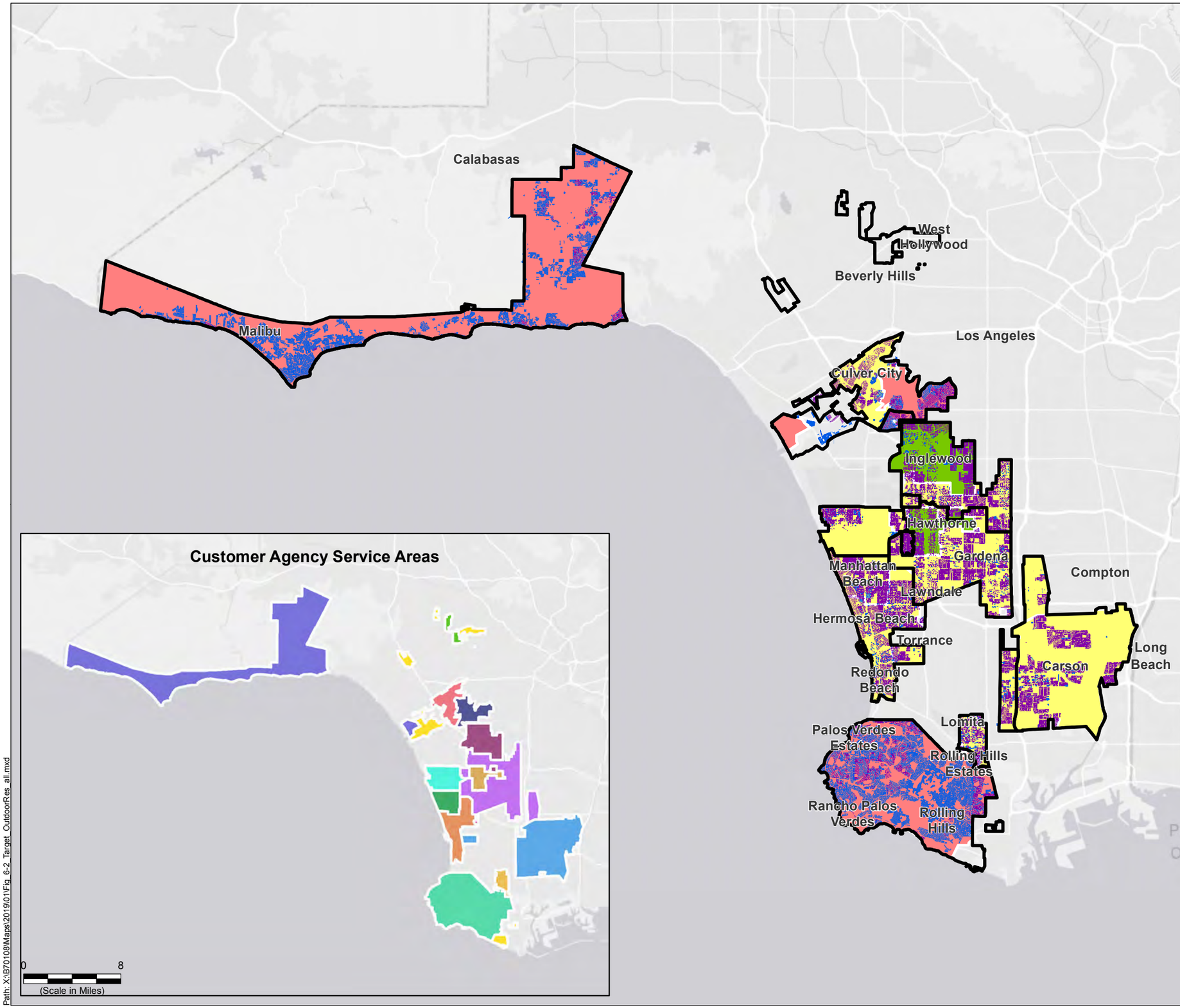
(WBIC) and more efficient sprinkler nozzles or sprinkler replacements. As discussed in Section 5, approximately 1.5% of the single-family residential parcels in the West Basin service area have participated in MWD's turf replacement rebate program, and 0.7% have participated in a smart irrigation controller rebate or exchange program. Given this, there is substantial opportunity to market and expand these or similar programs. Based on analyses of past participation by customers in the West Basin service area, homes with larger lots tend to participate in smart irrigation controllers at a higher rate, and those with smaller lots tend to participate in landscape transformation programs at a higher rate. Because outdoor water use varies significantly among customer agencies, the agencies with the highest outdoor water use have the greatest potential savings opportunities. Therefore, it is recommended that marketing for turf replacement or landscape transformation programs be focused in areas with the highest relative outdoor water use, and that the type of program targeted be based on the size of lots in an area.

Figure 6-2 shows single-family residential parcels that could potentially be targeted for participation in outdoor WUE programs; results are shown by Division in Appendix A. Customer agencies with outdoor water use representing greater than 40% of their total water use are shown as high priority, agencies with 25% to 40% outdoor water use are medium priority, and agencies with less than 25% outdoor water use are shown as low priority. Parcels that have not previously participated in a turf replacement or smart irrigation controller program, with lot sizes equal to or less than 9,000 sq ft (0.2 acres) are identified for targeting for landscape transformation programs and those greater than 9,000 sq ft are identified for targeting for irrigation device replacement programs. As summarized in **Table 6-1**, approximately 16,000 parcels are identified as high priority for targeting for landscape transformation programs and approximately 15,000 parcels are identified as high priority for targeting for irrigation device replacement programs.

Recommendation: Focus marketing and outreach of outdoor single-family residential WUE programs on areas with the highest amount of outdoor water use and target the type of WUE program relative to property size, as shown in **Figure 6-2**.

Table 6-1
Number of Single-Family Residential Parcels to Target for Outdoor Irrigation Programs

Division	Landscape Transformation Programs			Irrigation Device Replacement Programs		
	High Priority	Medium Priority	Low Priority	High Priority	Medium Priority	Low Priority
Division 1	7,391	17,871	-	15,607	3,232	-
Division 2	810	10,599	12,290	589	2,031	2,355
Division 3	121	38,149	-	64	3,940	-
Division 4	7,514	14,285	30	9,102	2,247	1
Division 5	-	21,009	5,253	-	3,632	956
Total	**15,836**	**101,913**	**17,573**	**25,362**	**15,082**	**3,312**



Legend

West Basin Director Division Boundaries

Program Targeting

- Landscape Transformation Programs (≤9,000 sq ft lot)
- Irrigation Device Replacement Programs (>9,000 sq ft lot)

WUE Program Outreach Priority

- Low (≤20% Outdoor Water Use)
- Medium (20-40% Outdoor Water Use)
- High (>40% Outdoor Water Use)

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. West Basin potable water customer agencies are ranked for outdoor residential WUE program outreach priority based on the estimated percentage of outdoor water use within their service area.
3. The type of residentual outdoor WUE program for targeting is based on parcel lot size.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

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Target Opportunities for Single-Family Residential Outdoor WUE Programs

West Basin Municipan Water District
January 2019
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Figure 6-2

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Recommendation 10: Provide Multi-Family Residential Indoor WUE Programs and Focus Outreach on Areas of Greatest Opportunity

Under the Making Water Conservation a California Way of Life Legislation (AB 1668/ SB 606), indoor multi-family and single-family residential water use is treated the same. However, the program outreach and design of WUE programs that target multi-family homes are necessarily different from those for single-family residential homes. The proportion of multi-family residential housing is highly variable across the West Basin service area, with multi-family residential water use making up from 3% to 25% of customer agencies' total water use (**Figure 6-3**). Programs that target indoor residential water use generally include toilet rebates and changeouts, clothes washer rebates and changeouts, leak detection and repair, and to a lesser extent showerheads and faucet aerator rebates and replacements. MWD has recently announced that in the coming months it will be launching a pilot program to provide up to a $250 rebate for HE toilets for multi-family homes. Customers in multi-family buildings built before 1994 that have not previously received a rebate for any unit within the building will be eligible for this pilot program.

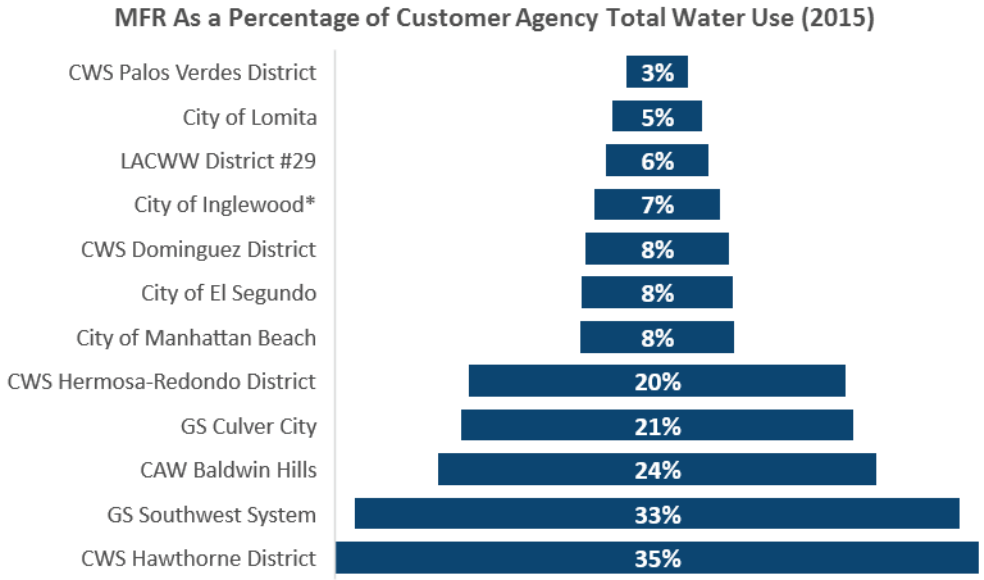
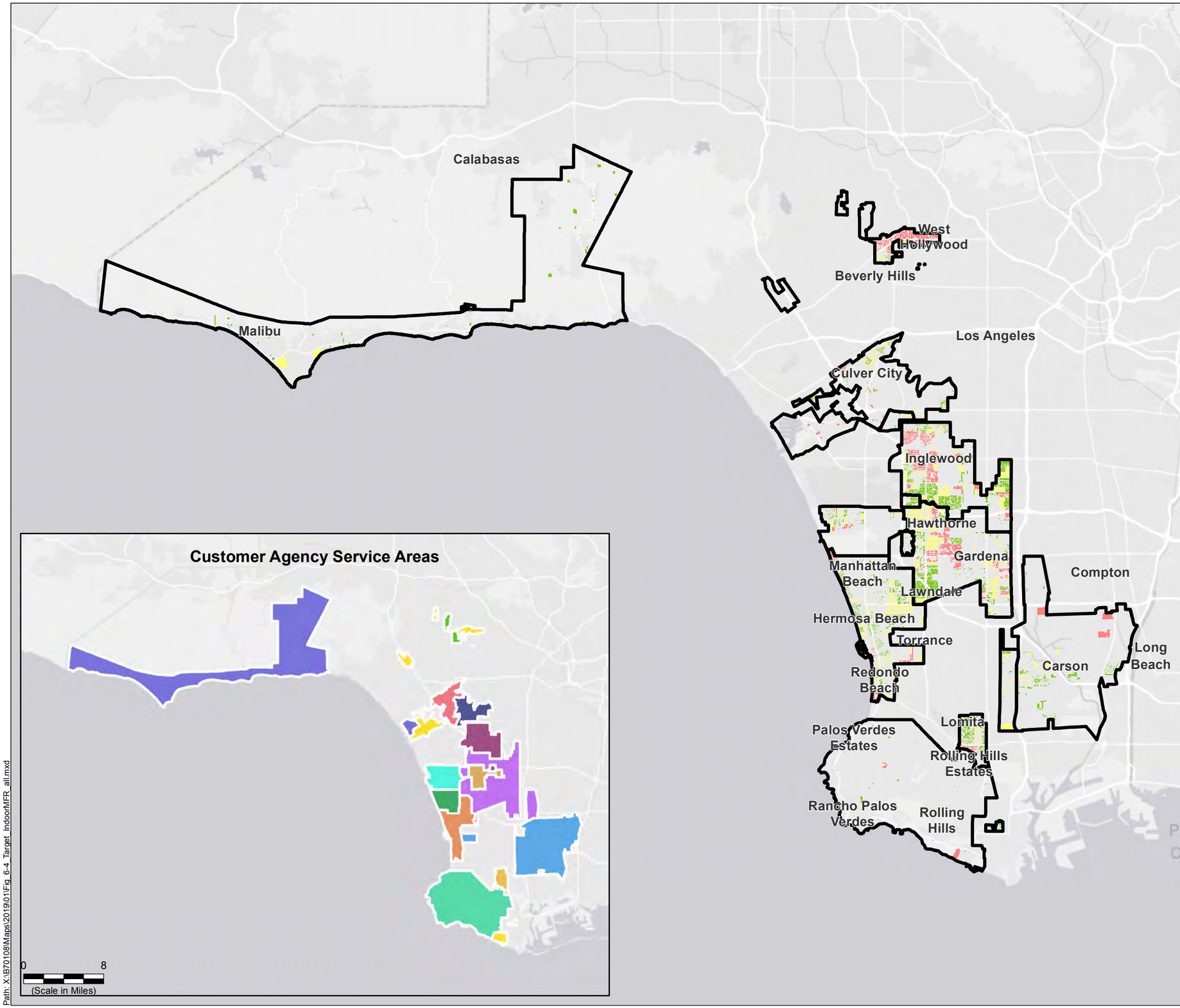


Figure 6-3. Percentage of total water use by customer agency in 2015 used by multi-family residential customers. The City of Inglewood reports residential water use as combined single- and multi-family use; multi-family residential water use is therefore estimated based on the number of multi-family accounts relative to single-family accounts.

Marketing and outreach for indoor multi-family residential programs should therefore target areas with the largest populations living in multi-family housing. **Figure 6-4** identifies multi-family residential parcels located in the West Basin service area. Parcels located in areas (Census block groups) where 50% or more of the population lives in multi-family housing are indicated as high priority for program outreach; parcels located in areas where 25-50% of the population lives in multi-family housing are indicated as medium priority for program outreach; and parcels located in areas where less than 25% of the population lives in multi-family housing are indicated as low priority for program outreach. For purposes of this assessment, multi-family residential parcels include those indicated by Assessor parcel data as being two or more units and manufactured/mobile homes. **Table 6-2** shows the breakdown of the prioritized parcels by Division.

Recommendation: Focus marketing and outreach of indoor multi-family residential WUE programs on areas with the largest populations living in multi-family residential housing, as shown in **Figure 6-4.**



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (≥50% Population in Multi-Family Housing)
- Medium (25-50% Population in Multi-Family Housing)
- Low (≤25% Population in Multi-Family Housing)

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Multi-family residential parcels are ranked for indoor residential WUE program outreach priority based on the proportion of an area's population that lives in multi-family residiental homes, based on Census block group. For purposes of this assessment, manufactured homes are considered to be multi-family.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

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Target Opportunities for Multi-Family Residential Indoor WUE Programs

West Basin Municipan Water District
January 2019
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Figure 6-4

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Table 6-2
Number of Multi-Family Residential Parcels to Target for Indoor WUE Programs

Division	High Priority	Medium Priority	Low Priority
Division 1	32	362	443
Division 2	2,856	2,413	2,318
Division 3	1,617	2,539	2,073
Division 4	2,640	1,364	1,017
Division 5	3,419	1,921	2,045
Total	**10,564**	**8,599**	**7,896**

RECOMMENDATION 11: FOCUS OUTREACH FOR RESIDENTIAL INDOOR WUE PROGRAMS ON UNDERREPRESENTED CUSTOMER SECTORS

Approximately 60% of the total potable water use in the West Basin service area is used by residential customers (multi-family and single-family). Depending on customer agency, outdoor water use can range from 47% to 85% of their total potable water use. As discussed in Section 4.1, the new state requirements (AB 1668/ SB 606) for urban water use objectives include as a component of the overall system-wide objective (water budget) a metric of 55 gpcd indoor residential water use, with the likelihood that this number will decrease in the future. While it is not expected that this indoor water use number be applied to individual households, but rather used as a factor to calculate a population-based component for system-wide compliance, it does emphasize the need to ensure and increase residential indoor water use efficiency over time. In 2018, customer agencies reported per capita residential water use, which consists of both indoor and outdoor use, ranging from 61 R-gpcd to 248 R-gpcd (**Figure 6-5**). The majority of customer agencies reported residential water use of roughly 80 R-gpcd or less. The three customer agencies with higher residential water use are the same three agencies with the highest proportion of outdoor water use (i.e., over 40% of total water use). Current indoor residential per capita water use is not available, but based on this, it is likely to be at or near the 55 gpcd metric used in the water budget.

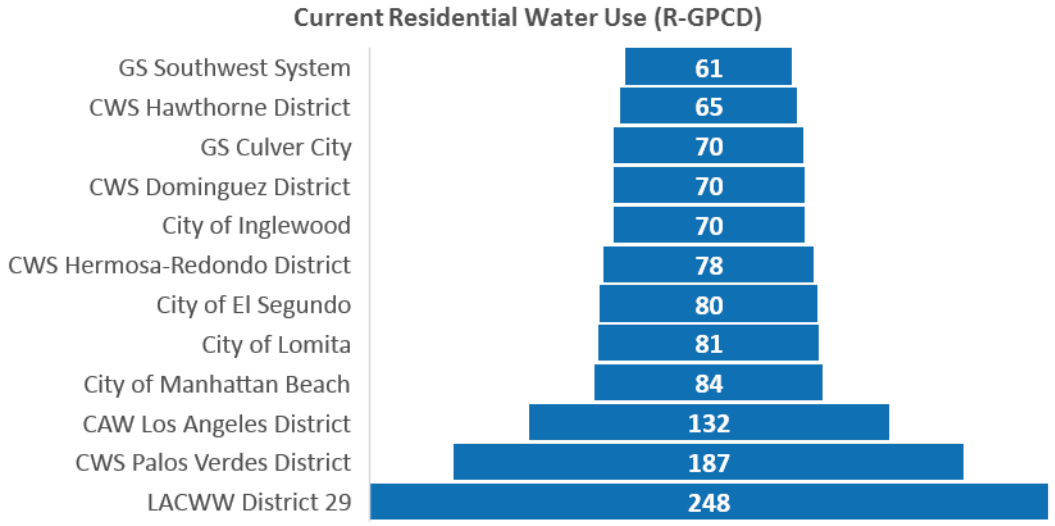


Figure 6-5. Current residential water use, from December 2017 through November 2018, based on monthly agency reporting to the SWRCB (June 2014 - November 2018 Urban Water Supplier Report Dataset). CAW Baldwin Hills District values are reported as part of the greater CAW Los Angeles District area.

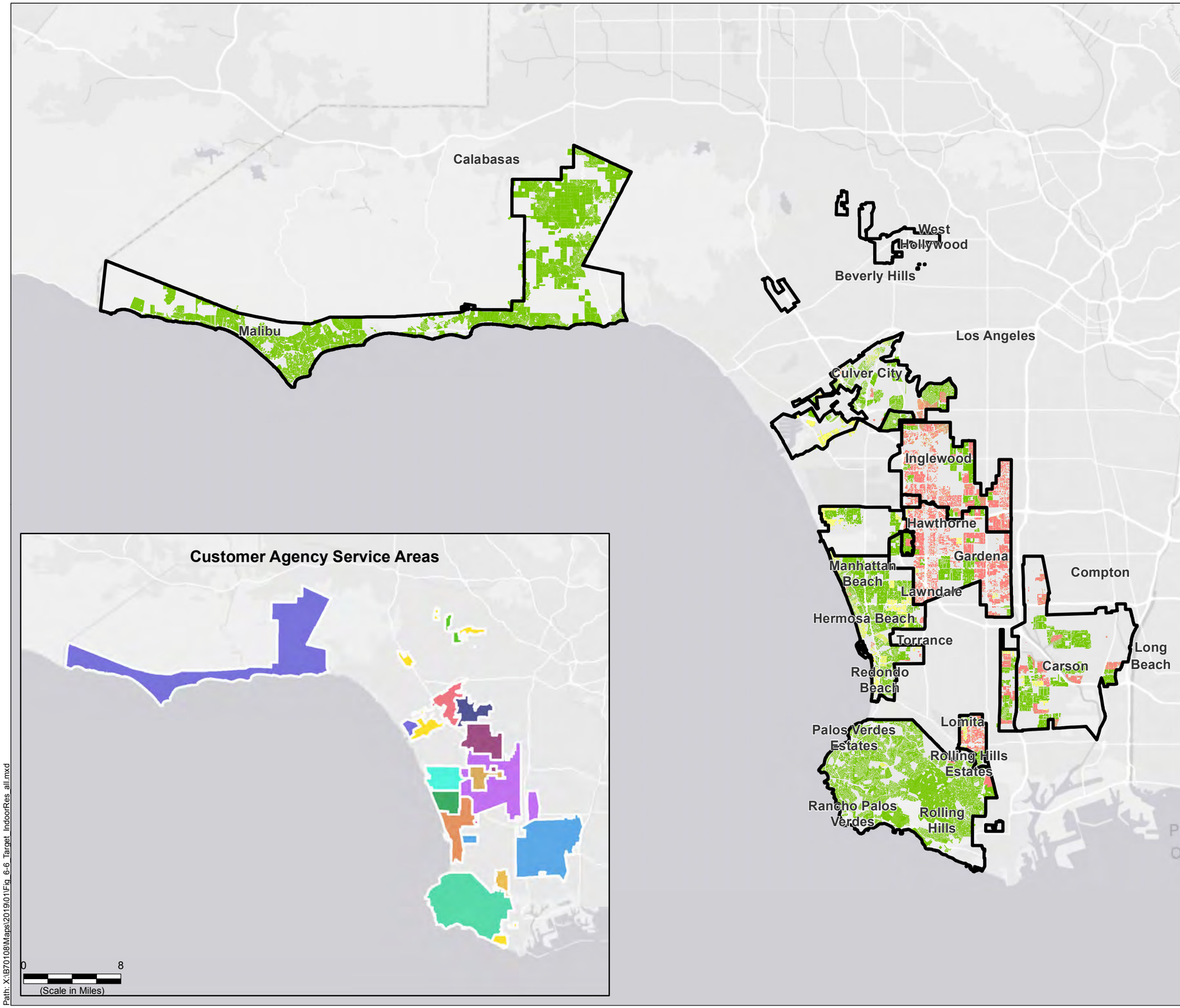
WUE programs that target residential indoor water use are generally aimed at: (1) replacing major water using fixtures in the home with new more efficient fixtures, including toilets, clothes washers, and to a lesser extent faucets and showerheads, or (2) identifying and fixing leaks. Programs aimed at identifying and fixing residential leaks (such as software associated with smart water meters) are generally programs best implemented by customer agencies. West Basin, MWD, and SoCalGas currently offer several device-based programs aimed at reducing indoor residential water use. Approximately 6% of single-family residential parcels in the West Basin service area have participated in a HE toilet and/or HE clothes washer program (rebate or direct installation program). As discussed in Section 5.6.2, residential customers located in lower income areas have historically participated in rebate-based programs (which require the customer to make a financial investment) at much lower rates than those in higher income areas, but do participate at high rates when no-cost programs are made available. Similarly, program participation in areas where the population predominantly consists of owner-occupied homes is consistently higher than areas with a high rate of rentership. Given that homes in these areas are also less likely to have fixtures changed out for new more efficient versions due to remodeling efforts, homes in low income and high rentership areas present a substantial opportunity for indoor residential water savings programs.

Figure 6-6 shows single-family residential parcels to potentially target for participation in indoor WUE programs. Parcels as identified as high priority are those located in areas where the median household income is considered to be low- or very-low income (≤$61,500/year) and have not previously participated in an indoor residential WUE program. Parcels identified as medium priority are those located in areas where the proportion of the population living in renter-occupied homes is greater than or equal to 50%, and where parcels have not previously participated in an indoor residential WUE program. All other parcels are indicated as low priority. It is recommended that marketing and outreach for all indoor residential WUE programs be targeted on the high and medium priority parcels, but particularly those with income eligibility requirements such as West Basin's new HE clothes washer program for disadvantaged community members. West Basin should also continue to partner with energy programs to help promote their indoor residential programs in low income areas. **Table 6-3** shows the breakdown of the prioritized parcels by Division.

Recommendation: Focus marketing and outreach of indoor residential WUE programs on areas with low participation, primarily low-income and high rentership areas, as shown in **Figure 6-6**. West Basin should consider no-cost programs with eligibility requirements for low-income customers and partnerships with energy utilities offering the same.

Table 6-3
Number of Single-Family Residential Parcels to Target for Indoor WUE Programs

Division	High Priority	Medium Priority	Low Priority
Division 1	4,052	697	33,554
Division 2	11,074	1	5,891
Division 3	3,268	4,352	23,009
Division 4	3,136	2,338	18,730
Division 5	11,553	368	6,381
Total	**33,083**	**7,756**	**87,565**



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (Low Income)
- Medium (≥50% Renter Population)
- Low (Moderate to High Income, <50% Renter Population)

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
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GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Single-family residential parcels are ranked for indoor residential WUE program outreach priority based on median household income and percentage of population that rents their home.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

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Target Opportunities for Single-Family Residential Indoor WUE Programs

West Basin Municipan Water District
January 2019
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Figure 6-6

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RECOMMENDATION 12: CONDUCT PERIODIC EVALUATION OF RESIDENTIAL WUE PROGRAMS

Analysis of past participation in residential WUE programs shows that customer participation rates vary within the West Basin service area relative to several different factors (Section 5). The effect of this is that not all customers and customer agencies may be getting the same benefit from the WUE programs offered. Given the rapidly changing WUE landscape and regulatory drivers, West Basin's overall WUE goals and objectives may similarly evolve over time. It is therefore recommended that a periodic review of customer participation is performed to evaluate whether the participants being reached by such programs aligns with West Basin's WUE objectives. The analyses presented in this Data Study can serve as a framework for such evaluations in the future.

Recommendation: Periodically review customer participation rates relative to customer agency service area, customer demographic sectors, or other factors, to evaluate whether the customers being reached by WUE programs aligns with West Basin's overall WUE objectives.

SUMMARY OF RESIDENTIAL WUE PROGRAM RECOMMENDATIONS

8) Provide a comprehensive set of residential WUE programs that include a range of programs that target indoor and outdoor water use, include both rebate and no-cost programs, and include a mix of device intervention programs and education programs.
9) Focus marketing and outreach of outdoor single-family residential WUE programs on areas with the highest amount of outdoor water use and target the type of WUE program relative to property size, as shown in **Figure 6-2.**
10) Focus marketing and outreach of indoor multi-family residential WUE programs on areas with the largest populations living in multi-family residential housing, as shown in **Figure 6-4.**
11) Focus marketing and outreach of indoor residential WUE programs on areas with low participation, primarily low-income and high rentership areas, as shown in **Figure 6-6**. West Basin should consider no-cost programs with eligibility requirements for low-income customers and partnerships with energy utilities offering the same.
12) Periodically review customer participation rates relative to customer agency service area, customer demographic sectors, or other factors, to evaluate whether the customers being reached by WUE programs aligns with West Basin's overall WUE objectives.

6.2.4. CII WUE Program Recommendations

The approach for water use efficiency programs for the CII sector is necessarily very different than that for the residential sector for a number of reasons. The water use and types of water uses are much more varied in the CII sector, business have a different and often more complicated decision making process than residential users, and businesses often have a reluctance to change water using operations at the risk of affecting productivity, among other reasons. The approach to water efficiency program adoption for multi-family residential and rental single-family homes, is very similar to that for CII, because the property owners and decision-makers have a much more business-minded view of WUE than that of a typical home owner. Therefore, the following section identifies WUE program outreach opportunities for CII customers as well as opportunities for multi-family residential and renter-occupied single-family residential customers.

RECOMMENDATION 13: FOCUS LARGE LANDSCAPE (OUTDOOR CII) WUE PROGRAMS ON AREAS OF GREATEST OPPORTUNITY

Under the Making Water Conservation a California Way of Life Legislation (AB 1668/ SB 606), indoor CII water use is excluded from the annual water use objectives calculations, and instead water agencies will be asked to show compliance with a set of yet-to-be-developed performance measures. Outdoor water use metered through dedicated irrigation meters associated with CII accounts, however, will be included in the calculation of the annual water use objective compliance. It should be noted that DWR is evaluating setting minimum size thresholds for converting mixed CII meters to dedicated irrigation meters as part of the performance measures, and thus customer agencies may be required to further meter their CII sector in the future.

In recent years, participation in large landscape programs by CII customers has been minimal. The LIEP program, which is offered to residential and CII customers, has primarily been utilized by residential customers with large landscapes (approximately 85% of participants). Between West Basin's LIEP program and MWD's large landscape survey program, there have been approximately 50 participants.[19] Although not evaluated in detail in this Data Study, there have also been over 100 participants in West Basin's large landscape WBIC program, which also includes both CII and residential customers. Given this, there is significant opportunity to increase participation in large landscape irrigation programs. MWD has recently announced that it will be expanding eligibility for its large landscape survey program to include residential properties with lot sizes larger than one acre.

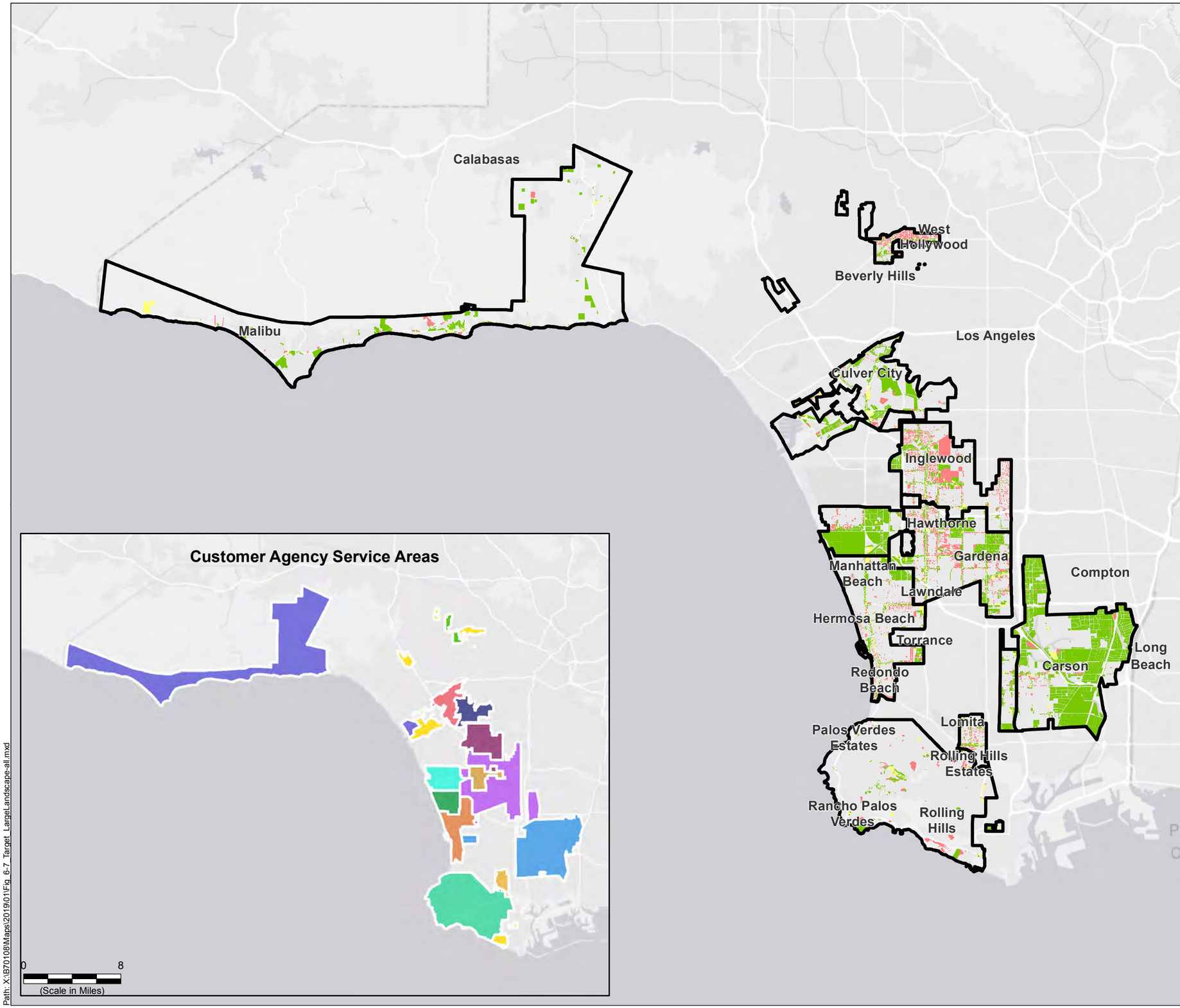
CII and multi-family residential parcels that are likely to have the most significant outdoor water use and therefore the greatest potential benefit from large landscape programs are identified as high and medium priority on **Figure 6-7**. A detailed breakdown of land use type and prioritization rank by Division is provided in **Table 5-17.**

Recommendation: Focus marketing and outreach for large landscape WUE programs on areas with the greatest opportunity based on land use type, as shown in **Figure 6-7** and **Table 5-17**. Encourage customer agencies to review their current size limits for requiring landscapes to be on separate meters, and begin a conceptual-level evaluation of what such a state-required threshold could mean for their agencies.

RECOMMENDATION 14: FOCUS COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL INDOOR WUE PROGRAMS ON AREAS OF GREATEST OPPORTUNITY

Under the Making Water Conservation a California Way of Life Legislation (AB 1668/ SB 606), indoor CII water use is excluded from the annual water use objectives calculations, and instead water agencies will be asked to show compliance with a set of yet-to-be-developed performance measures. In developing these performance measures, DWR will be evaluating, among other things, minimum size thresholds for converting mixed CII meters to dedicated irrigation meters, technologies that could be used in lieu of requiring dedicated irrigation meters, and best management practices such as water audits and water management plans for those CII customers that exceed a recommended size, volume of water use, or other threshold. The legislation also directs DWR to evaluate systems for classifying CII customers in a way that addresses significant water use (e.g., utilizing the North American Industry Classification System [NAICS] codes). Because the exact performance measures that will be implemented are not

[19] Although not evaluated in detail in this Study, there have also been over 100 participants in West Basin's large landscape WBIC program, which also includes both CII and residential customers.



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West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High Priority
- Medium Priority
- Low Priority

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

Abbreviations

CAW - California American Water
CWS - California Water Service
DWP - Department of Water and Power
GS - Golden State Water Company
LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Parcels identified as high priority include multi-family residential parcels of five or more units and commercial, institutional, and industrial parcels associated with business types that typically have large landscapes. A detailed list of business types and the desginated priorty is provided in the text.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

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(Scale in Miles)

Target Opportunities for Large Landscape WUE Programs

West Basin Municipan Water District
January 2019
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Figure 6-7

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currently known, it cannot be known exactly what WUE programs will be best suited to help customer agencies achieve these goals. However, West Basin and MWD offer a variety of programs to CII customers including kitchen retrofits, device rebates, HE toilet installation, and the WSIP program that funds specific programs, including those to increase WUE in industrial processes.

CII customers were identified based on parcel land use classifications and are summarized in attached **Table 5-17**. Each land use classification was ranked for outreach priority based on the likelihood of greatest WUE opportunity. Opportunities for indoor WUE in the commercial, institutional, and industrial sectors are shown on **Figures 6-8a**, **6-8b**, and **6-8c**, respectively.

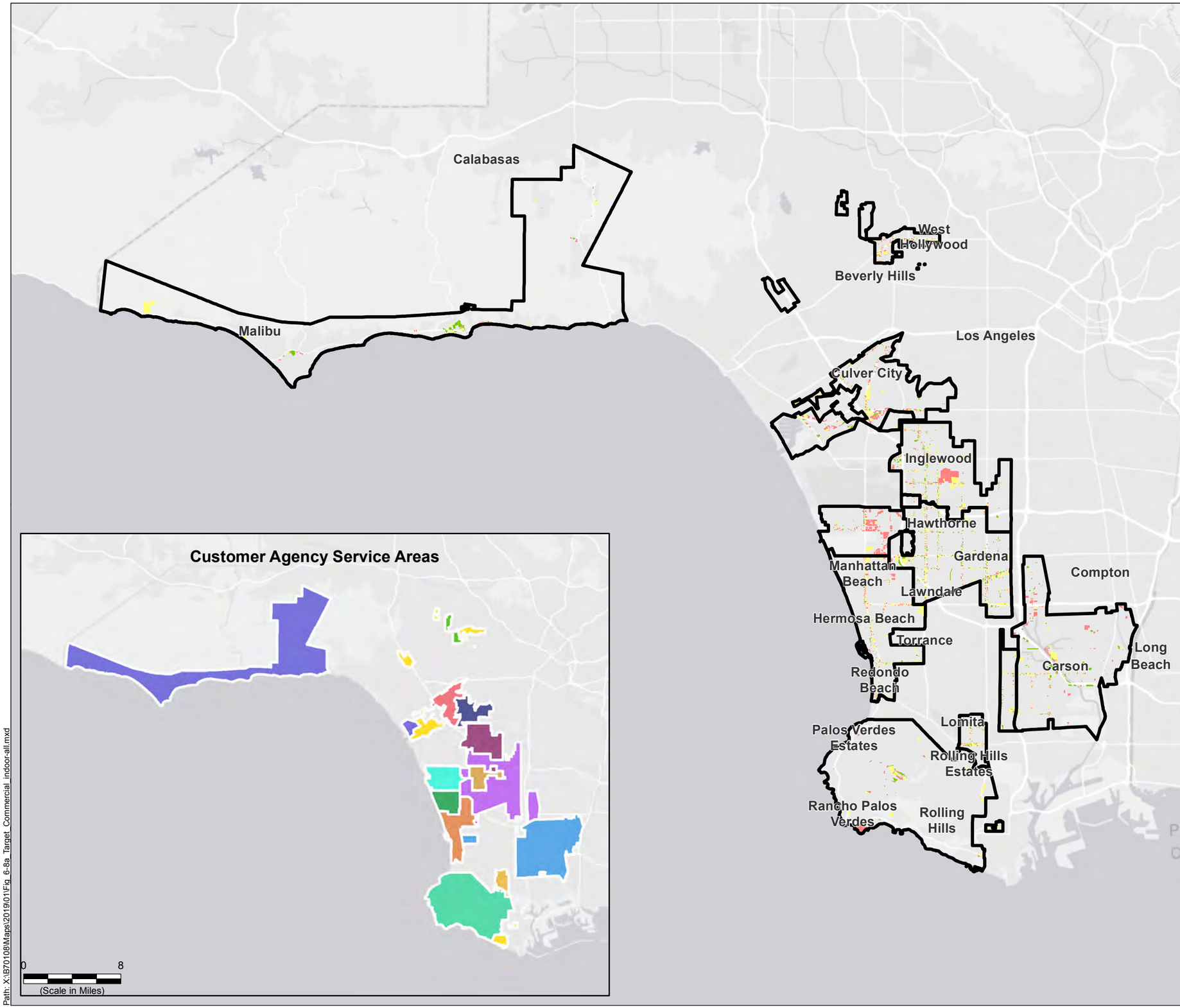
Recommendation: In order to reach CII customers with the greatest potential WUE savings opportunities, focus marketing and outreach efforts for CII customers on the areas indicated as high priority **Figures 6-8a**, **6-8b**, and **6-8c** and **Table 5-17,** for commercial, institutional, and industrial customers, respectively. Follow the DWR stakeholder outreach process for development of CII performance measures, and reevaluate CII program offerings and marketing for alignment with new performance measures as they are developed.

RECOMMENDATION 15: WORK WITH PUBLIC AGENCIES TO IDENTIFY WUE OPPORTUNITIES

In addition to the CII opportunities identified above under Recommendation 14, it is recommended that West Basin focus outreach efforts particularly on public agencies, whose water use is often classified as institutional, but can span the full range of water use, including residential use in publicly-owned housing, to large landscape use in parks and other campuses, to office use in administration buildings, and industrial-type uses associated with utilities.[20] Working with public agencies to increase WUE can have multiple benefits and efficiencies, particularly because public agencies often have stewardship of a substantial amount of property and buildings. When multiple or large projects can be accomplished through working with a single entity, both outreach and project administration efforts can be streamlined and efficient. Potential WUE program opportunities for properties owned by public agencies were evaluated, and are summarized in **Table 5-18**. The table indicates which Division each set of properties reside in, the type of programs that would be most likely to be beneficial, and a priority ranking for outreach for each public agency. **Figure 6-9** shows the location of these opportunities by outreach priority.

Recommendation: Look for further efficiencies in CII WUE program implementation by directing marketing outreach to public agencies, as shown in **Figure 6-9** and **Table 5-18**.

[20] Not every parcel in the service area has a land use classification designated in the Assessor's parcel data used in the assessments in this document. Because the County Assessor maintains these records primarily for purposes of assessing property taxes and public agencies are not subject to the same taxes, data associated with public agency properties can be lacking. The dataset used for this assessment is a listing of public agency properties, provided by the County Assessor's office to supplement the full parcel dataset.



Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
- GS Culver City
- GS Southwest System
- LACWW District #29
- Los Angeles DWP

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Notes

1. All locations are approximate.
2. Commercial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use. For purposes of this assessment, land uses classified as "recreational" are included with commercial land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

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(Scale in Miles)

WUE Outreach Opportunities for Indoor Commercial WUE Programs

West Basin Municipan Water District
January 2019
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Figure 6-8a

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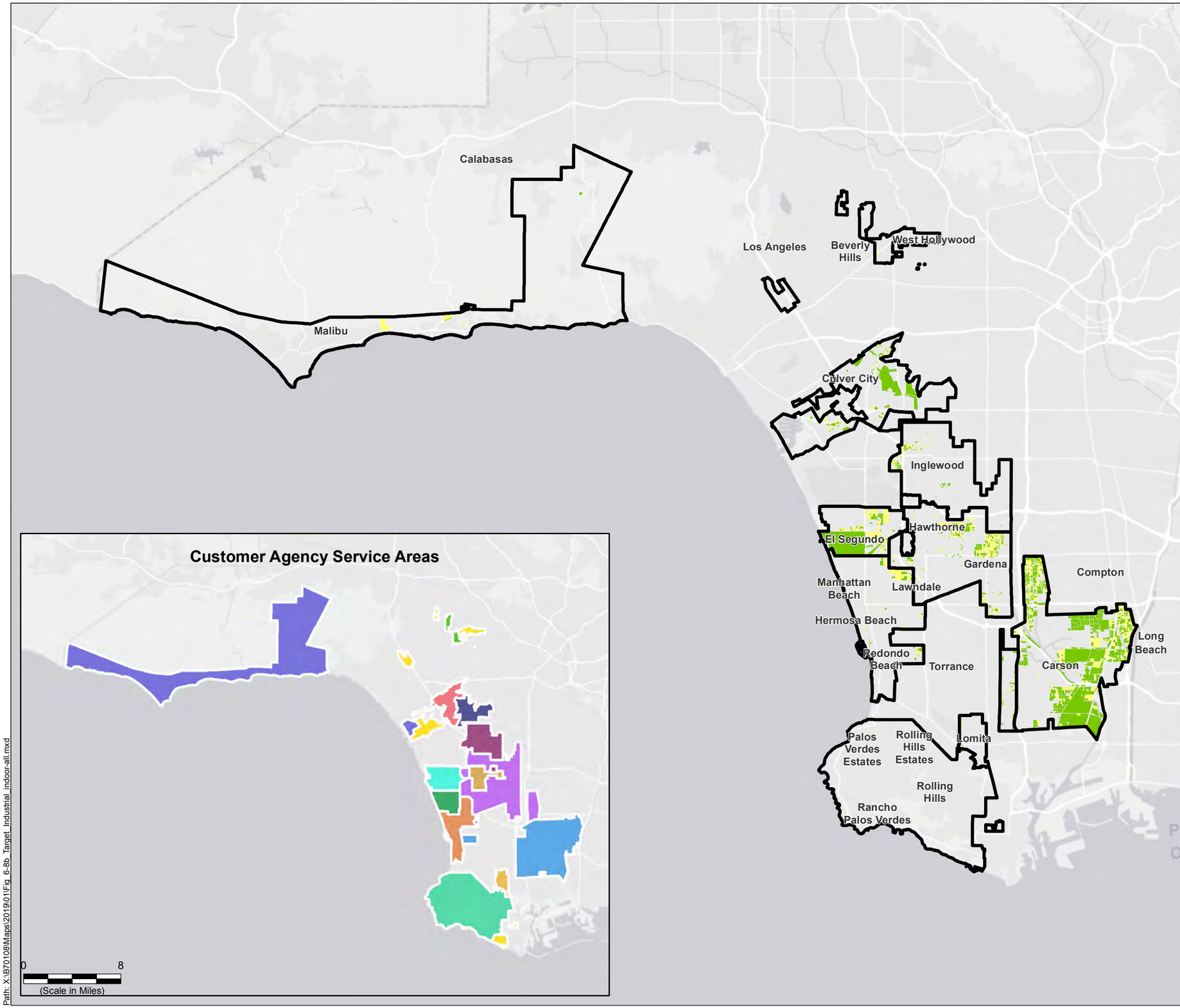

Legend

West Basin Director Division Boundaries

Outreach Priority

- Medium
- Low

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
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LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Industrial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

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(Scale in Miles)

WUE Outreach Opportunities for Indoor Industrial WUE Programs

West Basin Municipan Water District
January 2019
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Figure 6-8b

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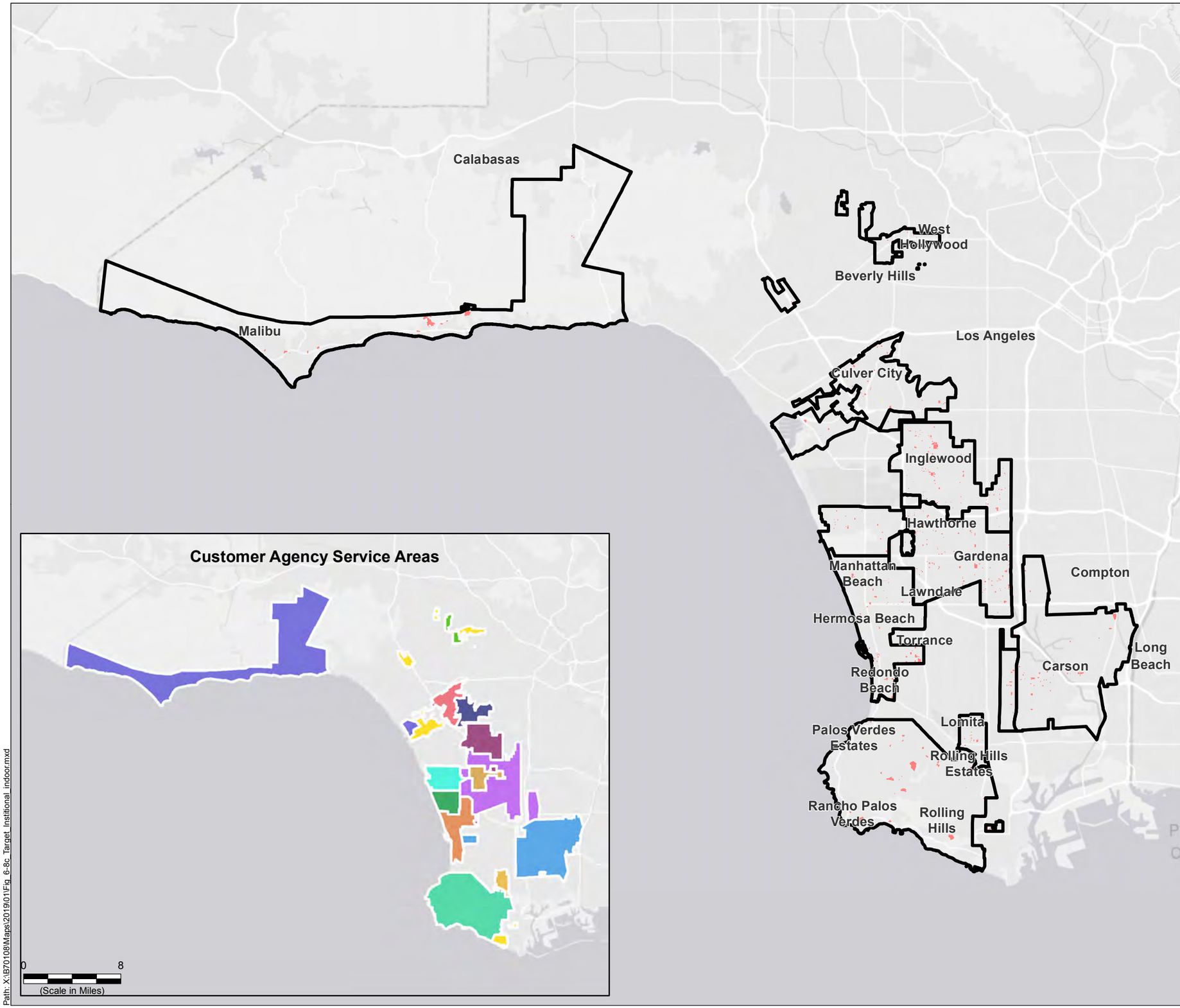

Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
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- City of Torrance
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- GS Southwest System
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Notes

1. All locations are approximate.
2. Institutional land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

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(Scale in Miles)

WUE Outreach Opportunities for Indoor Institutional WUE Programs

West Basin Municipan Water District
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Figure 6-8c

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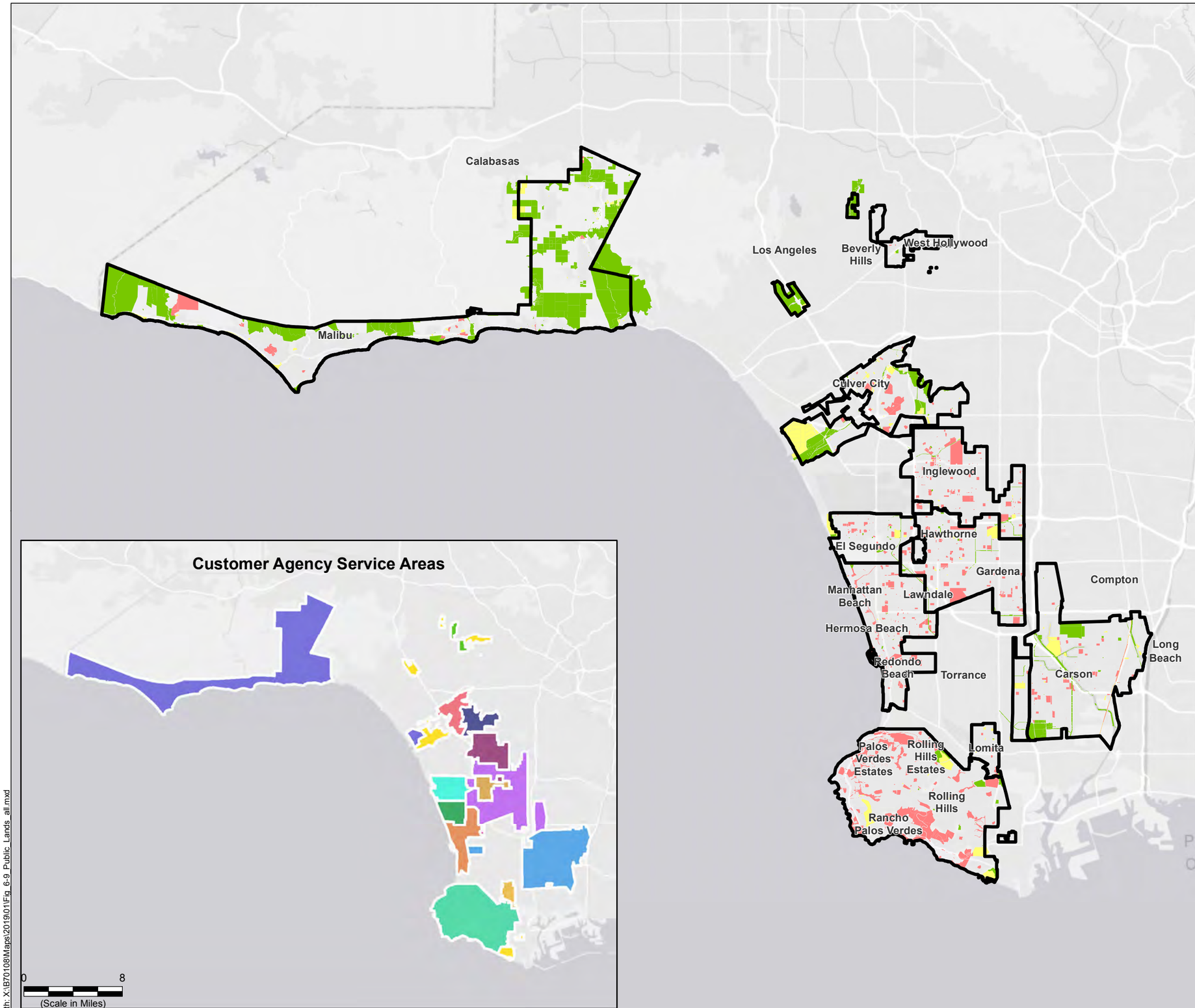

Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Customer Water Agency

- CWS Dominguez District
- CWS Hawthorne District
- CWS Hermosa-Redondo District
- CWS Palos Verdes District
- CAW Baldwin Hills
- City of Beverly Hills
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- City of Torrance
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LACWW - Los Angeles County Waterworks

Notes

1. All locations are approximate.
2. Public agencies are qualitatively ranked for priority for water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative size of facilities owned by agency.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Los Angeles County, 2018. "Assessor - Publicly Owned Parcels Listing," updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 4 8
(Scale in Miles)

Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties

West Basin Municipan Water District
January 2019
EKI B70108.00

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Figure 6-9

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SUMMARY OF COMMERCIAL, INSTITUTIONAL, AND INDUSTRIAL WUE PROGRAM RECOMMENDATIONS

13) CII and multi-family residential parcels that are likely to have the most significant outdoor water use and are therefore the greatest potential benefit from large landscape programs are identified as high and medium priority on **Figure 6-7**. A detailed breakdown of land use type and prioritization rank by Division is provided in **Table 5-17**.
14) In order to reach CII customers with the greatest potential WUE savings opportunities, focus marketing and outreach efforts for CII customers on the areas indicated as high priority **Figures 6-8a**, **6-8b**, and **6-8c** and **Table 5-17**, for commercial, institutional, and industrial customers, respectively. Follow the DWR stakeholder outreach process for development of CII performance measures, and reevaluate CII program offerings and marketing for alignment with new performance measures as they are developed.
15) Look for further efficiencies in CII WUE program implementation by directing marketing outreach to public agencies, as shown in **Figure 6-9** and **Table 5-18**.

7. REFERENCES

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CWS, 2016a. *California Water Service, 2015 Urban Water Management Plan, Dominguez District,* dated June 2016.

CWS, 2016b. *California Water Service, 2015 Urban Water Management Plan, City of Hawthorne District,* dated June 2016.

CWS, 2016c. *California Water Service, 2015 Urban Water Management Plan, Hermosa-Redondo District,* dated June 2016.

CWS, 2016d. *California Water Service, 2015 Urban Water Management Plan, Palos Verdes District,* dated June 2016.

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GS, 2016a. *2015 Urban Water Management Plan, Culver City,* Golden State Water Company, prepared by Kennedy/Jenks Consultants, dated June 2016.

GS, 2016b. 2*015 Urban Water Management Plan, Southwest,* Golden State Water Company, prepared by Kennedy/Jenks Consultants, dated July 2016.

El Segundo, 2016. *City of El Segundo 2015 Urban Water Management Plan,* prepared by Risk Management Professionals, dated 2016.

Inglewood, 2016. *2015 Urban Water Management Plan, City of Inglewood Public Works,* prepared by PSOMAS, dated 4 October 2016.

LACWD, 2017. *2015 Urban Water Management Plan for Los Angeles County Waterworks District 29, Malibu, and the Marina del Rey Water System,* County of Los Angeles Department of Public Works Waterworks Division, dated February 2017.

Lomita, 2016. *2015 Urban Water Management Plan, City of Lomita,* prepared by SA Associates, dated June 2016.

Manhattan Beach, 2017. *City of Manhattan Beach, 2015 Urban Water Management Plan,* prepared by Stetson Engineers Inc., dated January 2017.

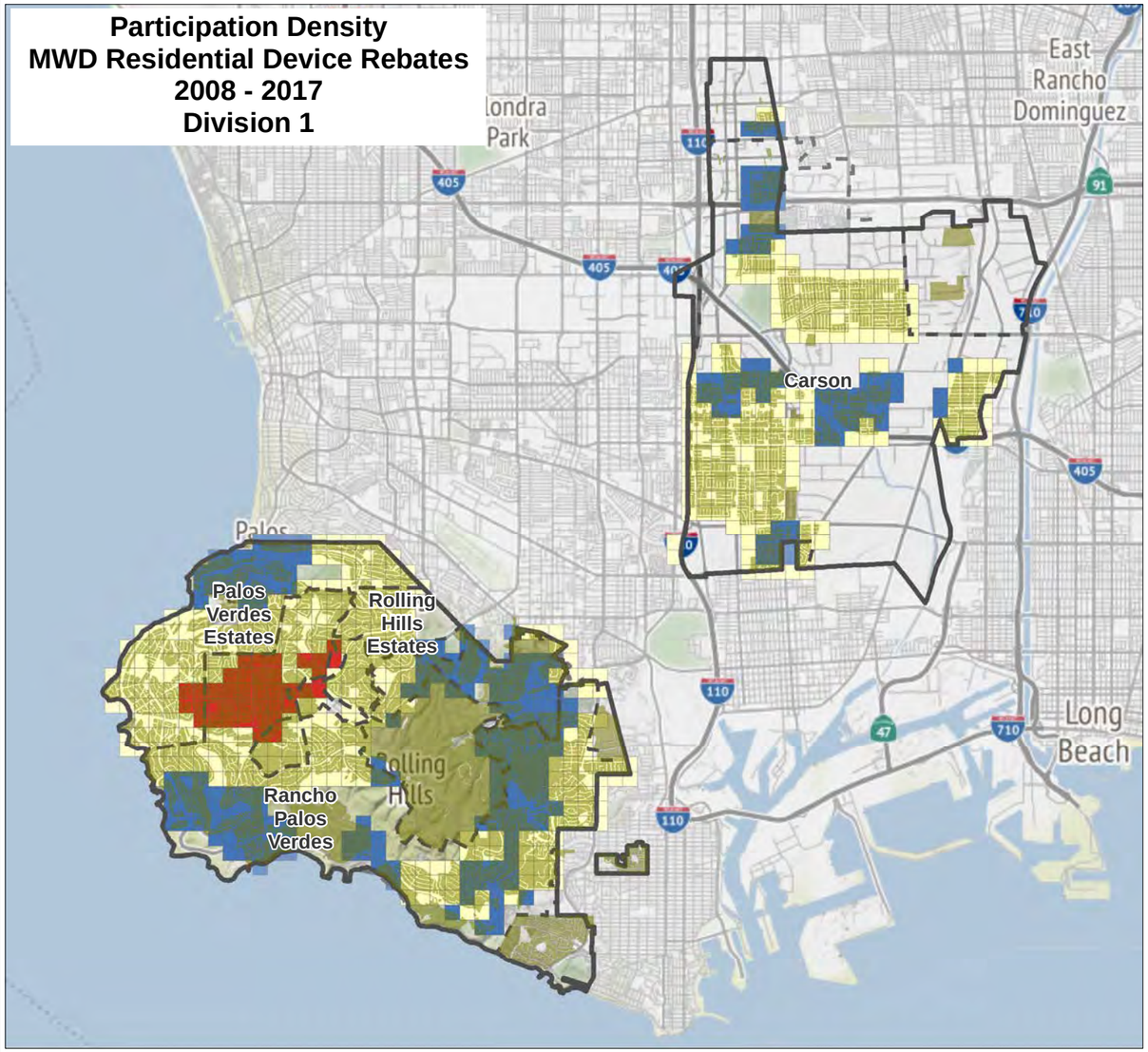
West Basin, 2016. *West Basin Municipal Water District 2015 Urban Water Management Plan,* dated June 2016.

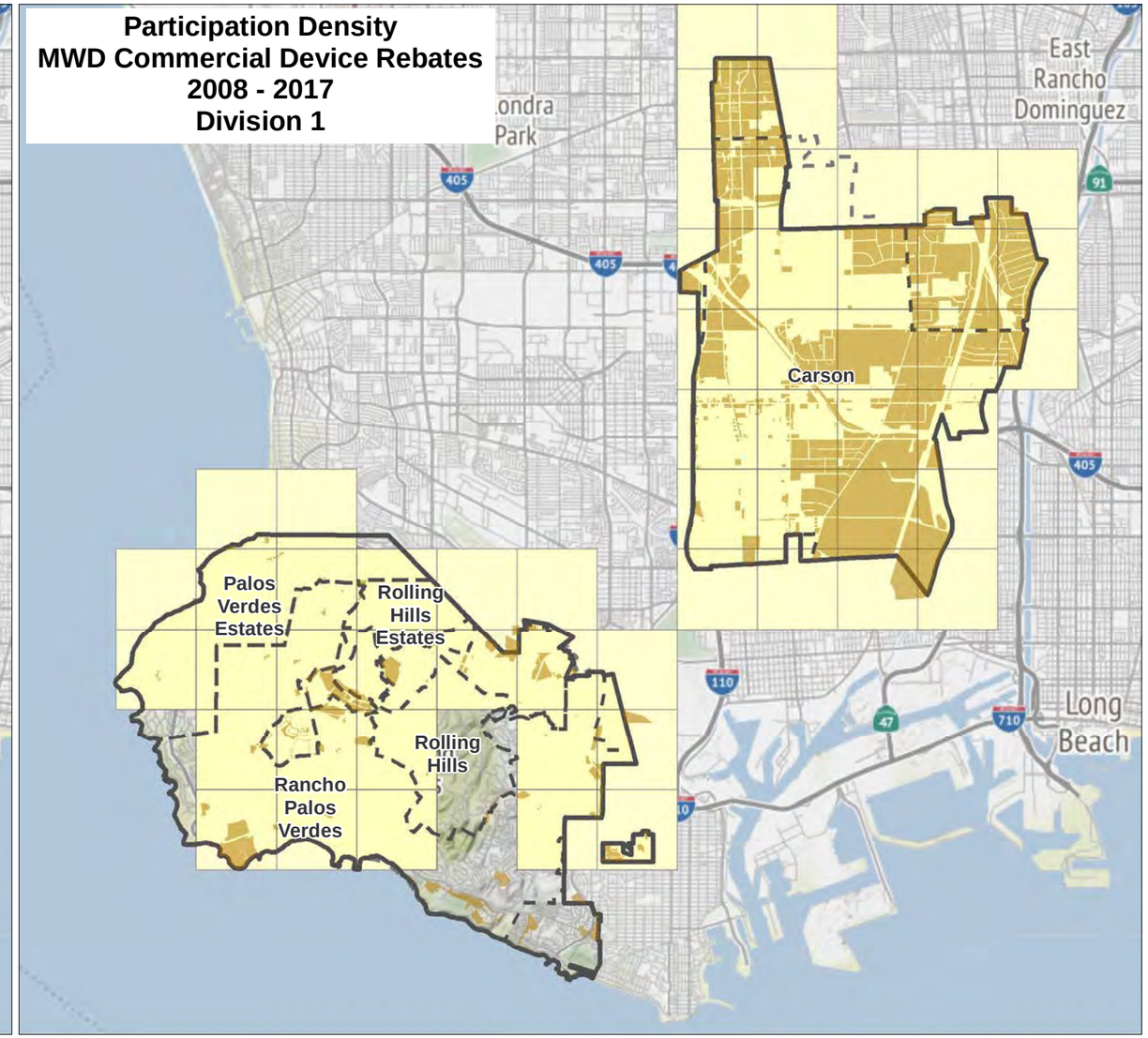
West Basin, 2017. *West Basin Municipal Water District 2015 Water Use Report Fiscal Year 2016-2017.*

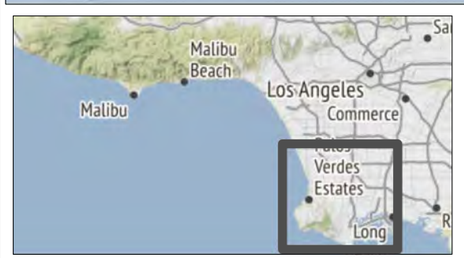
APPENDIX A

Selected Program Participation, Demographics, Land Use, and Program Opportunity Maps by Director Division

Division 1







Notes
1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources
1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N
0 2 4
Miles

Legend

Participation Hot and Cold Spots
- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels
- Commercial, Industrial, Institutional Parcels

Participation Density for MWD Device Rebate Program: Division 1

West Basin Municipal Water District
January 2019
EKI B70108.00
Figure 5-7 D1

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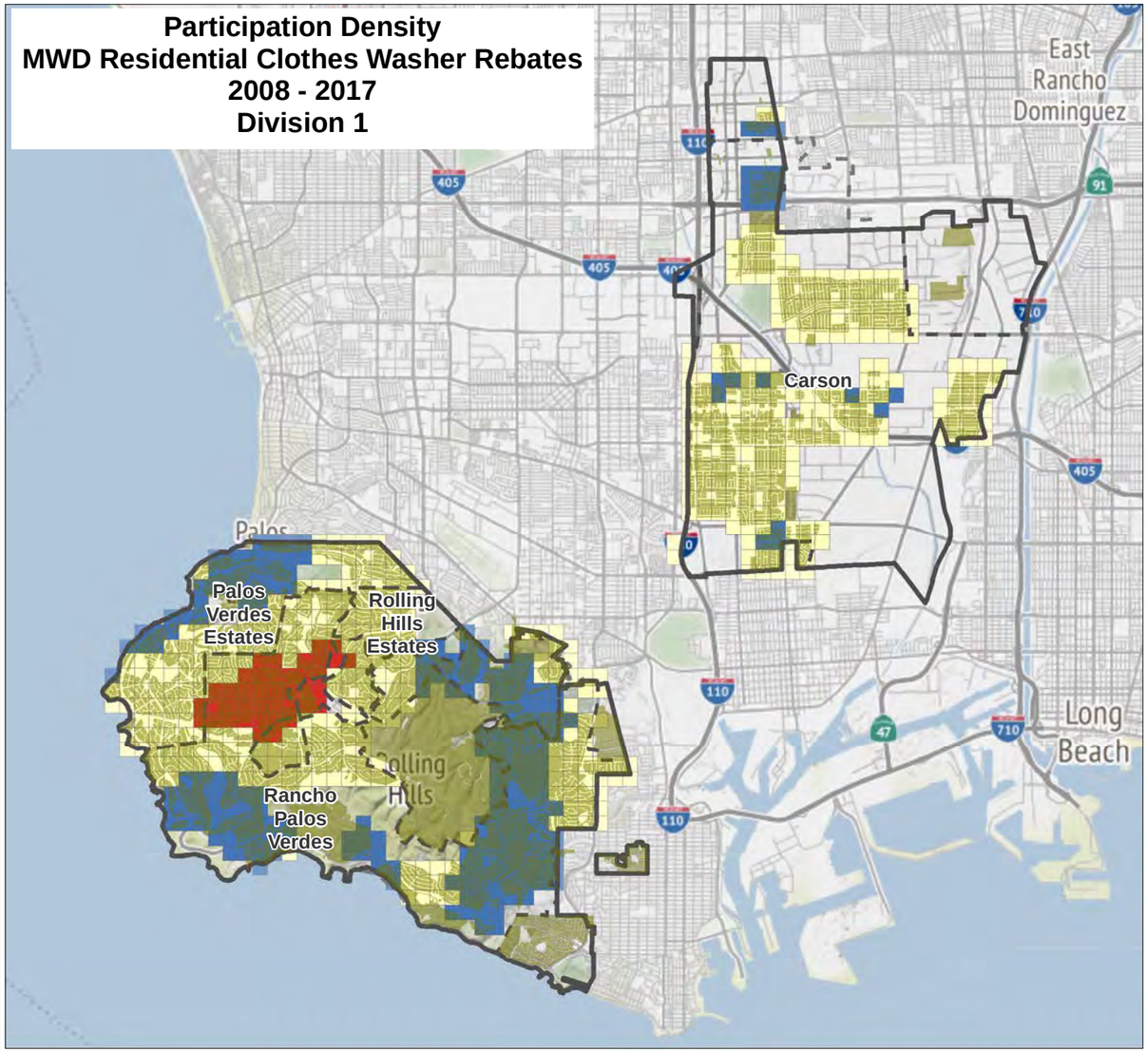
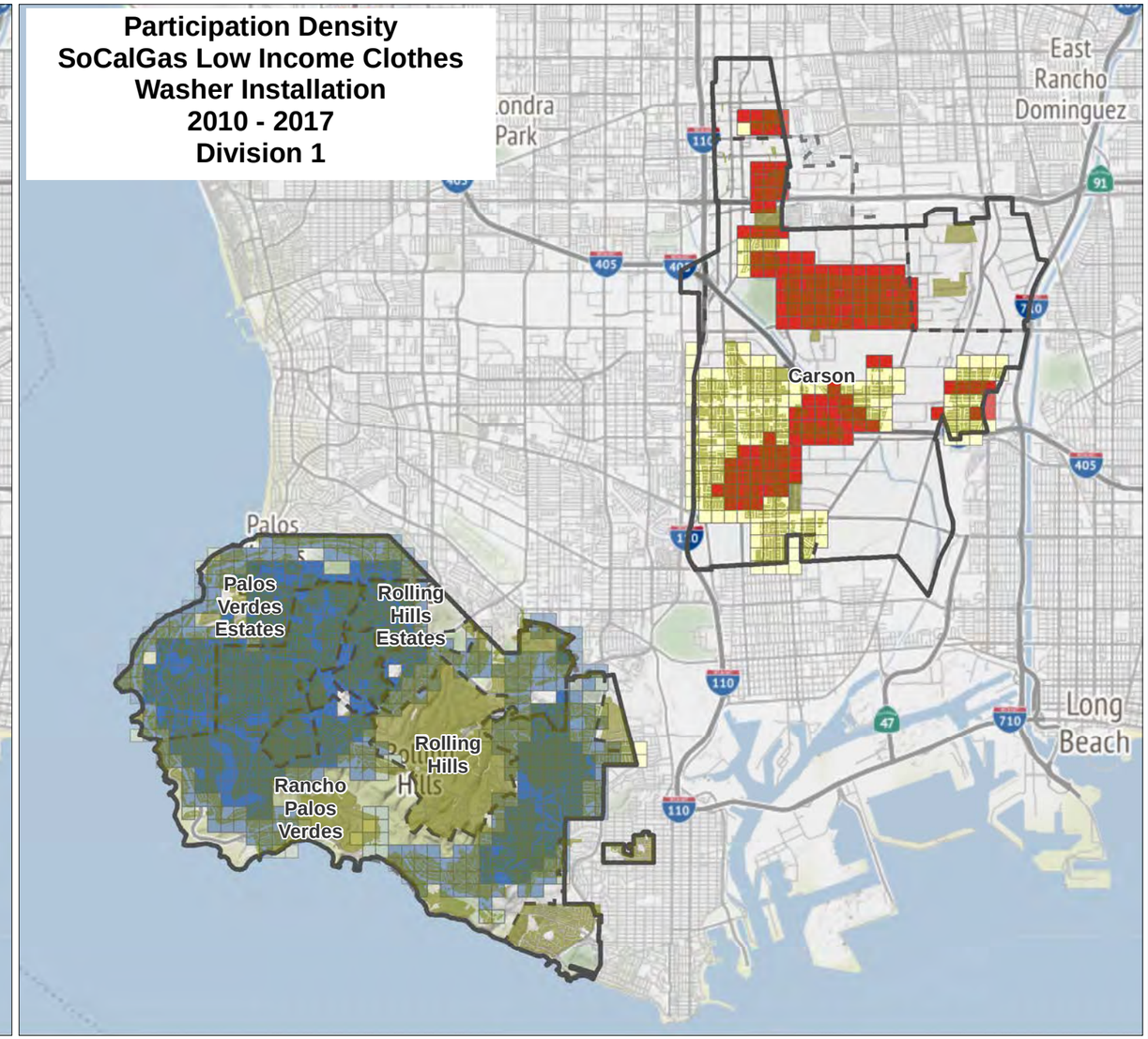




Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 2 4
Miles

Legend

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels

Participation Density for Residential Clothes Washer Rebate and Installation Programs: Division 1

West Basin Municipal Water District

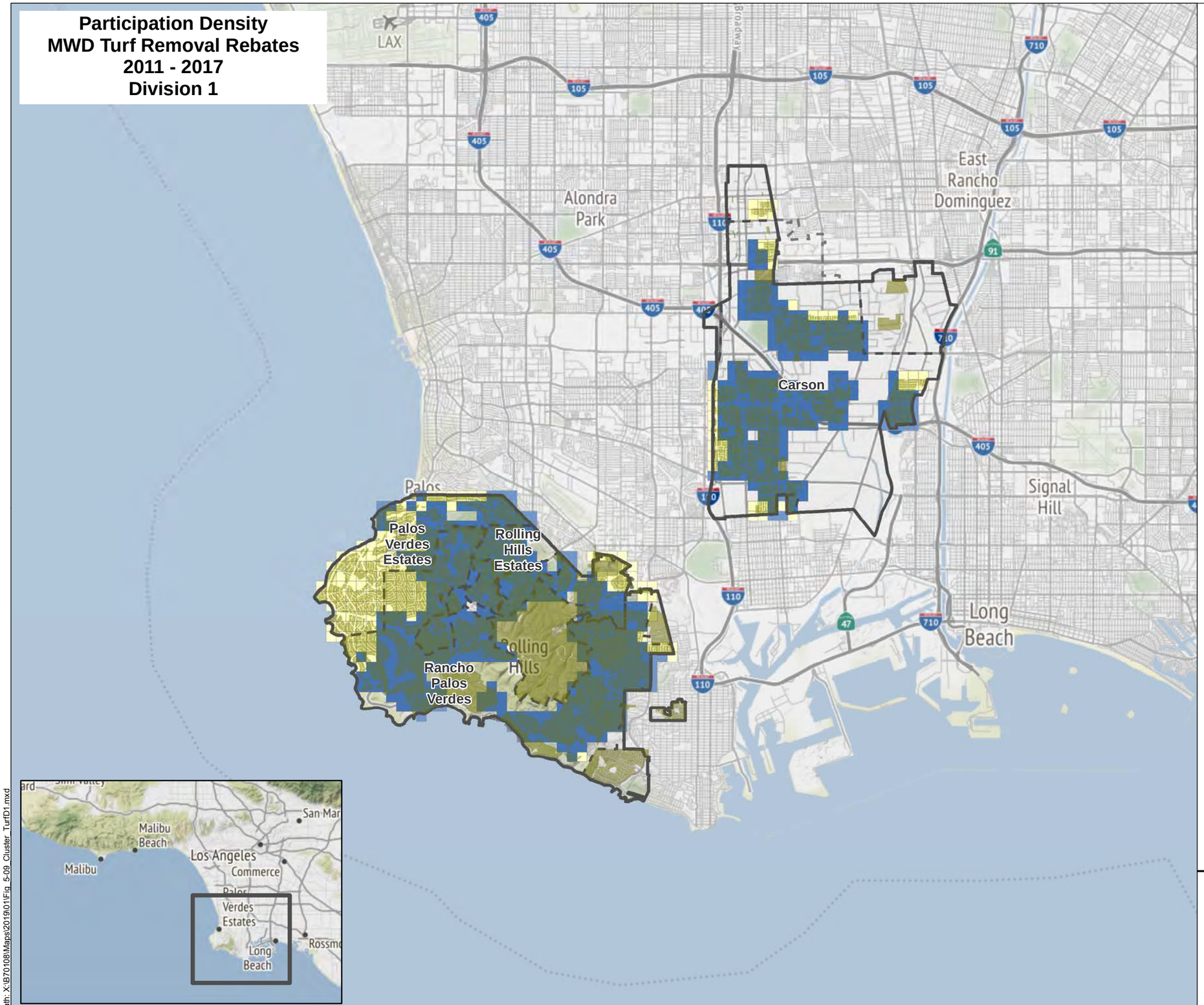
January 2019

EKI B70108.00

Figure 5-8 D1

eki environment & water

Path: X:\B70108\Maps\201901\Fig_5-08_Cluster_ResWashersD1.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 2 4

(Scale in Miles)

Participation Density for Turf Removal Rebate Program: Division 1

West Basin Municipan Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-9 D1

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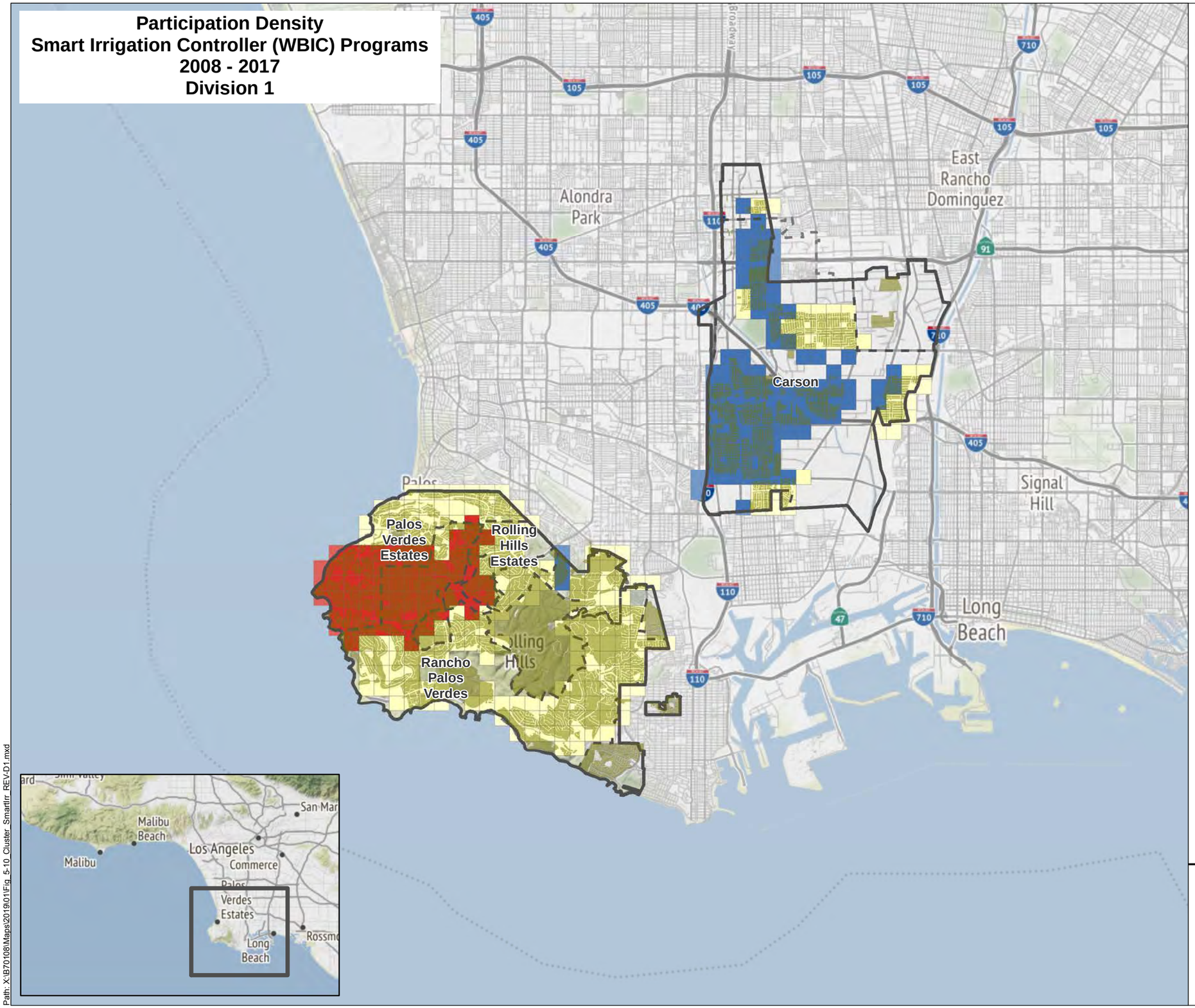

Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 2 4

(Scale in Miles)

Participation Density for Smart Irrigation Controller Programs: Division 1

West Basin Municipan Water District
January 2019
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Figure 5-10 D1

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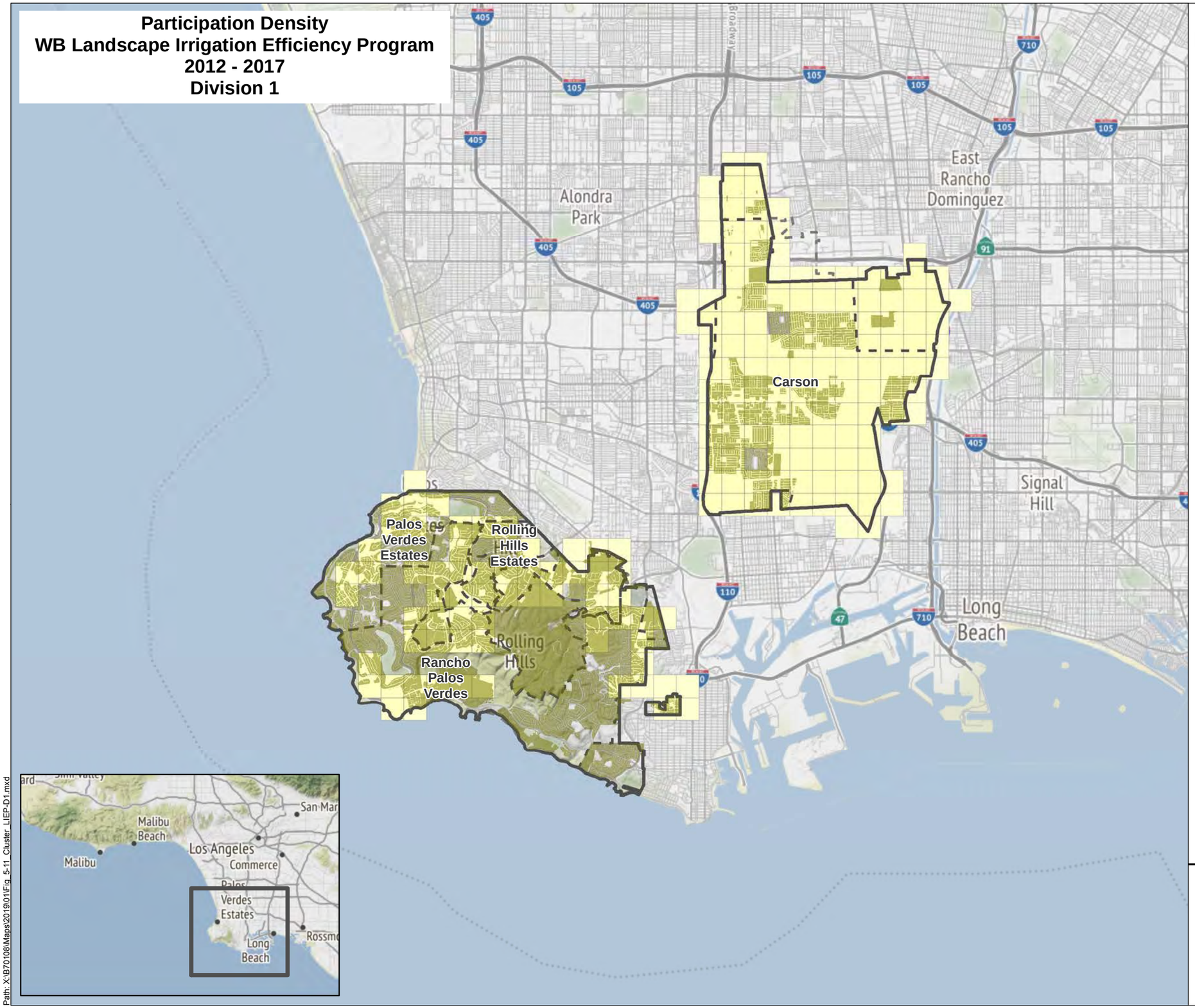

Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 2 4

(Scale in Miles)

Participation Density for Landscape Irrigation Efficiency Program (LIEP): Division 1

West Basin Municipan Water District
January 2019
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eki environment & water

Figure 5-11 D1

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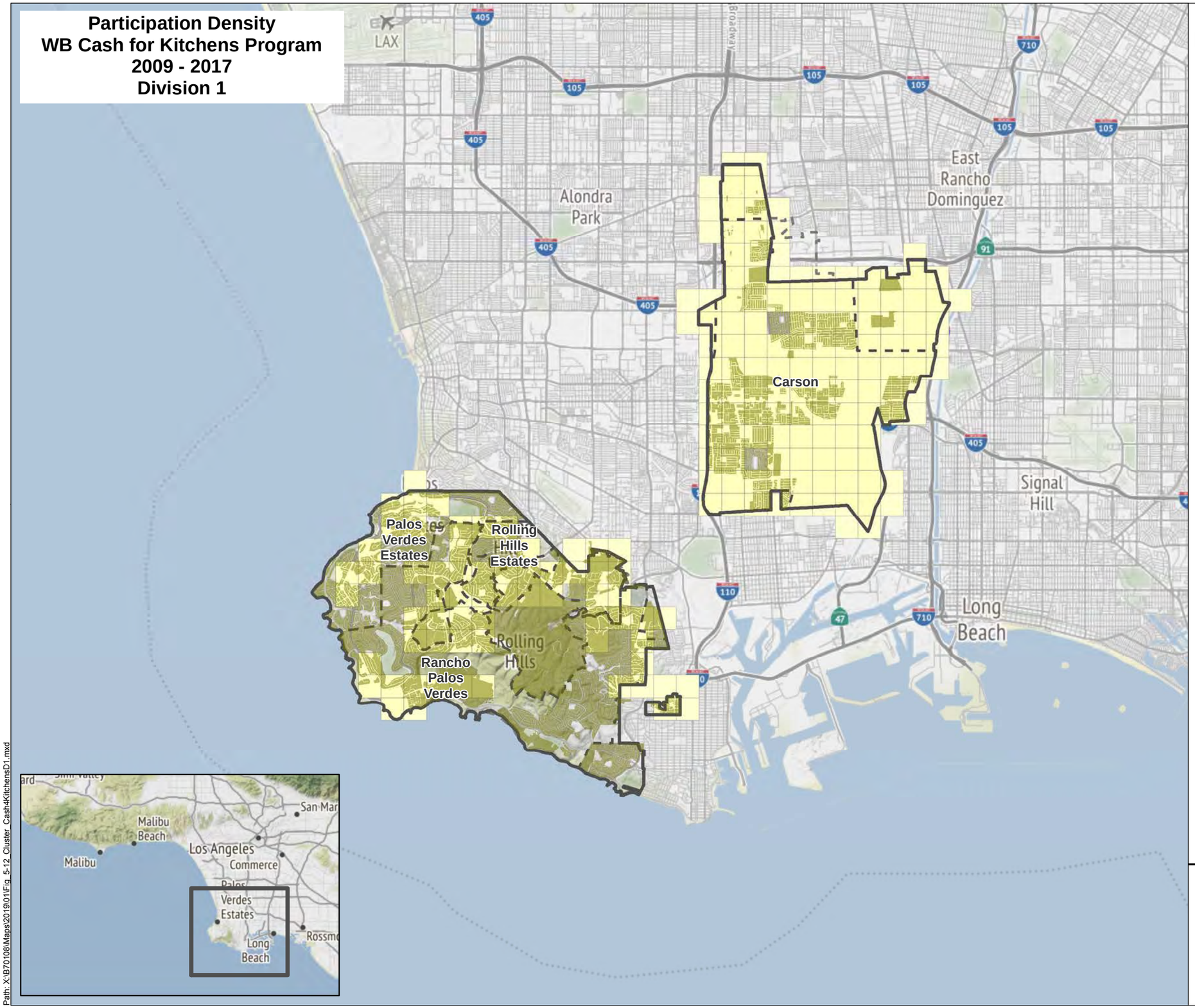

Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 2 4

(Scale in Miles)

Participation Density for Cash For Kitchens Program: Division 1

West Basin Municipan Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-12 D1

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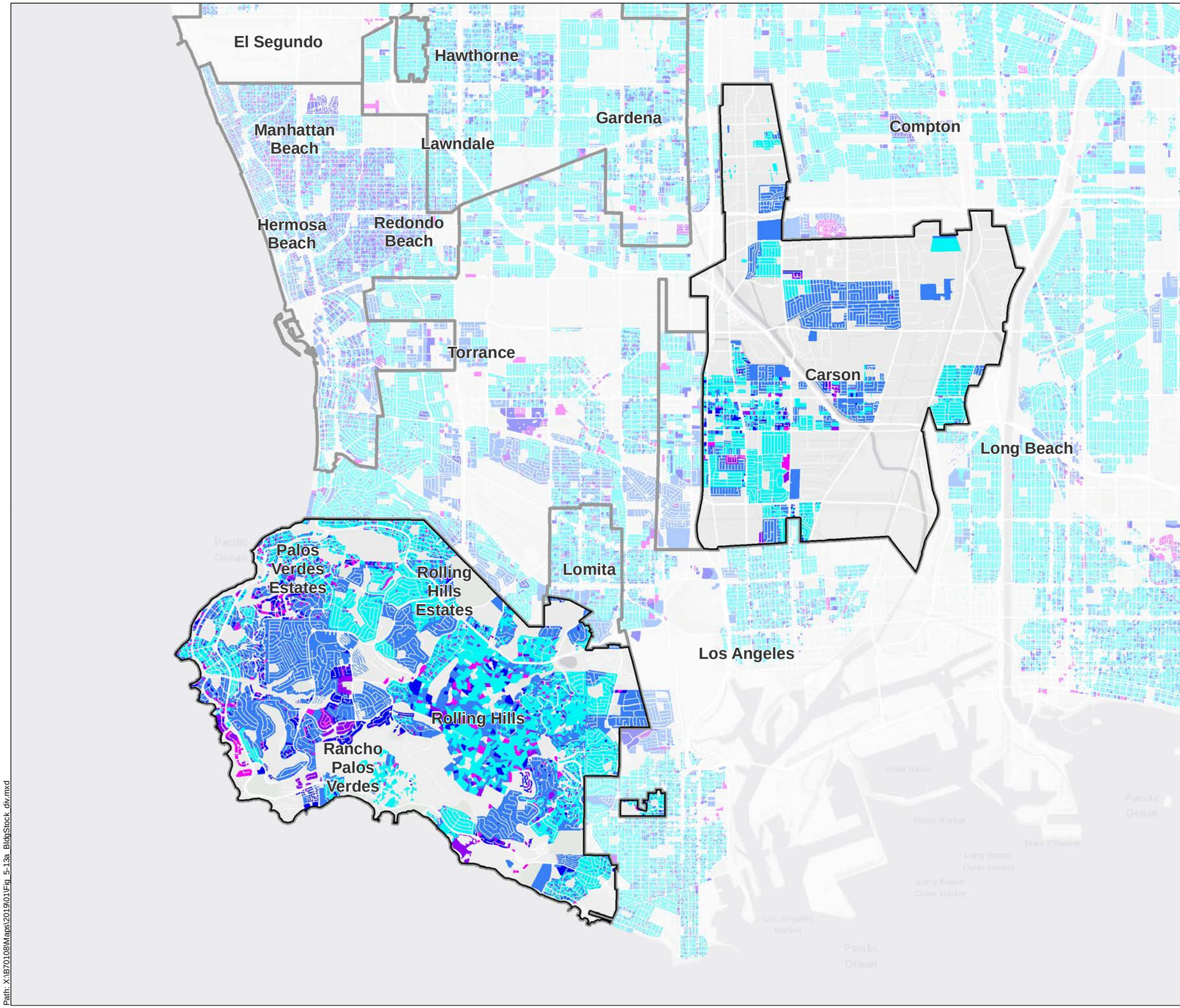

Legend

West Basin Director Division Boundaries

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1.5 3

(Scale in Miles)

Age of Building Stock - Residential Division 1

West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-13a D1

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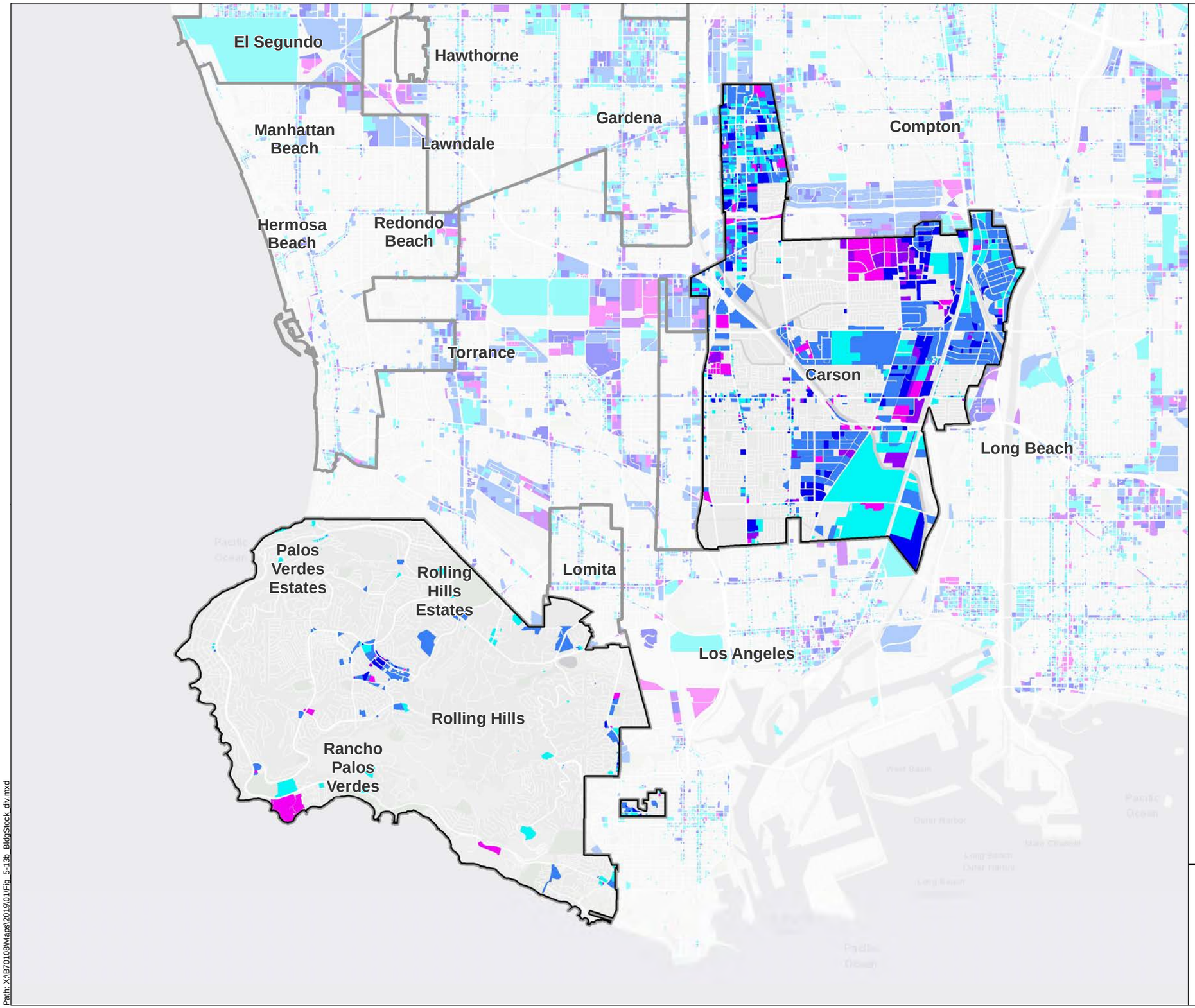

Legend

West Basin Director Division Boundaries

Date of Construction

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1.5 3

(Scale in Miles)

Age of Building Stock - CII
Division 1

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West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-13b D1

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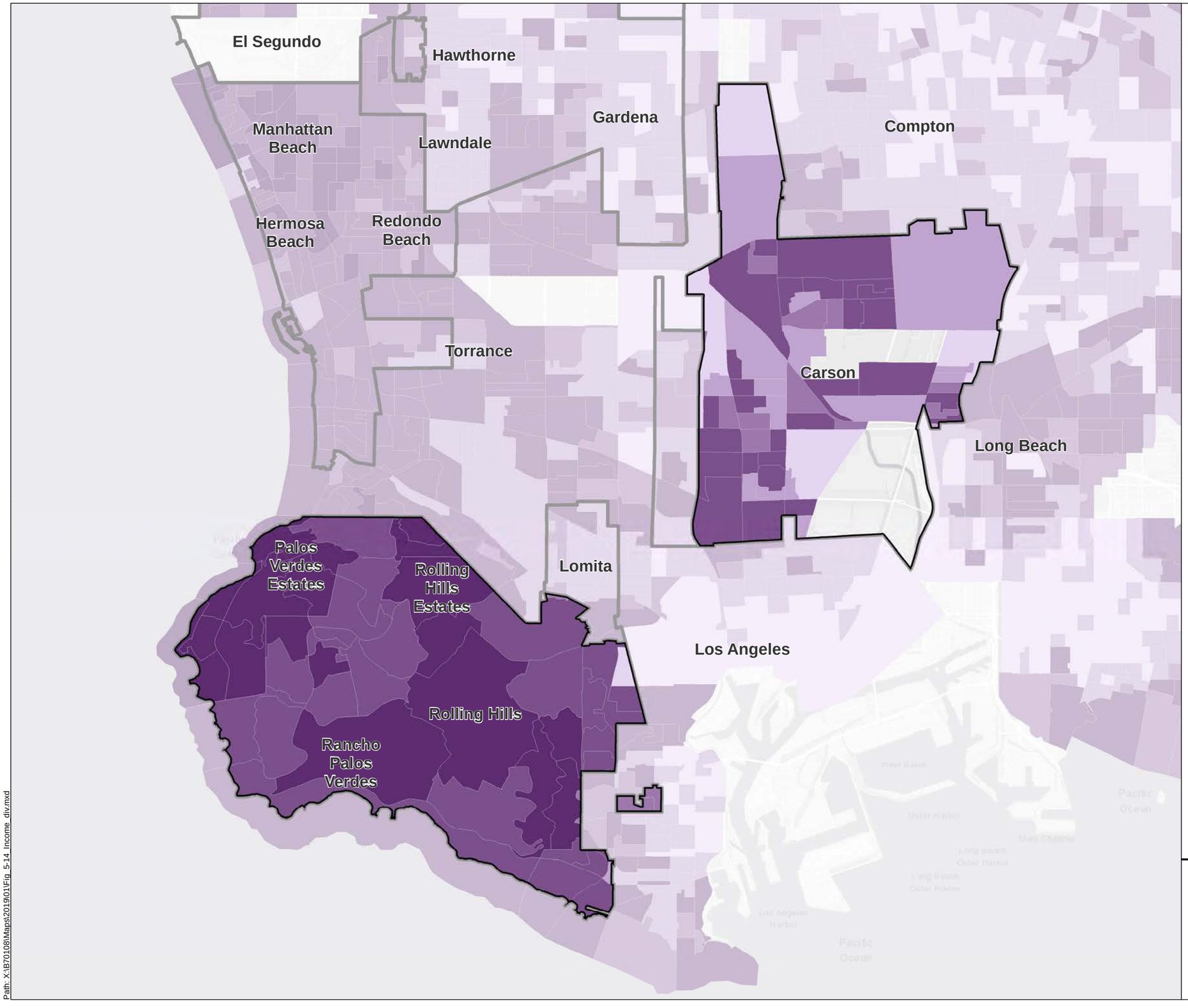

Legend

West Basin Director Division Boundaries

Household Median Income, Census

- Very Low <$38,450
- Low $38,451-$61,500
- Moderate $61,501-$70,000
- High $70,001 - $140,000
- Very High >$140,001

Notes

1. All locations are approximate.
2. Household income is based on estimated 2014 median household income by Census Block Group, per Census (2016). Income level groupings are based on California Department of Housing and Community Development ("HCD") income levels for Los Angeles County for a 3-person household in 2014 (HCD, 2014). Very high income is shown as greater than two times the Couinty-wide median household income.

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1.5 3

(Scale in Miles)

Median Household Income
Division 1

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West Basin Municipal Water District
June 2019
EKI B70108.00
Figure 5-14 D1

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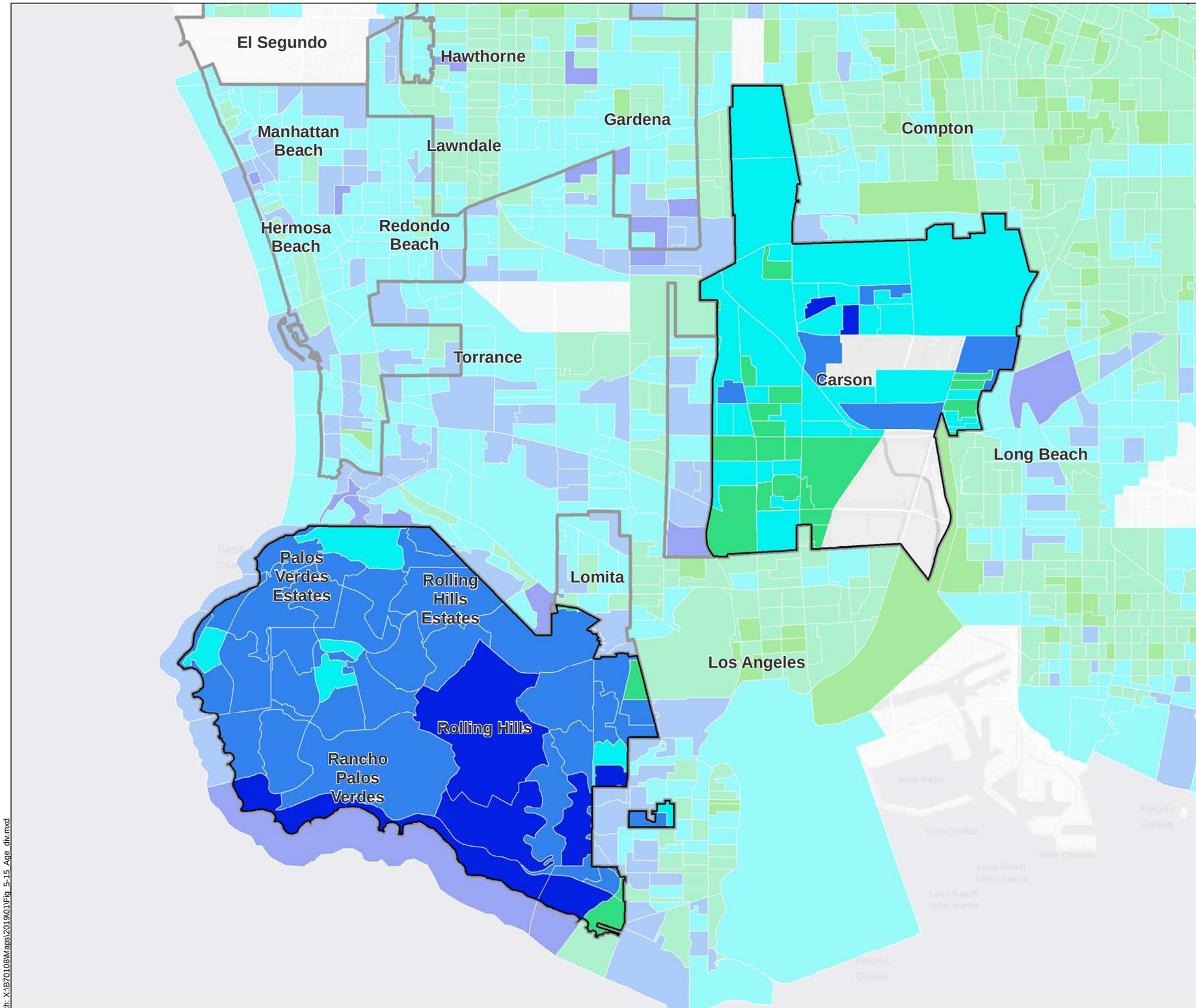

Legend

West Basin Director Division Boundaries

Median Household Age by Census Block Group

- <25
- 25-35
- 35-45
- 45-55
- >55

Notes

1. All locations are approximate.
2. Household age is based on the estimated 2014 median age of household members by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1.5 3

(Scale in Miles)

Median Household Age
Division 1

eki environment & water

West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-15 D1

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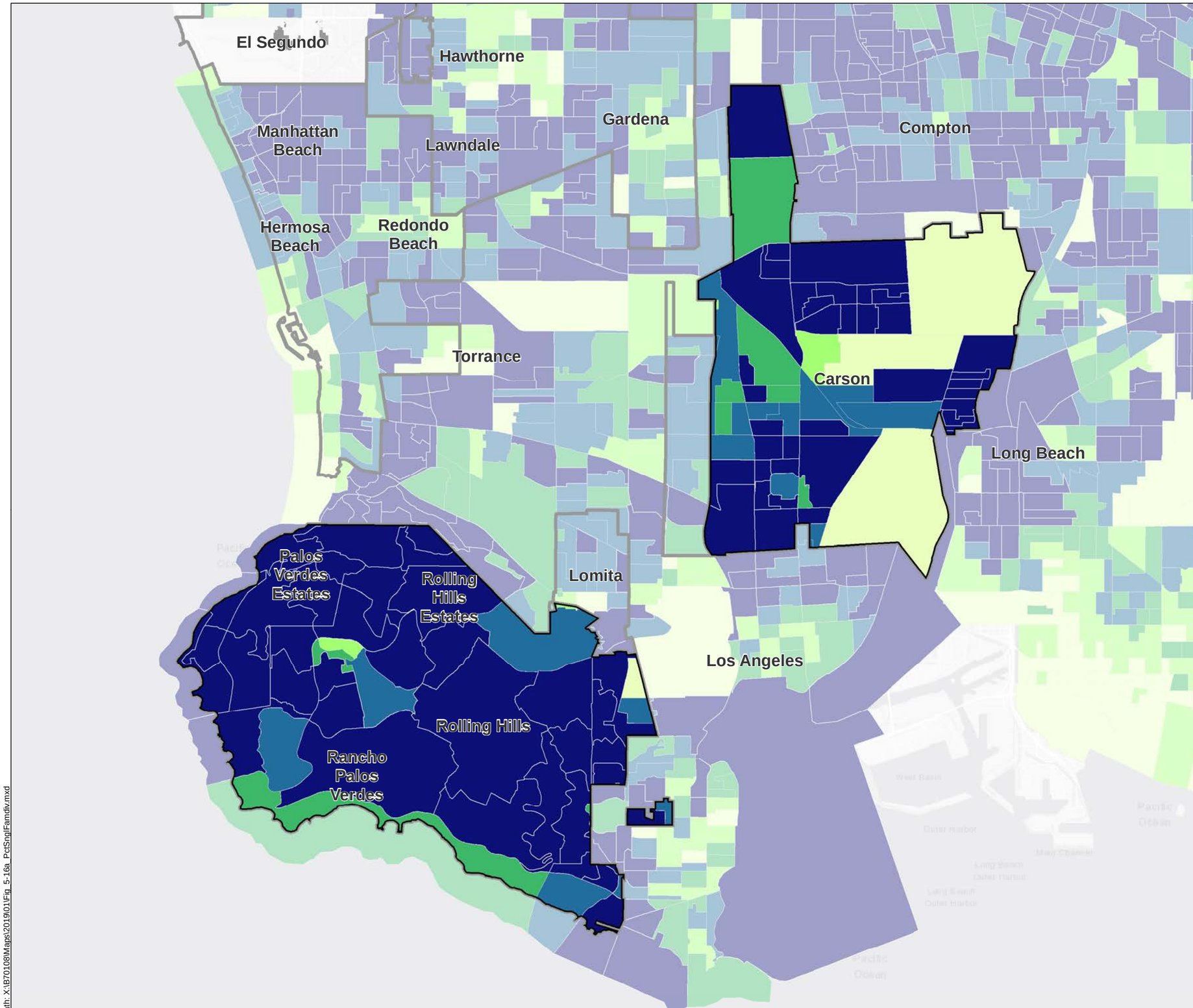

Legend

West Basin Director Division Boundaries

Percentage of Population in Single-Family Units

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in single-family homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1.5 3

(Scale in Miles)

Percentage of Population in Single-Family Homes Division 1

West Basin Municipal Water District
June 2019
EKI B70108.00

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Figure 5-16a D1

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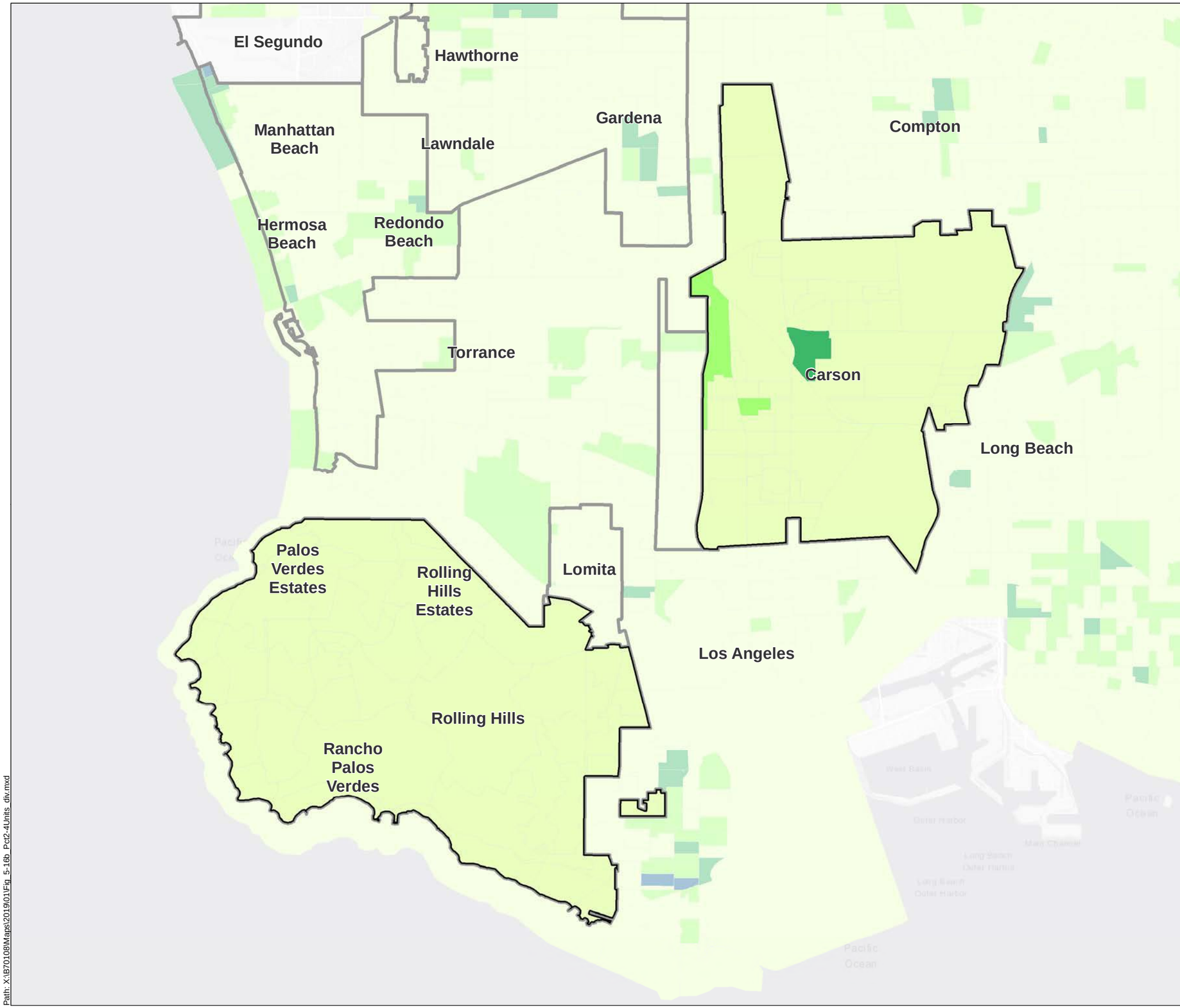

Legend

West Basin Director Division Boundaries

Percentage of Population in 2-4 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%

Notes

1. All locations are approximate.
2. Percentage of population in multi-family housing consisting of 2 to 4 units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1.5 3

(Scale in Miles)

Percentage of Population in Multi-Family Homes (2-4 Units) Division 1

West Basin Municipal Water District
June 2019
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Figure 5-16b D1

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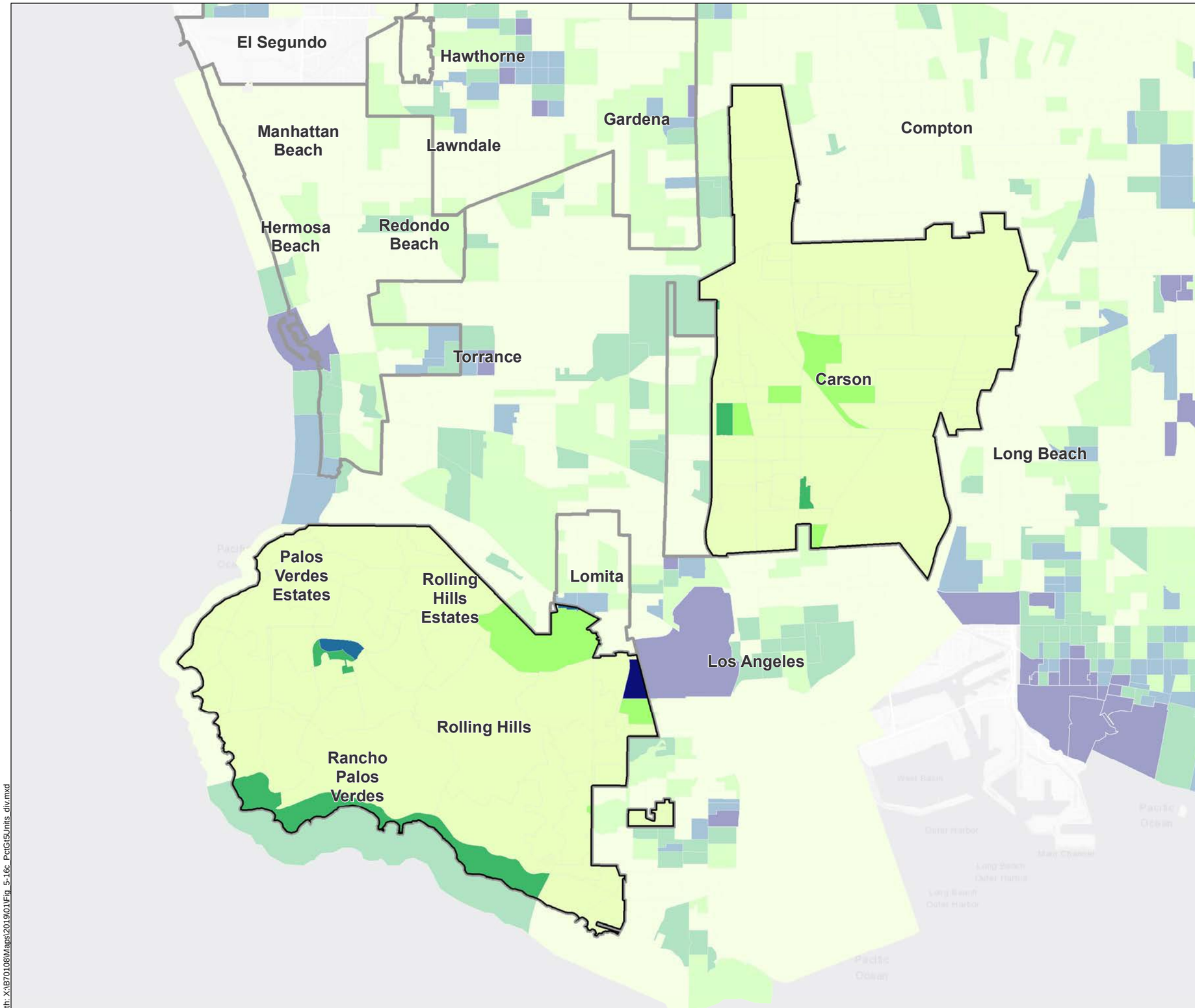

Legend

West Basin Director Division Boundaries

Percentage of Population in ≥5 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of 5 or more units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1.5 3

(Scale in Miles)

Percentage of Population in Multi-Family Homes (≥5 Units) Division 1

West Basin Municipal Water District
June 2019
EKI B70108.00

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Figure 5-16c D1

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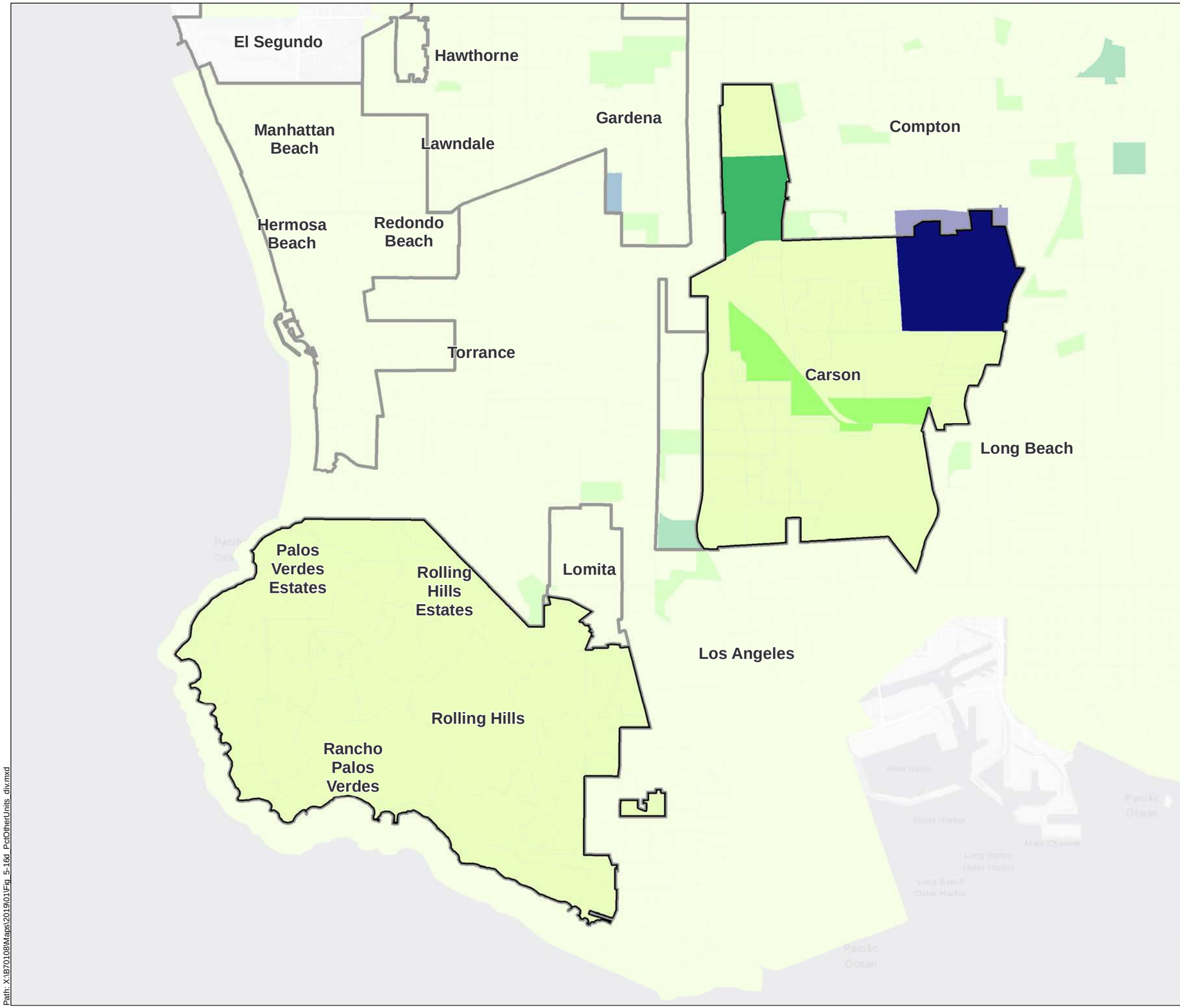

Legend

West Basin Director Division Boundaries

Percentage of Population in Mobile Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of mobile homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1.5 3

(Scale in Miles)

Percentage of Population in Mobile Home Housing Division 1

West Basin Municipal Water District
June 2019
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Figure 5-16d D1

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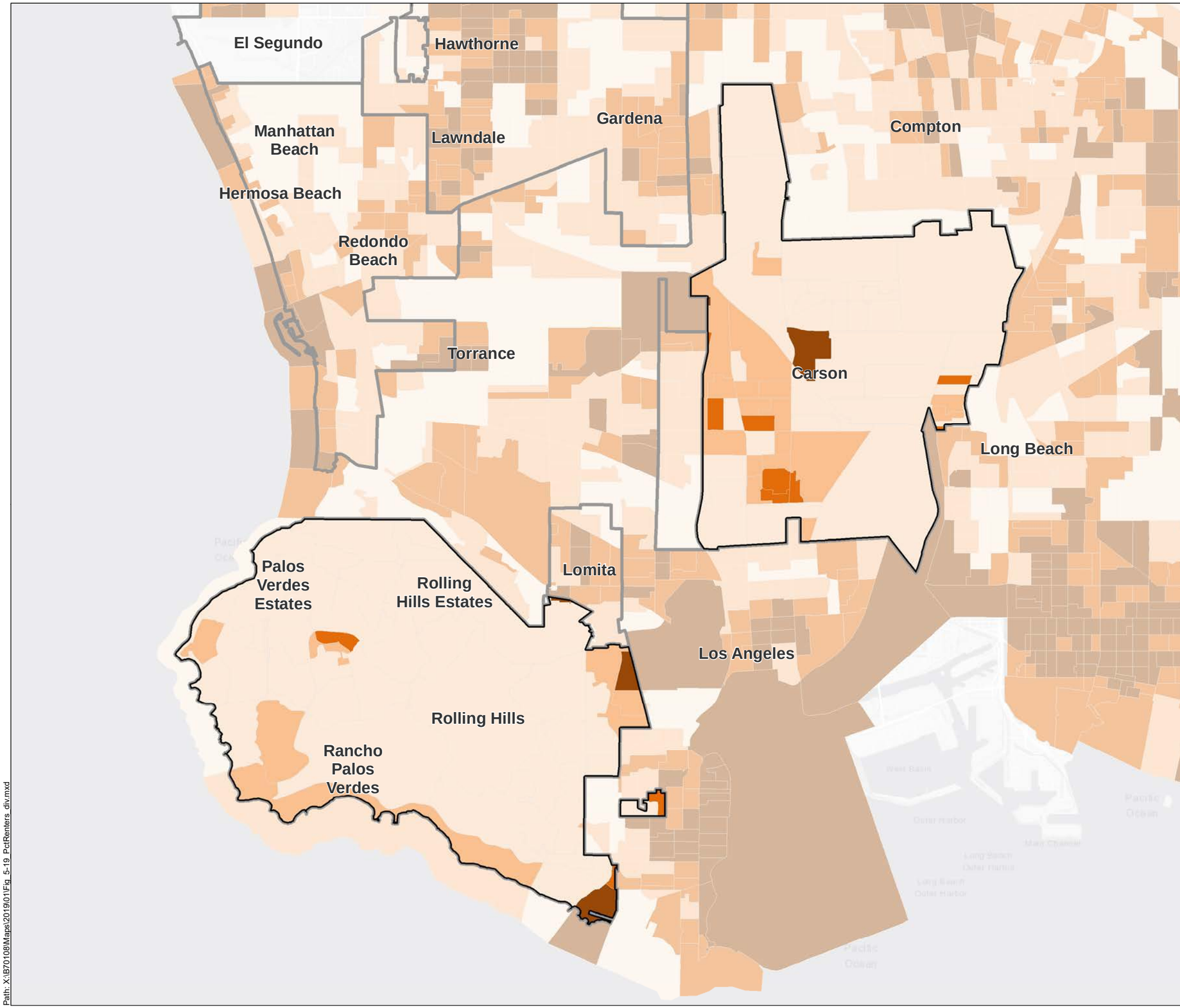

Legend

West Basin Director Division Boundaries

Percentage of Renters

- ≤25%
- 25.1% - 50%
- 50.1% - 75%
- ≥75%

Notes

1. All locations are approximate.
2. Percentage of renter-occupied housing units is based on the estimated 2014 number of renter-occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1.5 3

(Scale in Miles)

Percentage of Renter-Occupied Housing Units Division 1

West Basin Municipan Water District
January 2019
EKI B70108.00
Figure 5-19 D1

eki environment & water

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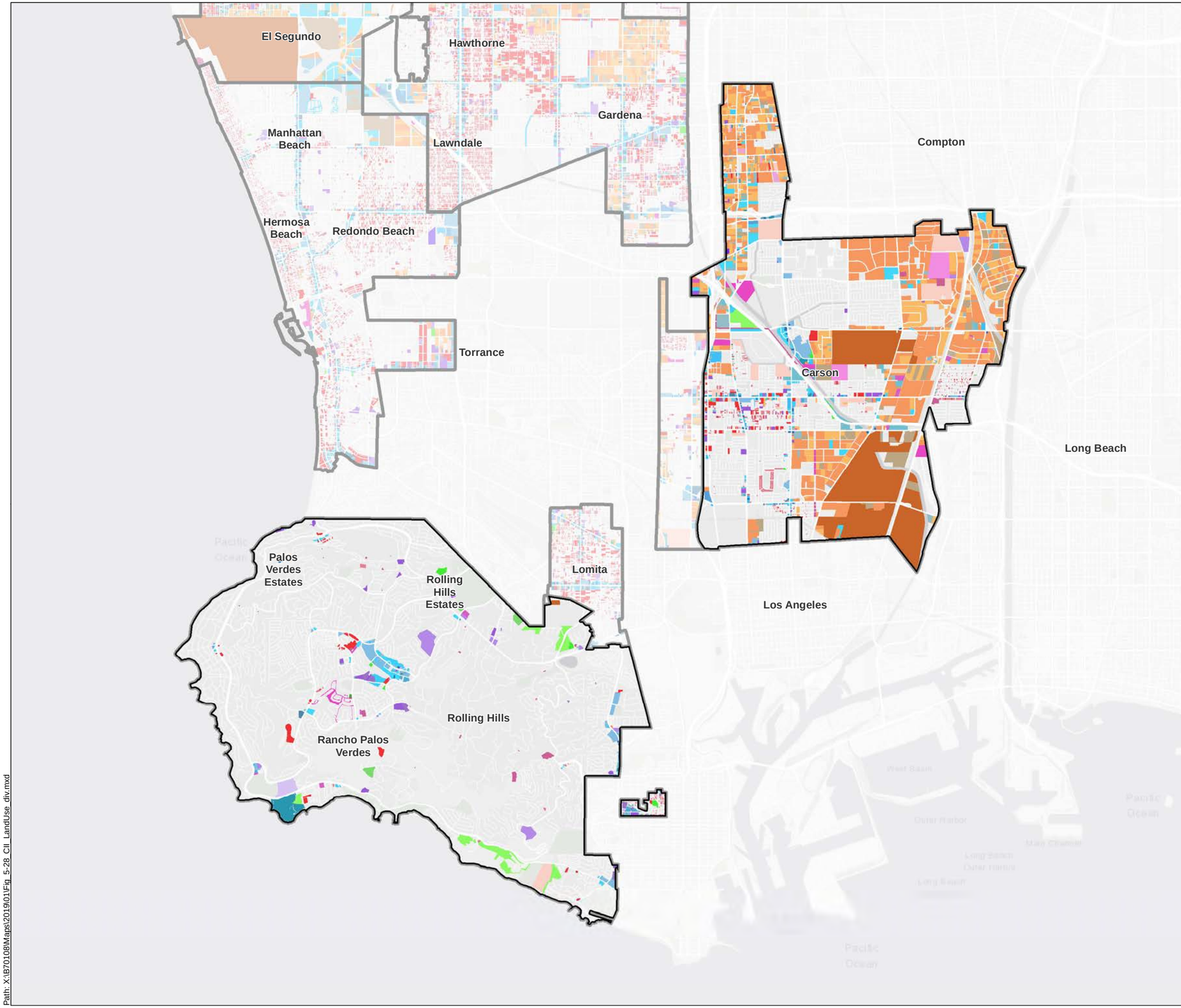


Legend

West Basin Director Division Boundaries

Multi-Family Residential
- Multi-Family Residential - 2-4 Units
- Multi-Family Residential - 5+ Units
- Residential - Mobile Home/Other

Commercial
- Animal Kennel
- Auto Service Station
- Bank, Savings and Loan
- Car Sales/Service
- Car Wash
- Commercial Unknown/Miscellaneous
- Department or Warehouse Store
- Hotel and Motel
- Non-Auto Shop, Paint Shop, or Laundry
- Office Building
- Parking Lot/Structure
- Professional Building
- Restaurant
- Shopping Center
- Store
- Supermarket
- Wholesale and Manufacturing Outlet

Institutional
- Adult Care Facility
- Cemetery, Mausoleum
- Children's Day Care Center
- Church
- College, University
- Convalescent Hospital, Nursing Home
- Hospital
- Mortuary, Funeral Home
- School (Private)

Industrial
- Cement, Rock and Gravel Plant
- Food Processing Plant
- Heavy Manufacturing
- Light Manufacturing
- Lumber Yard
- Other Mineral Processing
- Warehousing, Distribution, Storage

Recreational
- Athletic/Amusement/Recreational Facility
- Golf Course
- Horse Stables
- Ice Skating Rink
- Movie or Stage Theater

Miscellaneous
- Agriculture
- Other Unknown/Miscellaneous
- Petroleum and Gas Mining/Processing
- Utility/Rights of Way
- Wireless Communication Tower

Notes
1. All locations are approximate.
2. Land use type classifications are based by Assessor's parcel records.

Sources
1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

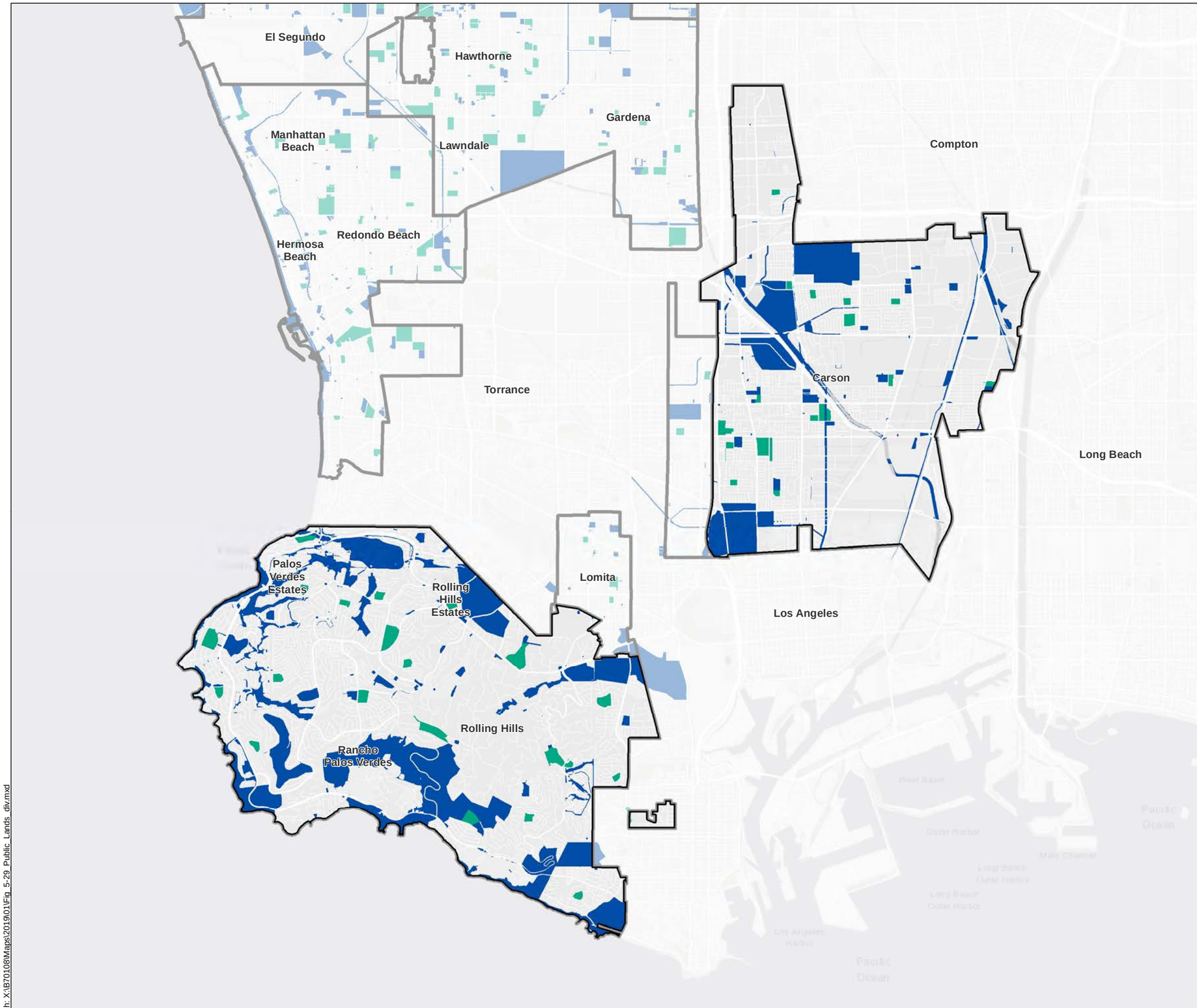
0 1.5 3
(Scale in Miles)

CII Land Use Types within Division 1

eki environment & water

West Basin Municipal Water District
June 2019
EKI B70108.00
Figure 5-28 D1

Path: X:\B70108\Maps\201901\Fig_5-28_CII_LandUse_div.mxd



Legend

- West Basin Director Division Boundaries
- Publicly Owned Parcels Designated as Schools
- Other Publicly Owned Parcels

Notes

1. All locations are approximate.
2. Parcels indicated as schools are based on the provided agency name. Publicly owned parcels include those owned by cities, the state, and other agencies, including but not limited to property used for offices, operations, parks, parking, etc.

Sources

1. Assessor - Publicly Owned Parcels Listing, updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1.5 3

(Scale in Miles)

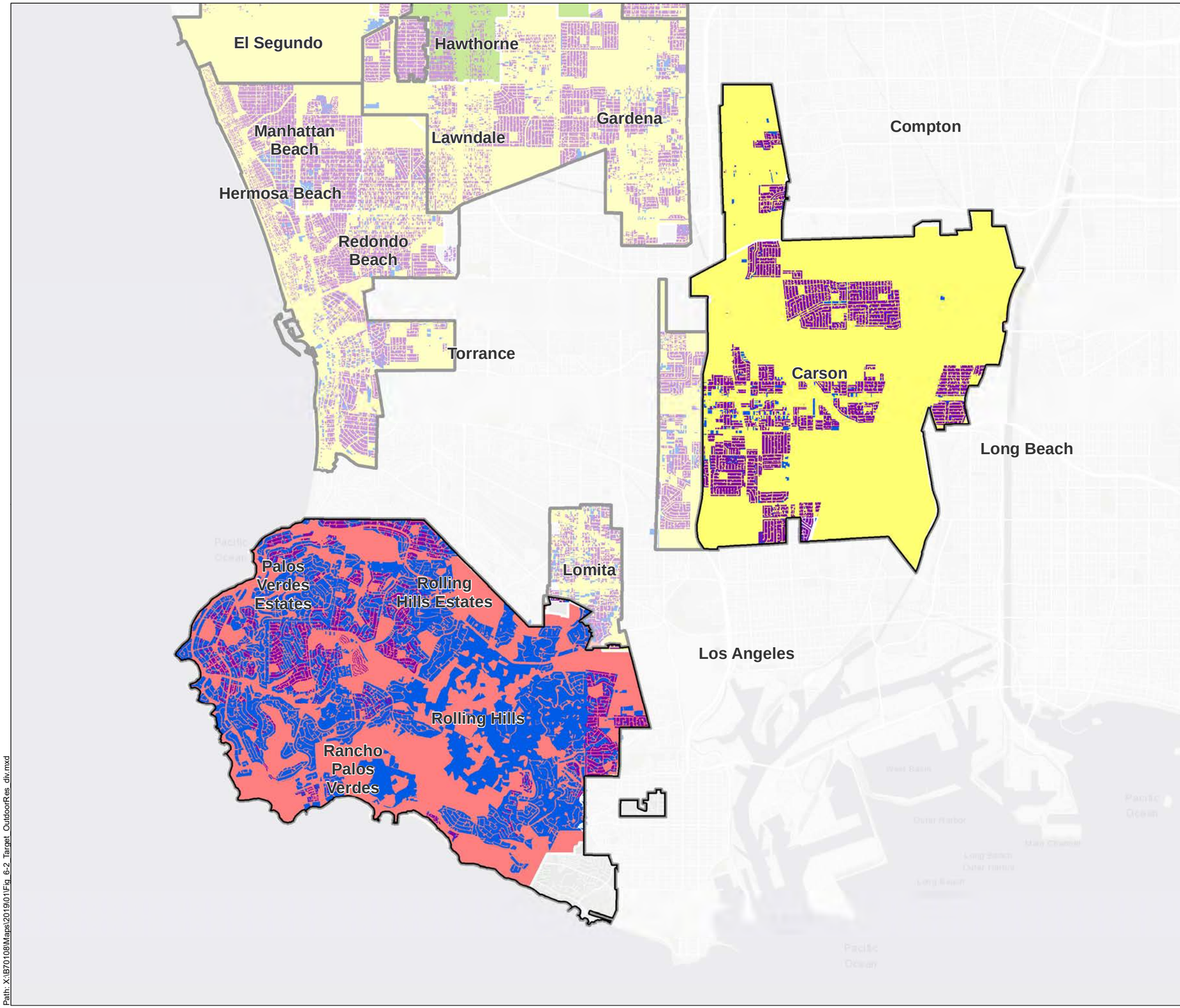
Publicly-Owned Lands within Division 1

eki environment & water

West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-29 D1

Path: X:\B70108\Maps\2019\01\Fig 5-29 Public Lands div.mxd



Legend

West Basin Director Division Boundaries

Program Targeting

Landscape Transformation Programs (≤9,000 sq ft lot)

Irrigation Device Replacement Programs (>9,000 sq ft lot)

WUE Program Outreach Priority

Low (≤20% Outdoor Water Use)

Medium (20-40% Outdoor Water Use)

High (>40% Outdoor Water Use)

Notes

1. All locations are approximate.
2. West Basin potable water customer agencies are ranked for outdoor residential WUE program outreach priority based on the estimated percentage of outdoor water use within their service area.
3. The type of residentual outdoor WUE program for targeting is based on parcel lot size.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1.5 3

(Scale in Miles)

Target Opportunities for Single-Family Residential Outdoor WUE Programs Division 1

West Basin Municipan Water District

January 2019

EKI B70108.00

Figure 6-2 D1

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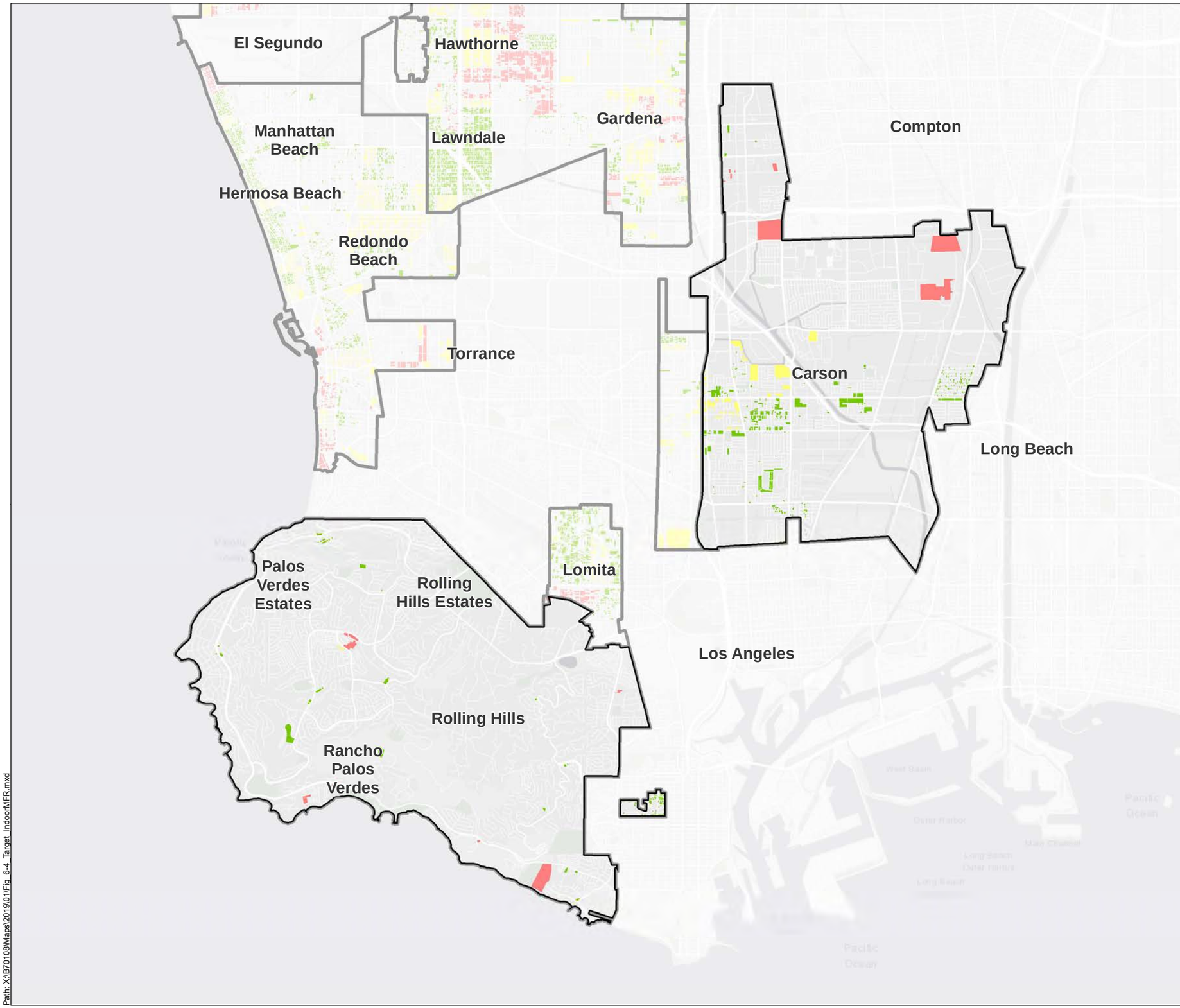
Path: X:\B70108\Maps\2019\01\Fig_6-2_Target_OutdoorRes_div.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (≥50% Population in Multi-Family Housing)
- Medium (25-50% Population in Multi-Family Housing)
- Low (≤25% Population in Multi-Family Housing)

Notes

1. All locations are approximate.
2. Multi-family residential parcels are ranked for indoor residential WUE program outreach priority based on the proportion of an area's population that lives in multi-family residiental homes, based on Census block group. For purposes of this assessment, manufactured homes are considered to be multi-family.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1.5 3

(Scale in Miles)

Target Opportunities for Multi-Family Residential Indoor WUE Programs Division 1

West Basin Municipan Water District

January 2019

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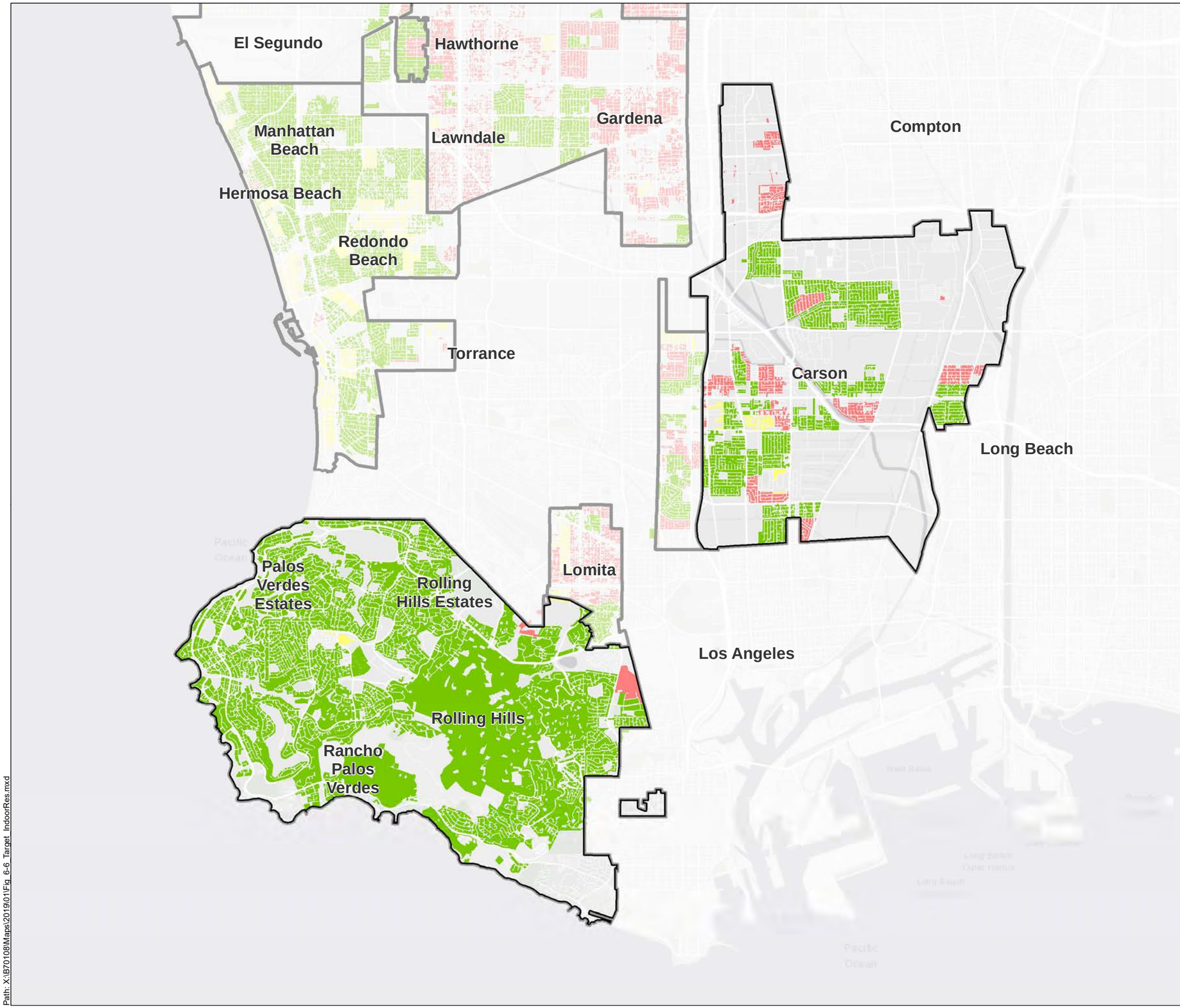
Figure 6-4 D1

Path: X:\B70108\Maps\2019\011\Fig_6-4_Target_IndoorMFR.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (Low Income)
- Medium (≥50% Renter Population)
- Low (Moderate to High Income, <50% Renter Population)

Notes

1. All locations are approximate.
2. Single-family residential parcels are ranked for indoor residential WUE program outreach priority based on median household income and percentage of population that rents their home.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1.5 3

(Scale in Miles)

Target Opportunities for Single-Family Residential Indoor WUE Programs Division 1

West Basin Municipan Water District

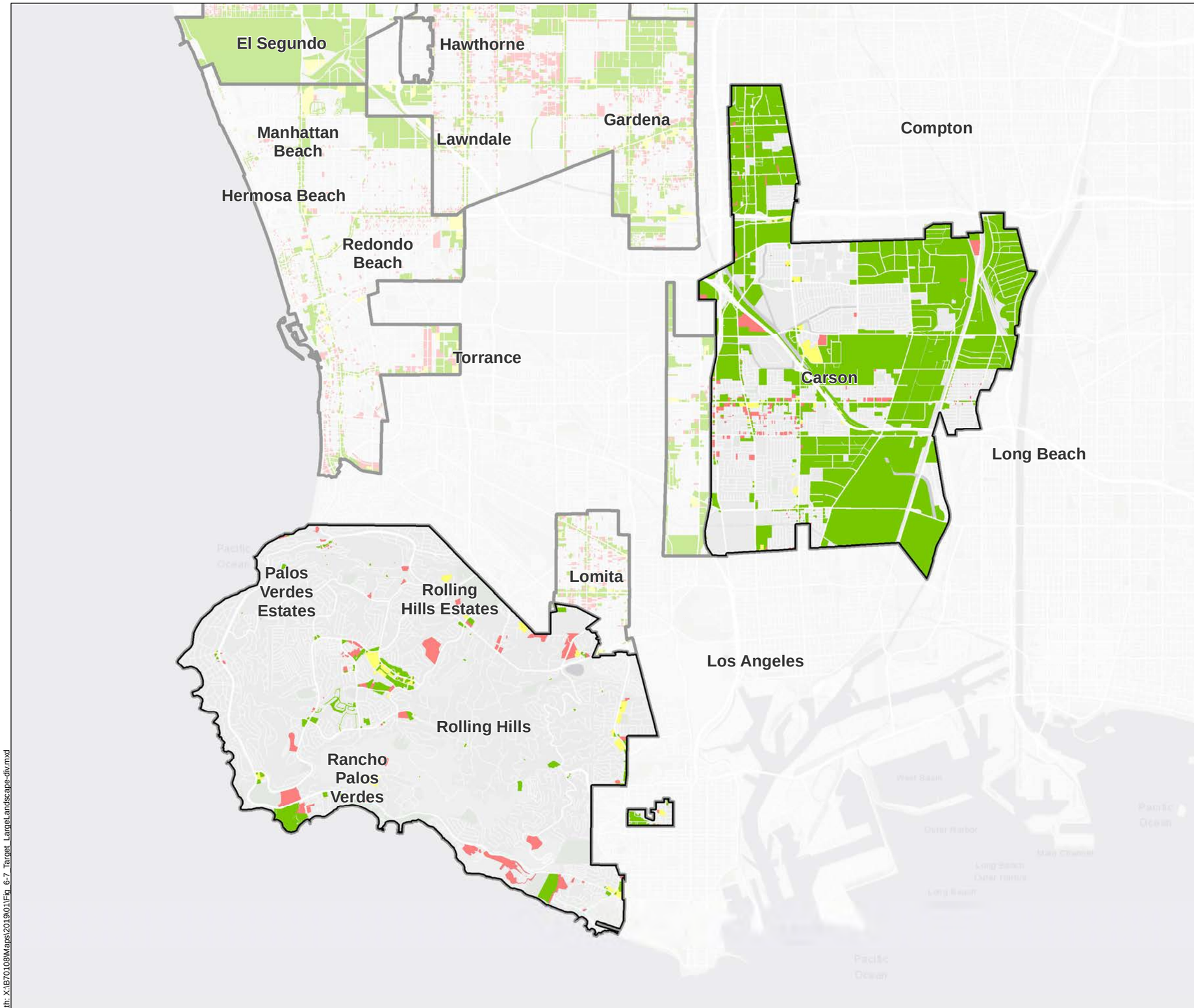
January 2019

EKI B70108.00

Figure 6-6 D1

eki environment & water

Path: X:\B70108\Maps\201901\Fig_6-6_Target_IndoorRes.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High Priority
- Medium Priority
- Low Priority

Notes

1. All locations are approximate.
2. Parcels identified as high priority include multi-family residential parcels of five or more units and commercial, institutional, and industrial parcels associated with business types that typically have large landscapes. A detailed list of business types and the desginated priorty is provided in the text.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1.5 3

(Scale in Miles)

Target Opportunities for Large Landscape WUE Programs Division 1

West Basin Municipal Water District

June 2019

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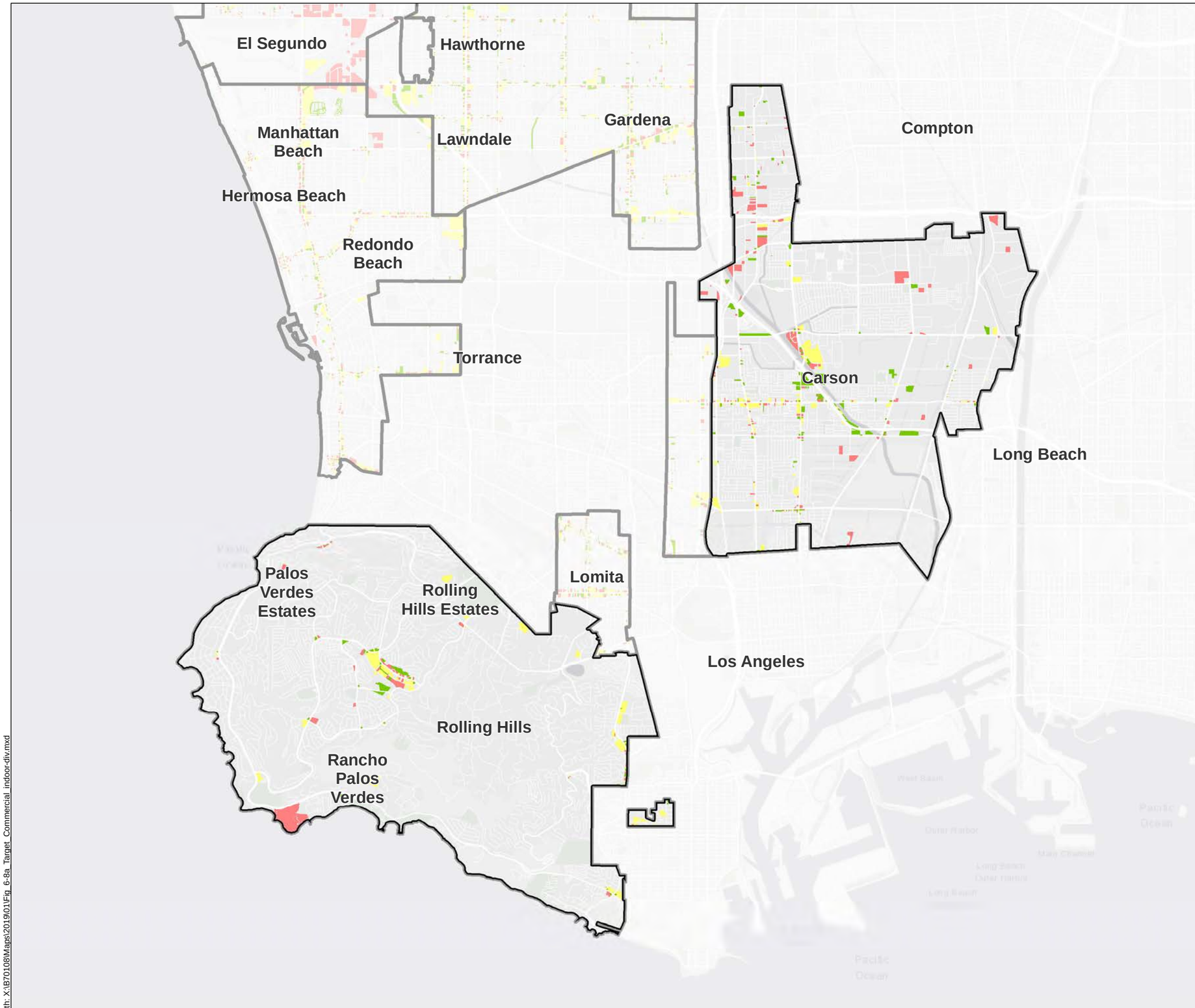
Figure 6-7 D1

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_6-7_Target_LargeLandscape-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Commercial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use. For purposes of this assessment, land uses classified as "recreational" are included with commercial land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1.5 3

(Scale in Miles)

WUE Outreach Opportunities for Indoor Commercial WUE Programs Division 1

West Basin Municipal Water District

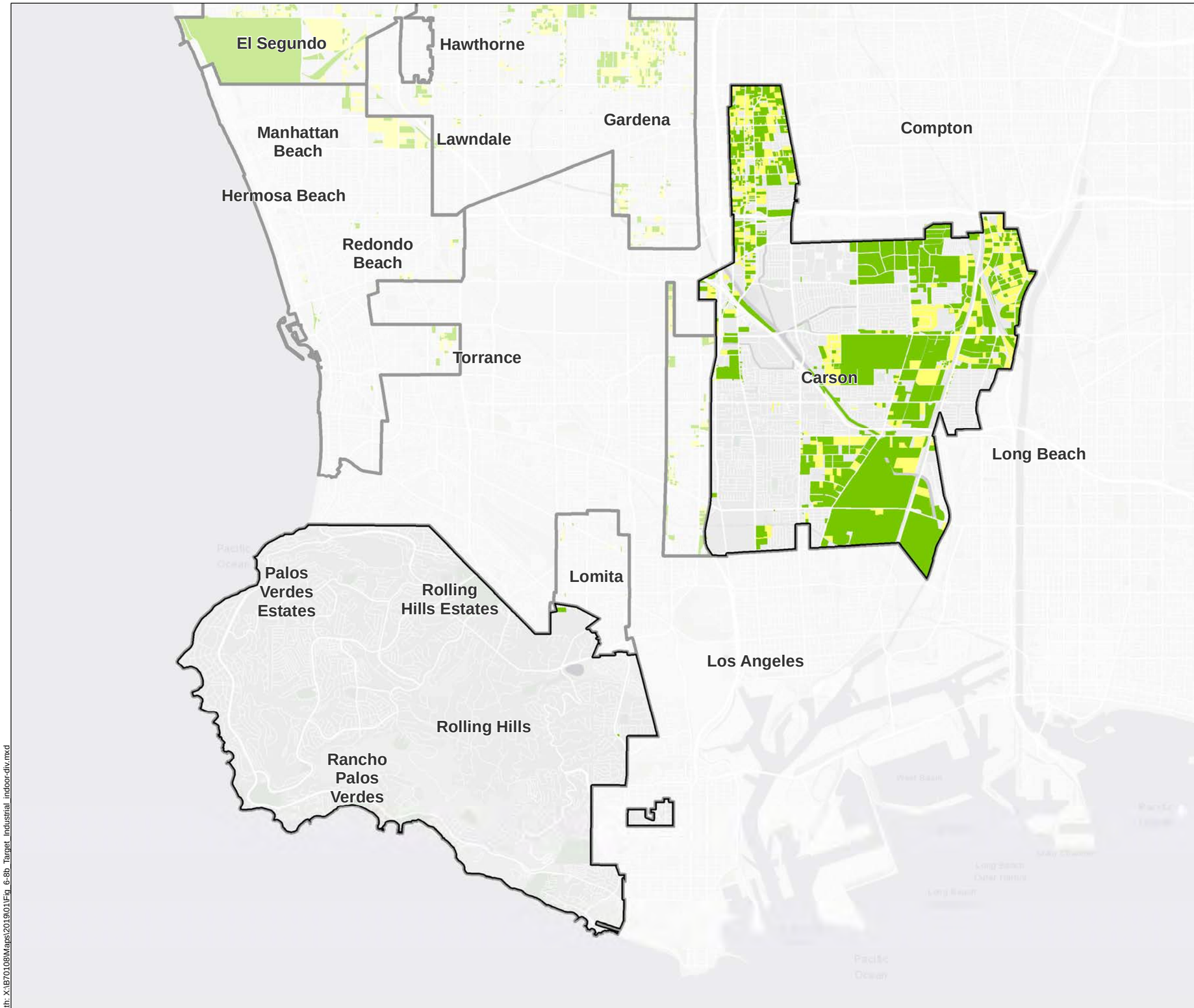
June 2019

EKI B70108.00

Figure 6-8a D1

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_6-8a_Target_Commercial_indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

Medium

Low

Notes

1. All locations are approximate.
2. Industrial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1.5 3

(Scale in Miles)

WUE Outreach Opportunities for Indoor Industrial WUE Programs Division 1

West Basin Municipal Water District

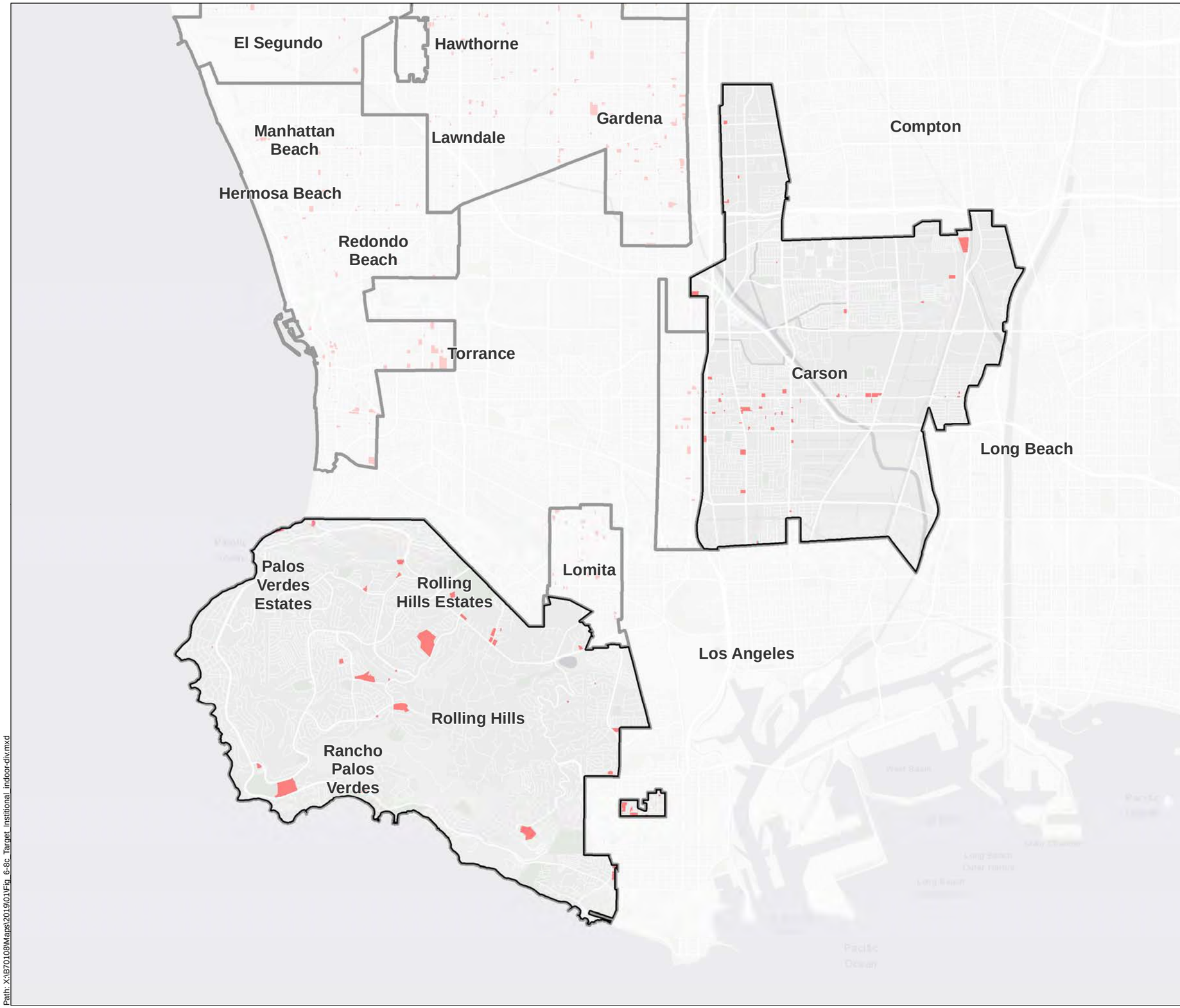
June 2019

EKI B70108.00

Figure 6-8b D1

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_6-8b_Target_Industrial_indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

High

Medium

Notes

1. All locations are approximate.
2. Institutional land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1.5 3

(Scale in Miles)

WUE Outreach Opportunities for Indoor Institutional WUE Programs
Division 1

West Basin Municipal Water District
June 2019
EKI B70108.00

eki environment & water

Figure 6-8c D1

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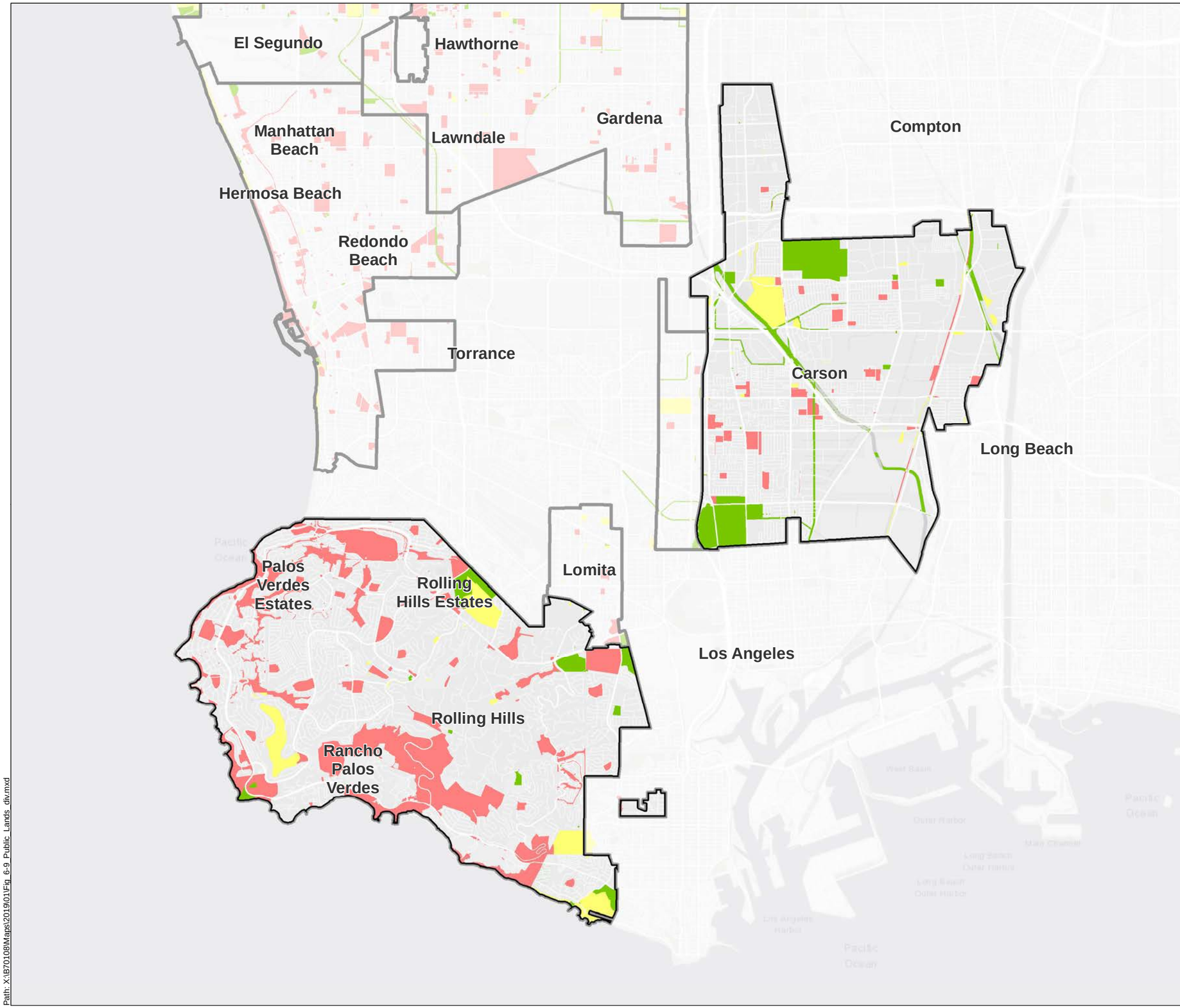


Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Public agencies are qualitatively ranked for priority for water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative size of facilities owned by agency.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Los Angeles County, 2018. "Assessor - Publicly Owned Parcels Listing," updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1.5 3

(Scale in Miles)

Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties Division 1

West Basin Municipal Water District

June 2019

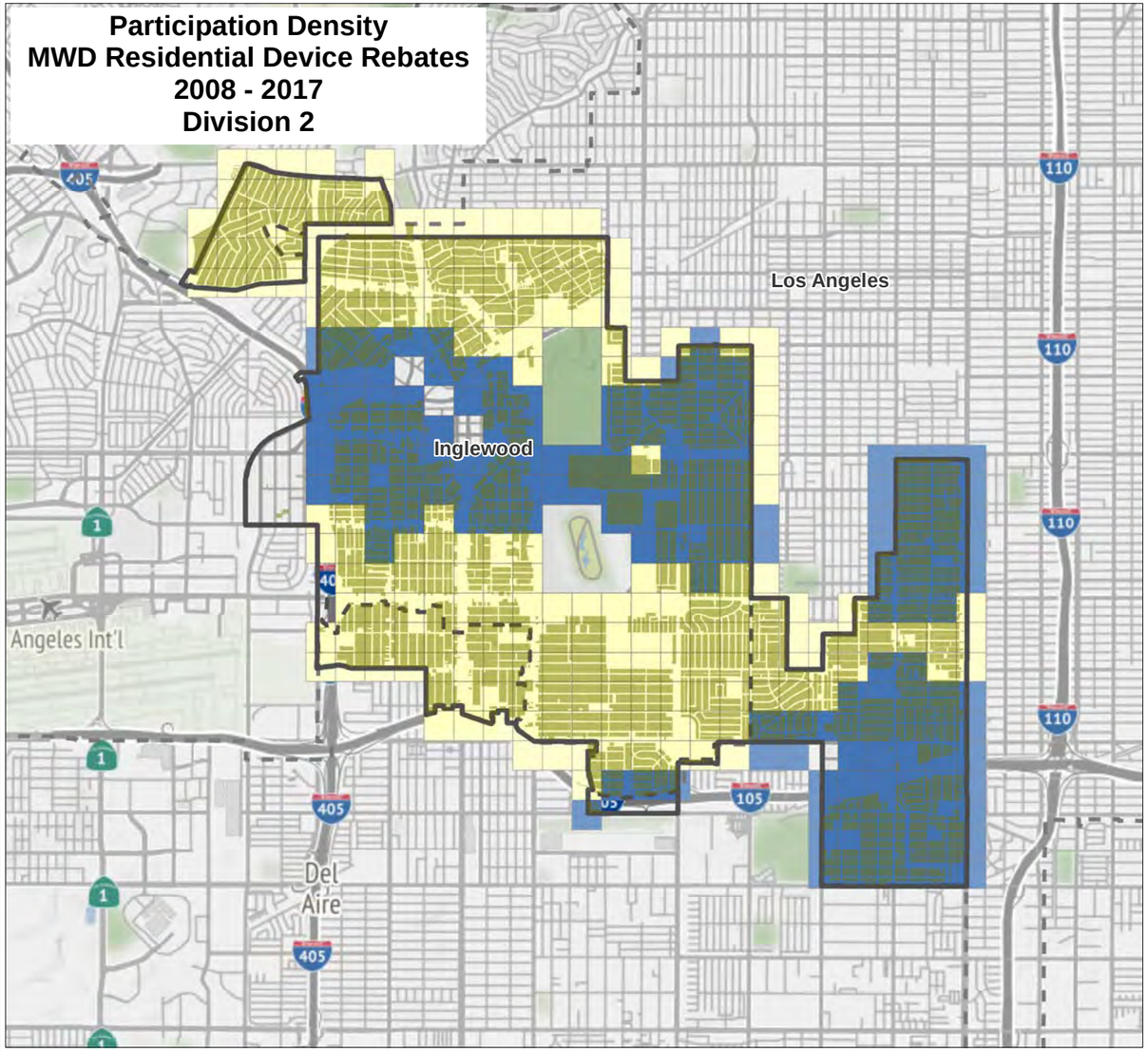
EKI B70108.00

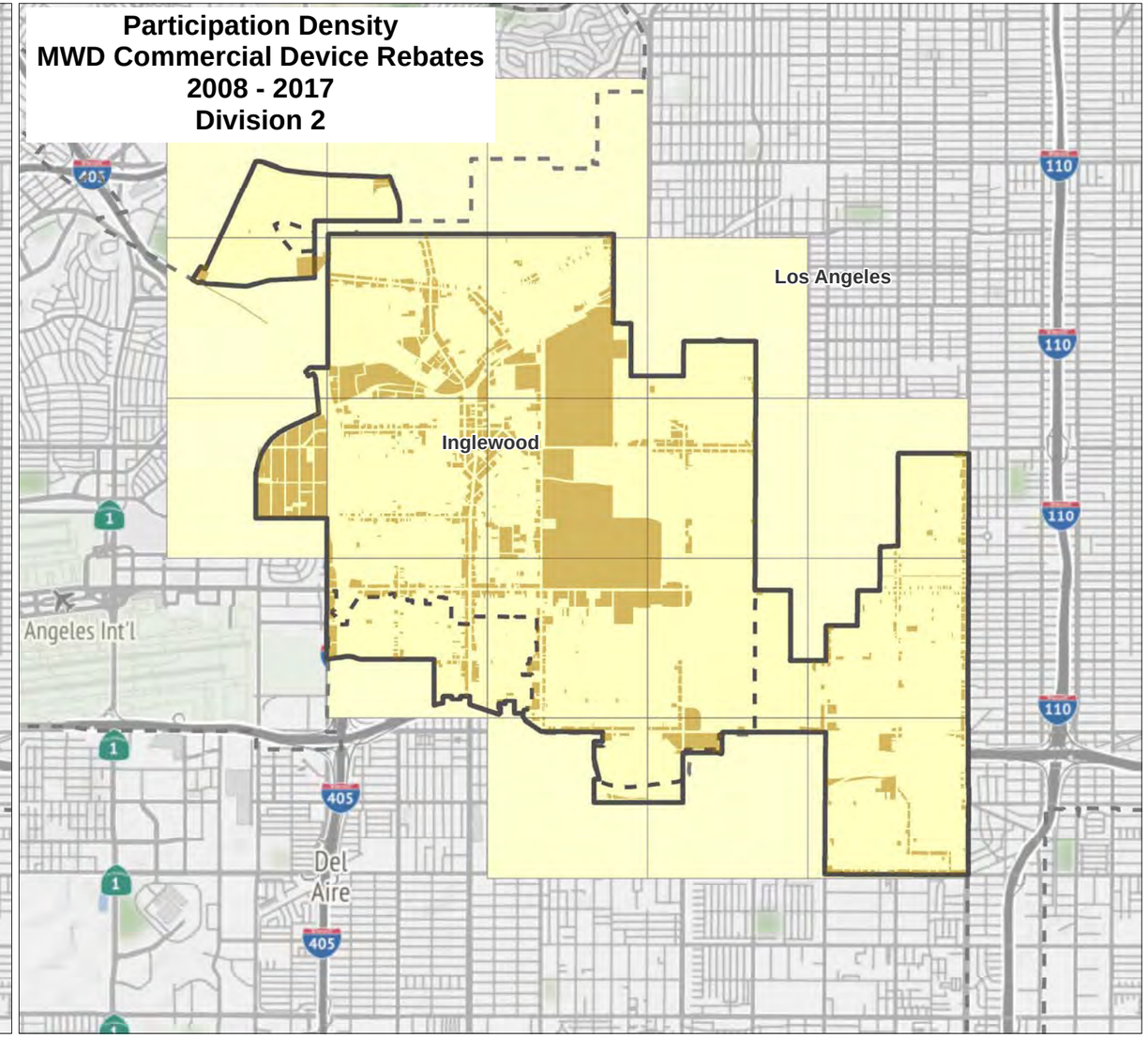
Figure 6-9 D1

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig 6-9 Public Lands div.mxd

Division 2





Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

Legend

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels
- Commercial, Industrial, Institutional Parcels

N

0 1 2
Miles

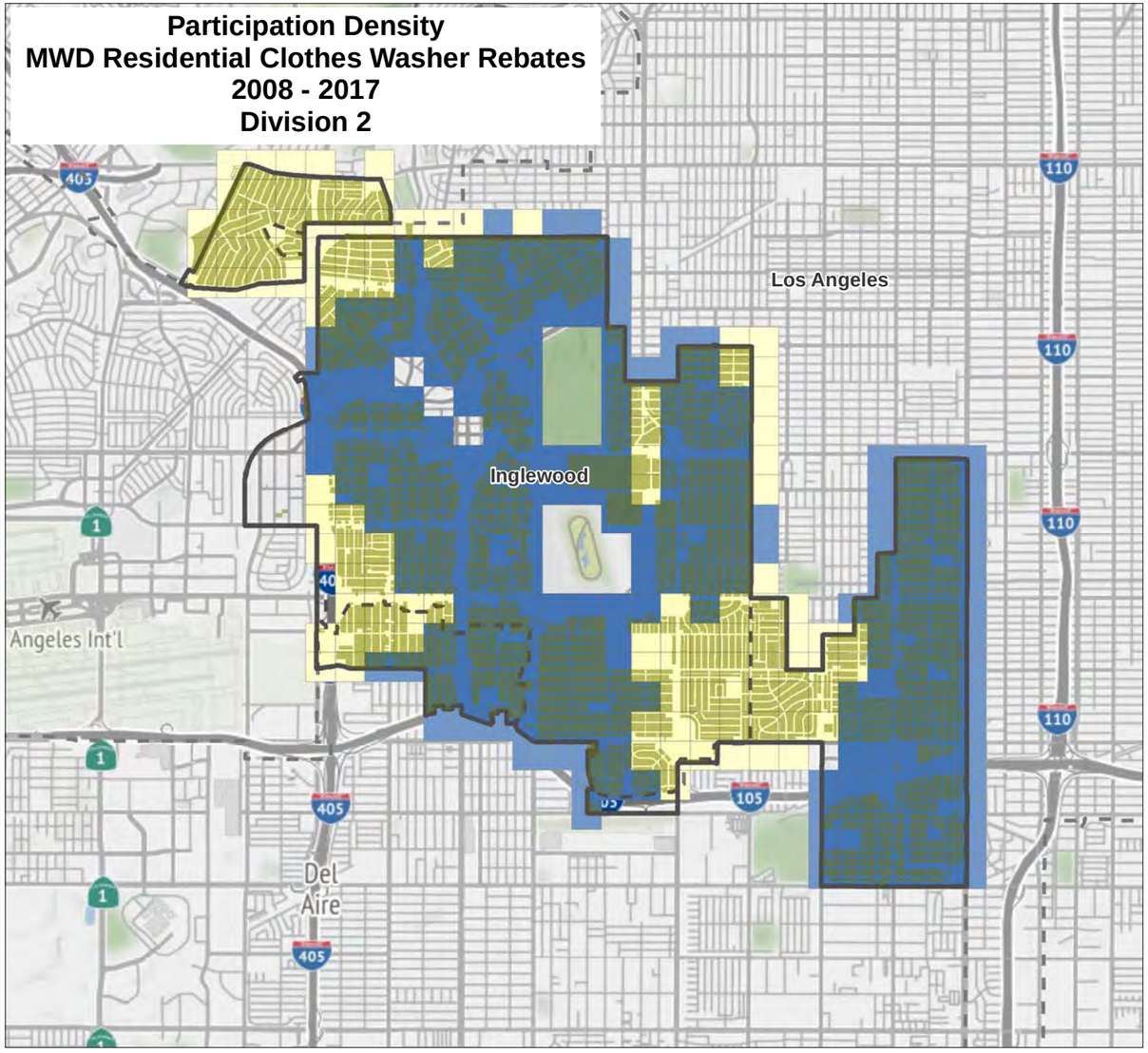
Participation Density for MWD Device Rebate Program: Division 2

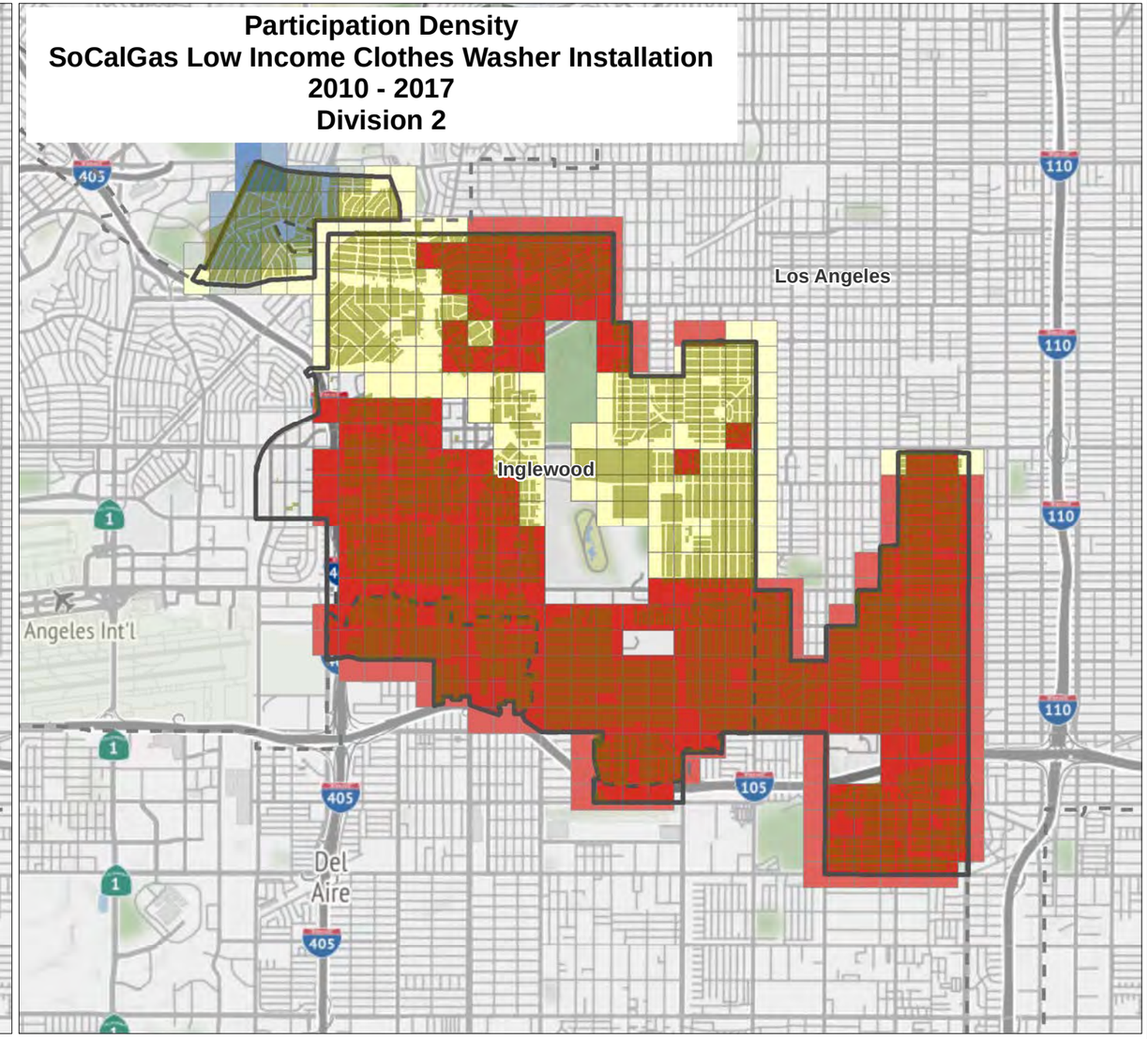
West Basin Municipal Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-7 D2

Path: X:\B70108\Maps\2019\01\Fig_5-07_Cluster_MWDRebateD2.mxd





Notes
1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources
1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

Legend

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels

N

0 1 2
Miles

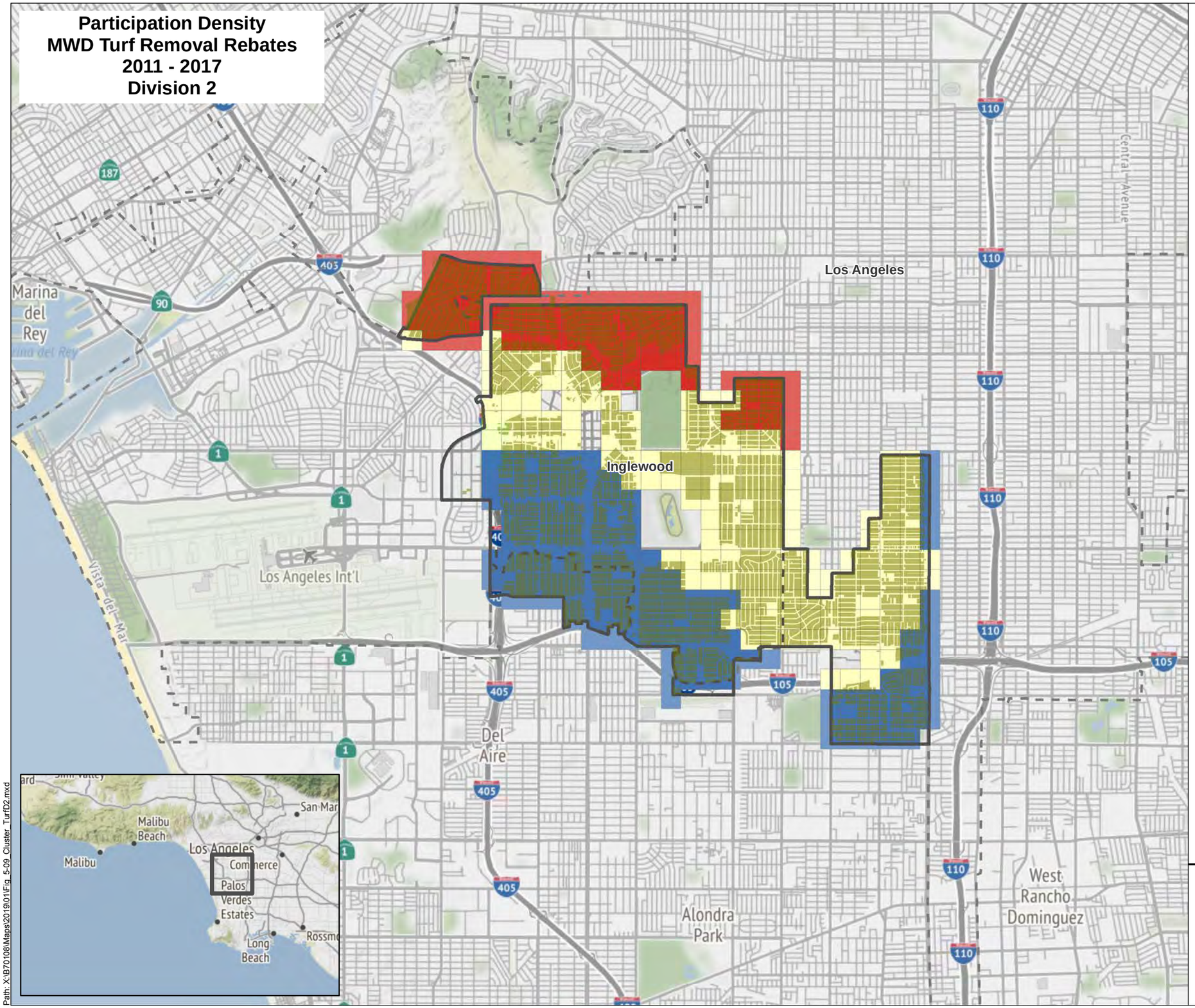
Participation Density for Residential Clothes Washer Rebate and Installation Programs: Division 2

West Basin Municipal Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-8 D2

Path: X:\B70108\Maps\201901\Fig_5-08_Cluster_ResWashersD2.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2

(Scale in Miles)

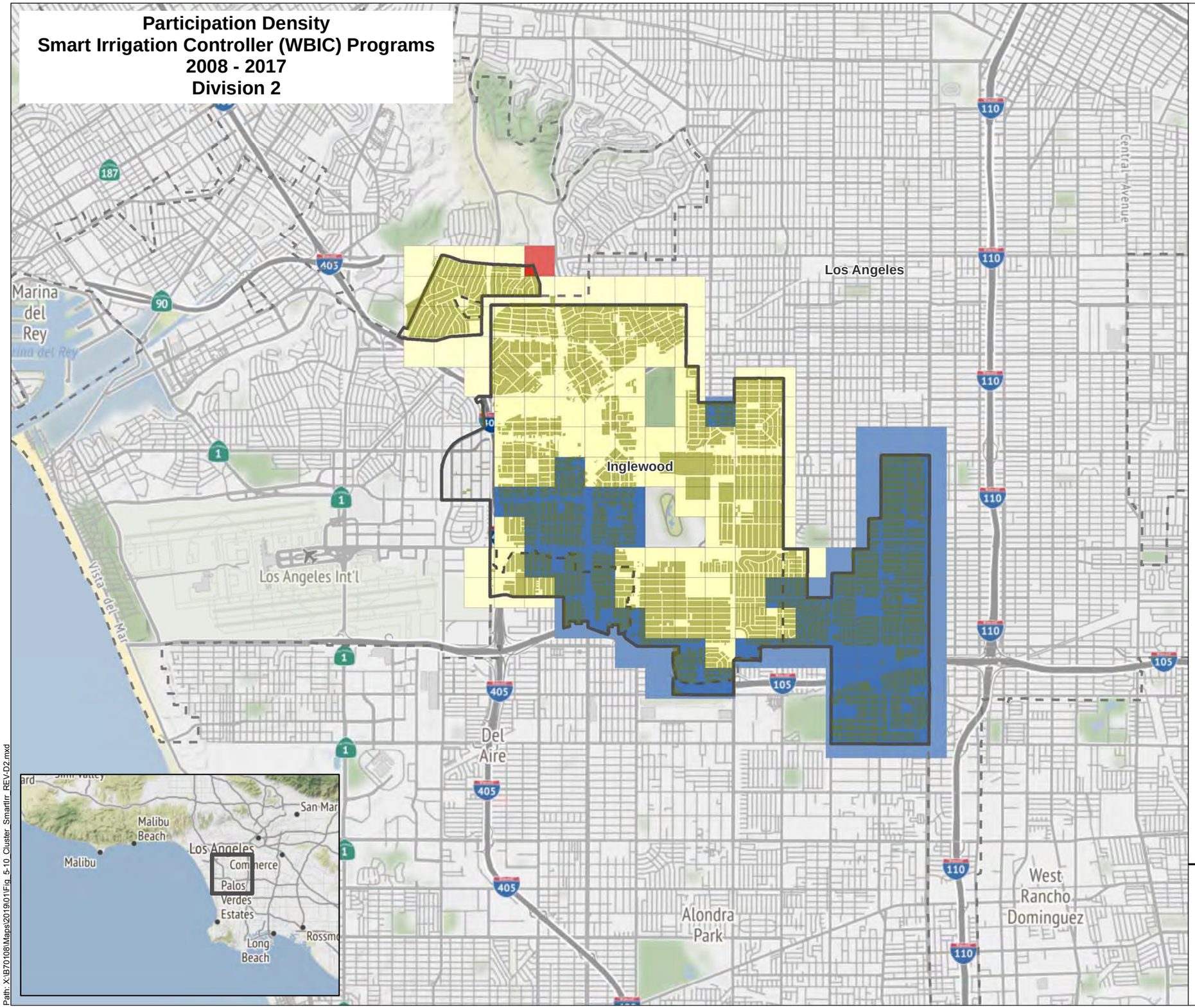
Participation Density for Turf Removal Rebate Program: Division 2

West Basin Municipan Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-9 D2

Path: X:\B70108\Maps\2019\01\Fig_5-09_Cluster_TurfD2.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2

(Scale in Miles)

Participation Density for Smart Irrigation Controller Programs: Division 2

West Basin Municipan Water District
January 2019
EKI B70108.00

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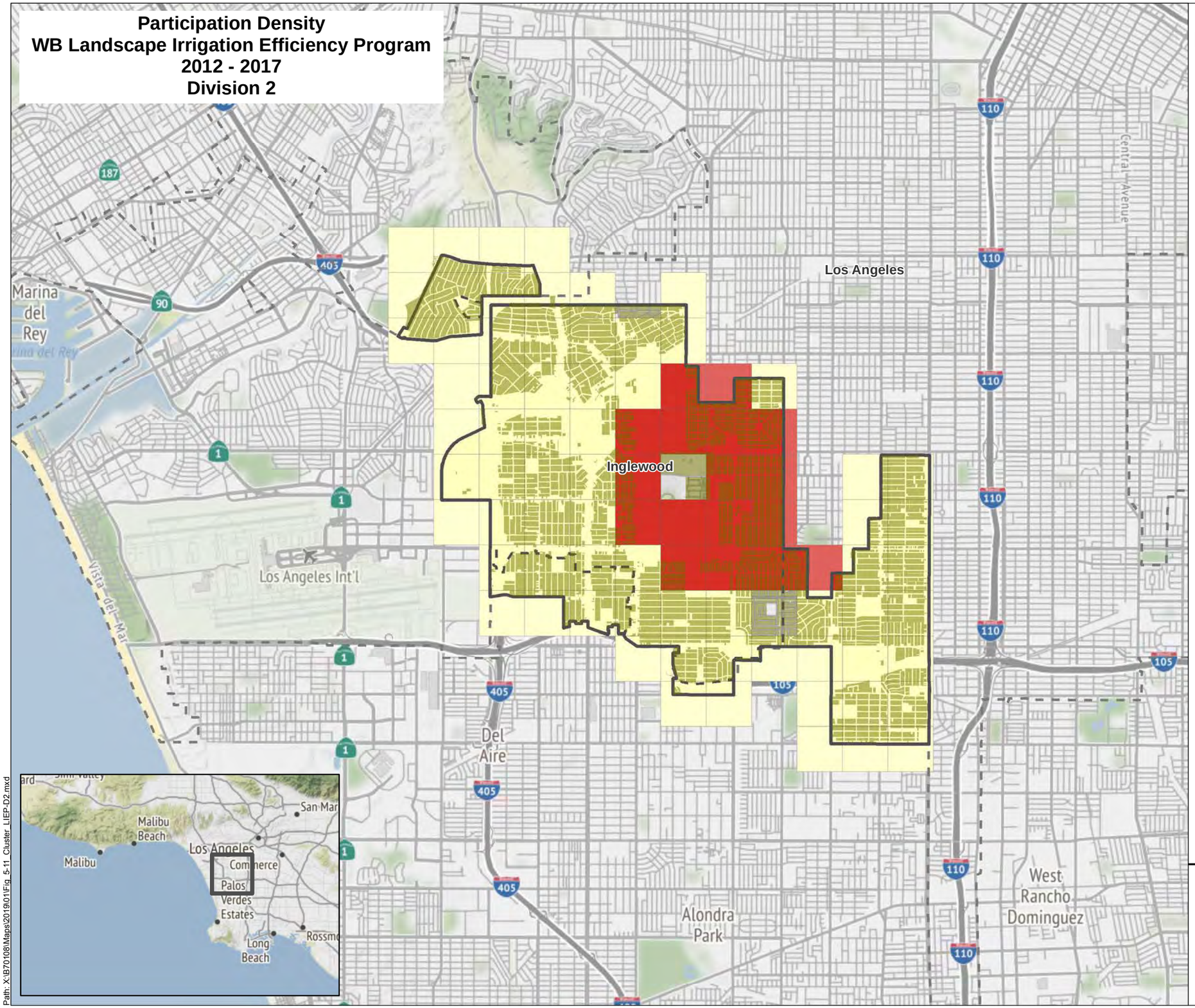
Figure 5-10 D2

Path: X:\B70108\Maps\201901\Fig_5-10_Cluster_SmartIrr_REV-D2.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2

(Scale in Miles)

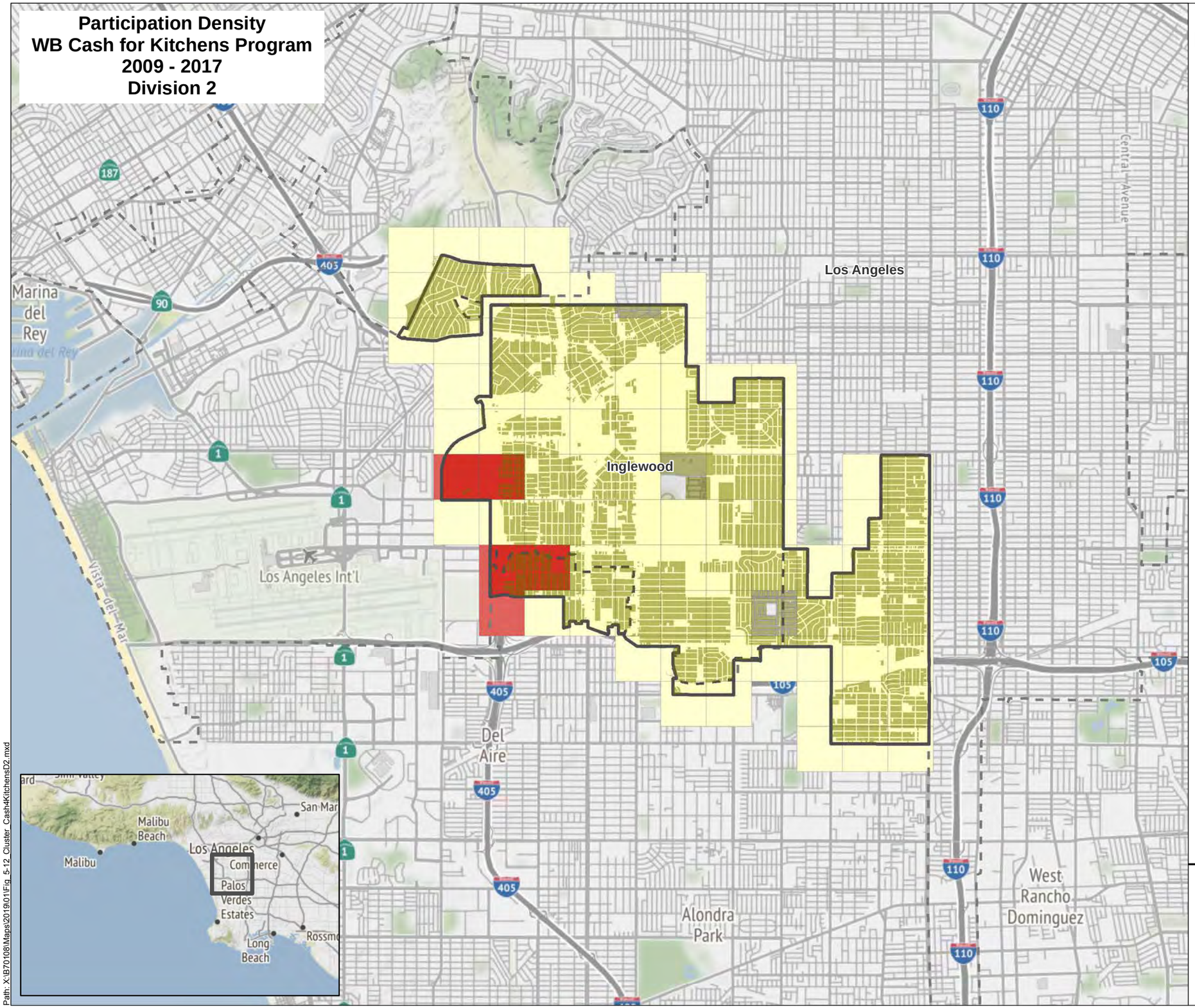
Participation Density for Landscape Irrigation Efficiency Program (LIEP): Division 2

West Basin Municipan Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-11 D2

Path: X:\B70108\Maps\201901\Fig_5-11_Cluster_LIEP-D2.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2

(Scale in Miles)

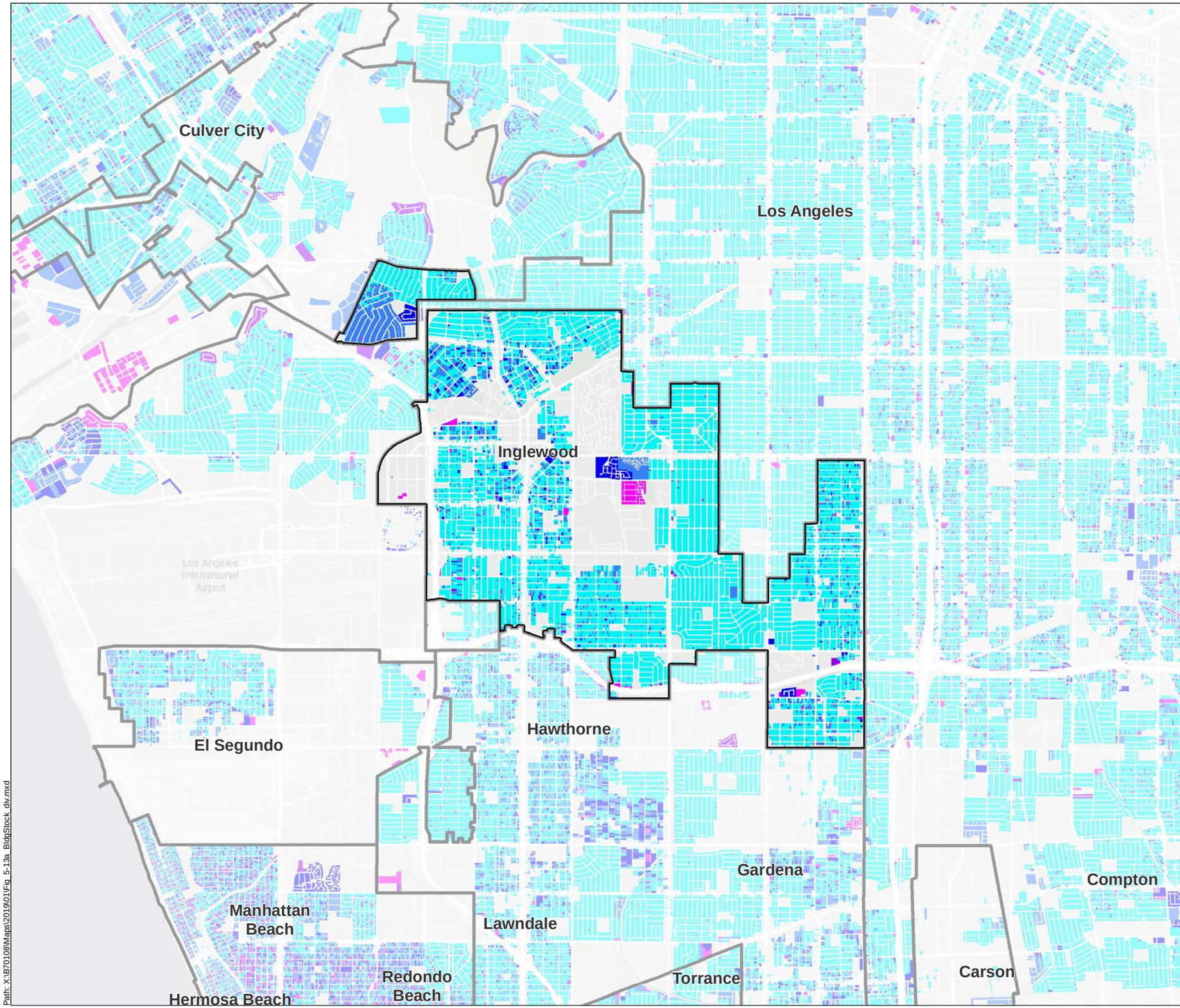
Participation Density for Cash For Kitchens Program: Division 2

West Basin Municipan Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-12 D2

Path: X:\B70108\Maps\2019\011\Fig_5-12_Cluster_Cash4KitchensD2.mxd



Legend

West Basin Director Division Boundaries

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Age of Building Stock - Residential
Division 2

West Basin Municipal Water District
June 2019
EKI B70108.00

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Figure 5-13a D2

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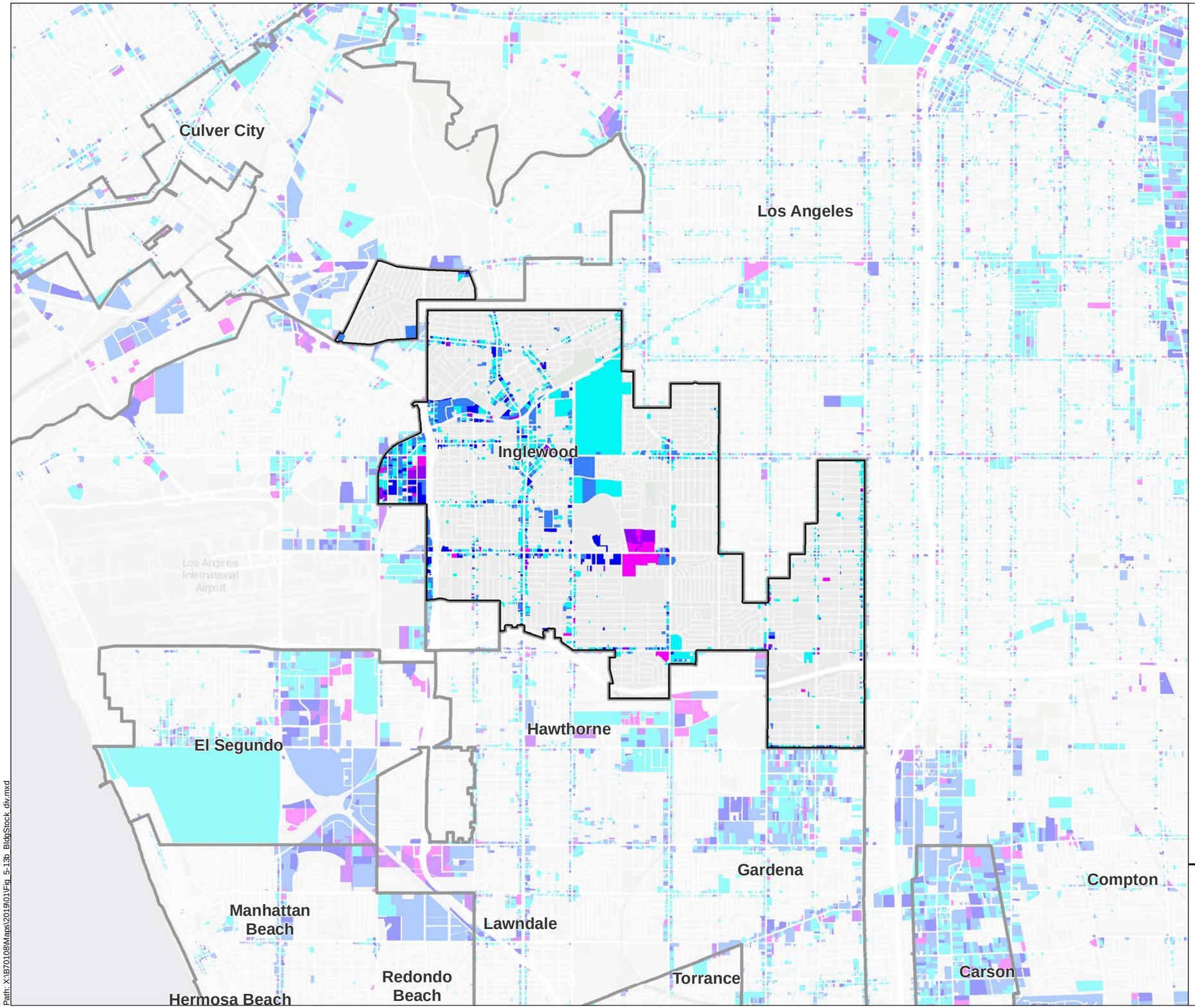


Legend

West Basin Director Division Boundaries

Date of Construction

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

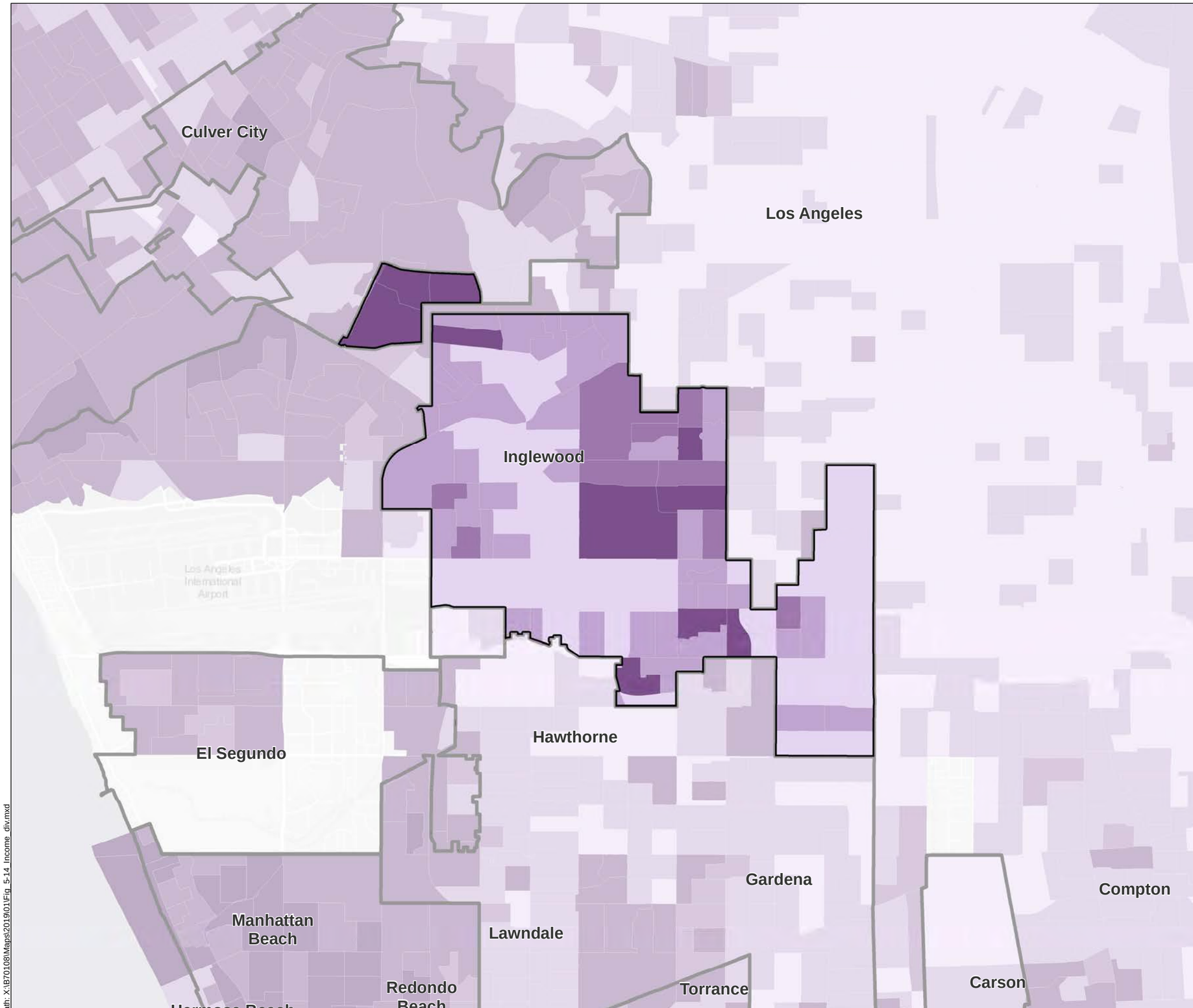
Age of Building Stock - CII
Division 2

West Basin Municipal Water District
June 2019
EKI B70108.00

eki environment & water

Figure 5-13b D2

Path: X:\B70108\Maps\2019\01\Fig_5-13b_BldgStock_div.mxd



Legend

West Basin Director Division Boundaries

Household Median Income, Census

- Very Low <$38,450
- Low $38,451-$61,500
- Moderate $61,501-$70,000
- High $70,001 - $140,000
- Very High >$140,001

Notes

1. All locations are approximate.
2. Household income is based on estimated 2014 median household income by Census Block Group, per Census (2016). Income level groupings are based on California Department of Housing and Community Development ("HCD") income levels for Los Angeles County for a 3-person household in 2014 (HCD, 2014). Very high income is shown as greater than two times the Couinty-wide median household income.

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1 2

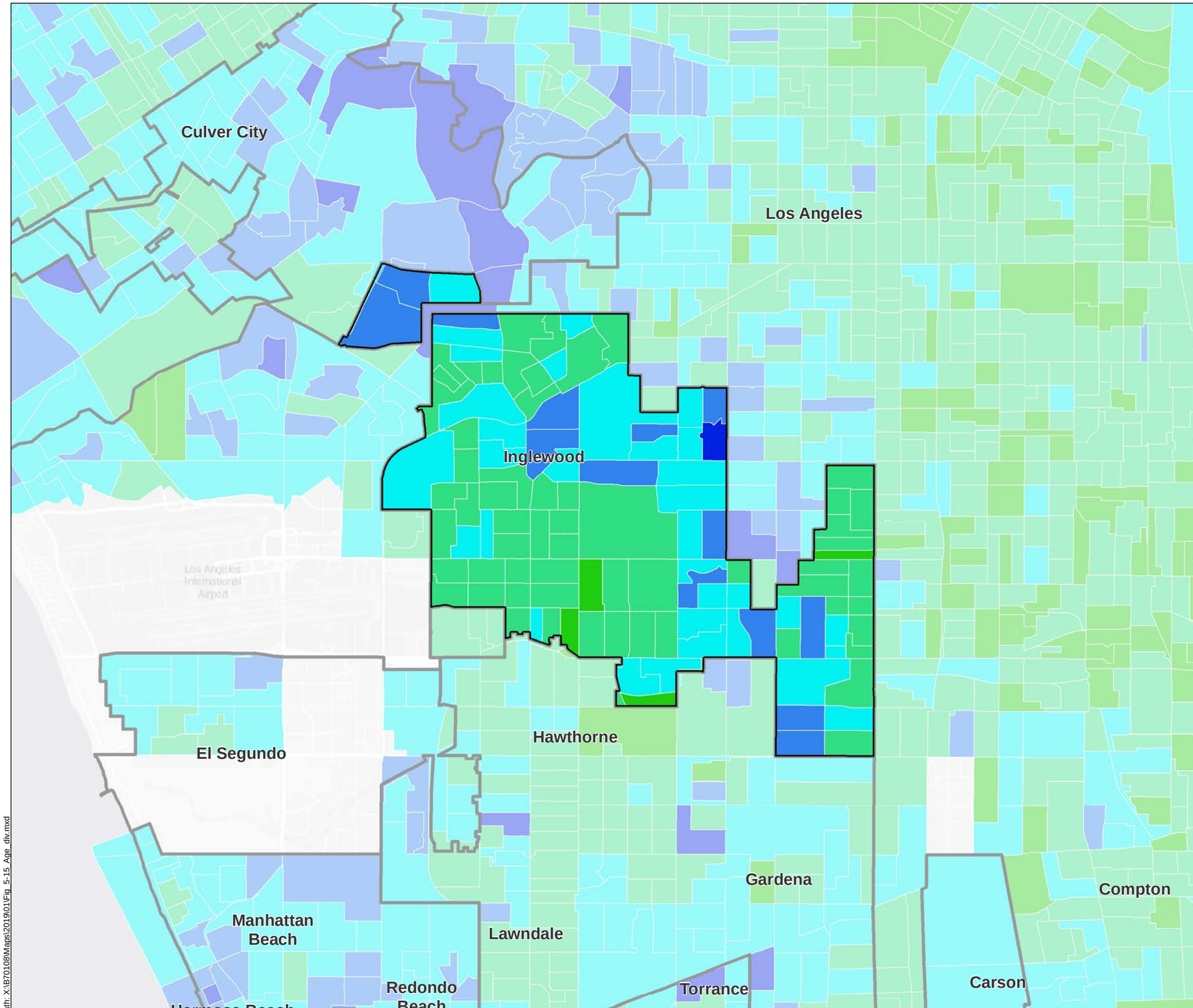
(Scale in Miles)

Median Household Income
Division 2

West Basin Municipal Water District
June 2019
EKI B70108.00
Figure 5-14 D2

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_5-14_Income_div.mxd



Legend

West Basin Director Division Boundaries

Median Household Age by Census Block Group

- <25
- 25-35
- 35-45
- 45-55
- >55

Notes

1. All locations are approximate.
2. Household age is based on the estimated 2014 median age of household members by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1 2

(Scale in Miles)

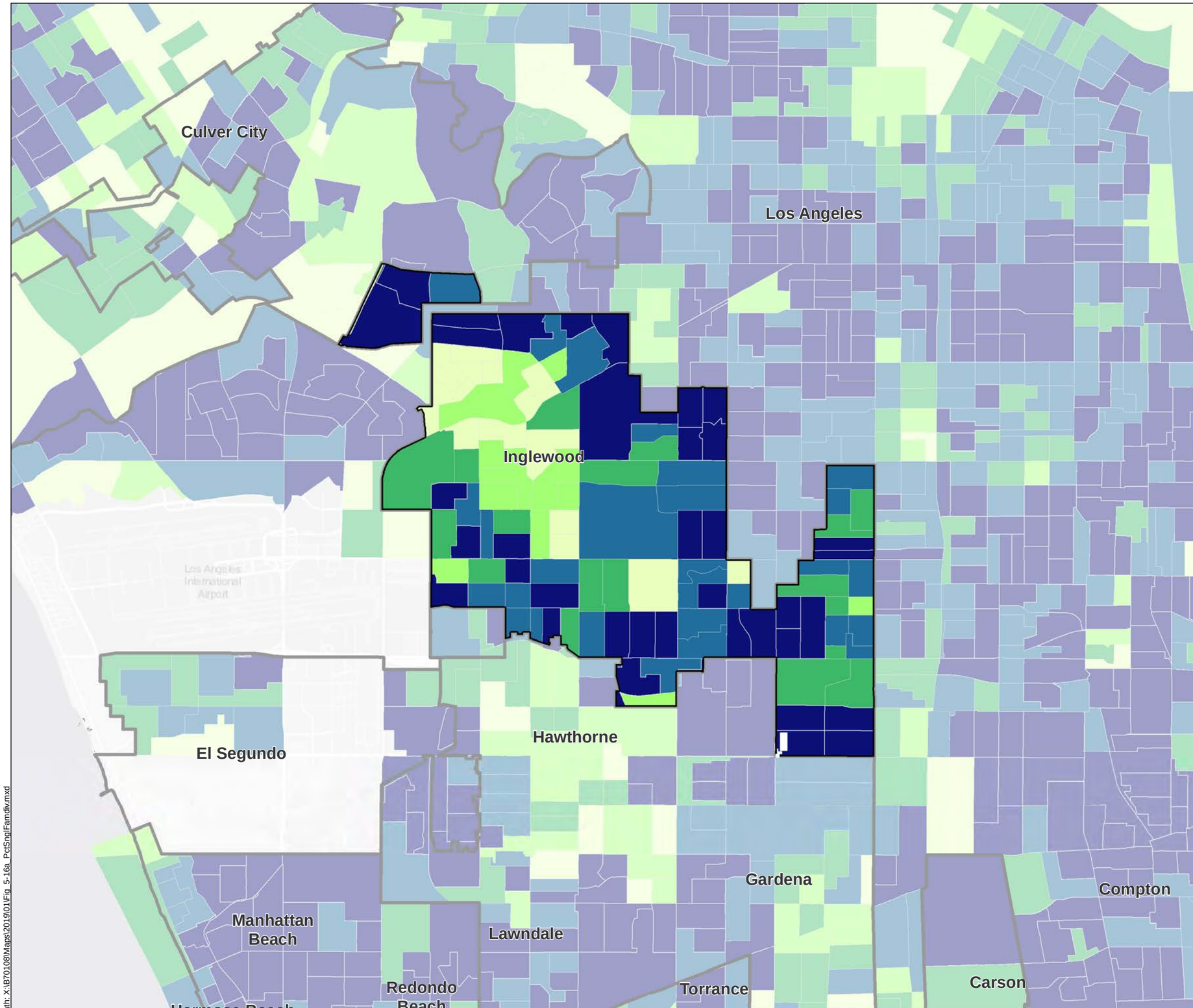
Median Household Age
Division 2

West Basin Municipal Water District
June 2019
EKI B70108.00

eki environment & water

Figure 5-15 D2

Path: X:\B70108\Maps\2019\01\Fig 5-15 Age div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in Single-Family Units

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in single-family homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Single-Family Homes Division 2

West Basin Municipal Water District
June 2019
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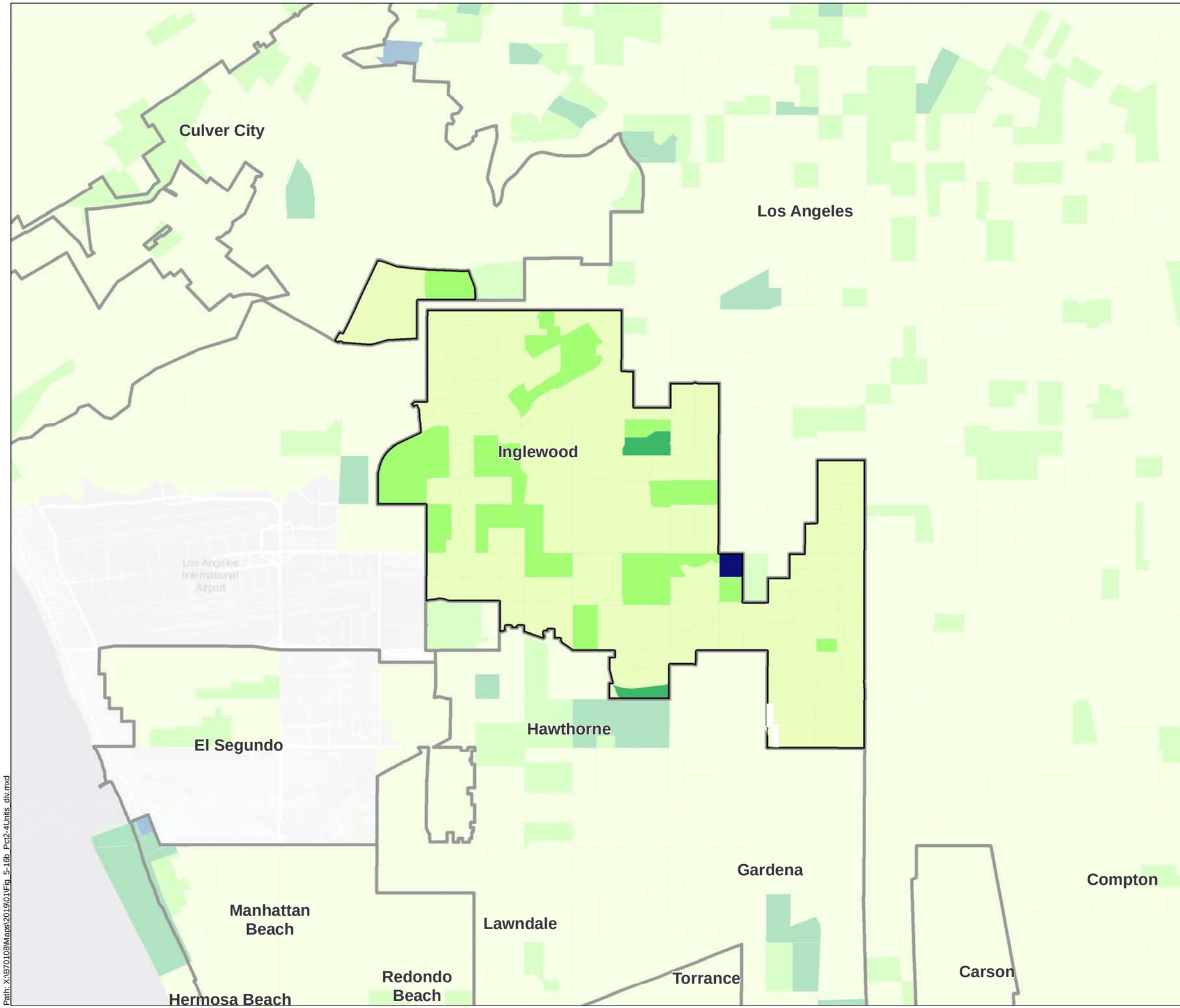
Figure 5-16a D2

Path: X:\B70108\Maps\2019\01\Fig 5-16a PctSngfFamdiv.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in 2-4 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in multi-family housing consisting of 2 to 4 units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Multi-Family Homes (2-4 Units) Division 2

West Basin Municipal Water District
June 2019
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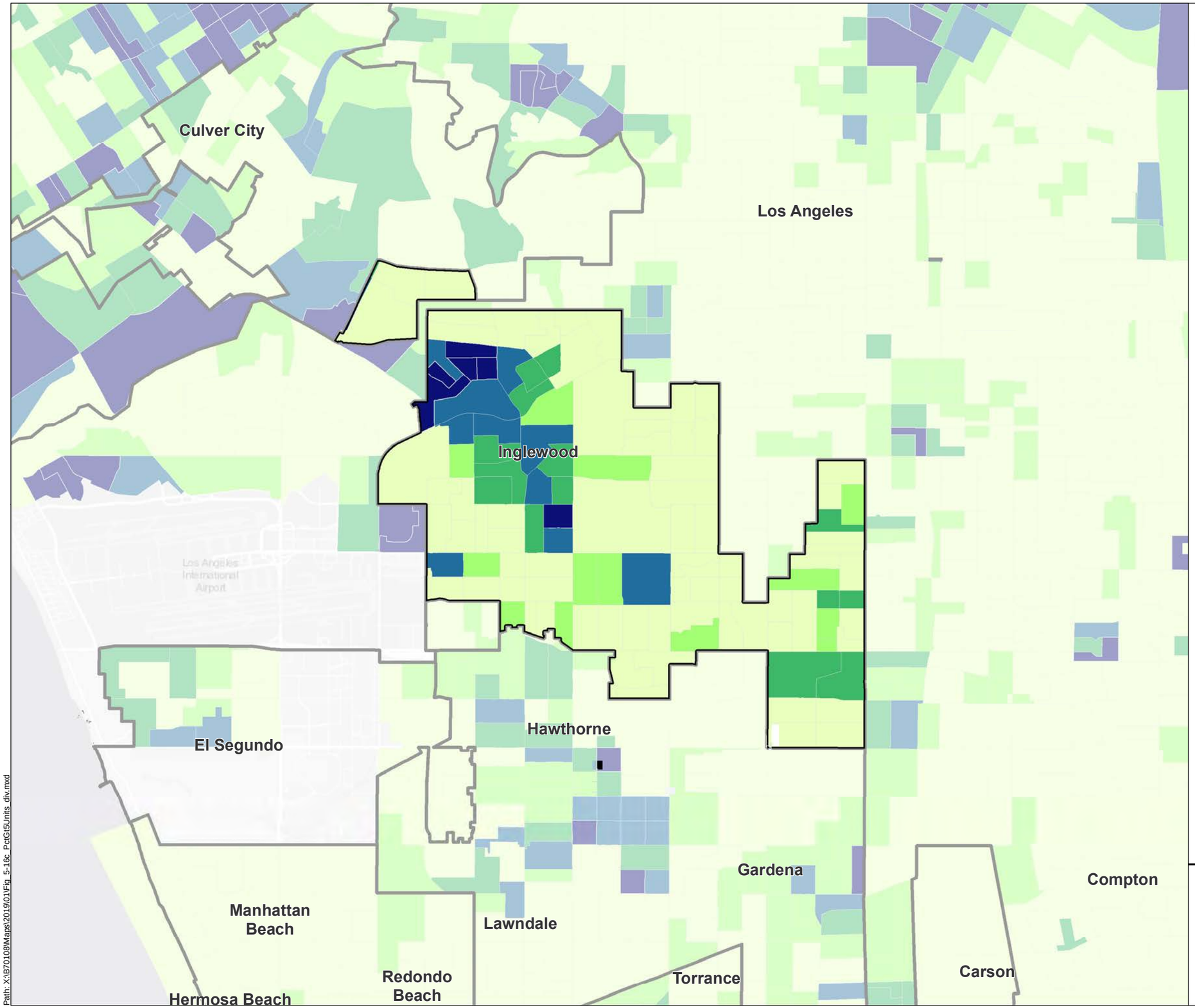
Figure 5-16b D2

Path: X:\B70108\Maps\2019\01\Fig_5-16b_Pct2-4Units_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in ≥5 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of 5 or more units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Multi-Family Homes (≥5 Units) Division 2

West Basin Municipal Water District
June 2019
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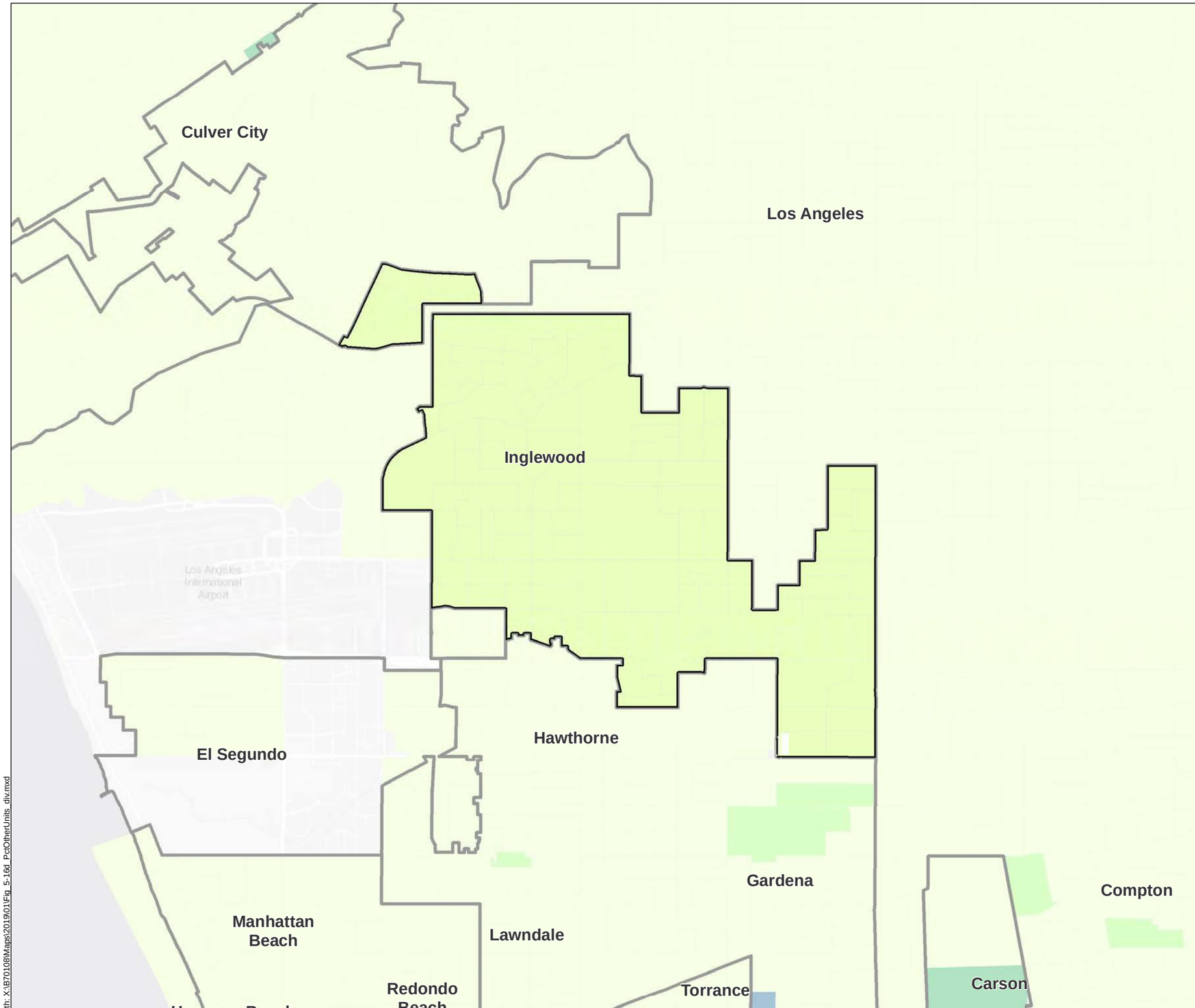
Figure 5-16c D2

Path: X:\B70108\Maps\2019\011\Fig_5-16c_PctGt5Units_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in Mobile Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of mobile homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Mobile Home Housing Division 2

West Basin Municipal Water District
June 2019
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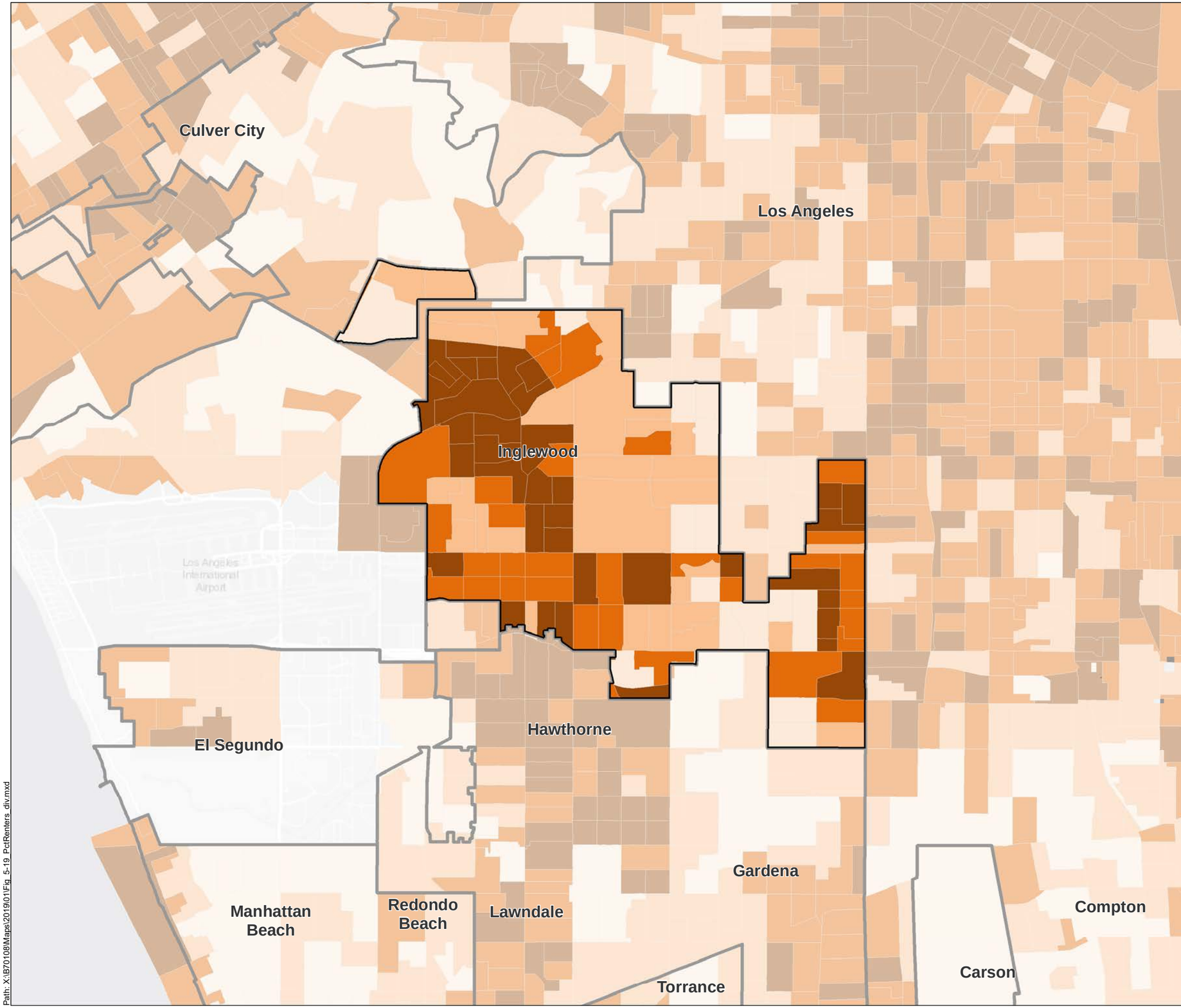
Figure 5-16d D2

Path: X:\B70108\Maps\2019\011Fig_5-16d_PctOtherUnits_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Renters

- ≤25%
- 25.1% - 50%
- 50.1% - 75%
- ≥75%

Notes

1. All locations are approximate.
2. Percentage of renter-occupied housing units is based on the estimated 2014 number of renter-occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Renter-Occupied Housing Units Division 2

West Basin Municipan Water District
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Figure 5-19 D2

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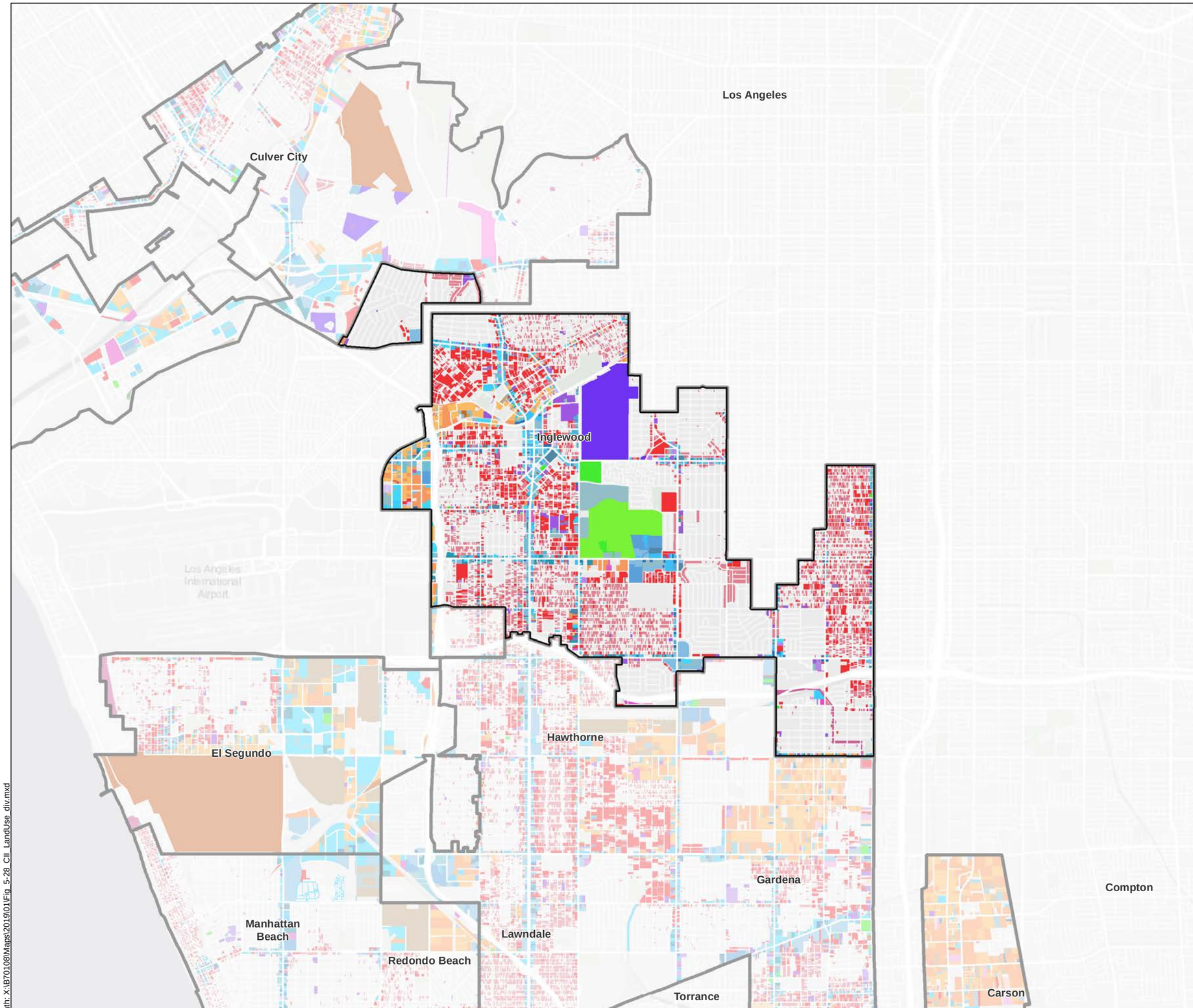
Path: X:\B70108\Maps\2019\01\Fig_5-19_PctRenters_div.mxd



Legend

West Basin Director Division Boundaries

Multi-Family Residential
- Multi-Family Residential - 2-4 Units
- Multi-Family Residential - 5+ Units
- Residential - Mobile Home/Other

Commercial
- Animal Kennel
- Auto Service Station
- Bank, Savings and Loan
- Car Sales/Service
- Car Wash
- Commercial Unknown/Miscellaneous
- Department or Warehouse Store
- Hotel and Motel
- Non-Auto Shop, Paint Shop, or Laundry
- Office Building
- Parking Lot/Structure
- Professional Building
- Restaurant
- Shopping Center
- Store
- Supermarket
- Wholesale and Manufacturing Outlet

Institutional
- Adult Care Facility
- Cemetery, Mausoleum
- Children's Day Care Center
- Church
- College, University
- Convalescent Hospital, Nursing Home
- Hospital
- Mortuary, Funeral Home
- Public School
- School (Private)

Industrial
- Cement, Rock and Gravel Plant
- Food Processing Plant
- Heavy Manufacturing
- Light Manufacturing
- Lumber Yard
- Other Mineral Processing
- Radio/Television Transmission Facility
- Warehousing, Distribution, Storage

Recreational
- Athletic/Amusement/Recreational Facility
- Movie or Stage Theater
- Race Track
- Recreational Unknown/Miscellaneous

Miscellaneous
- Agriculture
- Other Unknown/Miscellaneous
- Petroleum and Gas Mining/Processing
- Utility/Rights of Way
- Wireless Communication Tower

Notes

1. All locations are approximate.
2. Land use type classifications are based by Assessor's parcel records.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2
(Scale in Miles)

CII Land Use Types within Division 2

West Basin Municipal Water District
June 2019
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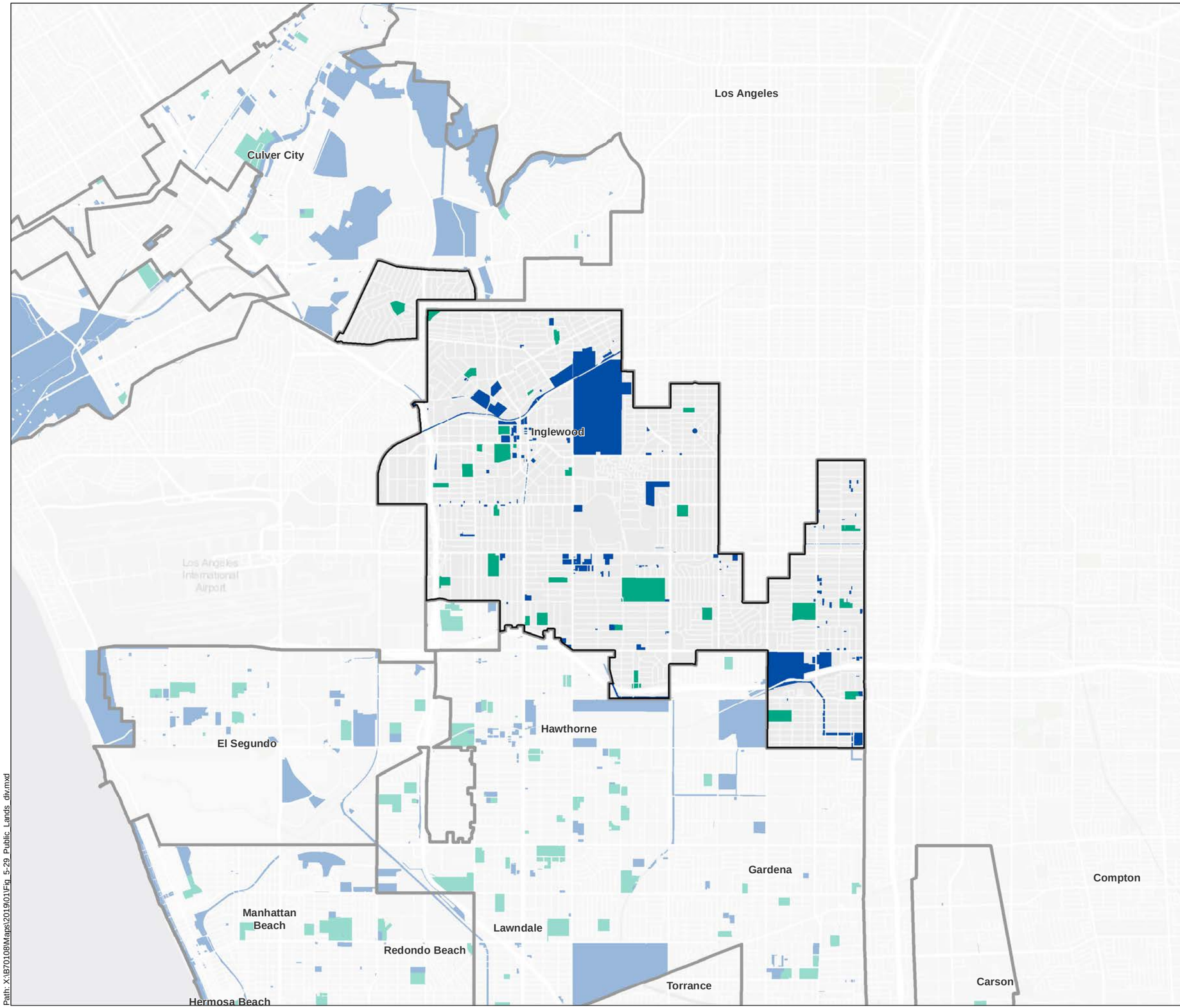
Figure 5-28 D2

Path: X:\B70108\Maps\2019\01\Fig_5-28_CII_LandUse_div.mxd



Legend

- West Basin Director Division Boundaries
- Publicly Owned Parcels Designated as Schools
- Other Publicly Owned Parcels

Notes

1. All locations are approximate.
2. Parcels indicated as schools are based on the provided agency name. Publicly owned parcels include those owned by cities, the state, and other agencies, including but not limited to property used for offices, operations, parks, parking, etc.

Sources

1. Assessor - Publicly Owned Parcels Listing, updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1 2

(Scale in Miles)

Publicly-Owned Lands within Division 2

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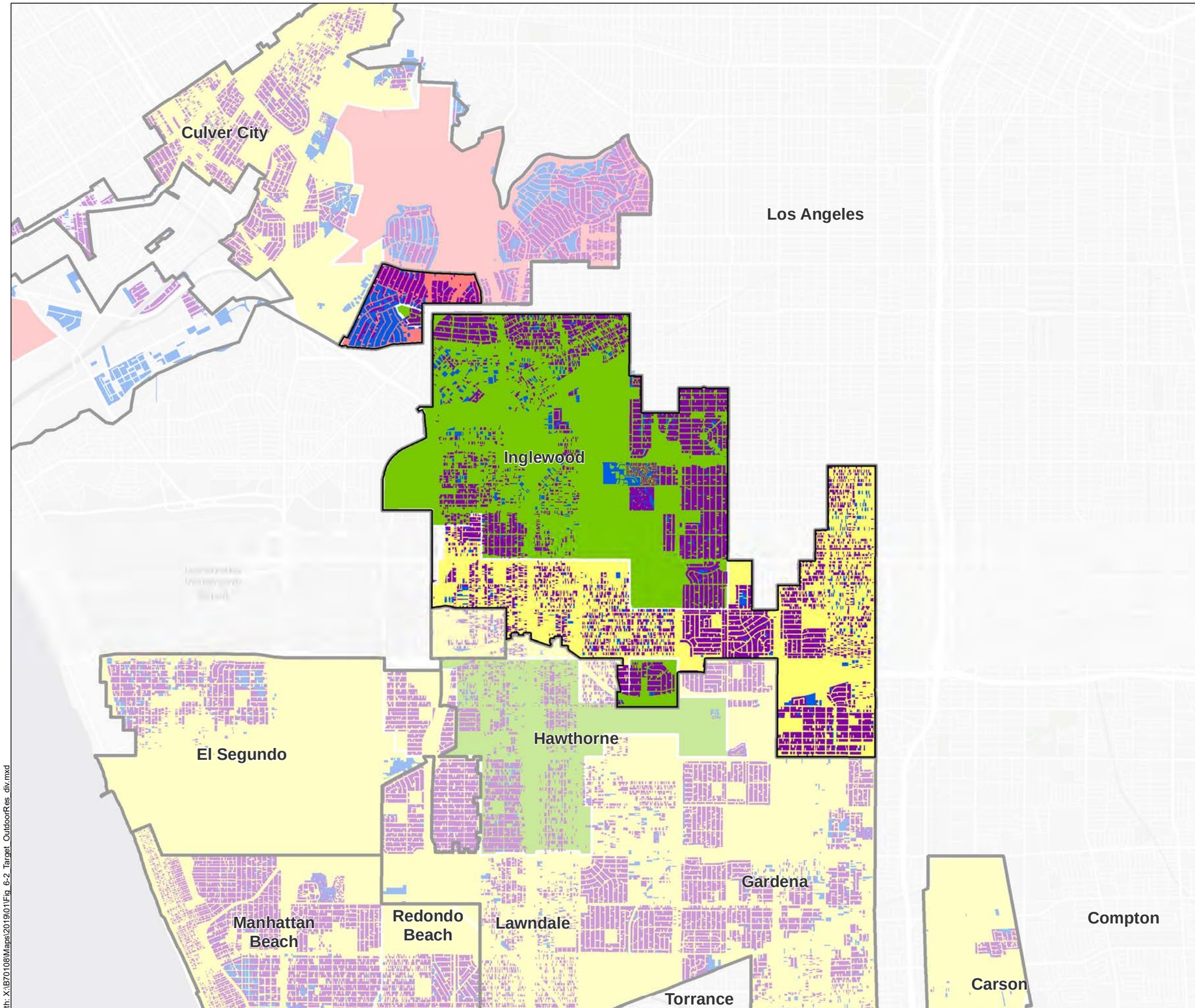
West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-29 D2

Path: X:\B70108\Maps\2019\011\Fig_5-29_Public_Lands_div.mxd



Legend

West Basin Director Division Boundaries

Program Targeting

- Landscape Transformation Programs (≤9,000 sq ft lot)
- Irrigation Device Replacement Programs (>9,000 sq ft lot)

WUE Program Outreach Priority

- Low (≤20% Outdoor Water Use)
- Medium (20-40% Outdoor Water Use)
- High (>40% Outdoor Water Use)

Notes

1. All locations are approximate.
2. West Basin potable water customer agencies are ranked for outdoor residential WUE program outreach priority based on the estimated percentage of outdoor water use within their service area.
3. The type of residentual outdoor WUE program for targeting is based on parcel lot size.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Target Opportunities for Single-Family Residential Outdoor WUE Programs Division 2

West Basin Municipan Water District

January 2019

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Figure 6-2 D2

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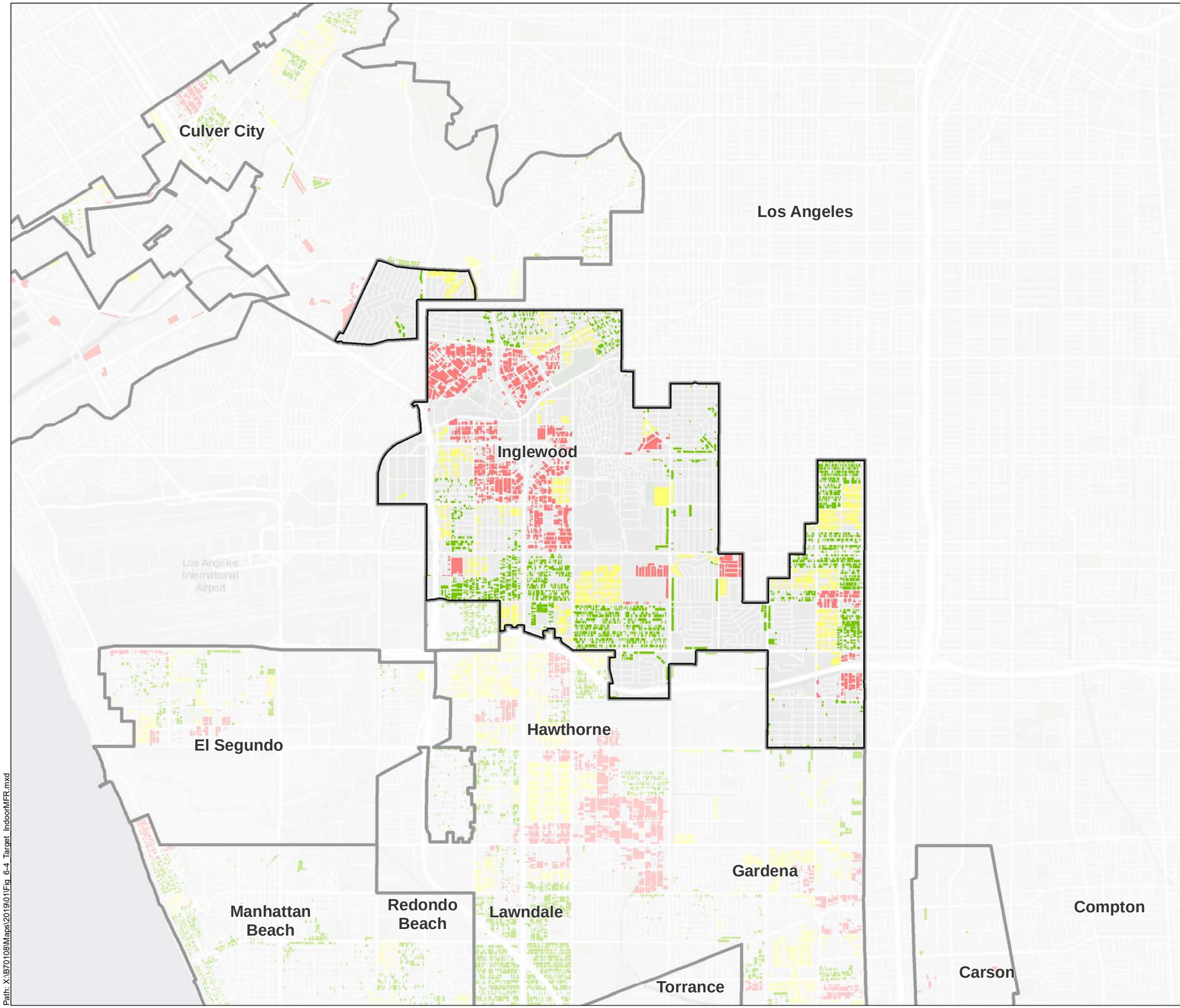
Path: X:\B70108\Maps\201901\Fig_6-2_Target_OutdoorRes_div.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (≥50% Population in Multi-Family Housing)
- Medium (25-50% Population in Multi-Family Housing)
- Low (≤25% Population in Multi-Family Housing)

Notes

1. All locations are approximate.
2. Multi-family residential parcels are ranked for indoor residential WUE program outreach priority based on the proportion of an area's population that lives in multi-family residiental homes, based on Census block group. For purposes of this assessment, manufactured homes are considered to be multi-family.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Target Opportunities for Multi-Family Residential Indoor WUE Programs Division 2

West Basin Municipan Water District

January 2019

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Figure 6-4 D2

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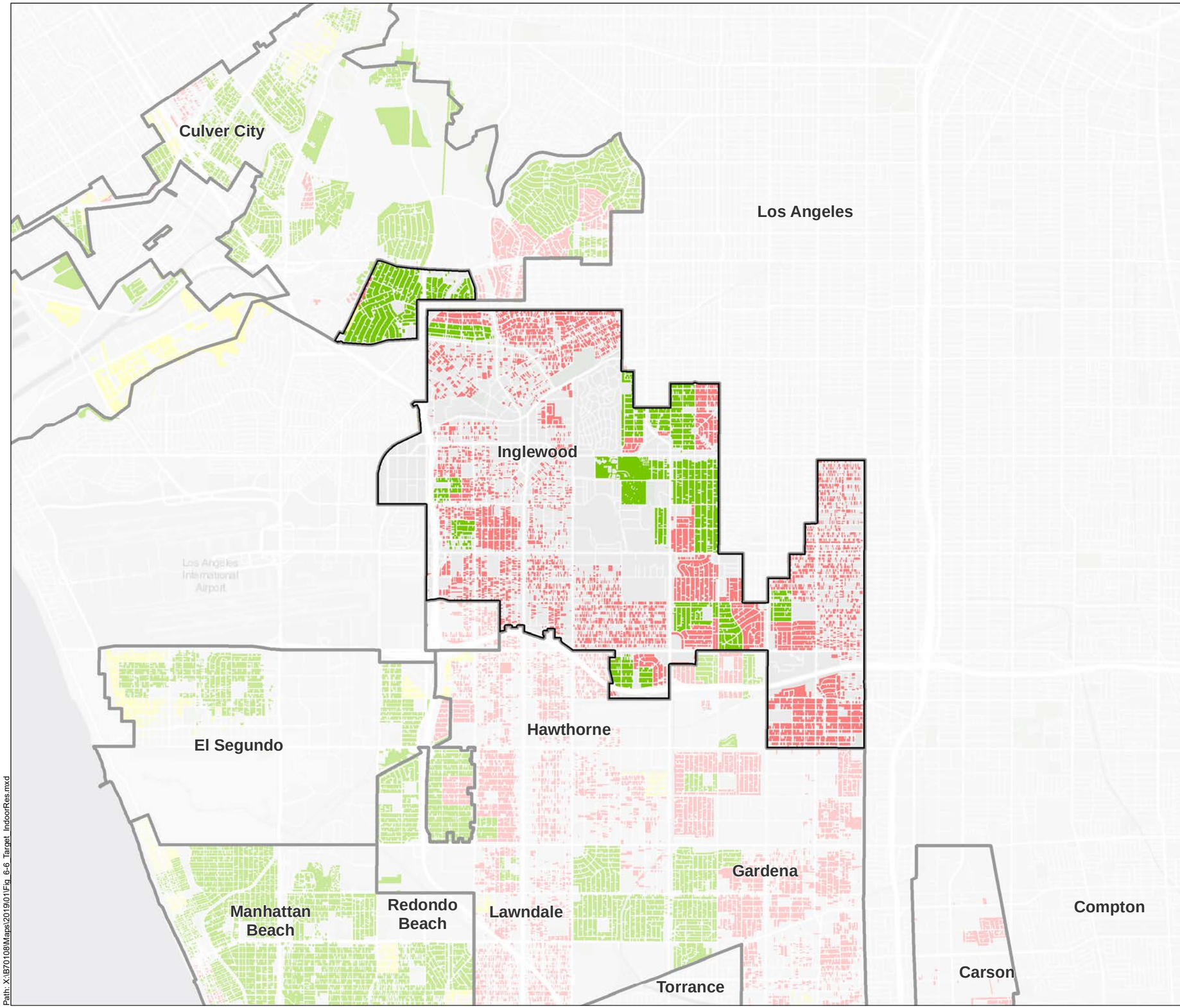
Path: X:\B70108\Maps\2019\01\Fig_6-4_Target_IndoorMFR.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (Low Income)
- Medium (≥50% Renter Population)
- Low (Moderate to High Income, <50% Renter Population)

Notes

1. All locations are approximate.
2. Single-family residential parcels are ranked for indoor residential WUE program outreach priority based on median household income and percentage of population that rents their home.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Target Opportunities for Single-Family Residential Indoor WUE Programs Division 2

West Basin Municipan Water District

January 2019

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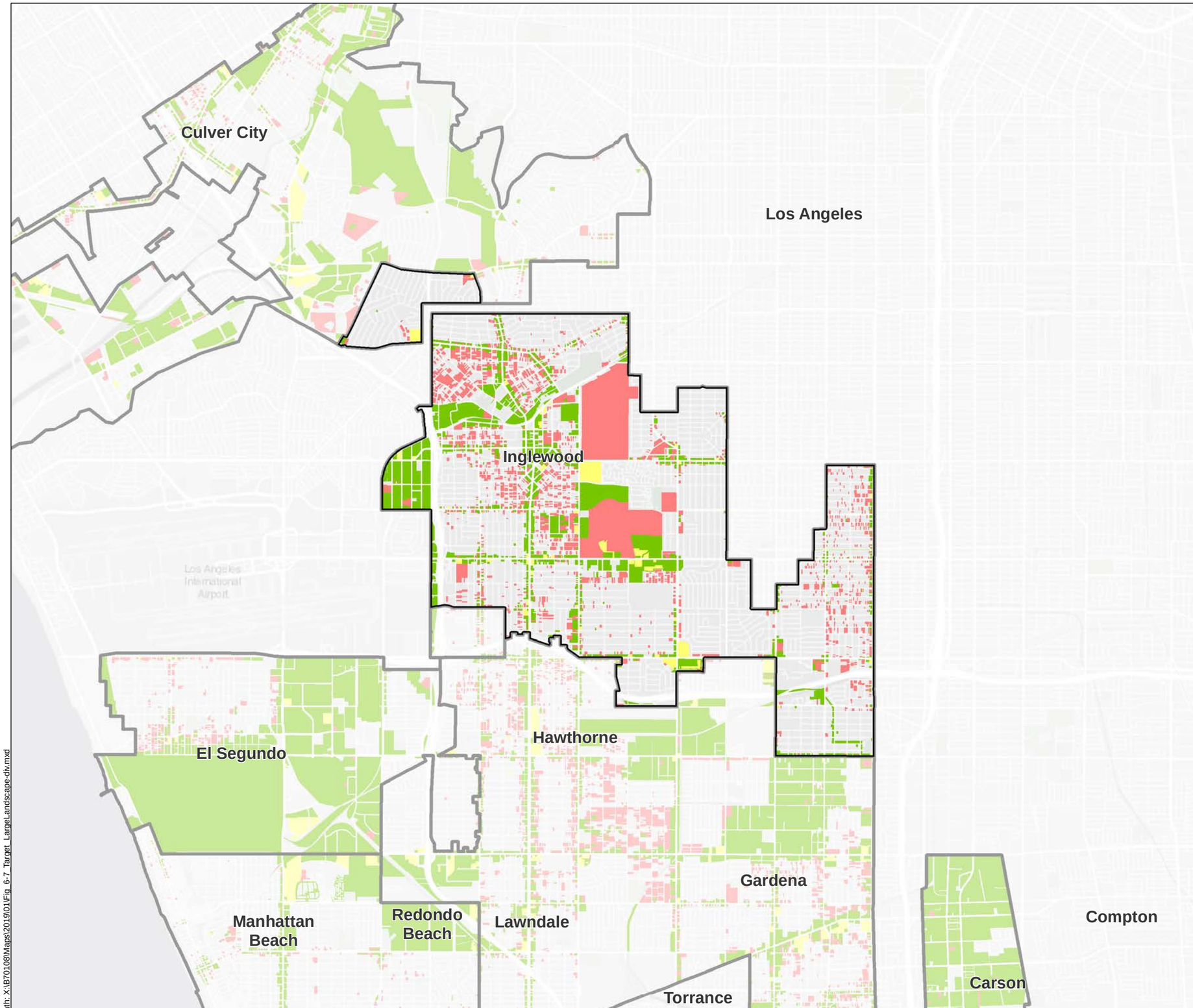
Figure 6-6 D2

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig. 6-6 Target IndoorRes.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High Priority
- Medium Priority
- Low Priority

Notes

1. All locations are approximate.
2. Parcels identified as high priority include multi-family residential parcels of five or more units and commercial, institutional, and industrial parcels associated with business types that typically have large landscapes. A detailed list of business types and the desginated priorty is provided in the text.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Target Opportunities for Large Landscape WUE Programs Division 2

West Basin Municipal Water District

June 2019

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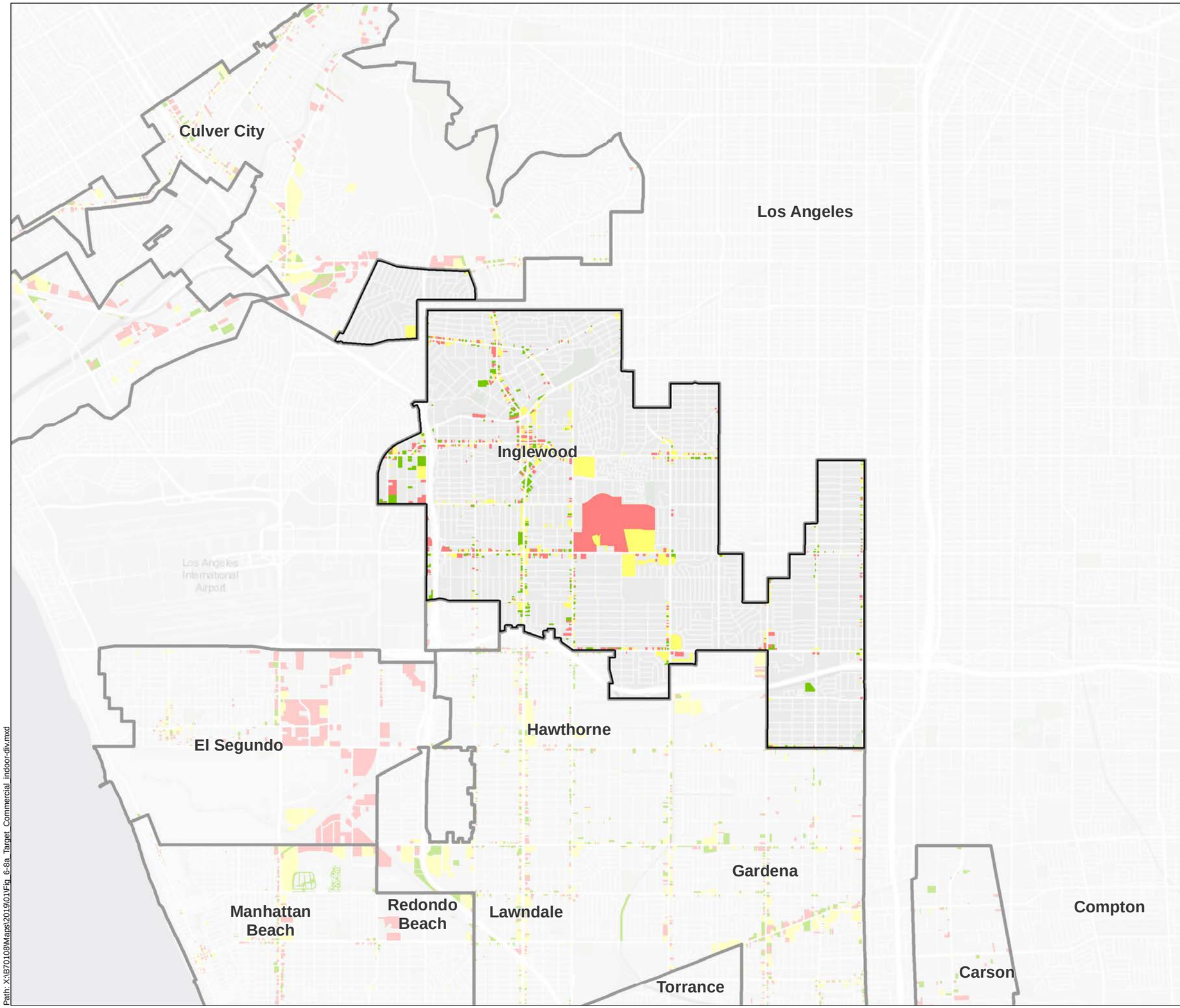
Figure 6-7 D2

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig 6-7 Target LargeLandscape-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Commercial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use. For purposes of this assessment, land uses classified as "recreational" are included with commercial land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Commercial WUE Programs Division 2

West Basin Municipal Water District

June 2019

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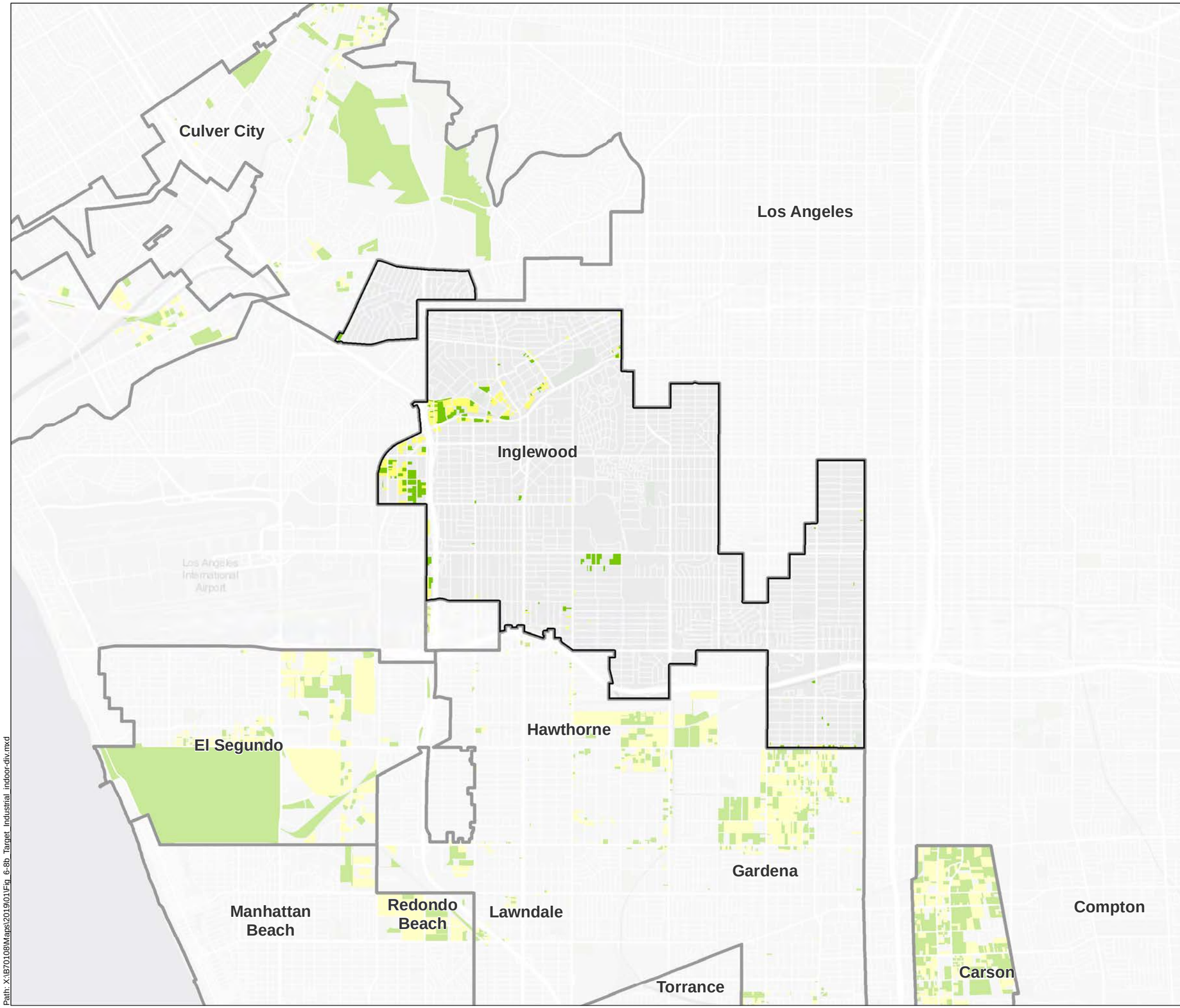
Figure 6-8a D2

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig 6-8a_Target_Commercial_indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

Medium

Low

Notes

1. All locations are approximate.
2. Industrial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Industrial WUE Programs Division 2

West Basin Municipal Water District

June 2019

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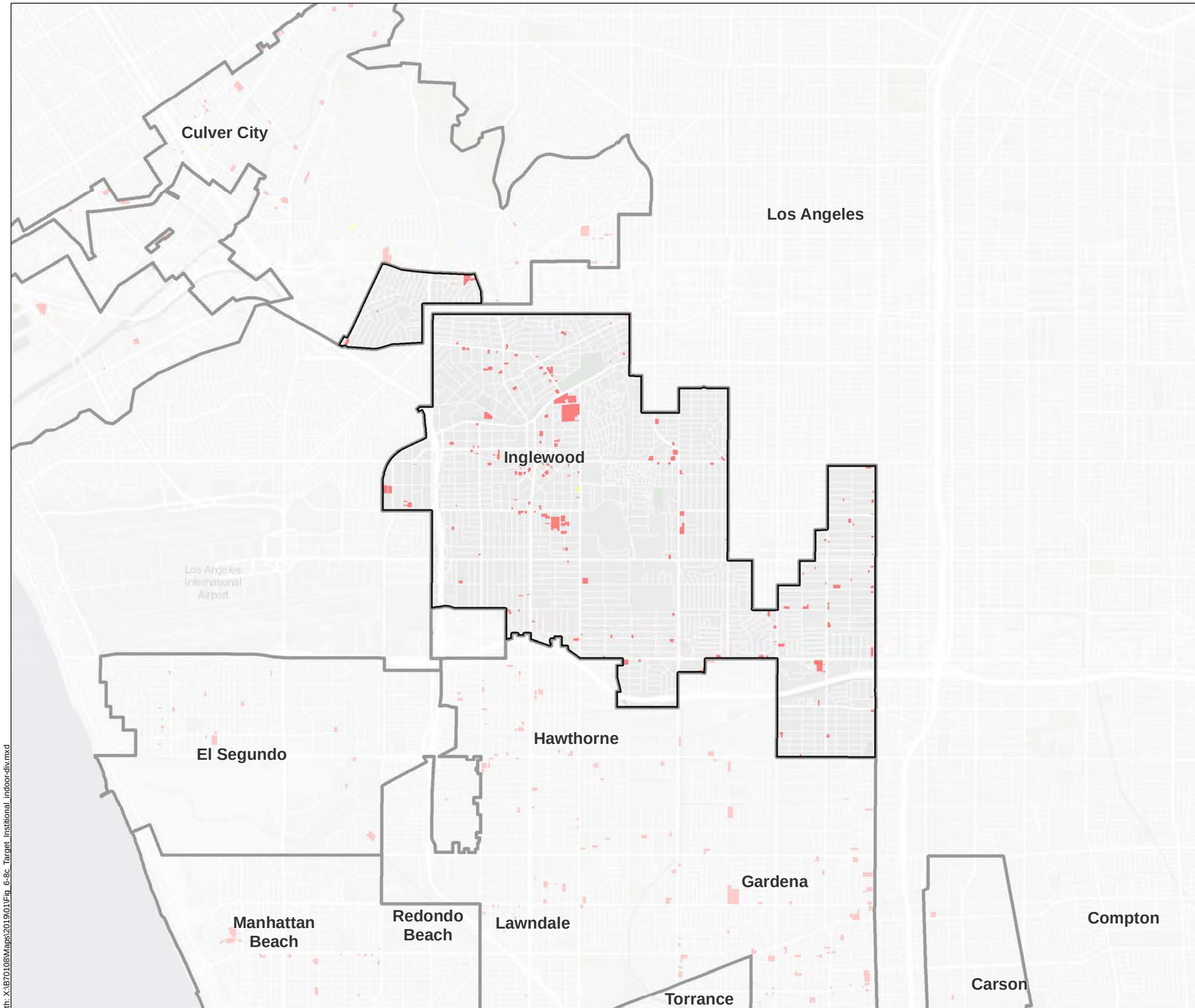
Figure 6-8b D2

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_6-8b_Target_Industrial_indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

High

Medium

Notes

1. All locations are approximate.
2. Institutional land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Institutional WUE Programs Division 2

West Basin Municipal Water District

June 2019

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Figure 6-8c D2

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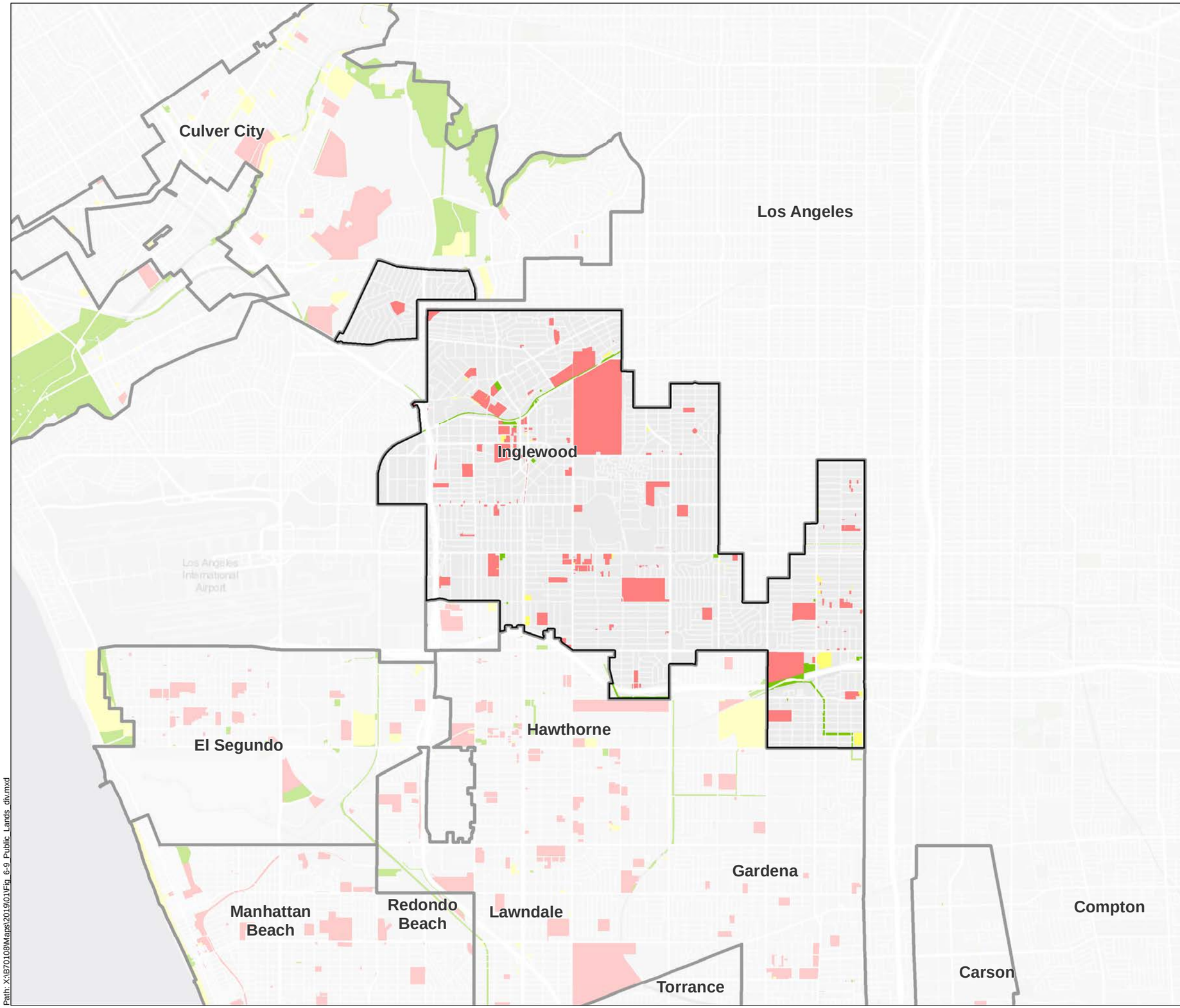

Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Public agencies are qualitatively ranked for priority for water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative size of facilities owned by agency.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Los Angeles County, 2018. "Assessor - Publicly Owned Parcels Listing," updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1 2

(Scale in Miles)

Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties Division 2

West Basin Municipal Water District

June 2019

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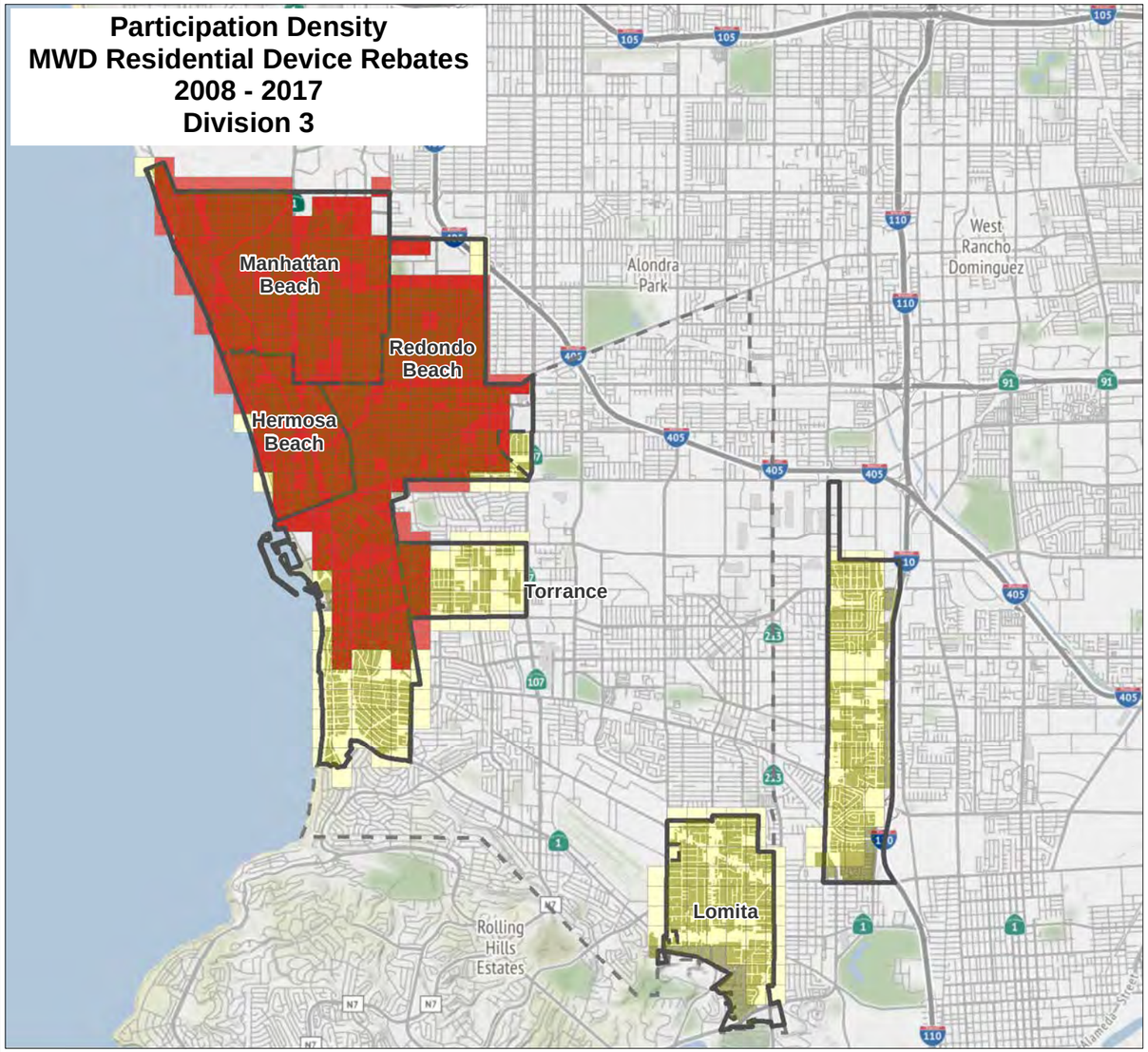
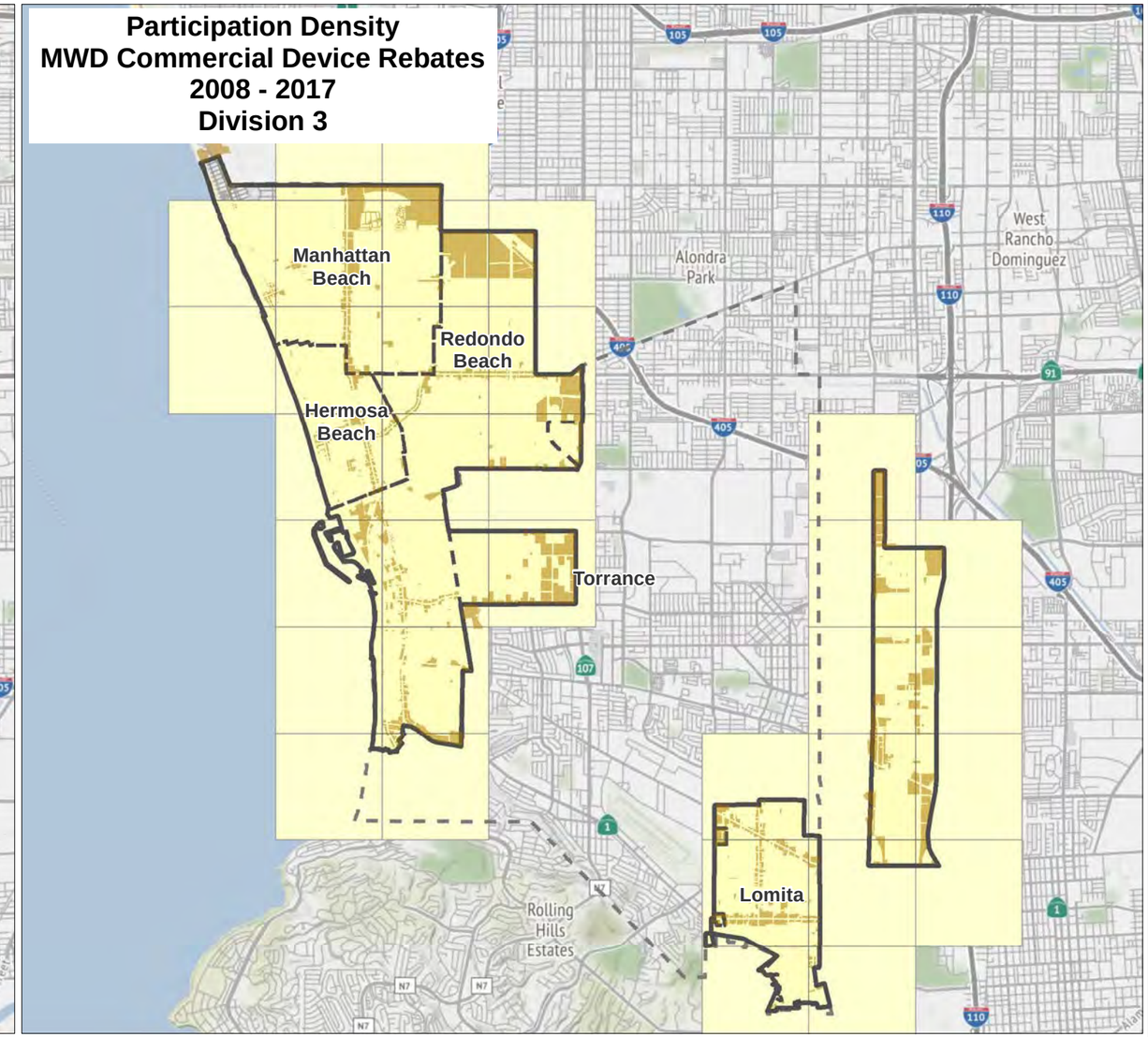
Figure 6-9 D2

Path: X:\B70108\Maps\2019\011Fig_6-9_Public_Lands_div.mxd

Division 3





Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1.5 3
Miles

Legend

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)
- Division Boundary
- City Boundary
- Residential Parcels
- Commercial, Industrial, Institutional Parcels

Participation Density for MWD Device Rebate Program: Division 3

West Basin Municipal Water District
January 2019
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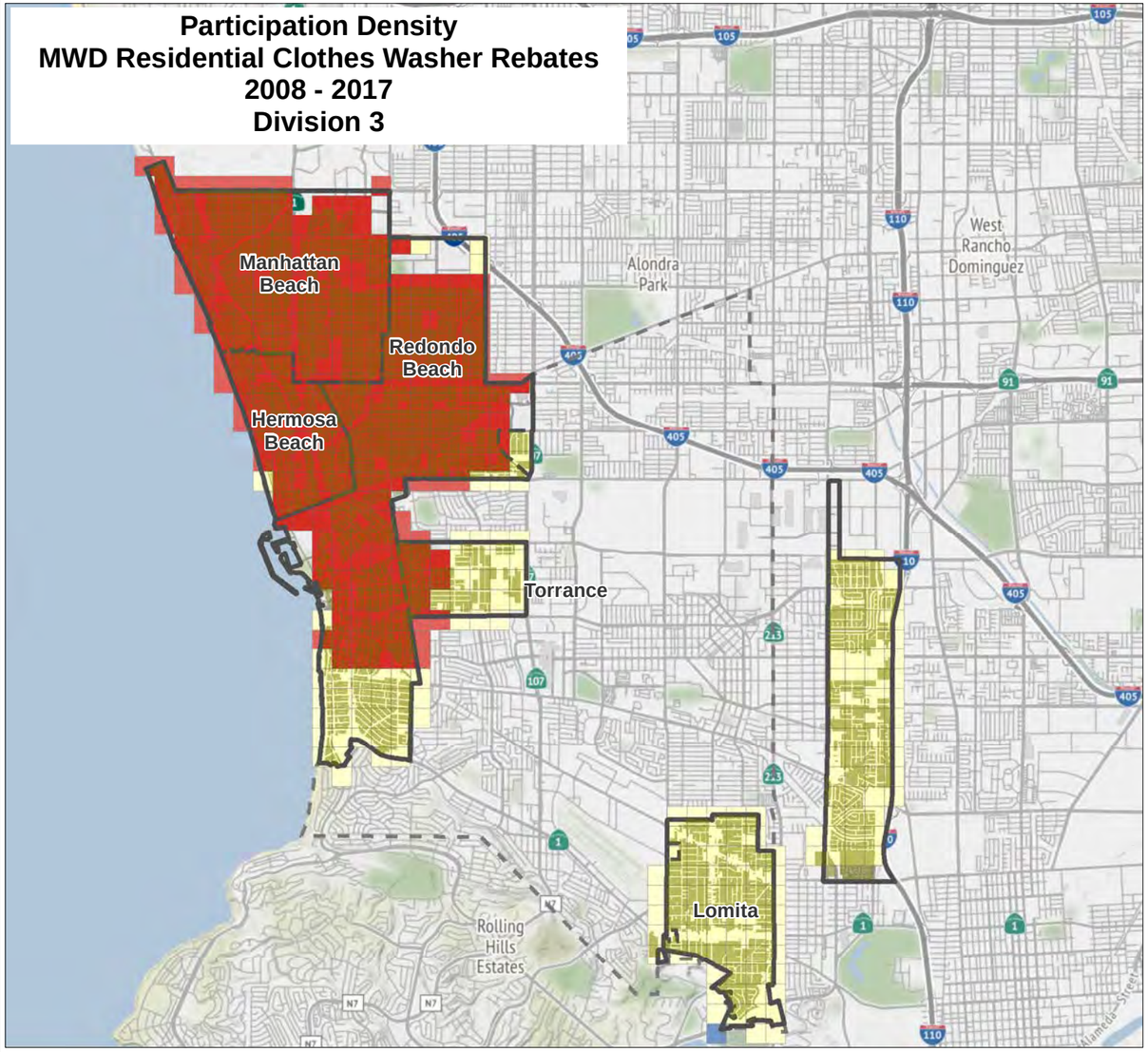
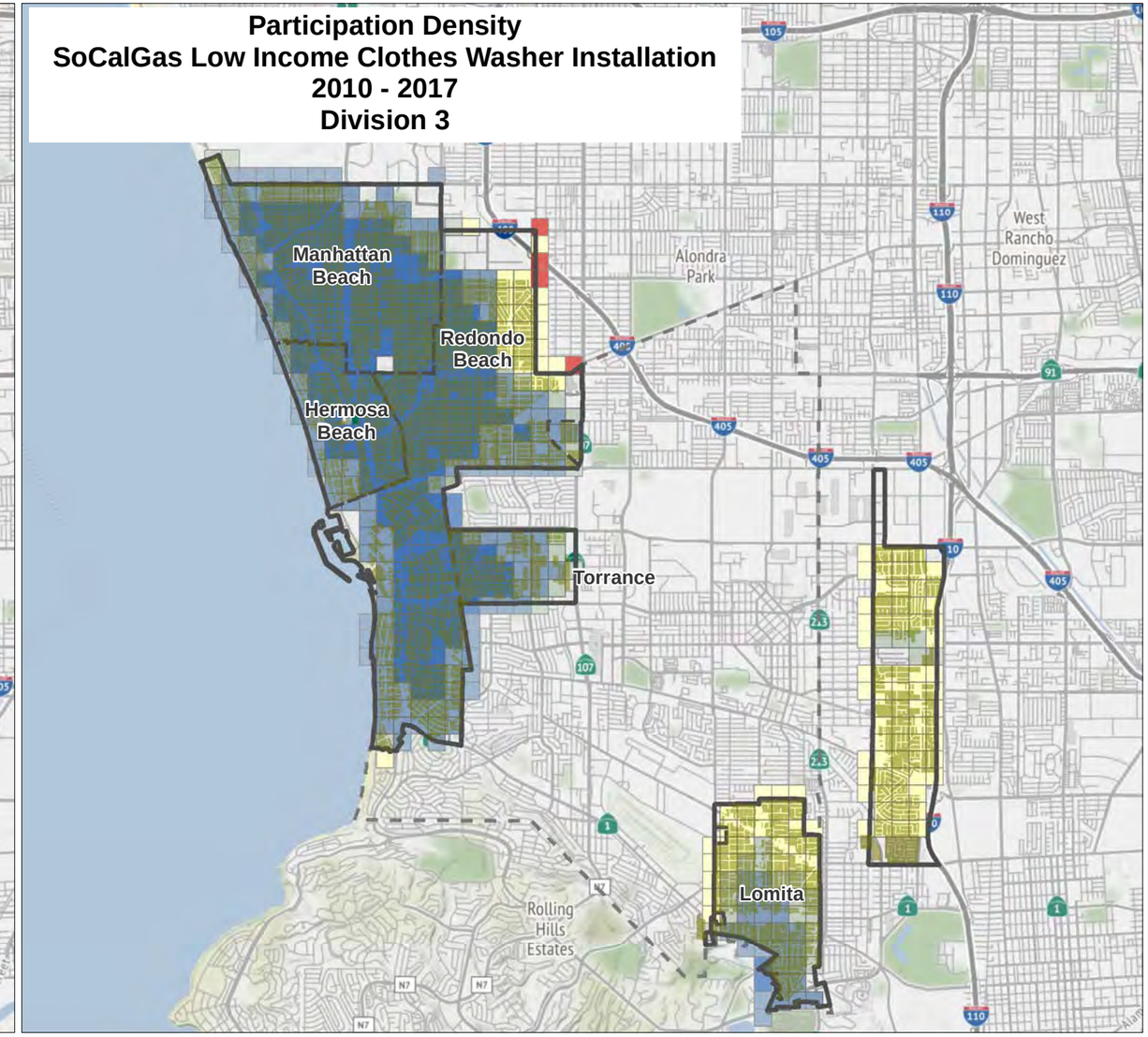
Figure 5-7 D3

Path: X:\B70108\Maps\2019\01\Fig_5-07_Cluster_MWDRebateD3.mxd





Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

Legend

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels

N

0 1.5 3
Miles

Participation Density for Residential Clothes Washer Rebate and Installation Programs: Division 3

West Basin Municipal Water District

January 2019

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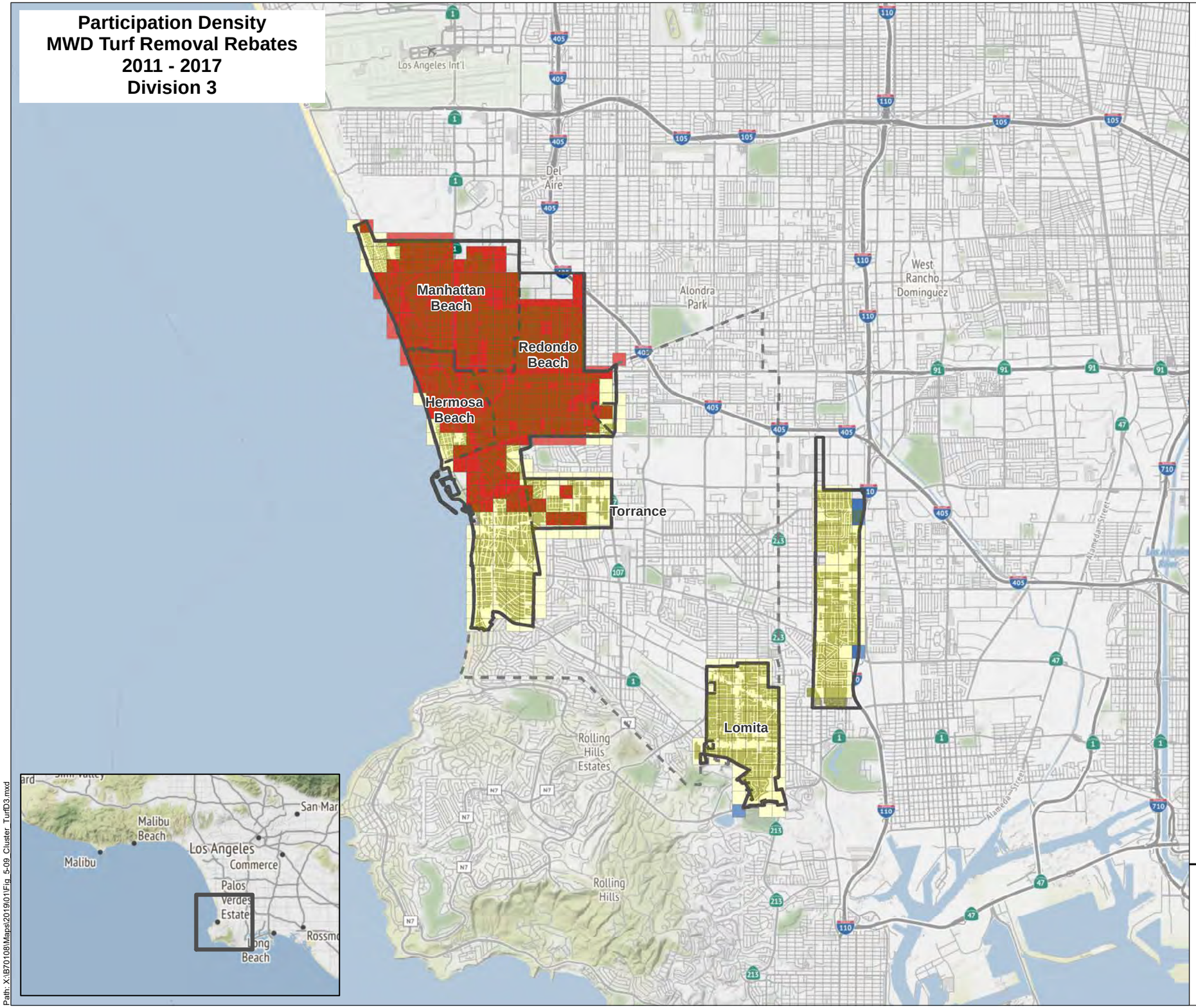
Figure 5-8 D3

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_5-08_Cluster_ResWashersD3.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1.5 3
(Scale in Miles)

Participation Density for Turf Removal Rebate Program: Division 3

West Basin Municipan Water District
January 2019
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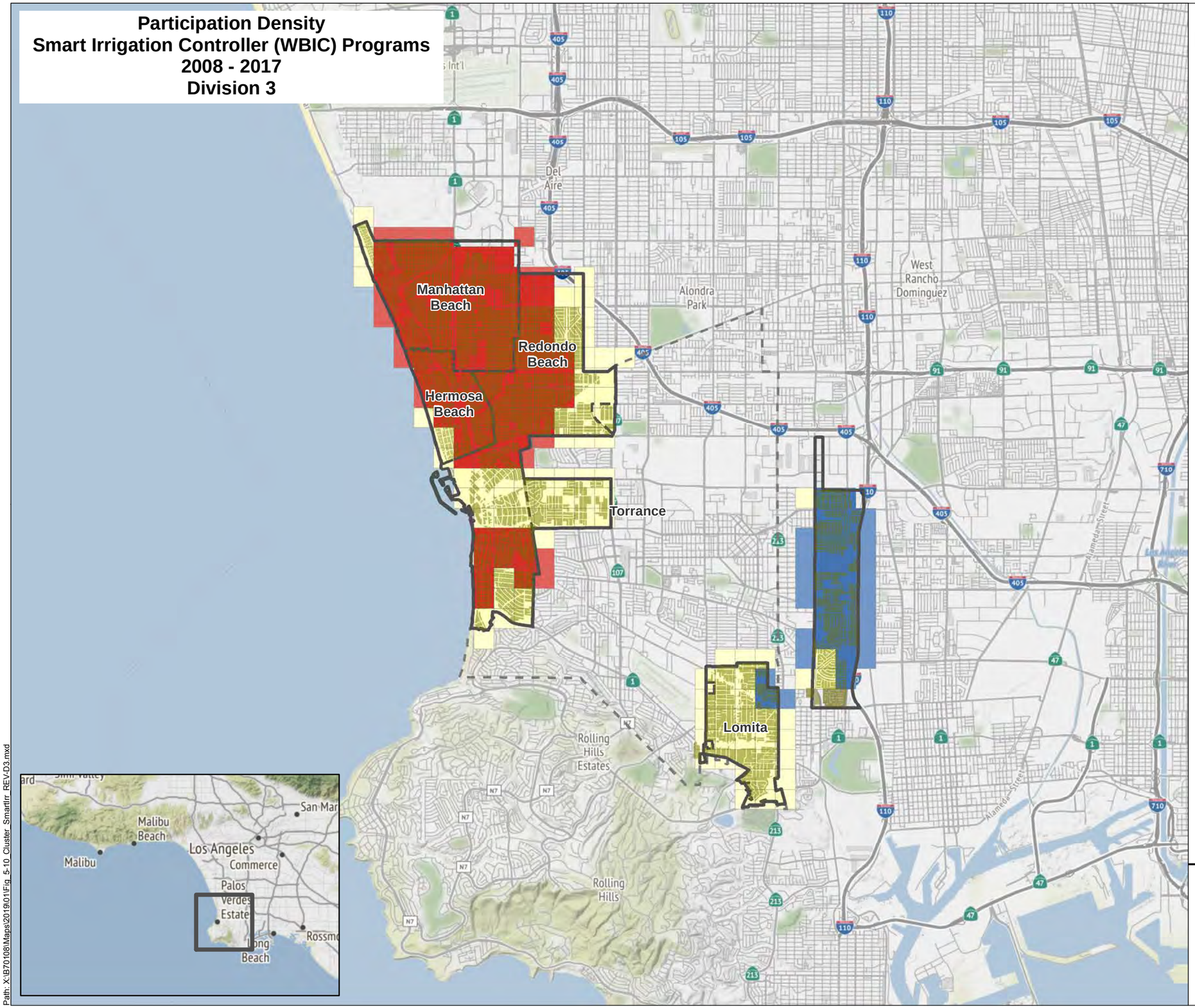
Figure 5-9 D3

Path: X:\B70108\Maps\2019\01\Fig_5-09_Cluster_TurfD3.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1.5 3

(Scale in Miles)

Participation Density for Smart Irrigation Controller Programs: Division 3

West Basin Municipan Water District
January 2019
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Figure 5-10 D3

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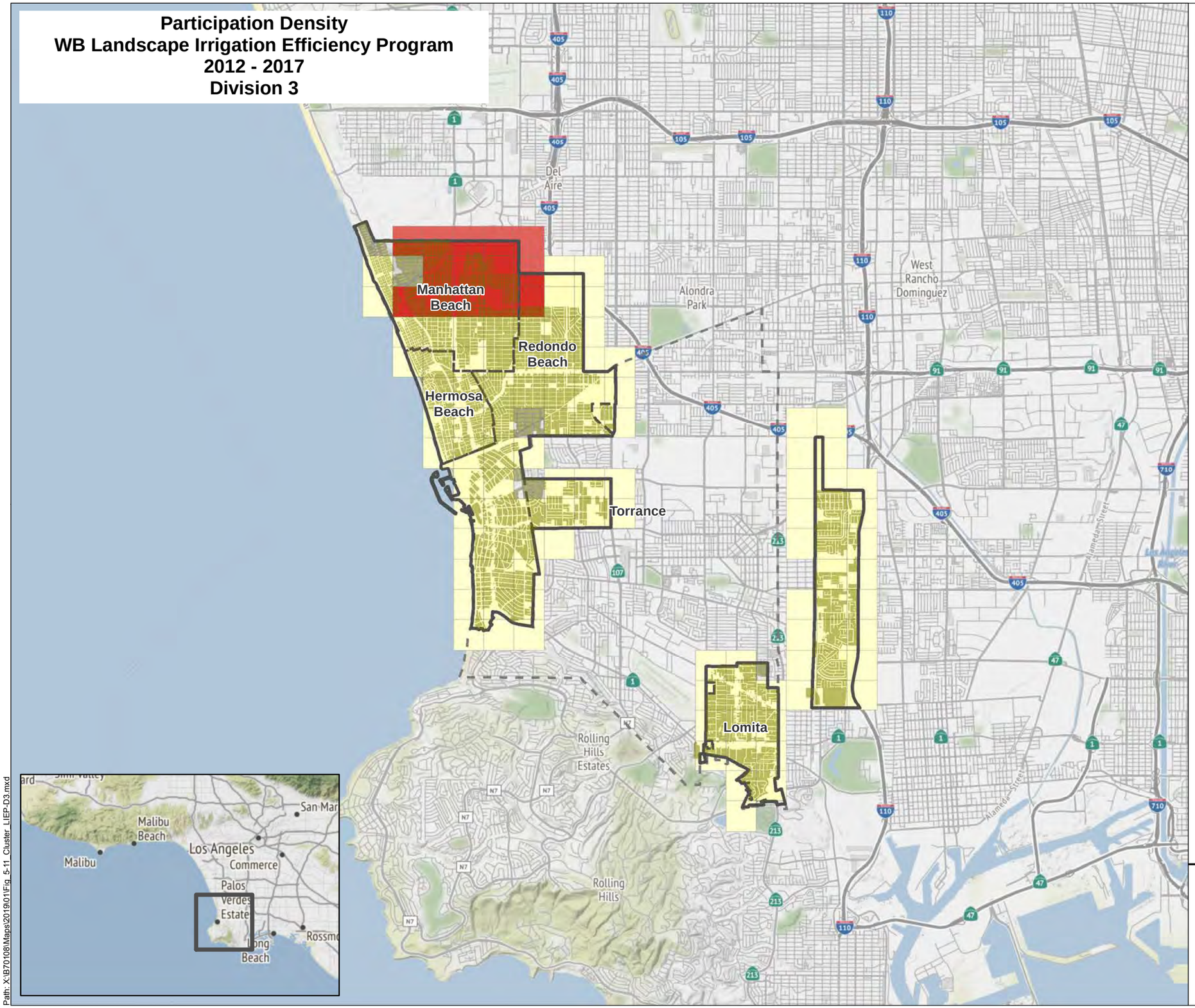

Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1.5 3

(Scale in Miles)

Participation Density for Landscape Irrigation Efficiency Program (LIEP): Division 3

West Basin Municipan Water District
January 2019
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Figure 5-11 D3

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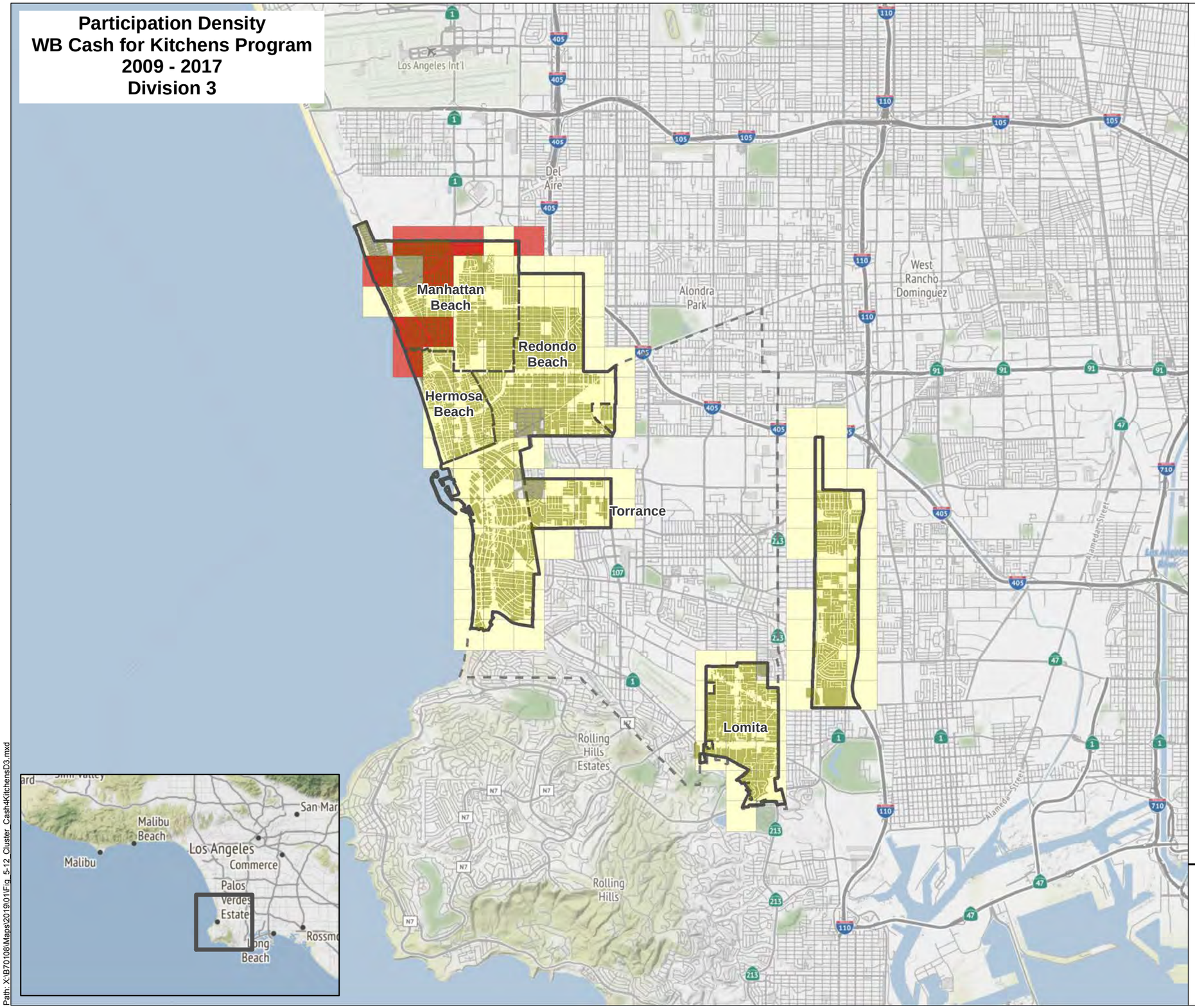
Path: X:\B70108\Maps\201901\Fig_5-11_Cluster_LIEP-D3.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1.5 3
(Scale in Miles)

Participation Density for Cash For Kitchens Program: Division 3

West Basin Municipan Water District
January 2019
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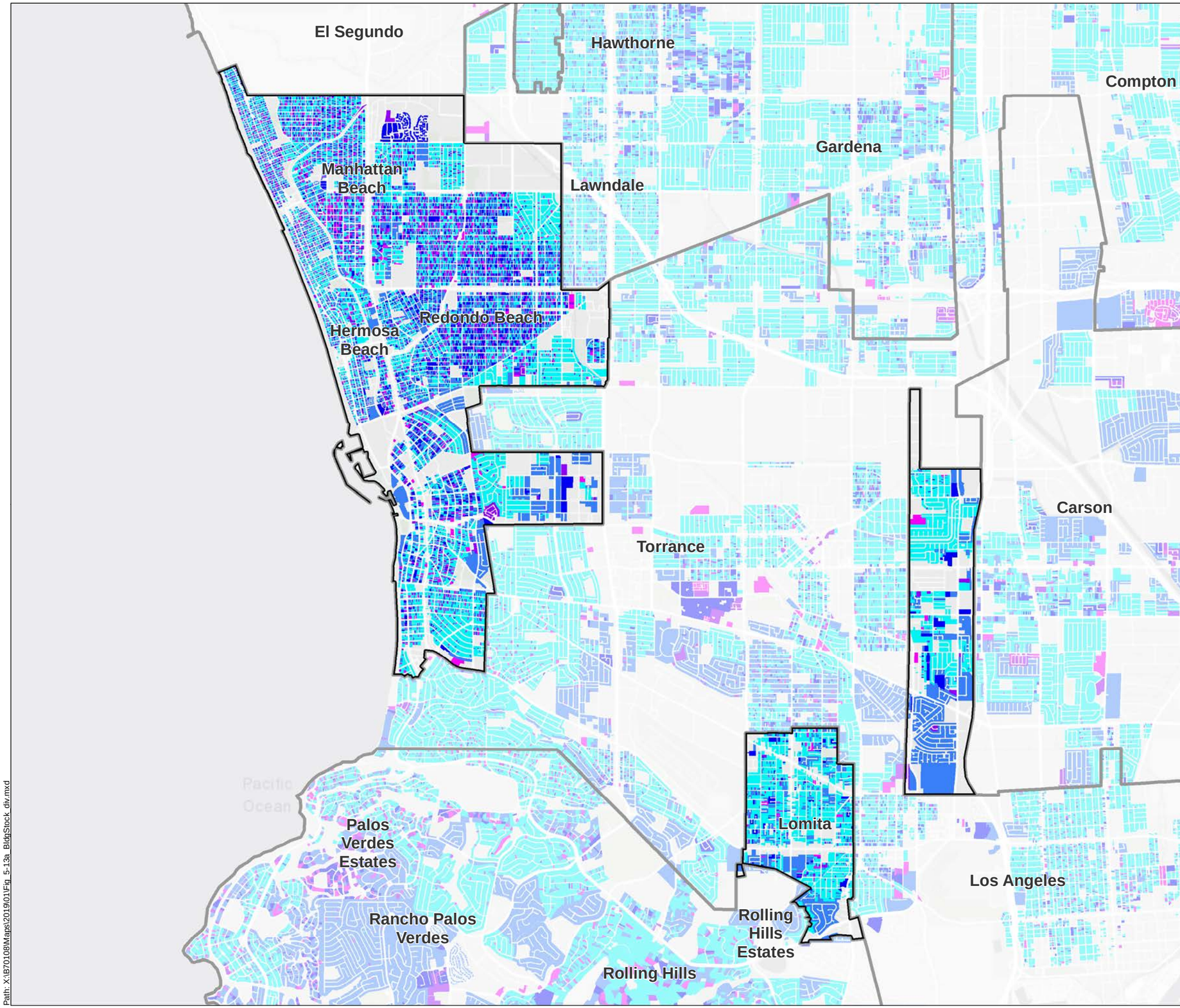
Figure 5-12 D3

Path: X:\B70108\Maps\201901\Fig_5-12_Cluster_Cash4KitchensD3.mxd



Legend

West Basin Director Division Boundaries

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

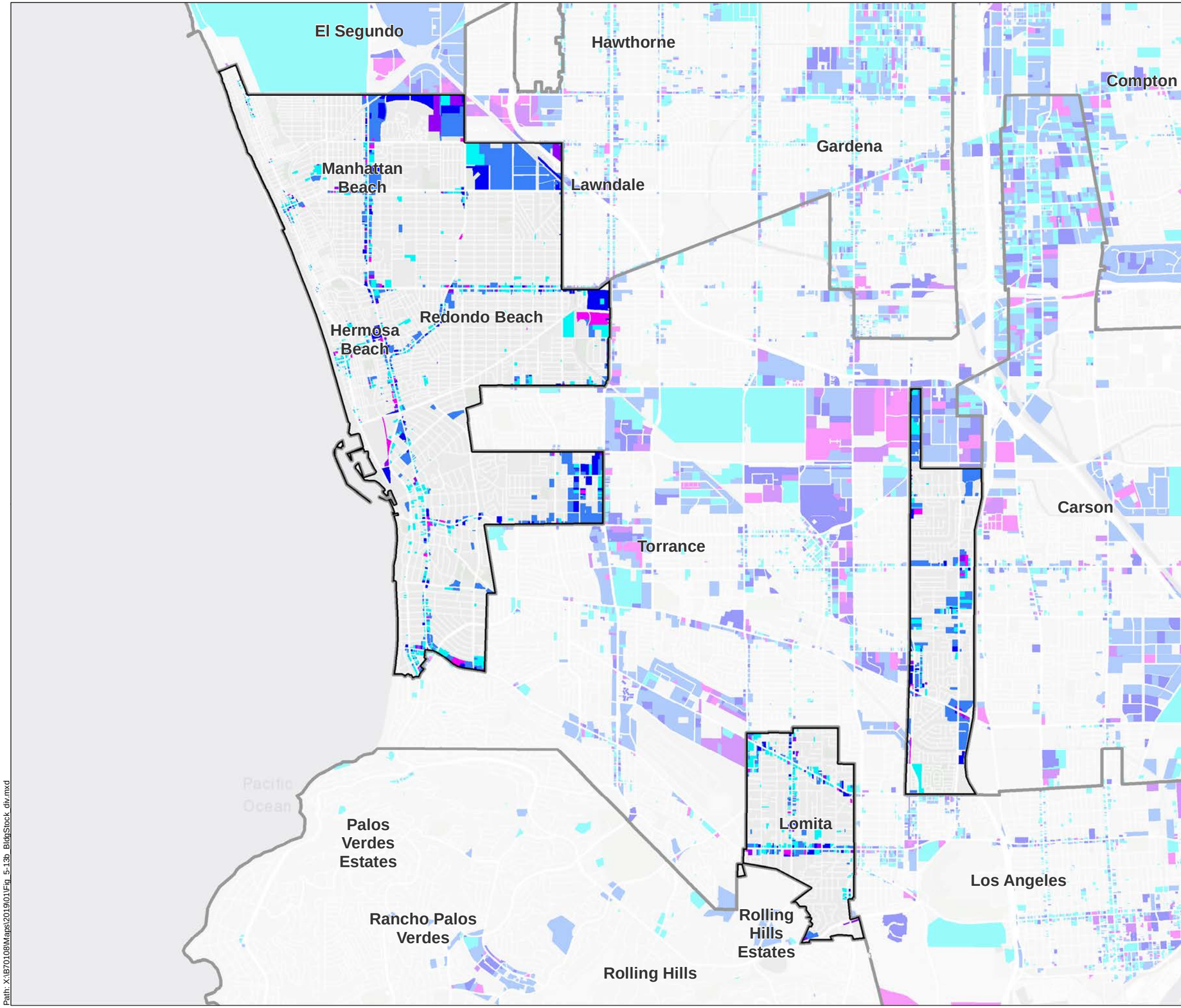
(Scale in Miles)

Age of Building Stock - Residential Division 3

West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-13a D3

Path: X:\B70108\Maps\2019\01\Fig_5-13a_BldgStock_div.mxd



Legend

West Basin Director Division Boundaries

Date of Construction

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Age of Building Stock - CII
Division 3

West Basin Municipal Water District
June 2019
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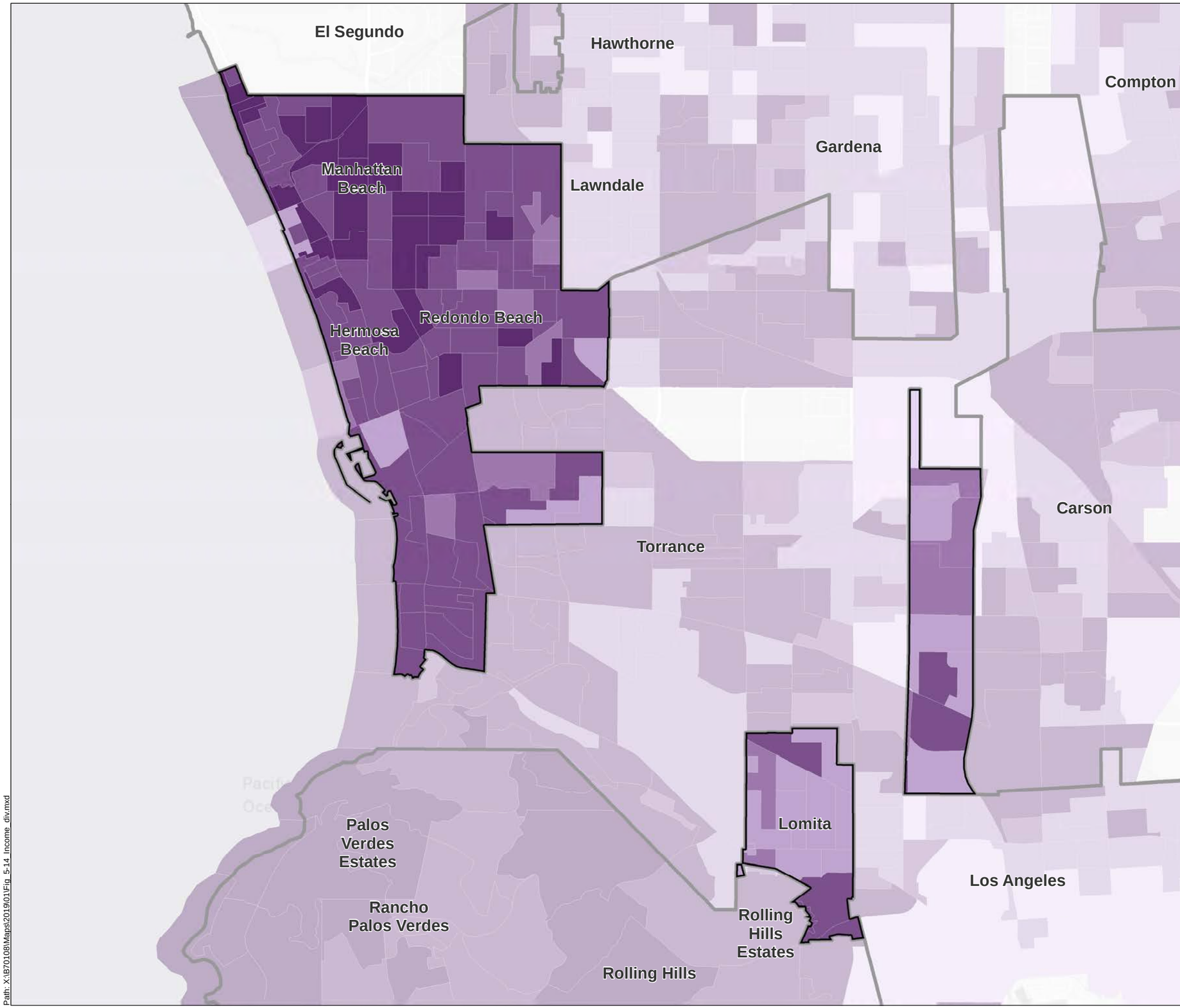
Figure 5-13b D3

Path: X:\B70108\Maps\2019\01\Fig_5-13b_BldgStock_div.mxd



Legend

West Basin Director Division Boundaries

Household Median Income, Census

- Very Low <$38,450
- Low $38,451-$61,500
- Moderate $61,501-$70,000
- High $70,001 - $140,000
- Very High >$140,001

Notes

1. All locations are approximate.
2. Household income is based on estimated 2014 median household income by Census Block Group, per Census (2016). Income level groupings are based on California Department of Housing and Community Development ("HCD") income levels for Los Angeles County for a 3-person household in 2014 (HCD, 2014). Very high income is shown as greater than two times the Couinty-wide median household income.

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1 2

(Scale in Miles)

Median Household Income
Division 3

West Basin Municipal Water District
June 2019
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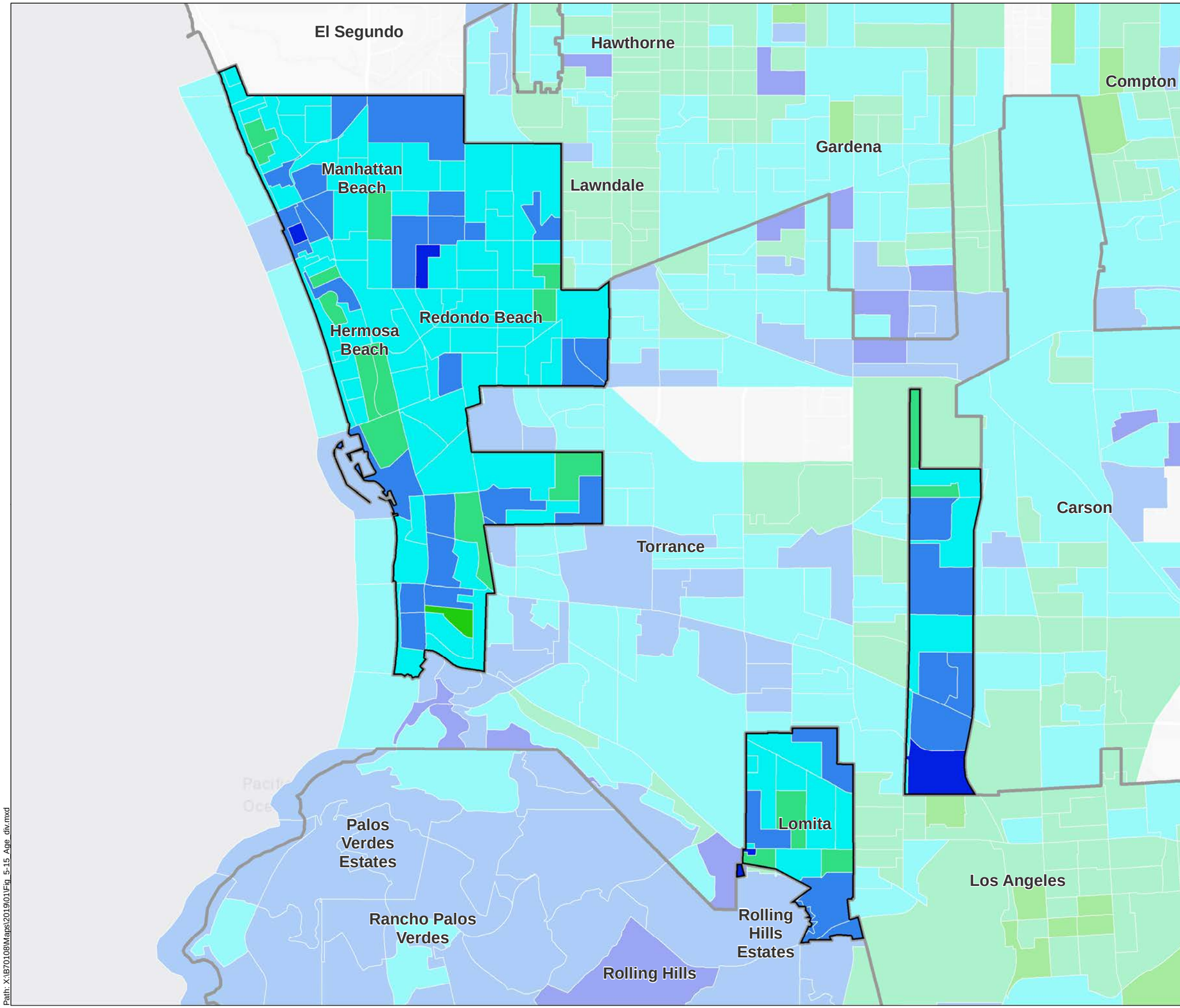
Figure 5-14 D3

Path: X:\B70108\Maps\2019\01\Fig_5-14_Income_div.mxd



Legend

West Basin Director Division Boundaries

Median Household Age by Census Block Group

- <25
- 25-35
- 35-45
- 45-55
- >55

Notes

1. All locations are approximate.
2. Household age is based on the estimated 2014 median age of household members by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1 2

(Scale in Miles)

Median Household Age
Division 3

West Basin Municipal Water District
June 2019
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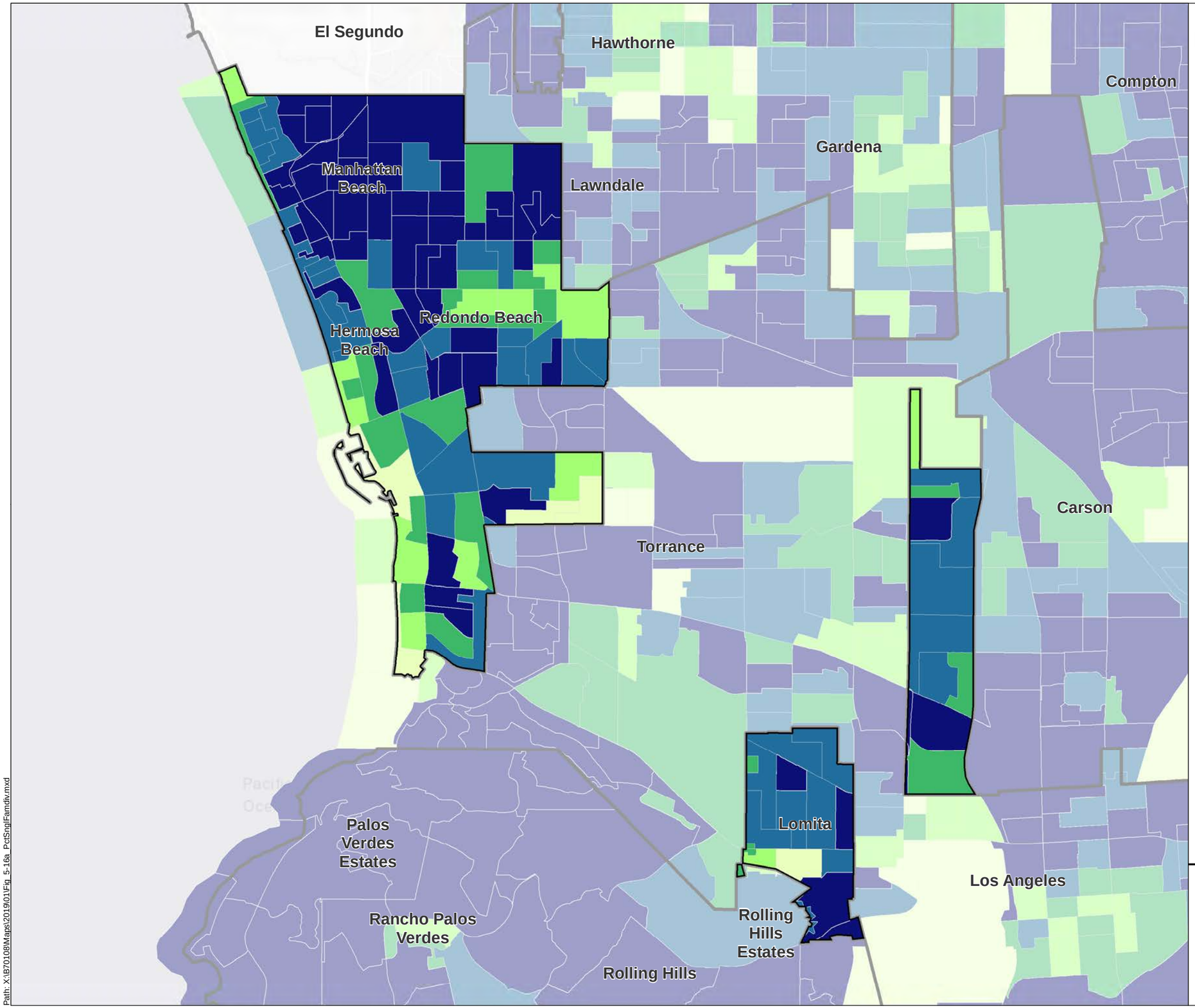
Figure 5-15 D3

Path: X:\B70108\Maps\2019\01\Fig_5-15_Age_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in Single-Family Units

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in single-family homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Single-Family Homes Division 3

West Basin Municipal Water District
June 2019
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Figure 5-16a D3

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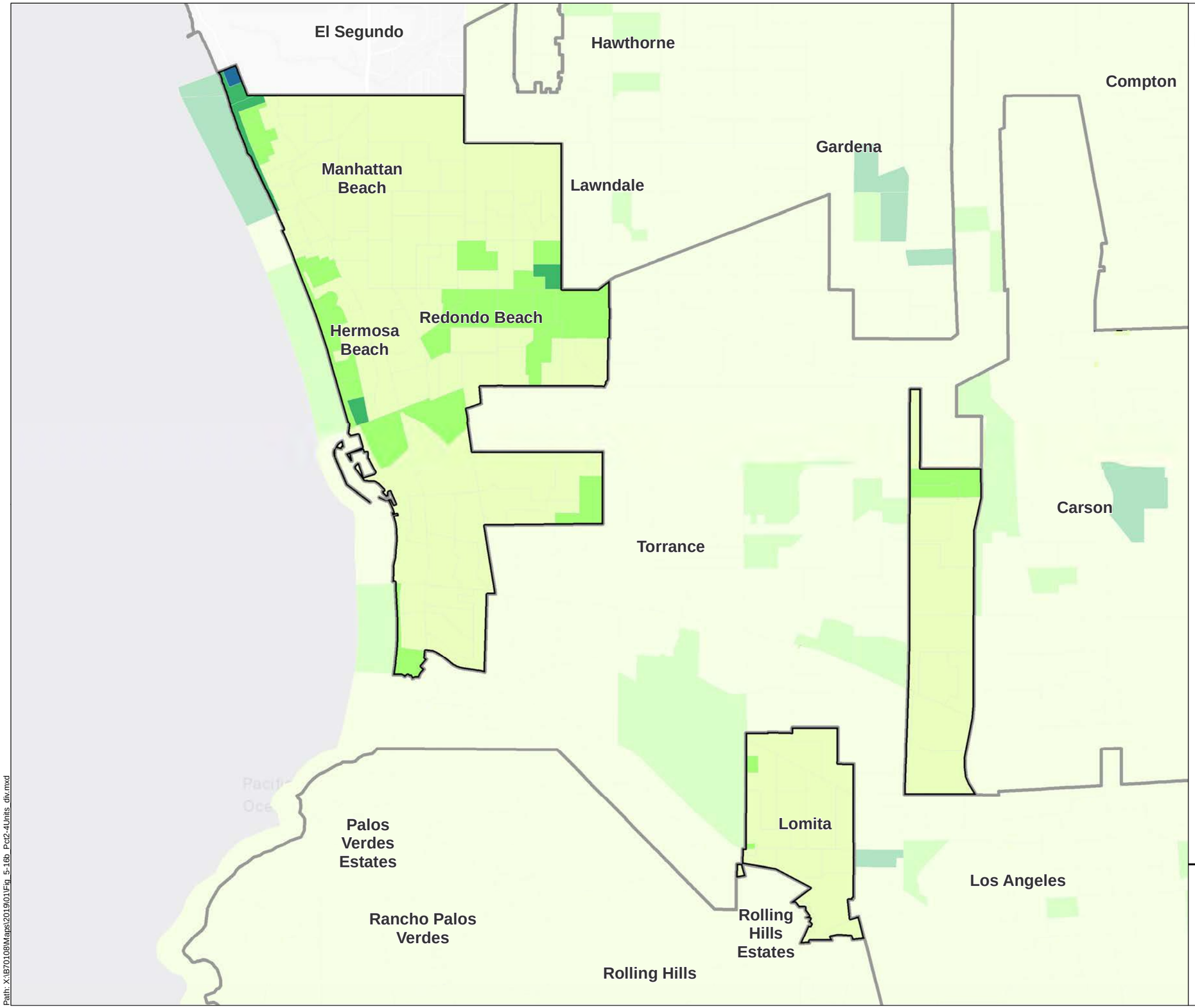

Legend

West Basin Director Division Boundaries

Percentage of Population in 2-4 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%

Notes

1. All locations are approximate.
2. Percentage of population in multi-family housing consisting of 2 to 4 units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Multi-Family Homes (2-4 Units) Division 3

West Basin Municipal Water District
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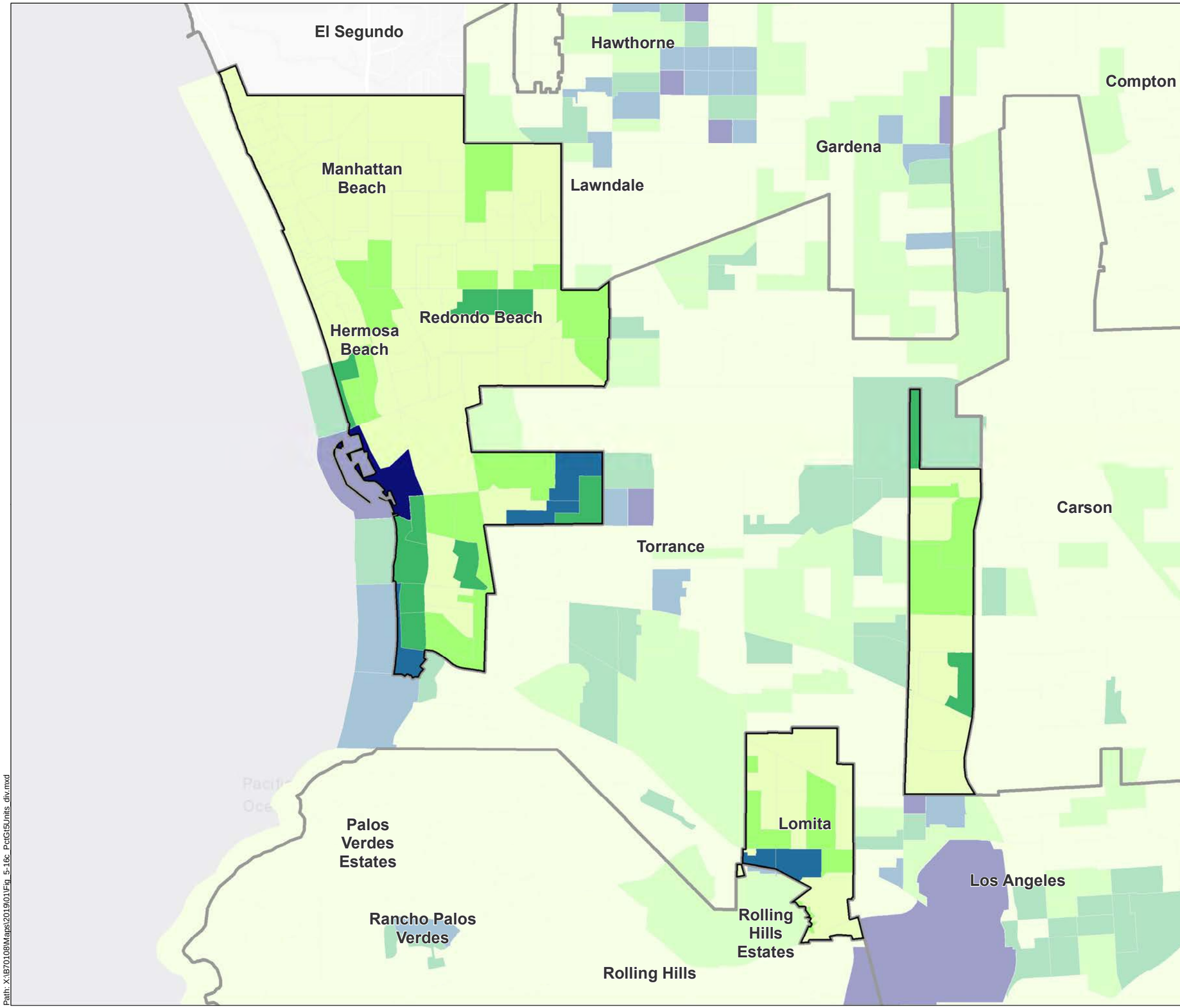
Figure 5-16b D3

Path: X:\B70108\Maps\2019\01\Fig_5-16b_Pct2-4Units_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in ≥5 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of 5 or more units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Multi-Family Homes (≥5 Units) Division 3

West Basin Municipal Water District
June 2019
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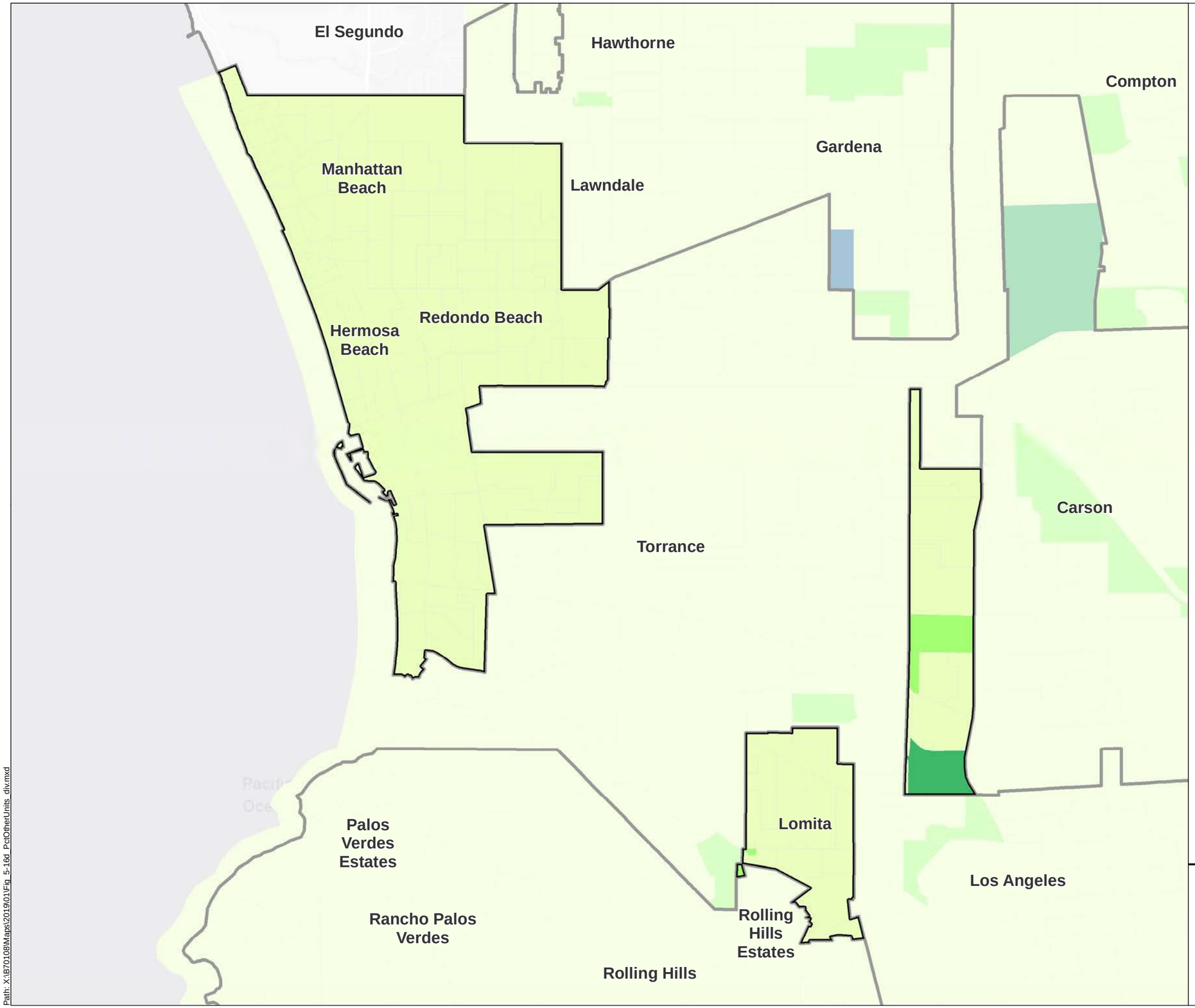
Figure 5-16c D3

Path: X:\B70108\Maps\2019\01\Fig_5-16c_PctGt5Units_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in Mobile Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of mobile homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Mobile Home Housing Division 3

West Basin Municipal Water District
June 2019
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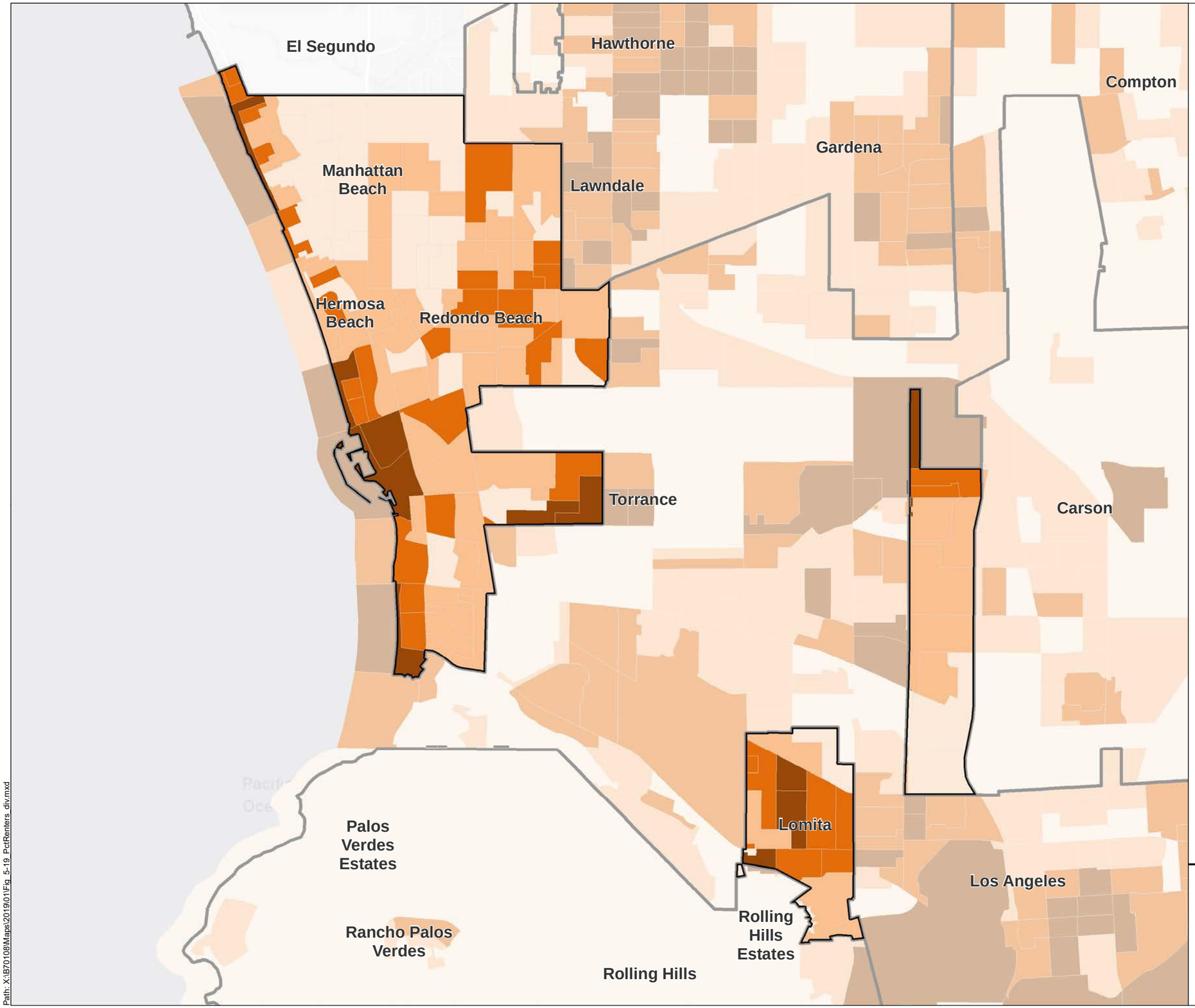
Figure 5-16d D3

Path: X:\B70108\Maps\201901\Fig_5-16d_PctOtherUnits_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Renters

- ≤25%
- 25.1% - 50%
- 50.1% - 75%
- ≥75%

Notes

1. All locations are approximate.
2. Percentage of renter-occupied housing units is based on the estimated 2014 number of renter-occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Renter-Occupied Housing Units Division 3

West Basin Municipan Water District
January 2019
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Figure 5-19 D3

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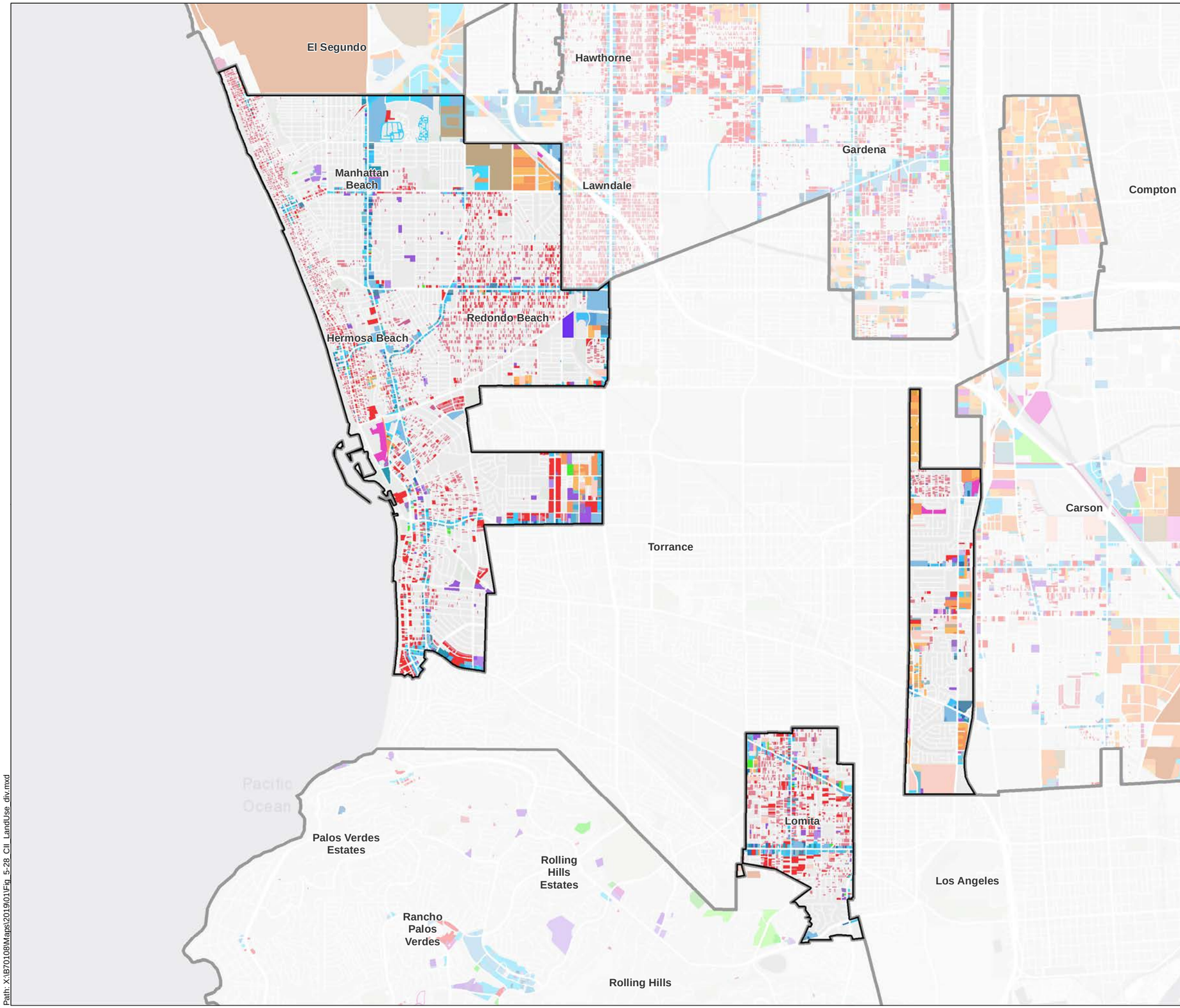
Path: X:\B70108\Maps\201901\Fig_5-19_PctRenters_div.mxd



Legend

West Basin Director Division Boundaries

Multi-Family Residential
- Multi-Family Residential - 2-4 Units
- Multi-Family Residential - 5+ Units
- Residential - Mobile Home/Other

Commercial
- Animal Kennel
- Auto Service Station
- Bank, Savings and Loan
- Car Sales/Service
- Car Wash
- Commercial Unknown/Miscellaneous
- Department or Warehouse Store
- Hotel and Motel
- Non-Auto Shop, Paint Shop, or Laundry
- Office Building
- Parking Lot/Structure
- Professional Building
- Restaurant
- Shopping Center
- Store
- Supermarket
- Wholesale and Manufacturing Outlet

Institutional
- Adult Care Facility
- Cemetery, Mausoleum
- Church
- Convalescent Hospital, Nursing Home
- Hospital
- Mortuary, Funeral Home
- School (Private)

Industrial
- Cement, Rock and Gravel Plant
- Food Processing Plant
- Heavy Manufacturing
- Light Manufacturing
- Lumber Yard
- Other Mineral Processing
- Warehousing, Distribution, Storage

Recreational
- Athletic/Amusement/Recreational Facility
- Golf Course
- Horse Stables
- Movie or Stage Theater

Miscellaneous
- Agriculture
- Other Unknown/Miscellaneous
- Petroleum and Gas Mining/Processing
- Utility/Rights of Way
- Wireless Communication Tower

Notes

1. All locations are approximate.
2. Land use type classifications are based by Assessor's parcel records.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

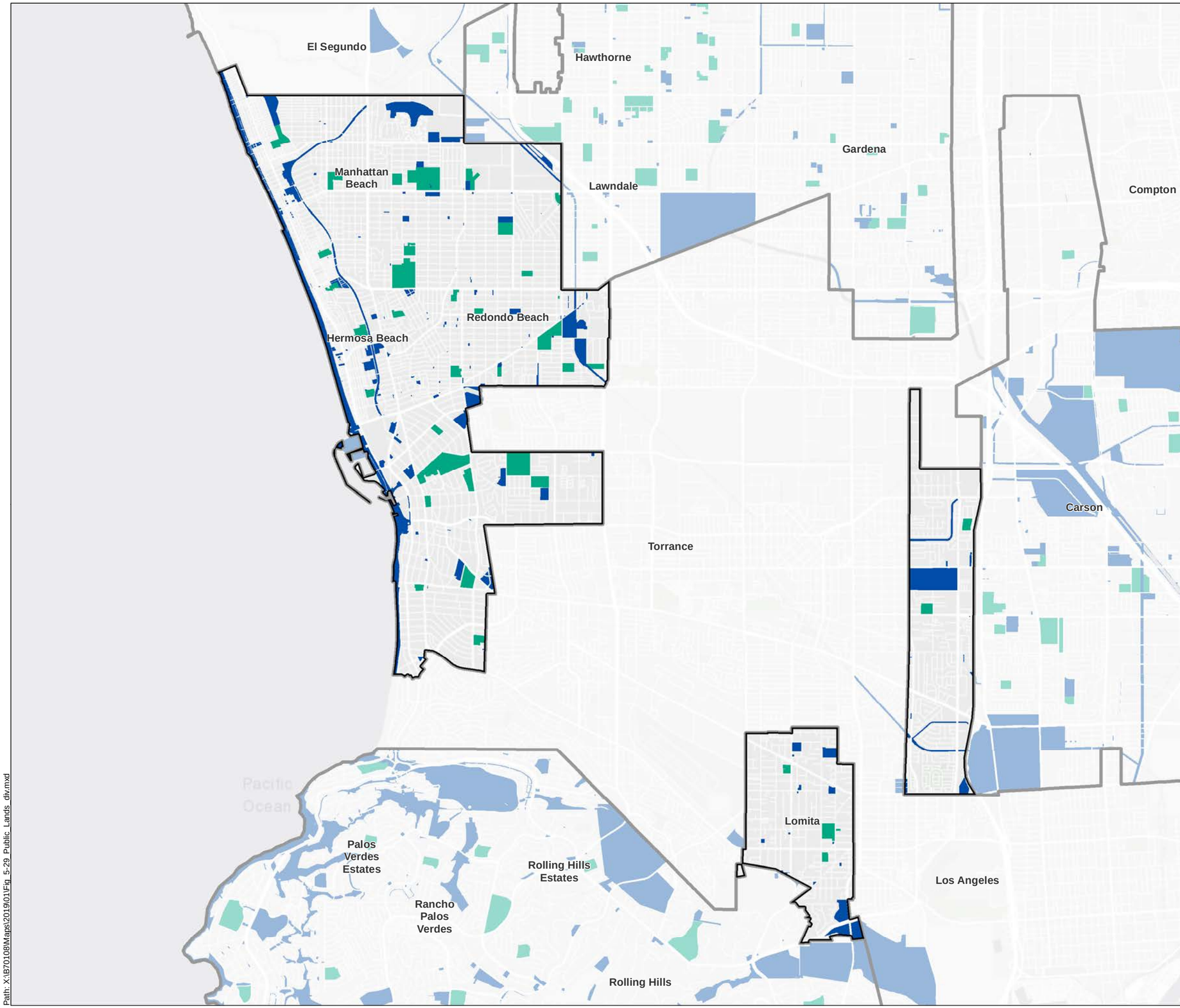
0 1 2
(Scale in Miles)

CII Land Use Types within Division 3

West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-28 D3

Path: X:\B70108\Maps\2019\01\Fig_5-28_CII_LandUse_div.mxd



Legend

- West Basin Director Division Boundaries
- Publicly Owned Parcels Designated as Schools
- Other Publicly Owned Parcels

Notes

1. All locations are approximate.
2. Parcels indicated as schools are based on the provided agency name. Publicly owned parcels include those owned by cities, the state, and other agencies, including but not limited to property used for offices, operations, parks, parking, etc.

Sources

1. Assessor - Publicly Owned Parcels Listing, updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1 2
(Scale in Miles)

Publicly-Owned Lands within Division 3

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West Basin Municipal Water District
June 2019
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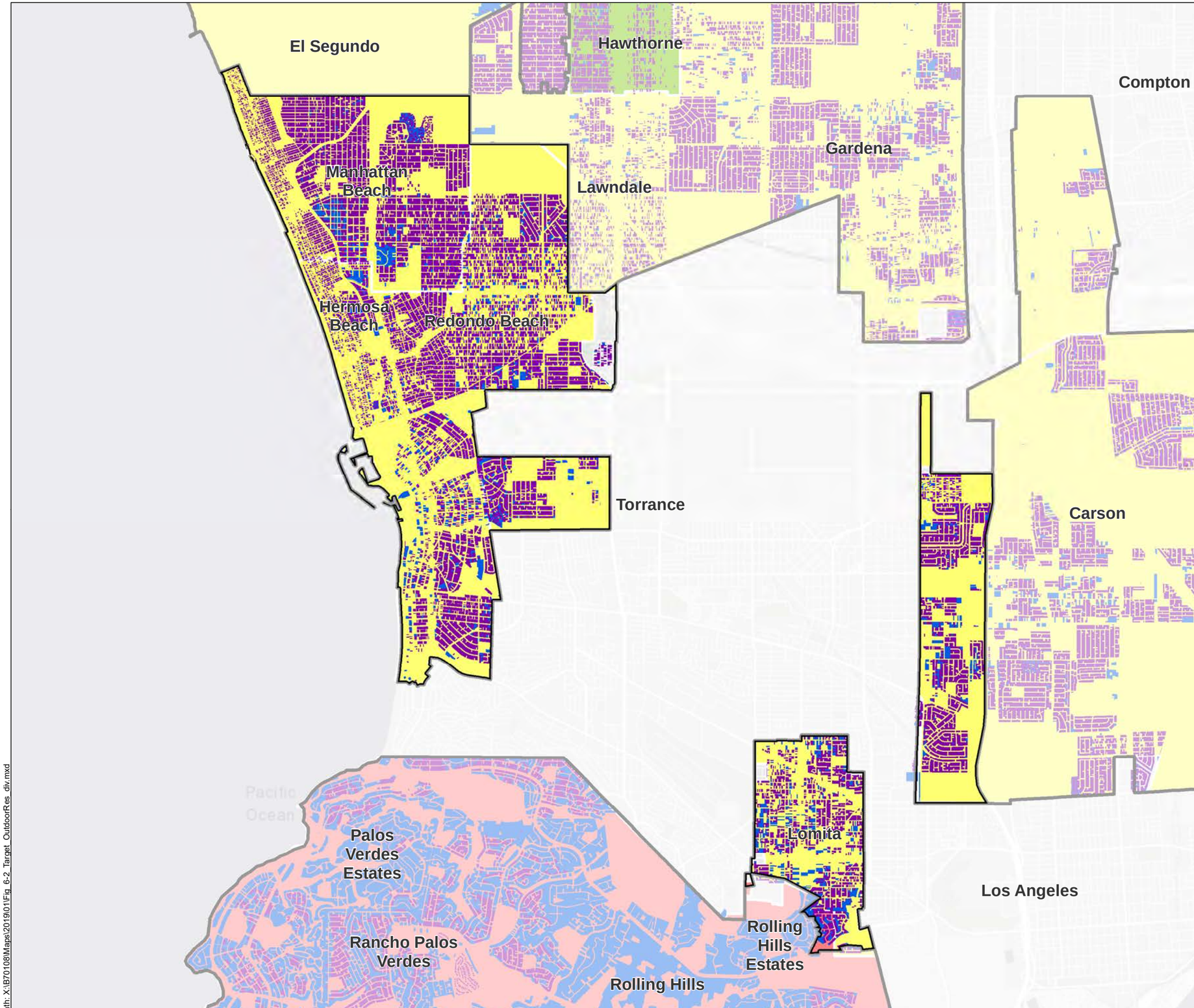
Figure 5-29 D3

Path: X:\B70108\Maps\2019\01\Fig_5-29_Public_Lands_div.mxd



Legend

- West Basin Director Division Boundaries

Program Targeting

- Landscape Transformation Programs (≤9,000 sq ft lot)
- Irrigation Device Replacement Programs (>9,000 sq ft lot)

WUE Program Outreach Priority

- Low (≤20% Outdoor Water Use)
- Medium (20-40% Outdoor Water Use)
- High (>40% Outdoor Water Use)

Notes

1. All locations are approximate.
2. West Basin potable water customer agencies are ranked for outdoor residential WUE program outreach priority based on the estimated percentage of outdoor water use within their service area.
3. The type of residentual outdoor WUE program for targeting is based on parcel lot size.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Target Opportunities for Single-Family Residential Outdoor WUE Programs Division 3

West Basin Municipan Water District

January 2019

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Figure 6-2 D3

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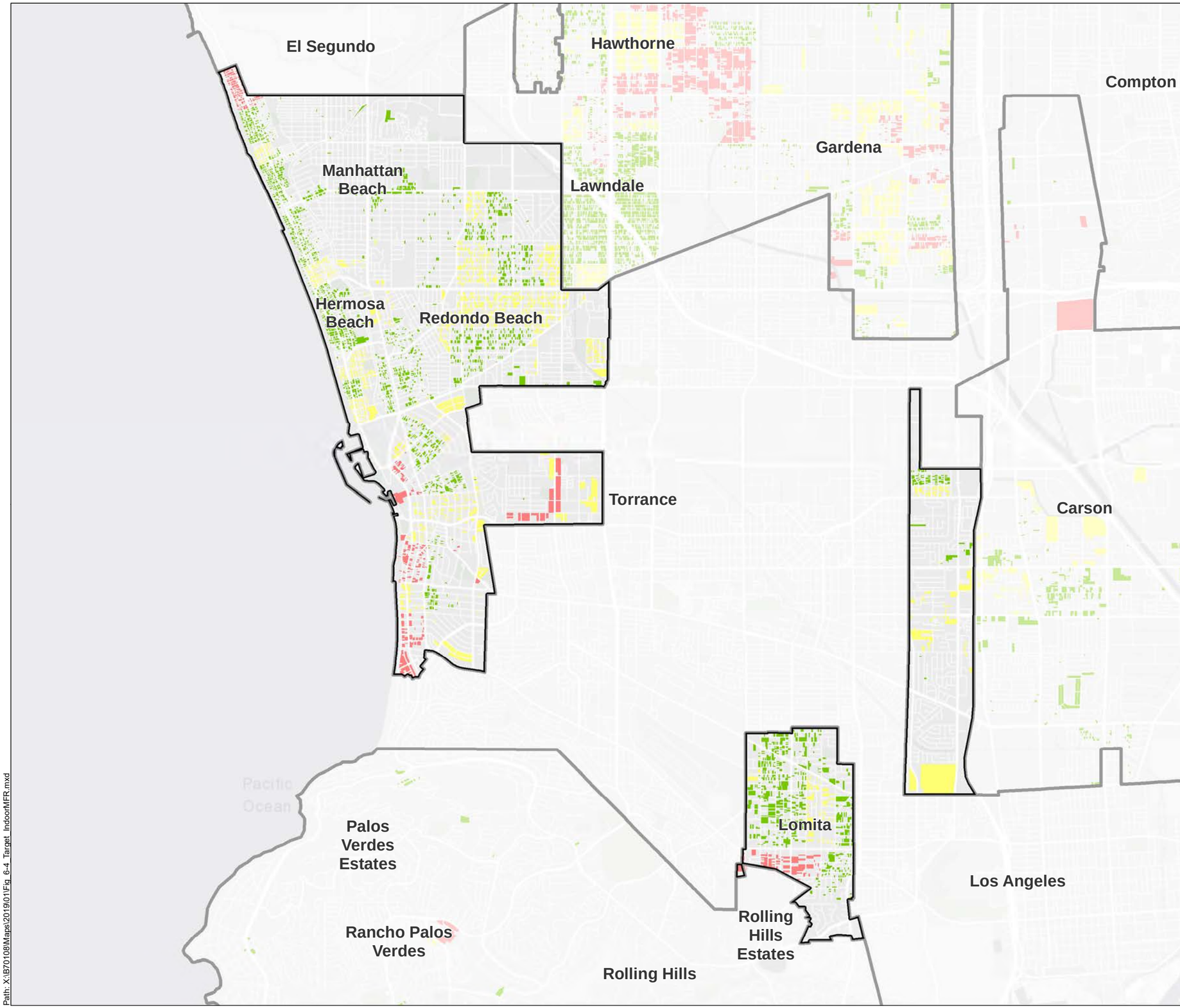
Path: X:\B70108\Maps\201901\Fig_6-2_Target_OutdoorRes_div.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (≥50% Population in Multi-Family Housing)
- Medium (25-50% Population in Multi-Family Housing)
- Low (≤25% Population in Multi-Family Housing)

Notes

1. All locations are approximate.
2. Multi-family residential parcels are ranked for indoor residential WUE program outreach priority based on the proportion of an area's population that lives in multi-family residiental homes, based on Census block group. For purposes of this assessment, manufactured homes are considered to be multi-family.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Target Opportunities for Multi-Family Residential Indoor WUE Programs Division 3

West Basin Municipan Water District

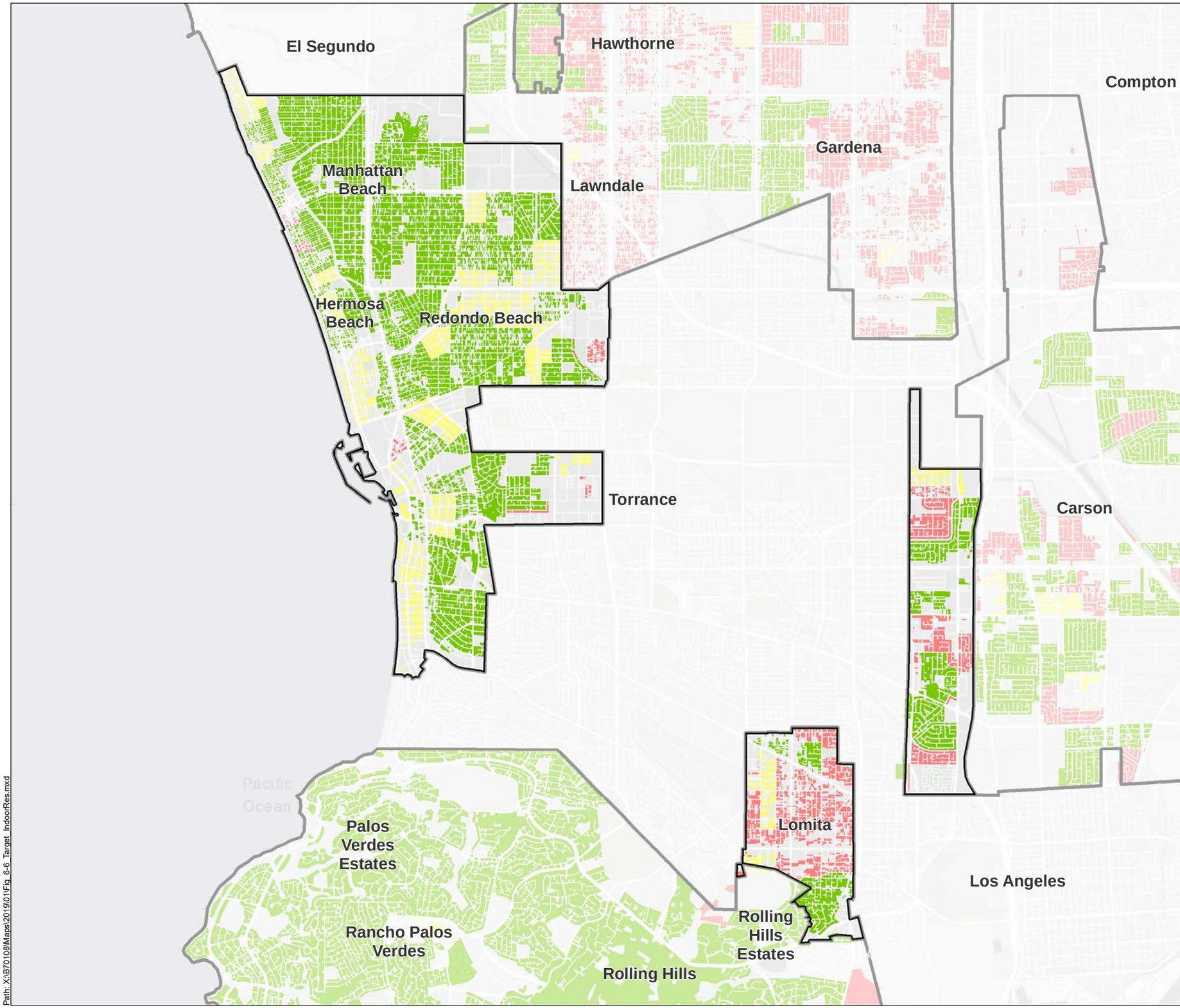
January 2019

EKI B70108.00

Figure 6-4 D3

eki environment & water

Path: X:\B70108\Maps\201901\Fig. 6-4_Target_IndoorMFR.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (Low Income)
- Medium (≥50% Renter Population)
- Low (Moderate to High Income, <50% Renter Population)

Notes

1. All locations are approximate.
2. Single-family residential parcels are ranked for indoor residential WUE program outreach priority based on median household income and percentage of population that rents their home.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Target Opportunities for Single-Family Residential Indoor WUE Programs Division 3

West Basin Municipan Water District

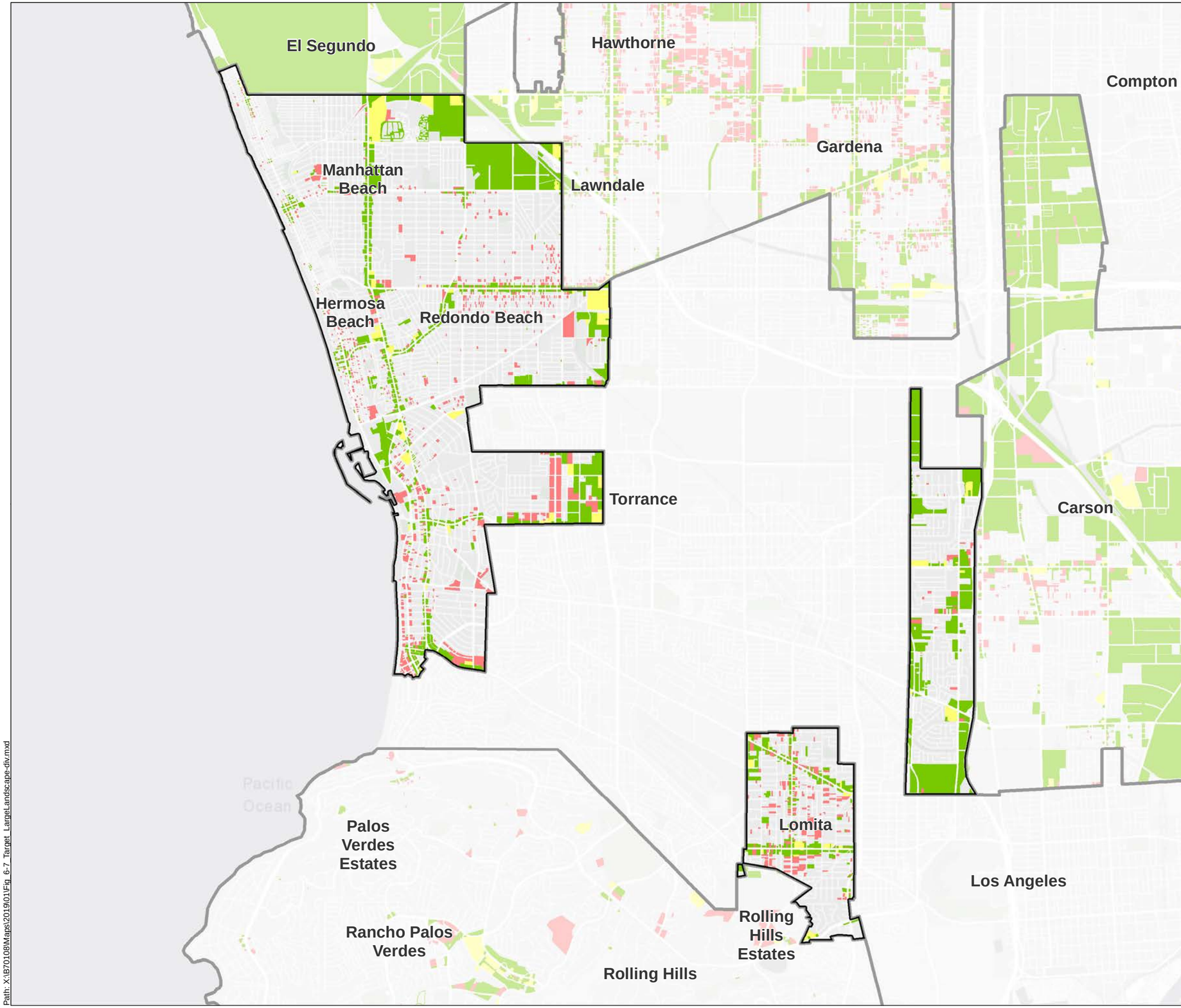
January 2019

EKI B70108.00

Figure 6-6 D3

eki environment & water

Path: X:\B70108\Maps\201901\Fig. 6-6_Target_IndoorRes.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High Priority
- Medium Priority
- Low Priority

Notes

1. All locations are approximate.
2. Parcels identified as high priority include multi-family residential parcels of five or more units and commercial, institutional, and industrial parcels associated with business types that typically have large landscapes. A detailed list of business types and the desginated priorty is provided in the text.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Target Opportunities for Large Landscape WUE Programs Division 3

West Basin Municipal Water District

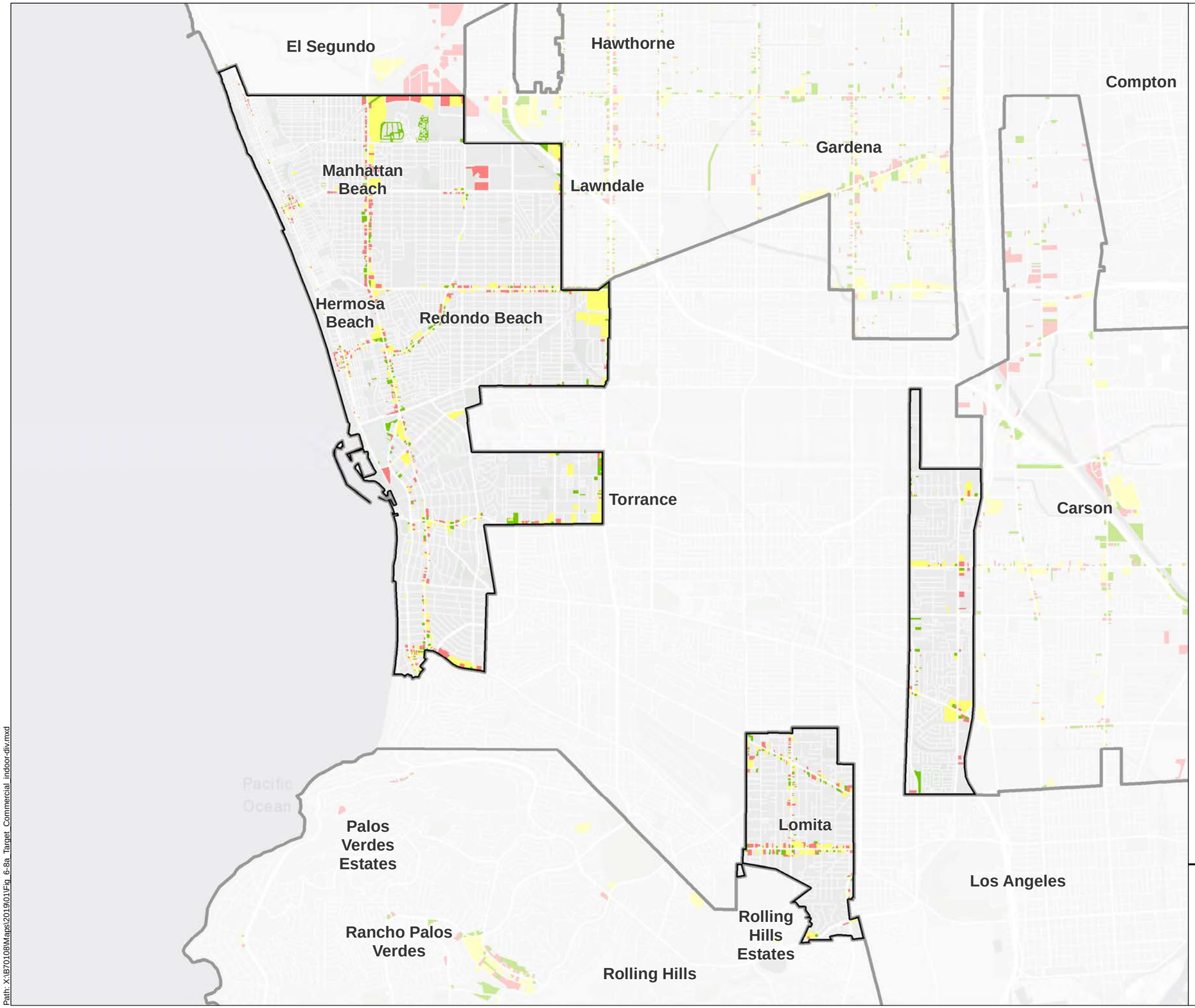
June 2019

EKI B70108.00

Figure 6-7 D3

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig 6-7 Target LargeLandscape-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Commercial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use. For purposes of this assessment, land uses classified as "recreational" are included with commercial land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Commercial WUE Programs Division 3

West Basin Municipal Water District

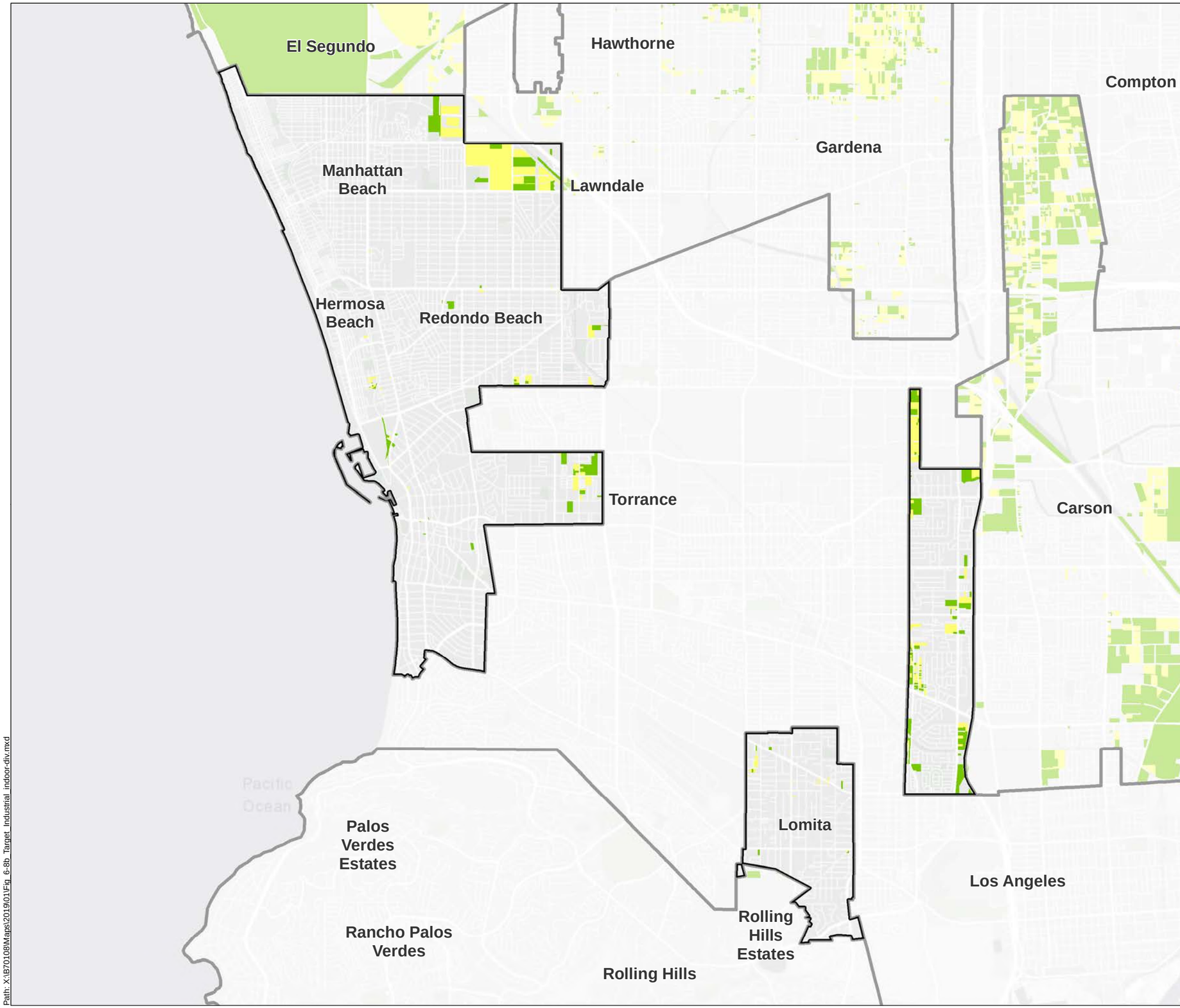
June 2019

EKI B70108.00

Figure 6-8a D3

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig 6-8a_Target_Commercial_indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

Medium

Low

Notes

1. All locations are approximate.
2. Industrial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Industrial WUE Programs Division 3

West Basin Municipal Water District

June 2019

EKI B70108.00

Figure 6-8b D3

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_6-8b_Target_Industrial_indoor-div.mxd

Legend

West Basin Director Division Boundaries

Outreach Priority

High

Medium

Notes

1. All locations are approximate.
2. Institutional land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Institutional WUE Programs Division 3

West Basin Municipal Water District

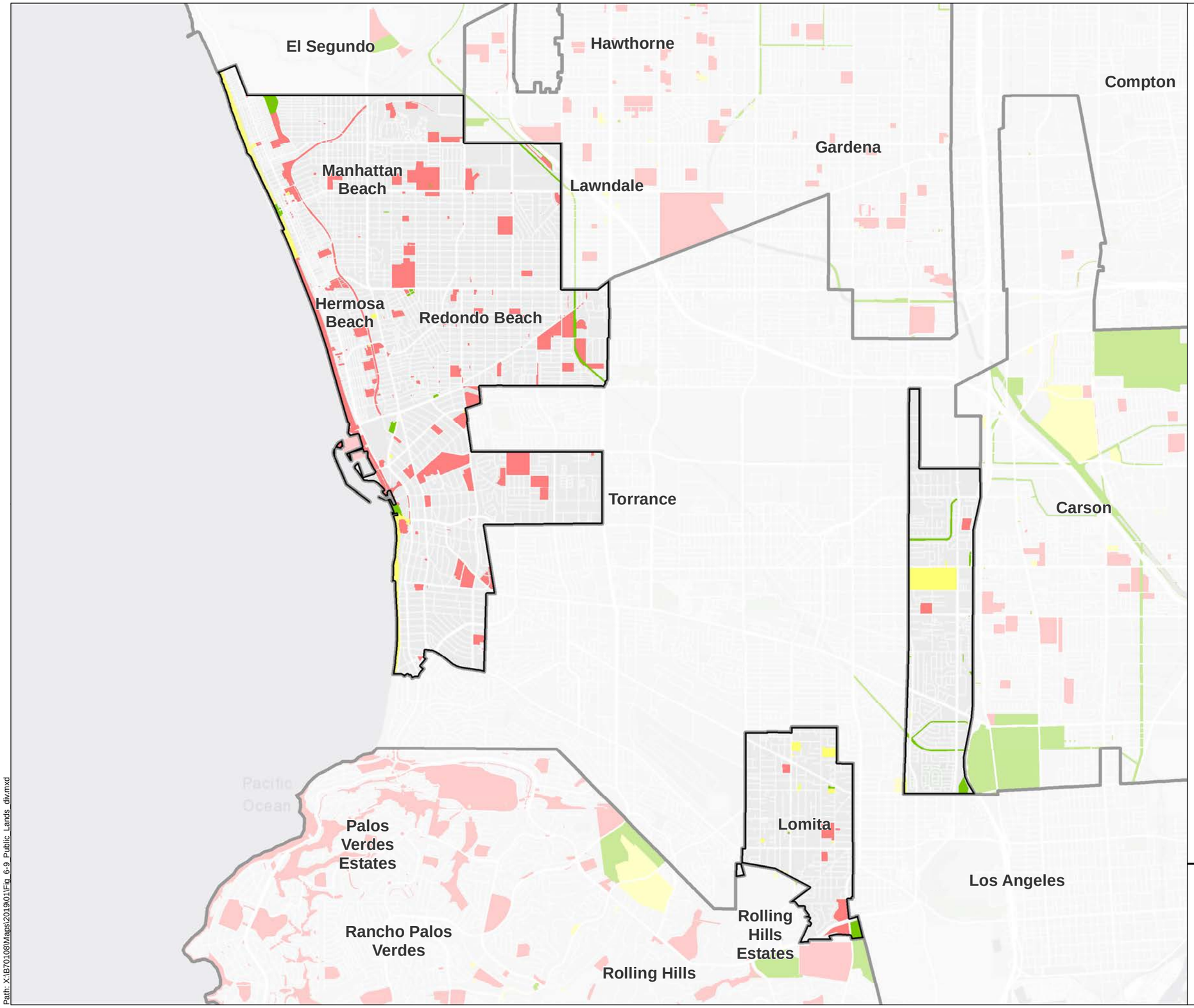
June 2019

EKI B70108.00

Figure 6-8c D3

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_6-8c_Target_Institional_indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Public agencies are qualitatively ranked for priority for water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative size of facilities owned by agency.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Los Angeles County, 2018. "Assessor - Publicly Owned Parcels Listing," updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1 2

(Scale in Miles)

Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties Division 3

West Basin Municipal Water District

June 2019

EKI B70108.00

Figure 6-9 D3

eki environment & water

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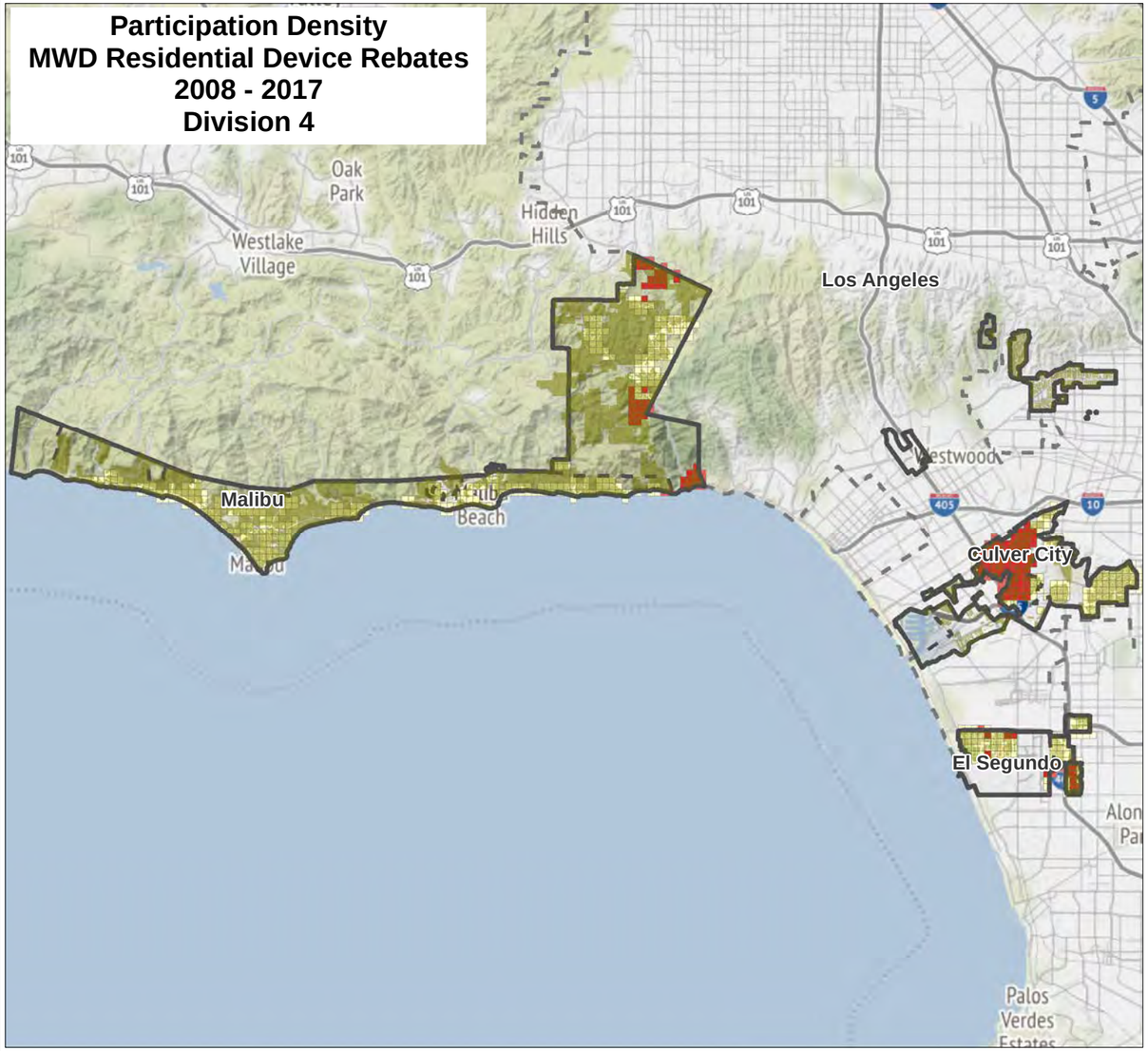
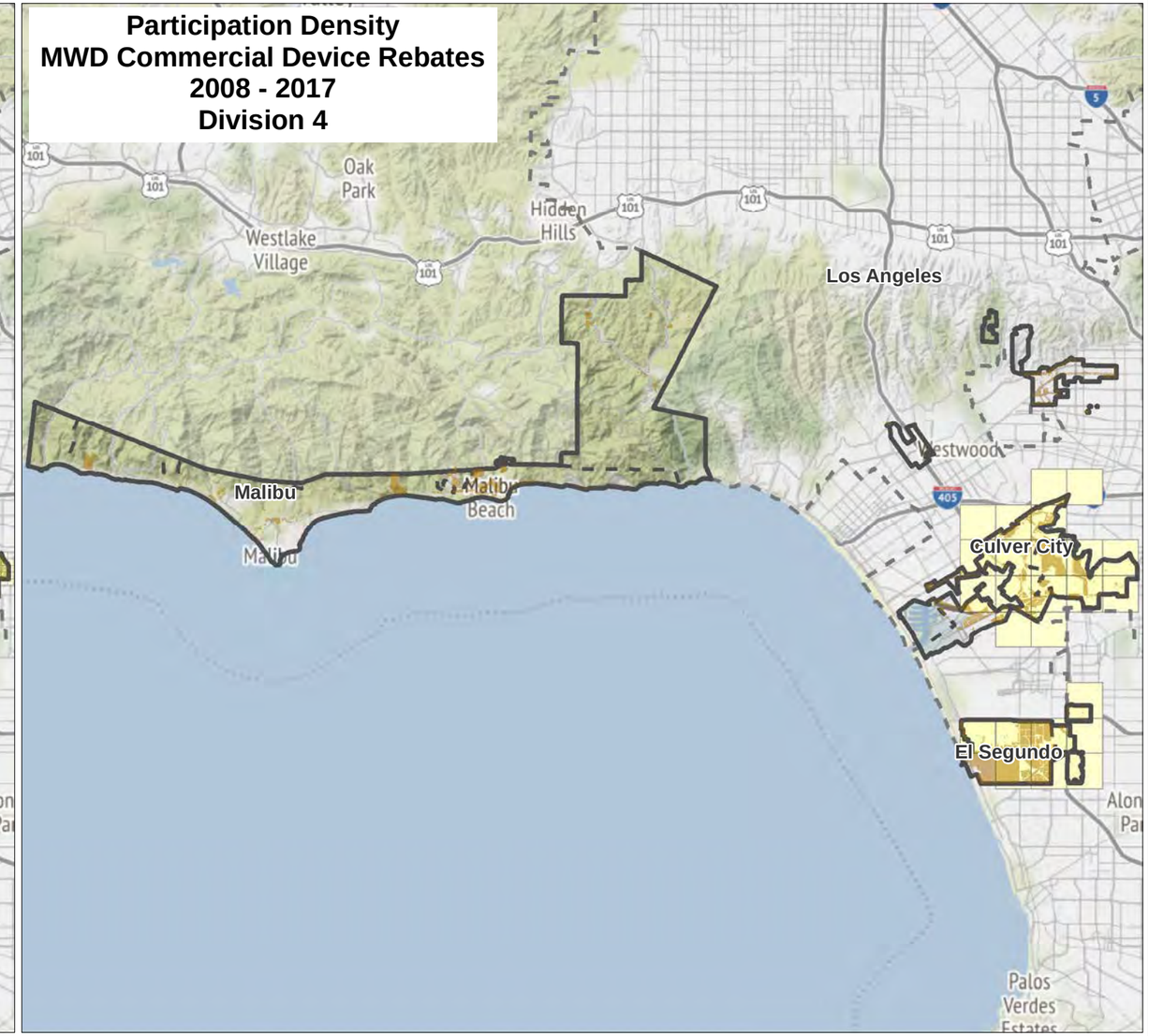
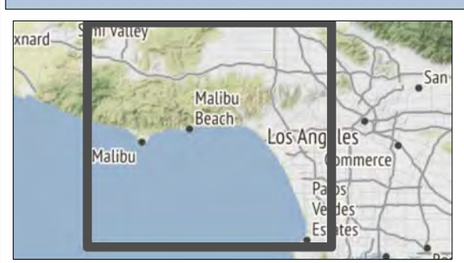
Division 4







Notes
1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources
1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

Legend

Participation Hot and Cold Spots
- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels
- Commercial, Industrial, Institutional Parcels

N

0 4.5 9
Miles

Participation Density for MWD Device Rebate Program: Division 4

West Basin Municipal Water District
January 2019
EKI B70108.00

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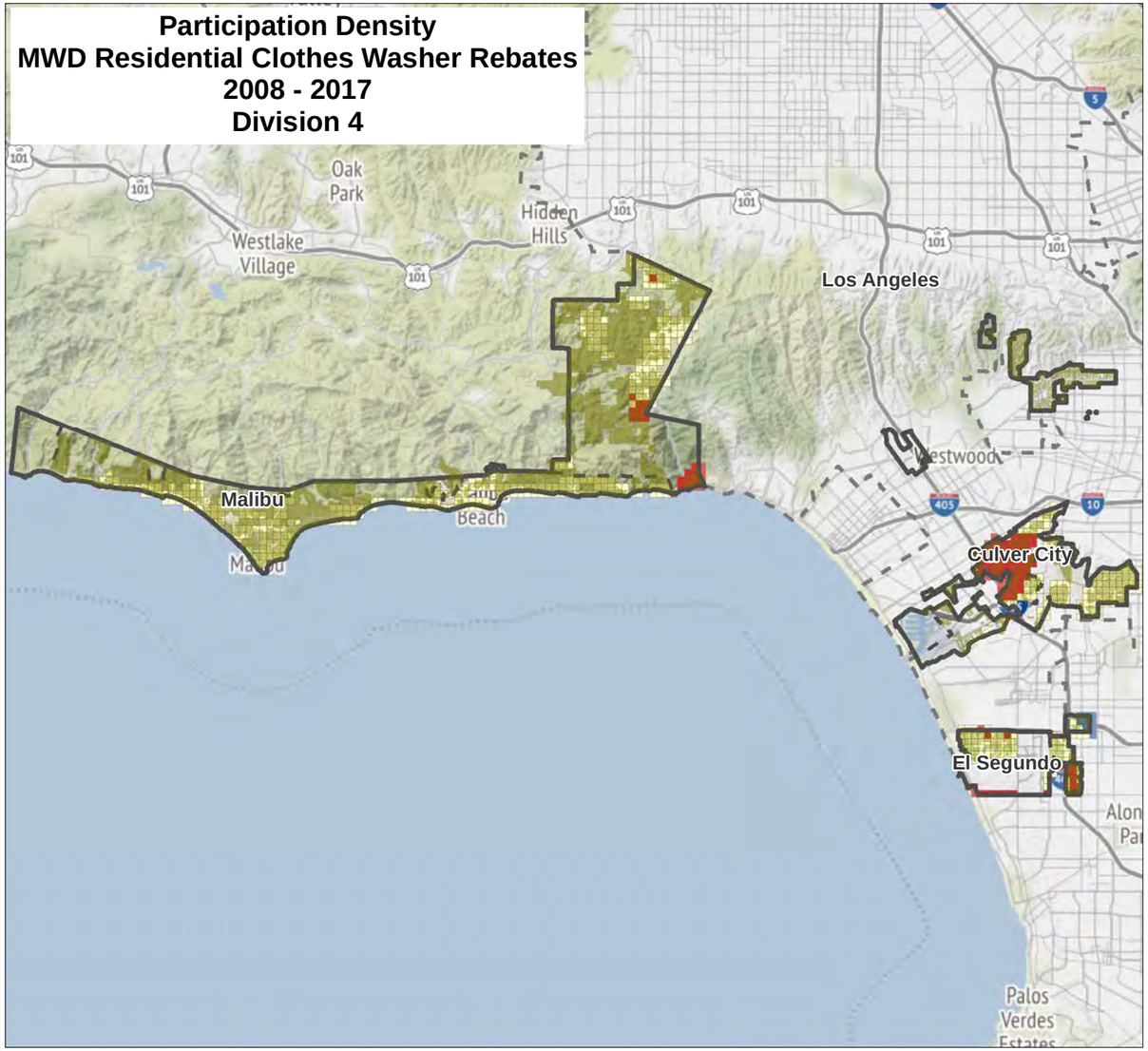
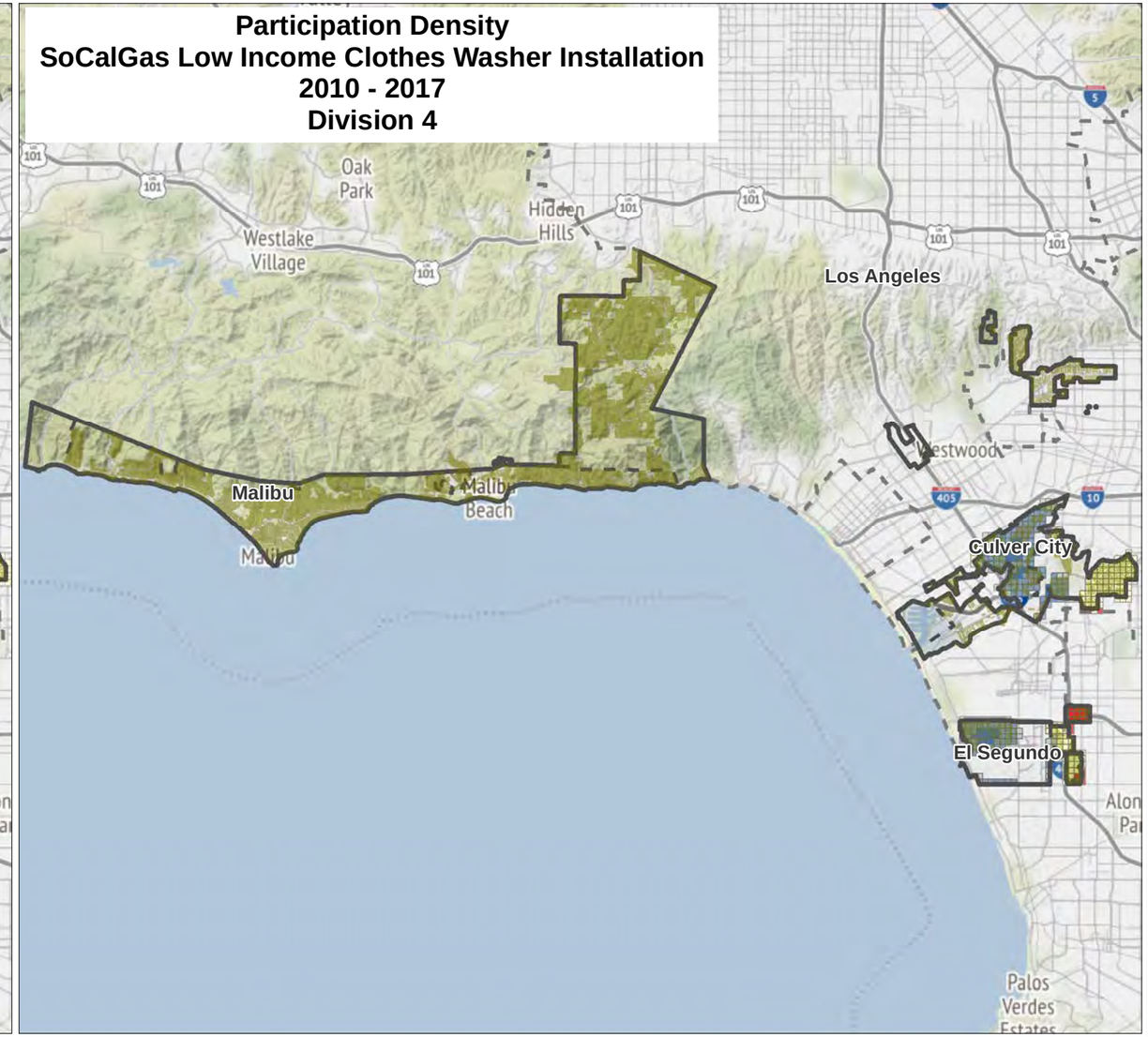
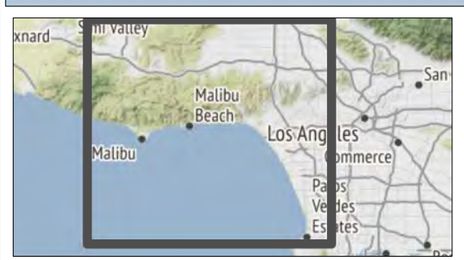
Figure 5-7 D4

Path: X:\B70108\Maps\2019\01\Fig_5-07_Cluster_MWDRebateD4.mxd







Notes
1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources
1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

Legend

Participation Hot and Cold Spots
- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels

N

0 4.5 9
Miles

Participation Density for Residential Clothes Washer Rebate and Installation Programs: Division 4

West Basin Municipal Water District
January 2019
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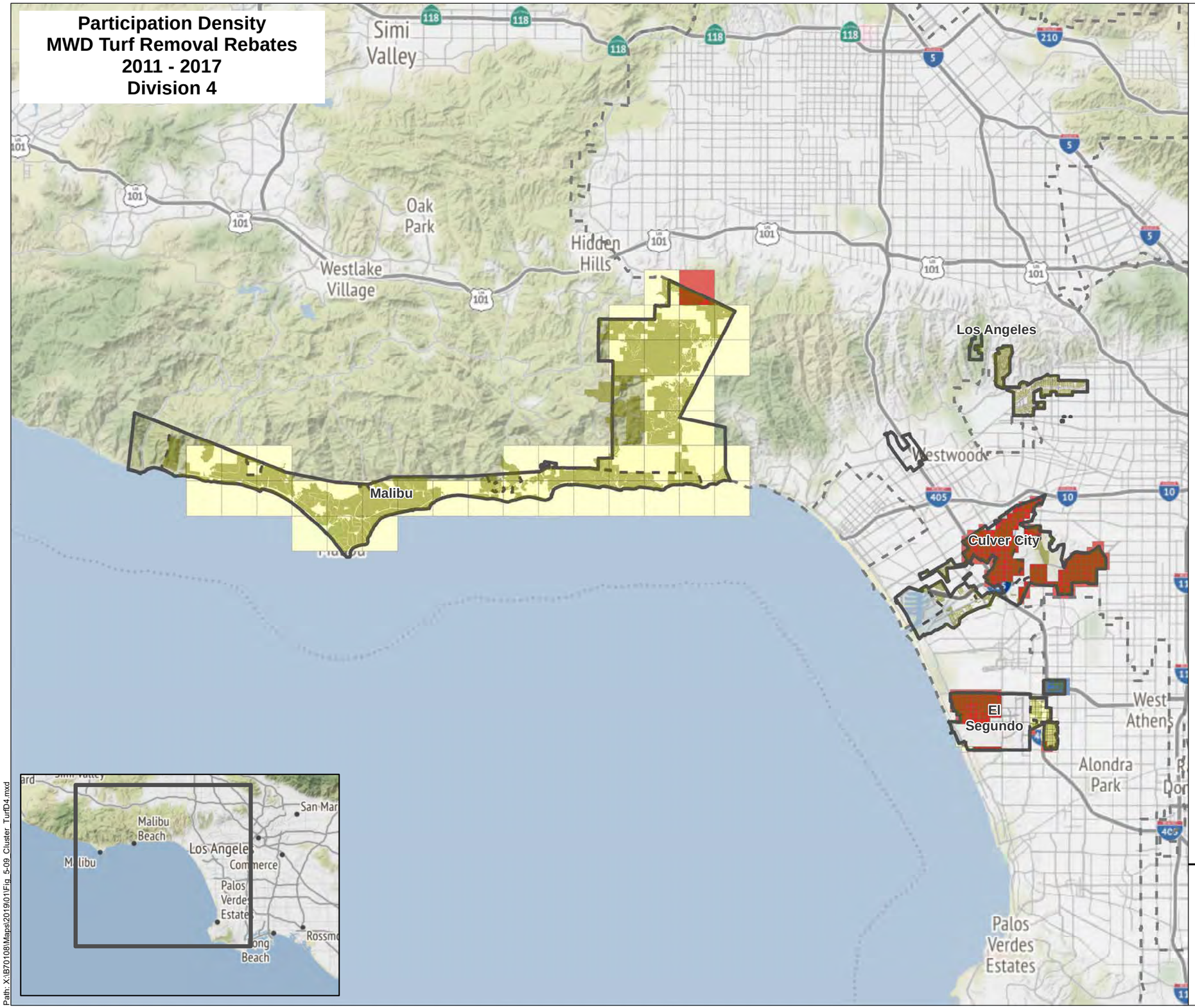
Figure 5-8 D4

Path: X:\B70108\Maps\2019\01\Fig_5-08_Cluster_ResWashersD4.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 3.5 7

(Scale in Miles)

Participation Density for Turf Removal Rebate Program: Division 4

West Basin Municipan Water District
January 2019
EKI B70108.00

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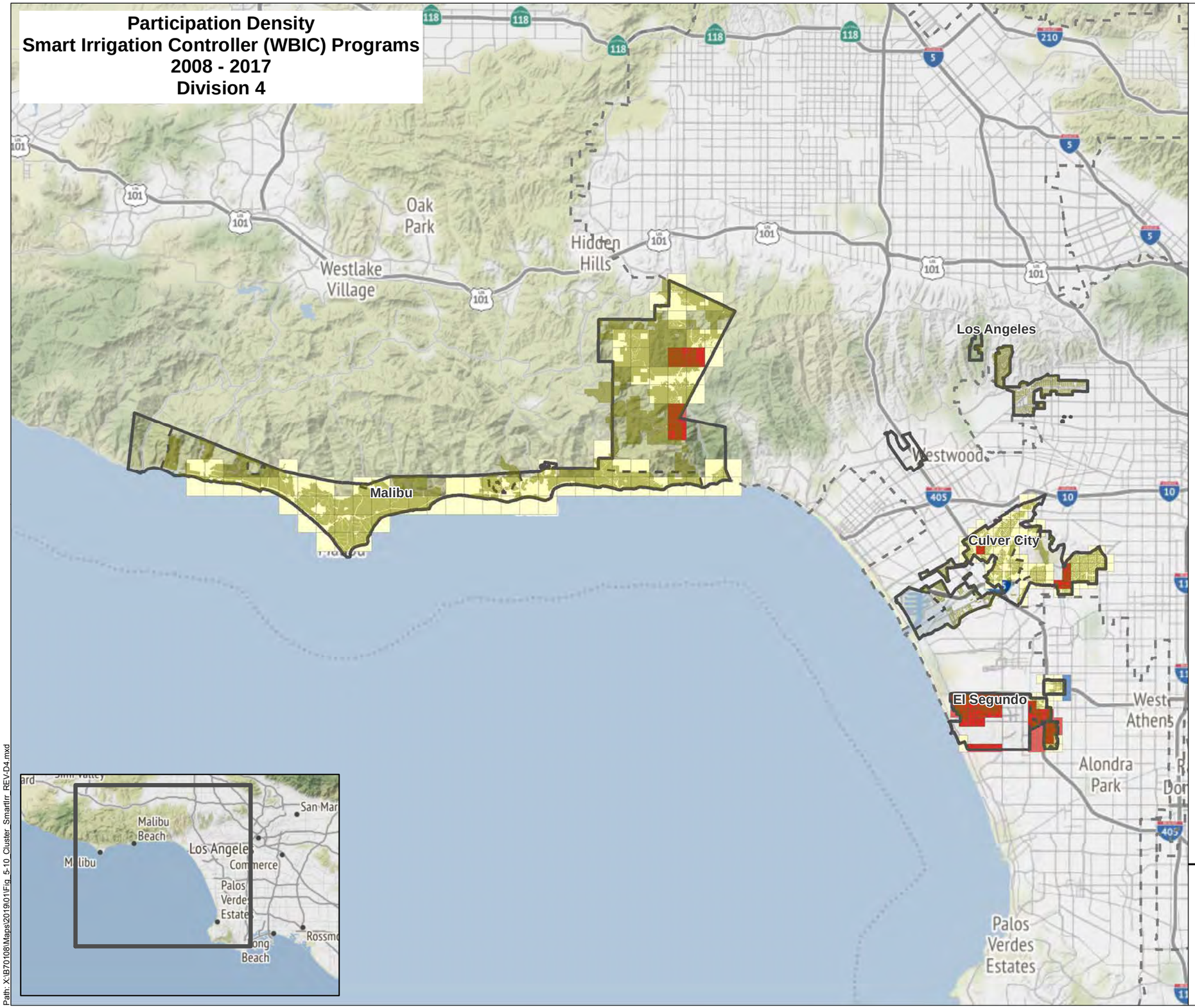
Figure 5-9 D4

Path: X:\B70108\Maps\2019\01\Fig_5-09_Cluster_TurfD4.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 3.5 7

(Scale in Miles)

Participation Density for Smart Irrigation Controller Programs: Division 4

West Basin Municipan Water District
January 2019
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Figure 5-10 D4

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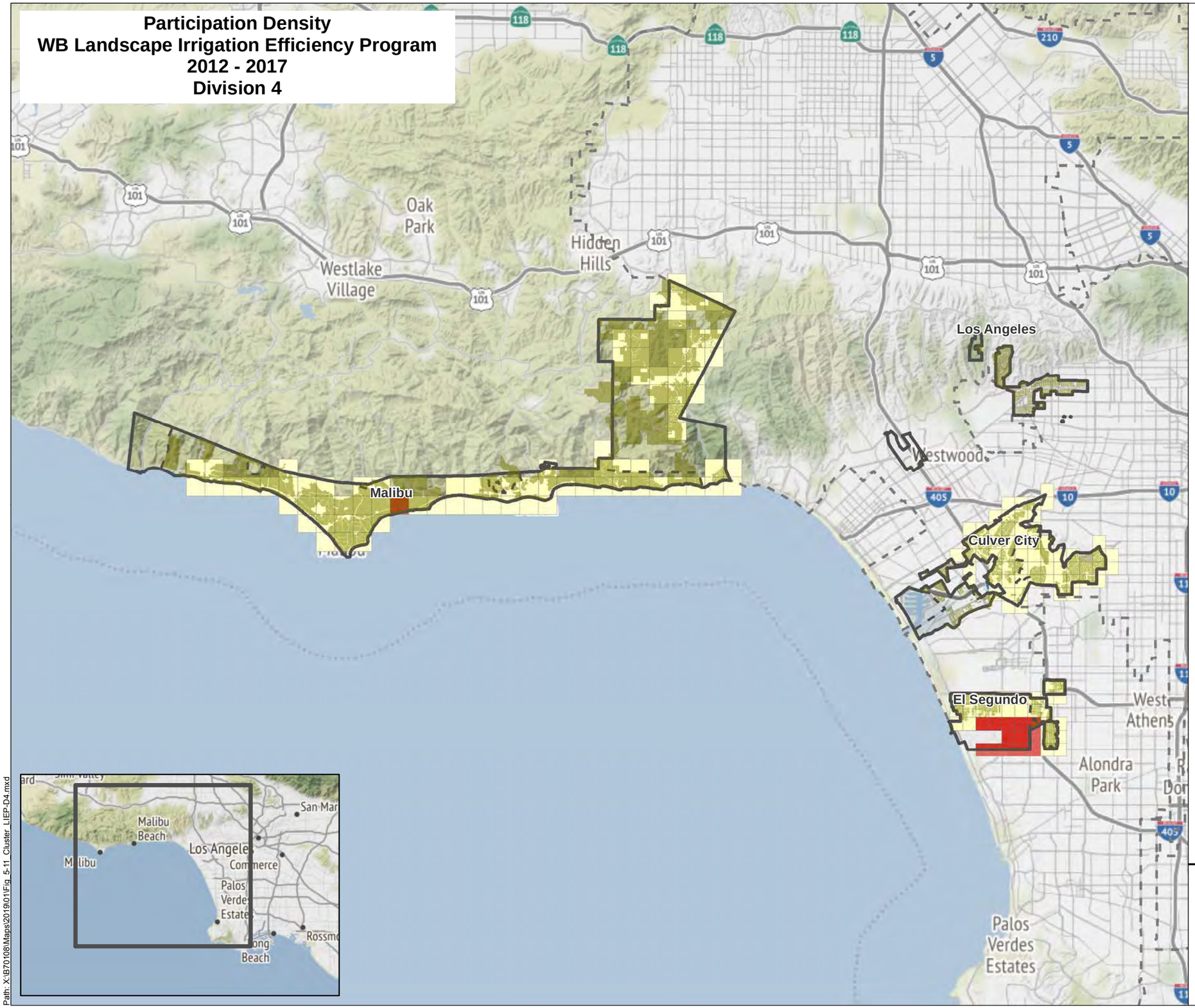
Path: X:\B70108\Maps\2019\011\Fig_5-10_Cluster_SmartIrr_REV-D4.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 3.5 7

(Scale in Miles)

Participation Density for Landscape Irrigation Efficiency Program (LIEP): Division 4

West Basin Municipan Water District
January 2019
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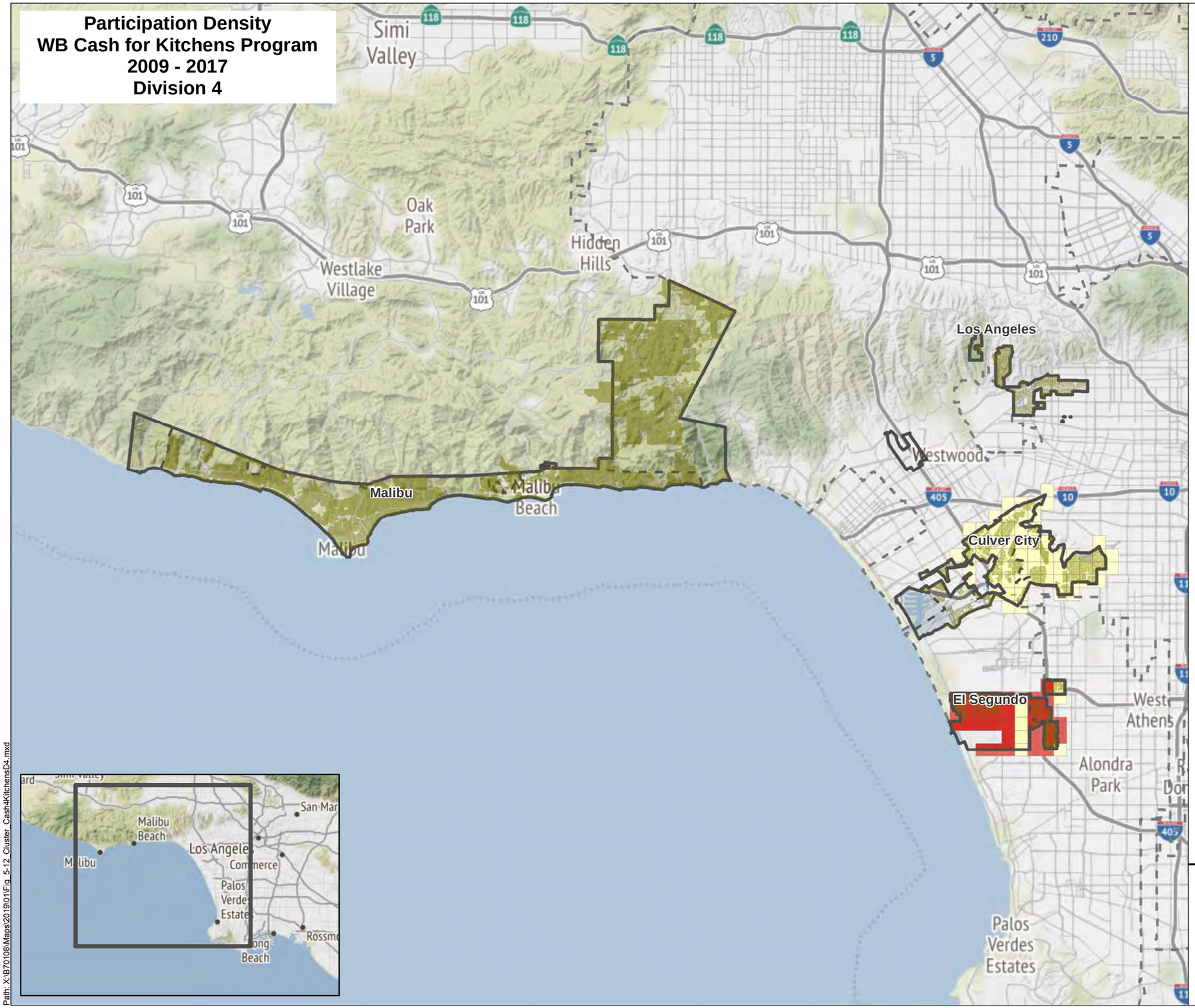
Figure 5-11 D4

Path: X:\B70108\Maps\2019\011\Fig_5-11_Cluster_LIEP-D4.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 3.5 7

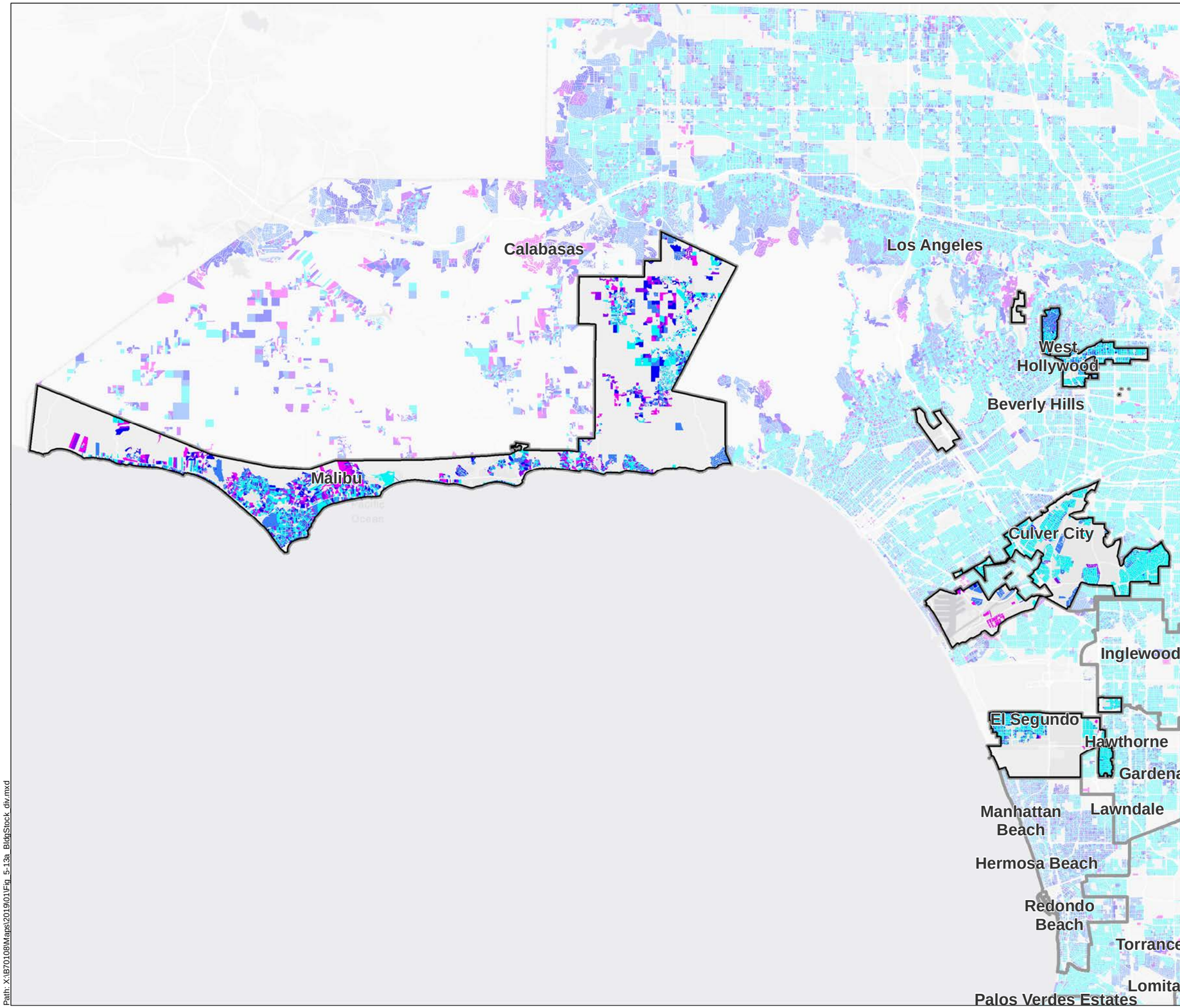
(Scale in Miles)

Participation Density for Cash For Kitchens Program: Division 4

West Basin Municipan Water District
January 2019
EKI B70108.00

Figure 5-12 D4

Path: X:\B70108\Maps\2019\011Fig_5-12_Cluster_Cash4KitchensD4.mxd



Legend

West Basin Director Division Boundaries

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6

(Scale in Miles)

Age of Building Stock - Residential
Division 4

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West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-13a D4

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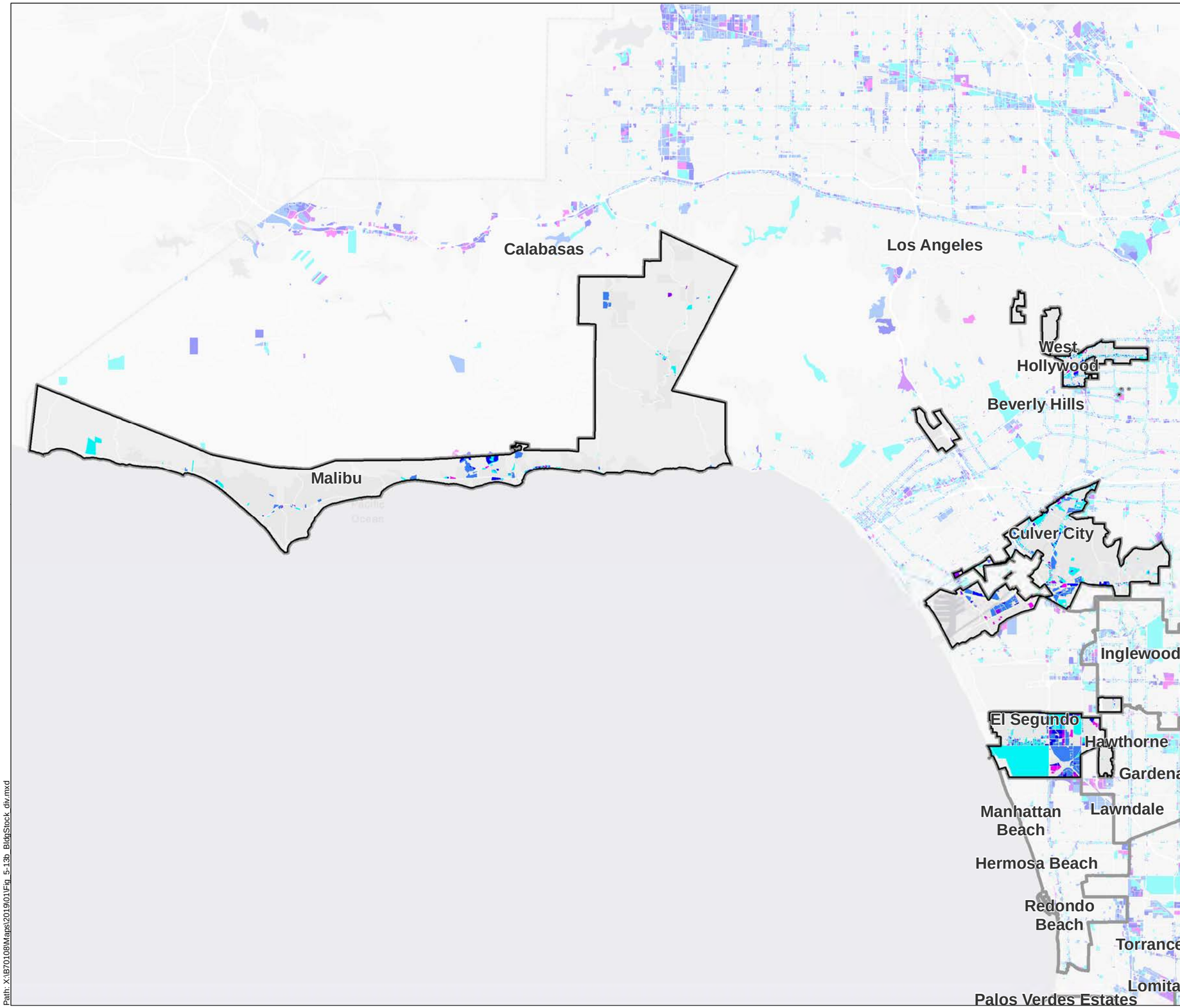

Legend

West Basin Director Division Boundaries

Date of Construction

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6

(Scale in Miles)

Age of Building Stock - CII
Division 4

West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-13b D4

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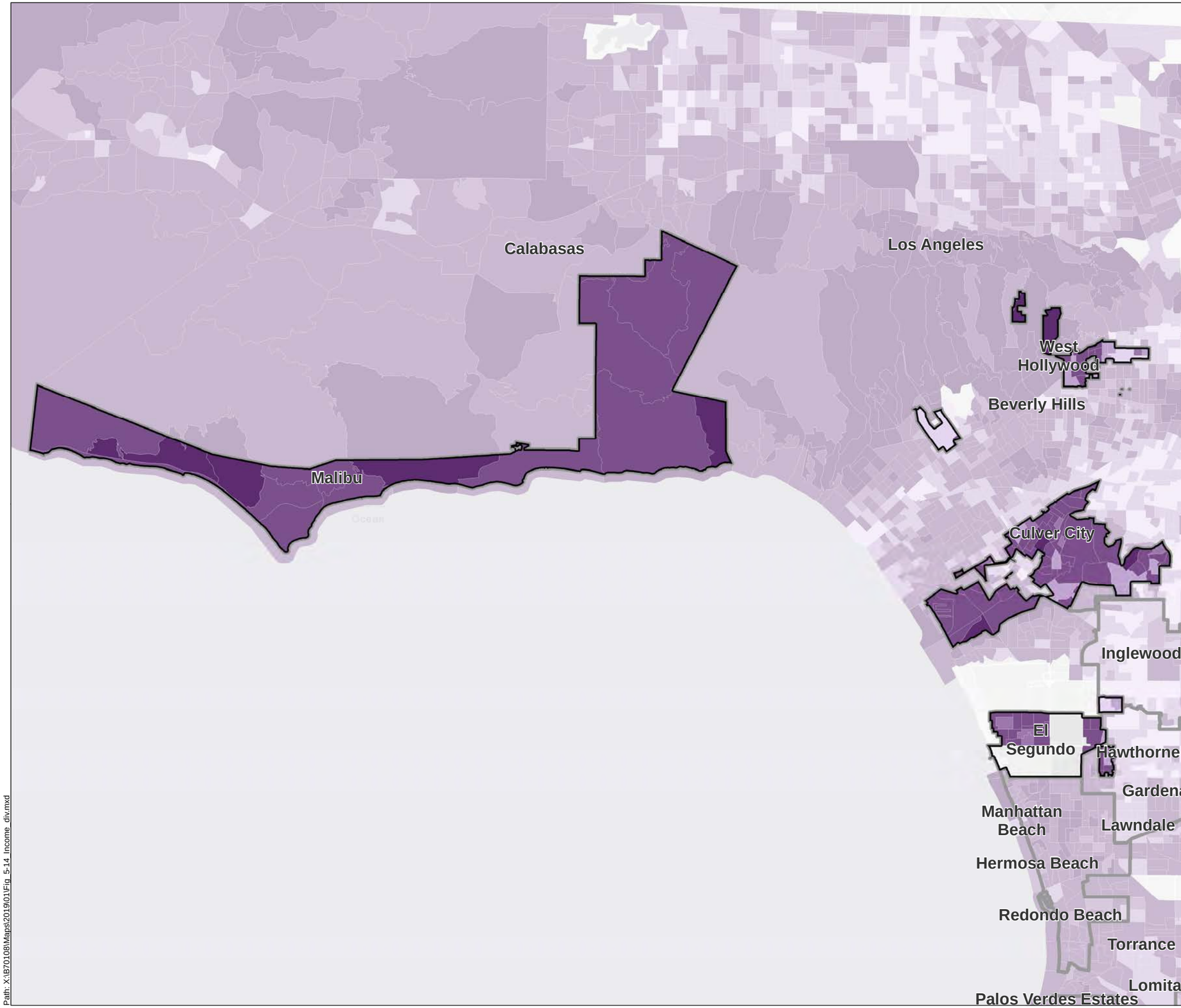

Legend

West Basin Director Division Boundaries

Household Median Income, Census

- Very Low <$38,450
- Low $38,451-$61,500
- Moderate $61,501-$70,000
- High $70,001 - $140,000
- Very High >$140,001

Notes

1. All locations are approximate.
2. Household income is based on estimated 2014 median household income by Census Block Group, per Census (2016). Income level groupings are based on California Department of Housing and Community Development ("HCD") income levels for Los Angeles County for a 3-person household in 2014 (HCD, 2014). Very high income is shown as greater than two times the Couinty-wide median household income.

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 3 6

(Scale in Miles)

Median Household Income
Division 4

West Basin Municipal Water District
June 2019
EKI B70108.00
Figure 5-14 D4

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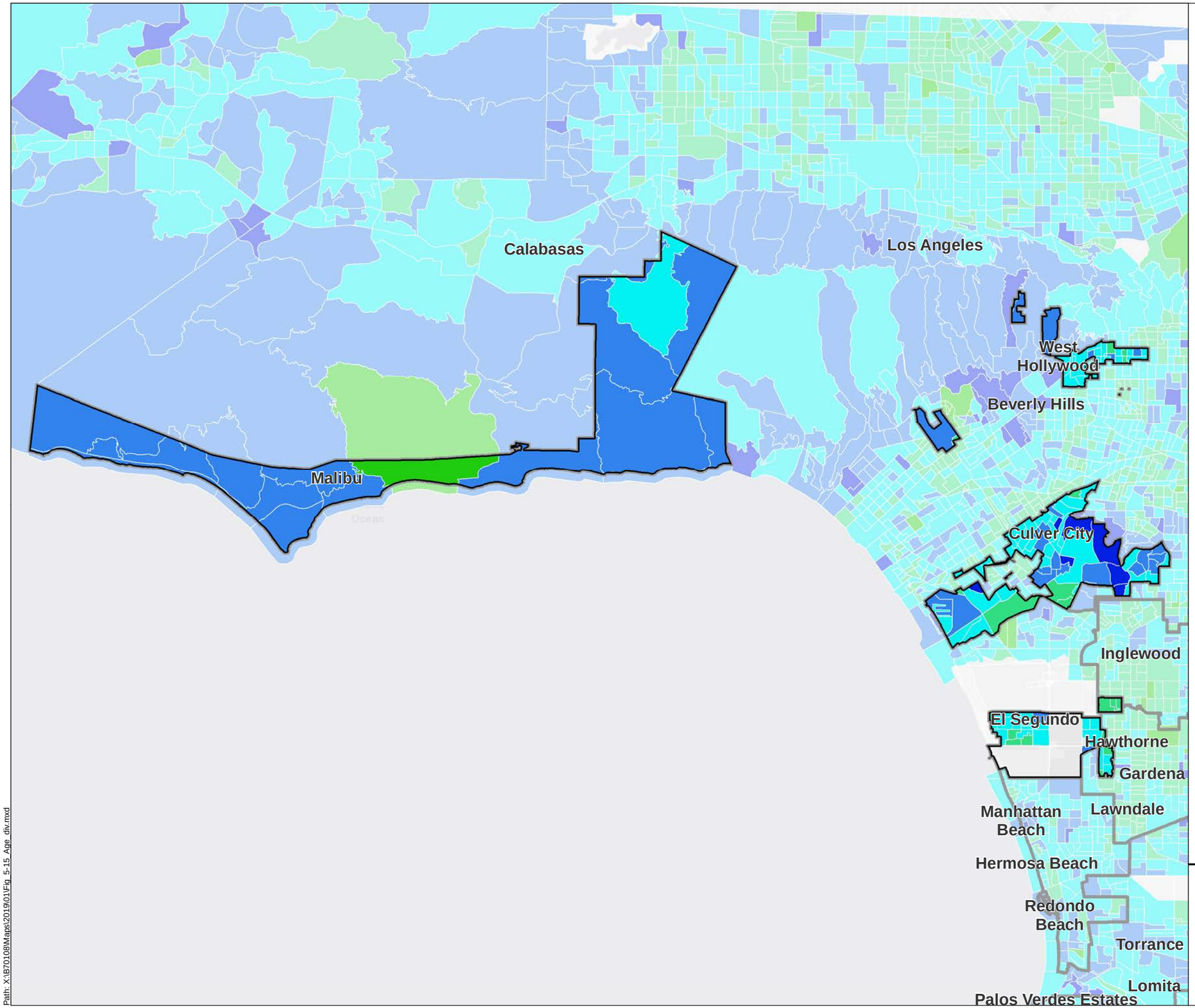
Path: X:\B70108\Maps\2019\01\Fig_5-14_Income_div.mxd



Legend

West Basin Director Division Boundaries

Median Household Age by Census Block Group

- <25
- 25-35
- 35-45
- 45-55
- >55

Notes

1. All locations are approximate.
2. Household age is based on the estimated 2014 median age of household members by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 3 6

(Scale in Miles)

Median Household Age
Division 4

West Basin Municipal Water District
June 2019
EKI B70108.00

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Figure 5-15 D4

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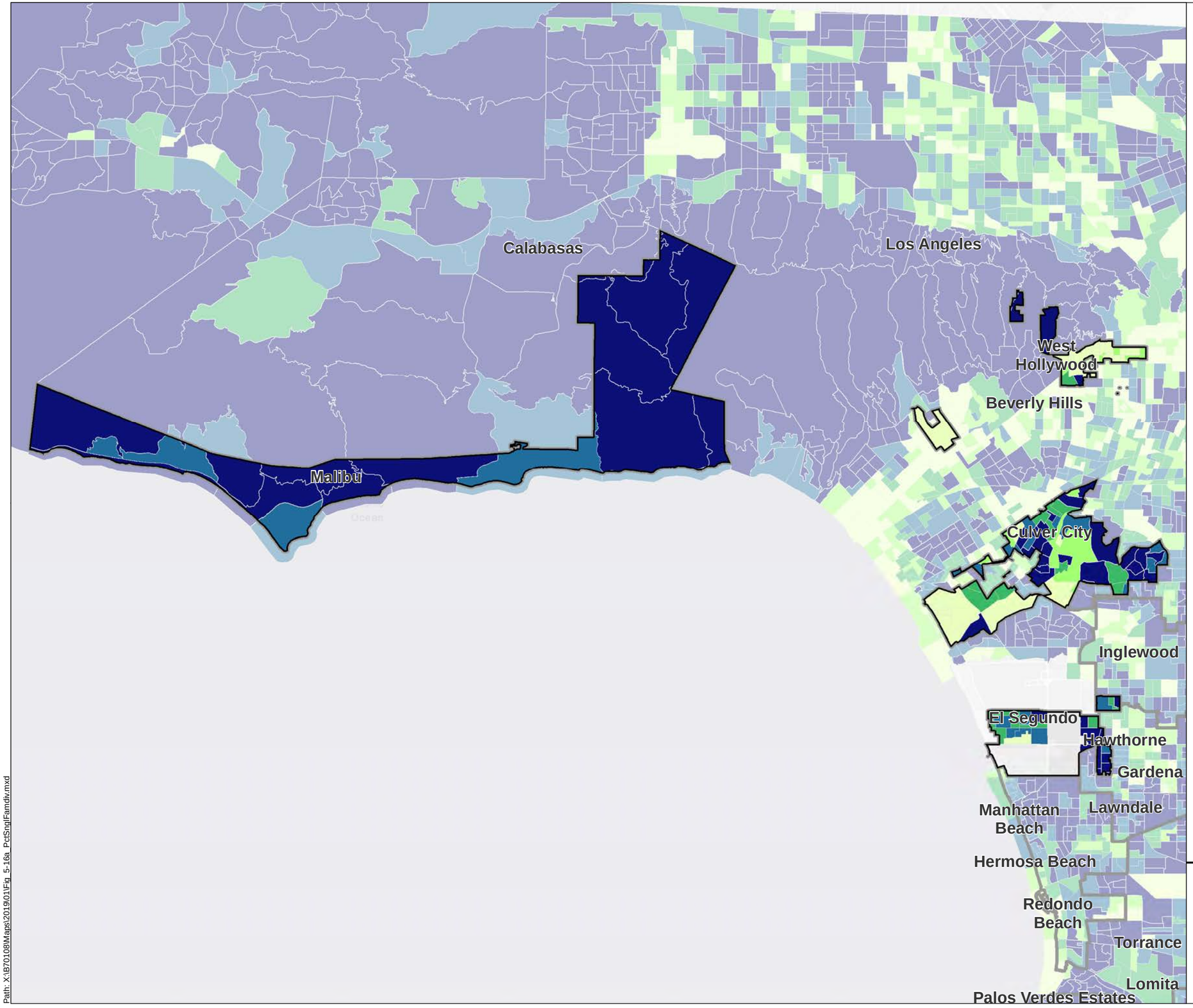

Legend

West Basin Director Division Boundaries

Percentage of Population in Single-Family Units

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in single-family homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 3 6

(Scale in Miles)

Percentage of Population in Single-Family Homes Division 4

West Basin Municipal Water District
June 2019
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Figure 5-16a D4

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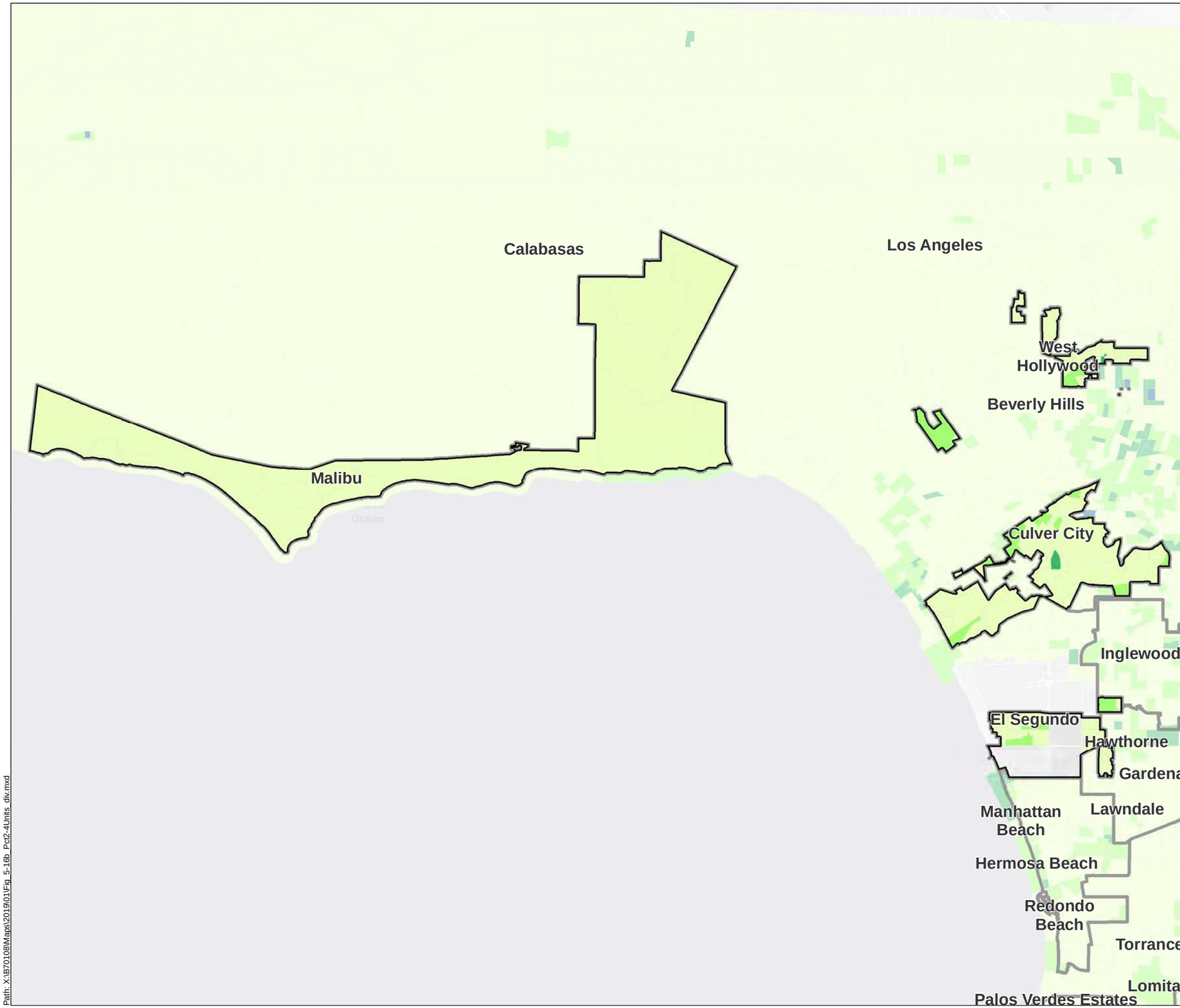

Legend

West Basin Director Division Boundaries

Percentage of Population in 2-4 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%

Notes

1. All locations are approximate.
2. Percentage of population in multi-family housing consisting of 2 to 4 units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 3 6

(Scale in Miles)

Percentage of Population in Multi-Family Homes (2-4 Units) Division 4

West Basin Municipal Water District
June 2019
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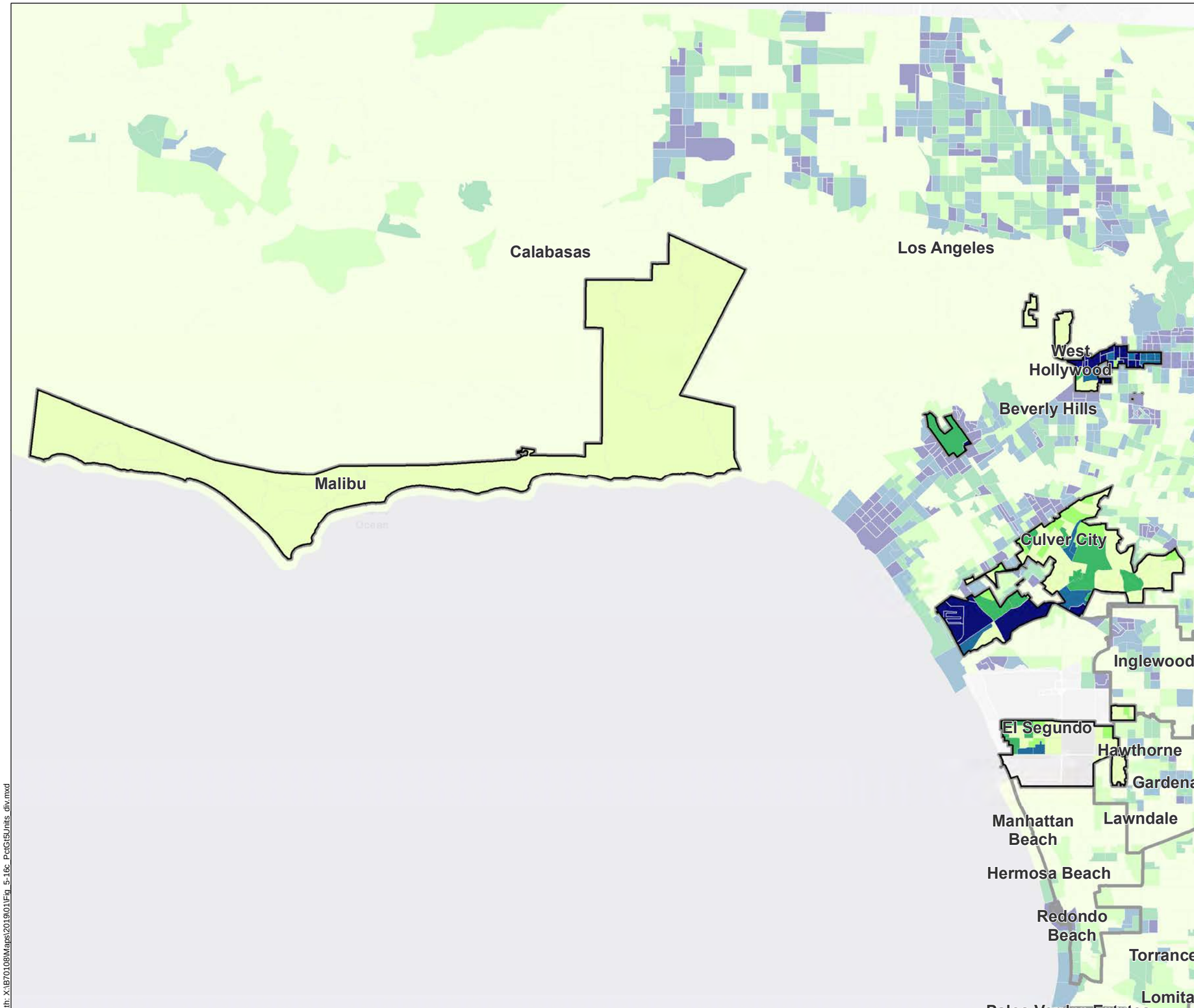
Figure 5-16b D4

Path: X:\B70108\Maps\2019\011\Fig_5-16b_Pct2-4Units_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in ≥5 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of 5 or more units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 3 6

(Scale in Miles)

Percentage of Population in Multi-Family Homes (≥5 Units) Division 4

West Basin Municipal Water District
June 2019
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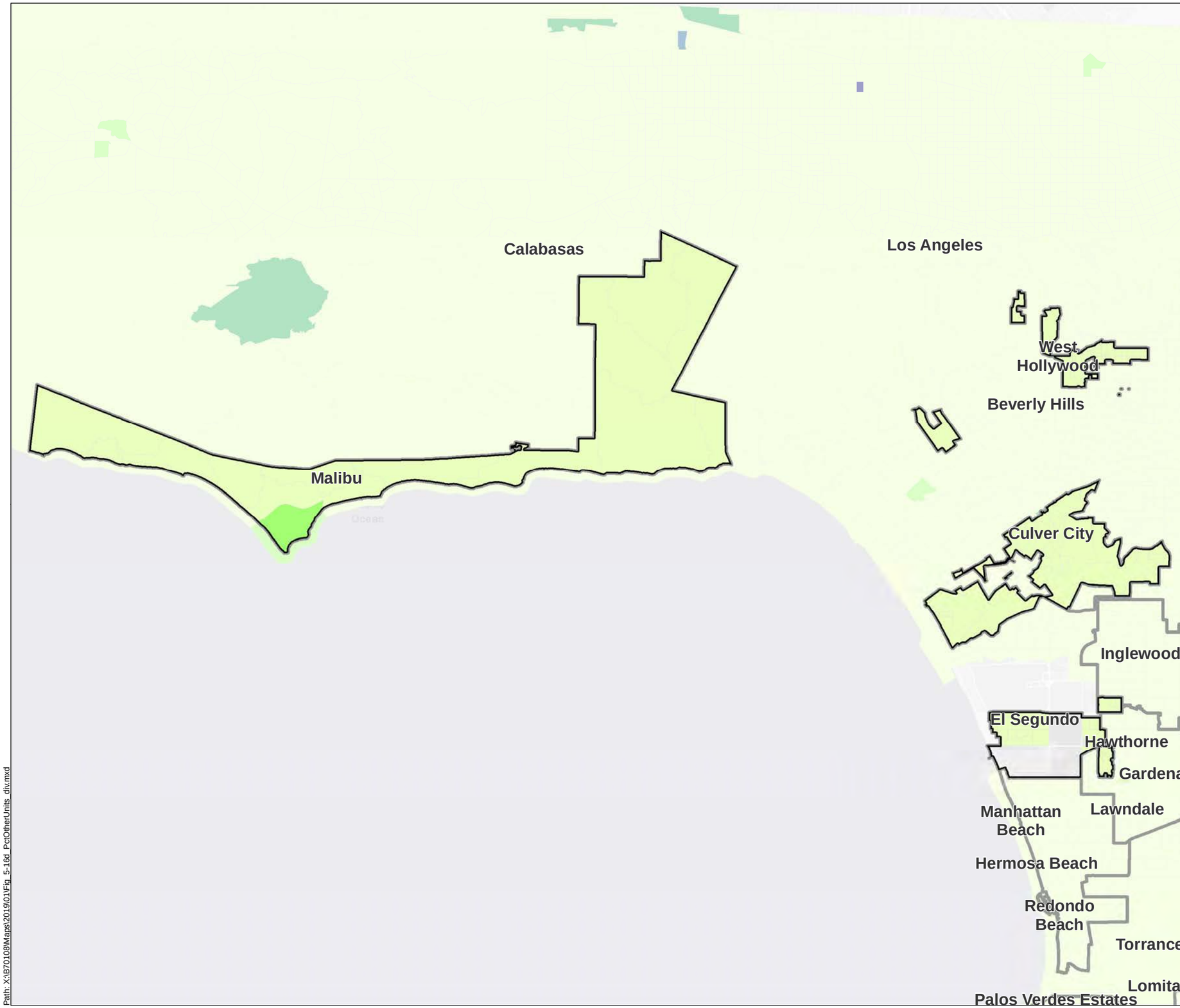
Figure 5-16c D4

Path: X:\B70108\Maps\2019\01\Fig 5-16c PctGt5Units div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in Mobile Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of mobile homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 3 6

(Scale in Miles)

Percentage of Population in Mobile Home Housing Division 4

West Basin Municipal Water District
June 2019
EKI B70108.00

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Figure 5-16d D4

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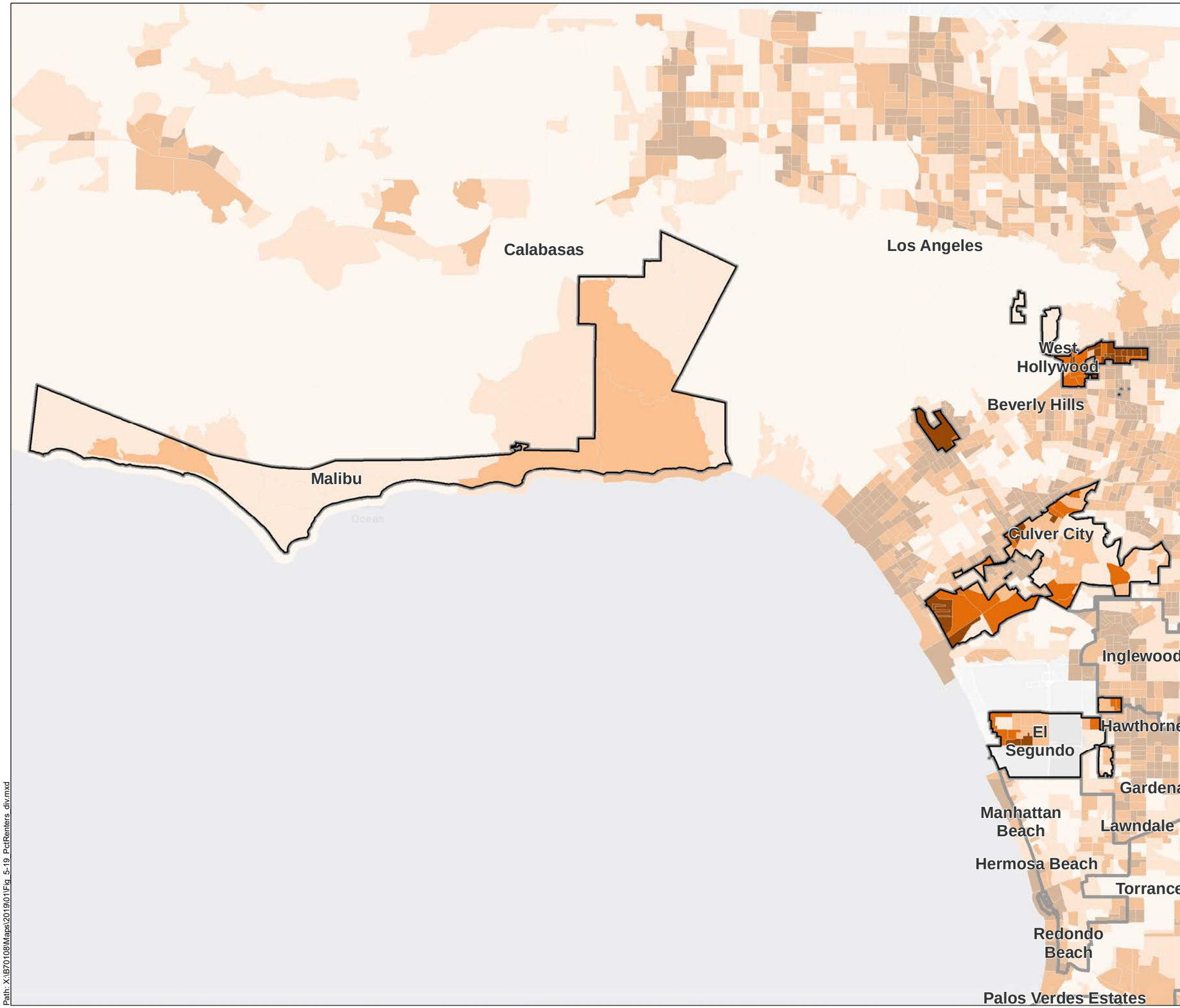

Legend

West Basin Director Division Boundaries

Percentage of Renters

- ≤25%
- 25.1% - 50%
- 50.1% - 75%
- ≥75%

Notes

1. All locations are approximate.
2. Percentage of renter-occupied housing units is based on the estimated 2014 number of renter-occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 3 6

(Scale in Miles)

Percentage of Renter-Occupied Housing Units Division 4

West Basin Municipan Water District
January 2019
EKI B70108.00
Figure 5-19 D4

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Path: X:\B70108\Maps\2019\01\Fig_5-19_PctRenters_div.mxd

Legend

West Basin Director Division Boundaries

Multi-Family Residential
- Multi-Family Residential - 2-4 Units
- Multi-Family Residential - 5+ Units
- Residential - Mobile Home/Other

Commercial
- Animal Kennel
- Auto Service Station
- Bank, Savings and Loan
- Car Sales/Service
- Car Wash
- Commercial Unknown/Miscellaneous
- Department or Warehouse Store
- Hotel and Motel
- Non-Auto Shop, Paint Shop, or Laundry
- Office Building
- Parking Lot/Structure
- Professional Building
- Restaurant
- Shopping Center
- Store
- Supermarket
- Wholesale and Manufacturing Outlet

Institutional
- Adult Care Facility
- Cemetery, Mausoleum
- Children's Day Care Center
- Church
- College, University
- Convalescent Hospital, Nursing Home
- Hospital
- Mortuary, Funeral Home
- Public School
- School (Private)

Industrial
- Cement, Rock and Gravel Plant
- Food Processing Plant
- Heavy Manufacturing
- Light Manufacturing
- Lumber Yard
- Other Mineral Processing
- Radio/Television Transmission Facility
- Warehousing, Distribution, Storage

Recreational
- Athletic/Amusement/Recreational Facility
- Golf Course
- Movie or Stage Theater
- Race Track
- Recreational Unknown/Miscellaneous

Miscellaneous
- Agriculture
- Other Unknown/Miscellaneous
- Petroleum and Gas Mining/Processing
- Utility/Rights of Way
- Wireless Communication Tower

Notes

1. All locations are approximate.
2. Land use type classifications are based by Assessor's parcel records.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6
(Scale in Miles)

CII Land Use Types within Division 4

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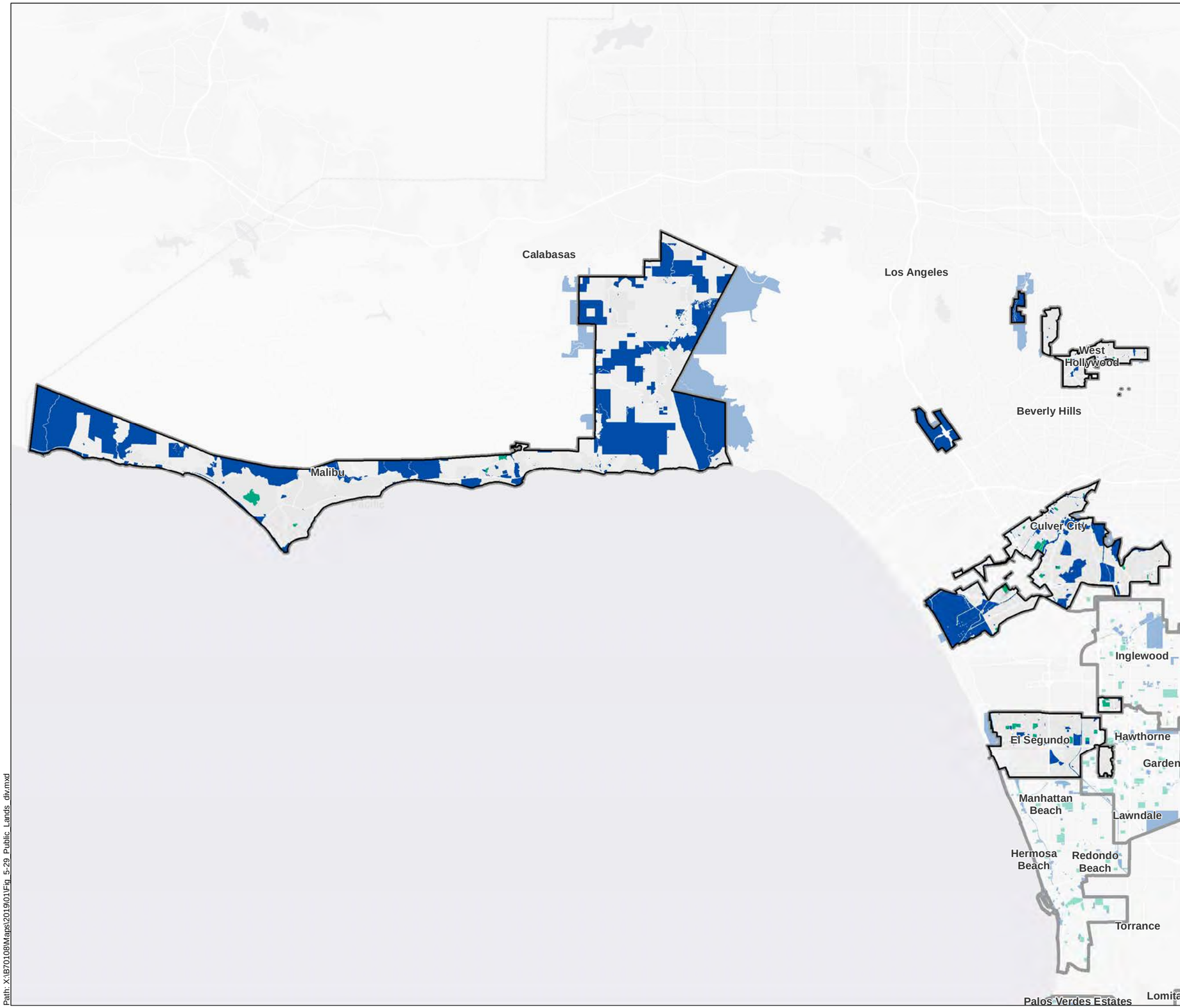
West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-28 D4

Path: X:\B70108\Maps\2019\01\Fig_5-28_CII_LandUse_div.mxd



Legend

- West Basin Director Division Boundaries
- Publicly Owned Parcels Designated as Schools
- Other Publicly Owned Parcels

Notes

1. All locations are approximate.
2. Parcels indicated as schools are based on the provided agency name. Publicly owned parcels include those owned by cities, the state, and other agencies, including but not limited to property used for offices, operations, parks, parking, etc.

Sources

1. Assessor - Publicly Owned Parcels Listing, updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 3 6

(Scale in Miles)

Publicly-Owned Lands within Division 4

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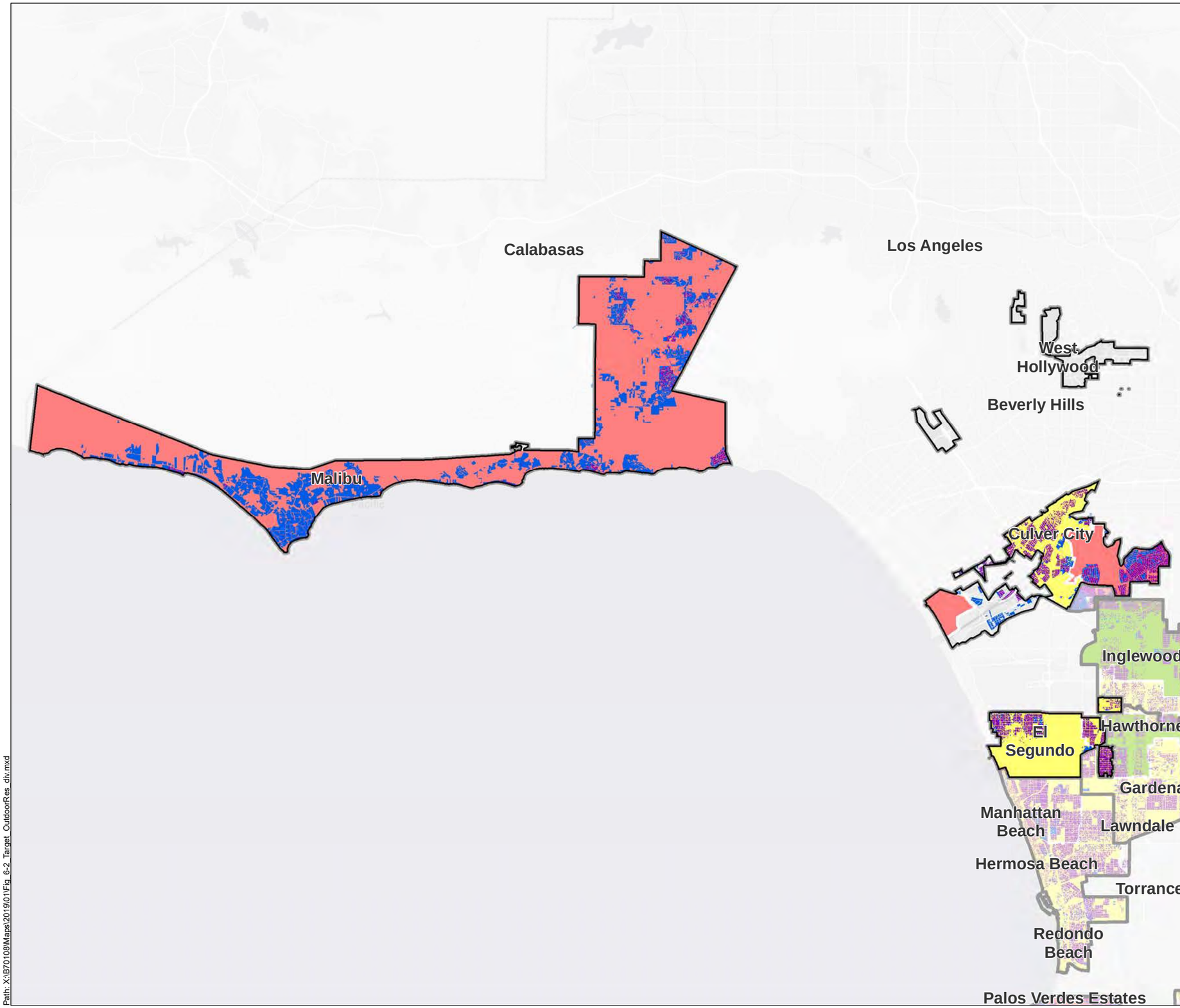
West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-29 D4

Path: X:\B70108\Maps\2019\011Fig 5-29 Public Lands div.mxd



Legend

West Basin Director Division Boundaries

Program Targeting

- Landscape Transformation Programs (≤9,000 sq ft lot)
- Irrigation Device Replacement Programs (>9,000 sq ft lot)

WUE Program Outreach Priority

- Low (≤20% Outdoor Water Use)
- Medium (20-40% Outdoor Water Use)
- High (>40% Outdoor Water Use)

Notes

1. All locations are approximate.
2. West Basin potable water customer agencies are ranked for outdoor residential WUE program outreach priority based on the estimated percentage of outdoor water use within their service area.
3. The type of residentual outdoor WUE program for targeting is based on parcel lot size.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6

(Scale in Miles)

Target Opportunities for Single-Family Residential Outdoor WUE Programs Division 4

West Basin Municipan Water District

January 2019

EKI B70108.00

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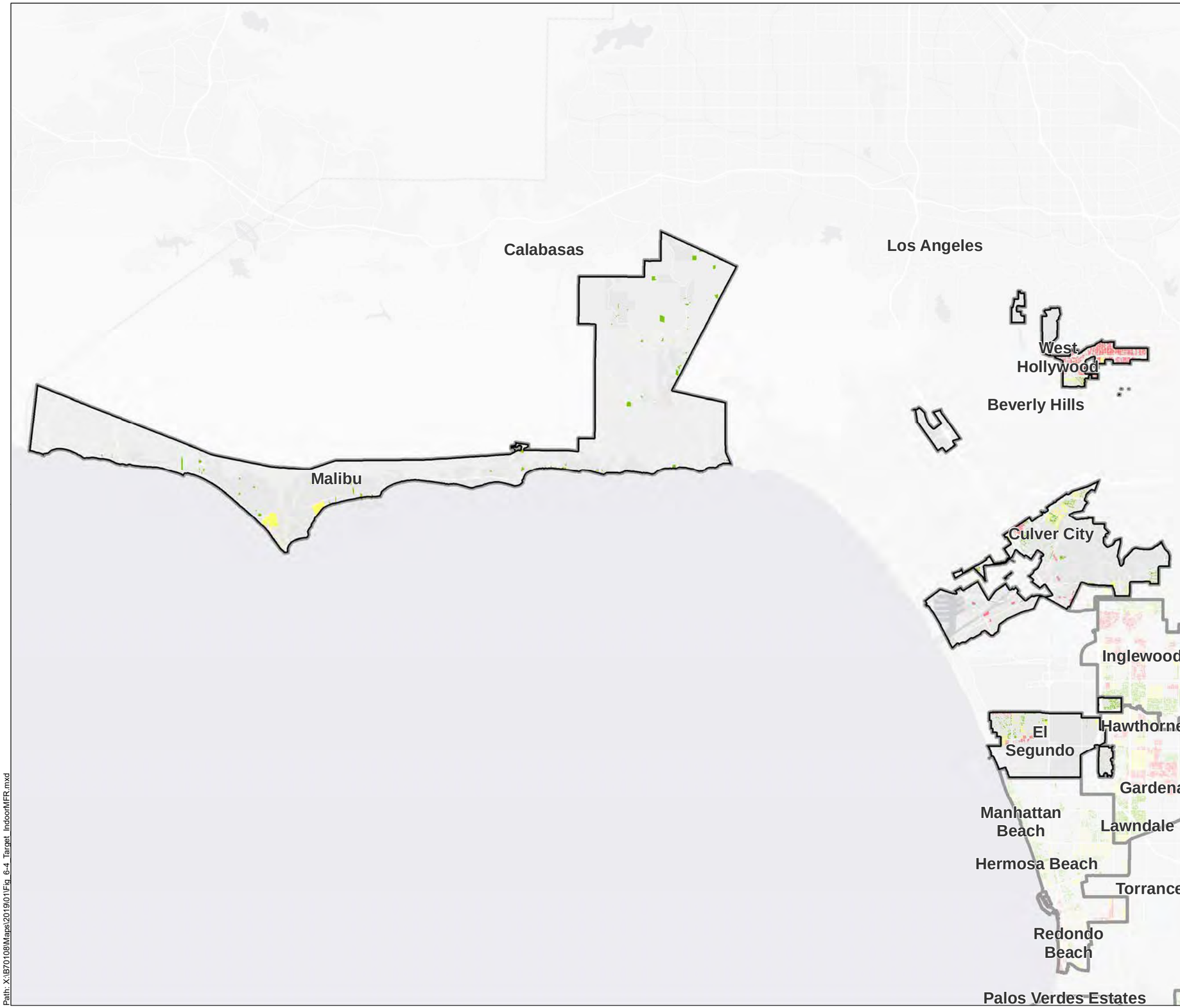
Figure 6-2 D4

Path: X:\B70108\Maps\2019\01\Fig_6-2_Target_OutdoorRes_div.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (≥50% Population in Multi-Family Housing)
- Medium (25-50% Population in Multi-Family Housing)
- Low (≤25% Population in Multi-Family Housing)

Notes

1. All locations are approximate.
2. Multi-family residential parcels are ranked for indoor residential WUE program outreach priority based on the proportion of an area's population that lives in multi-family residiental homes, based on Census block group. For purposes of this assessment, manufactured homes are considered to be multi-family.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 3 6

(Scale in Miles)

Target Opportunities for Multi-Family Residential Indoor WUE Programs Division 4

West Basin Municipan Water District

January 2019

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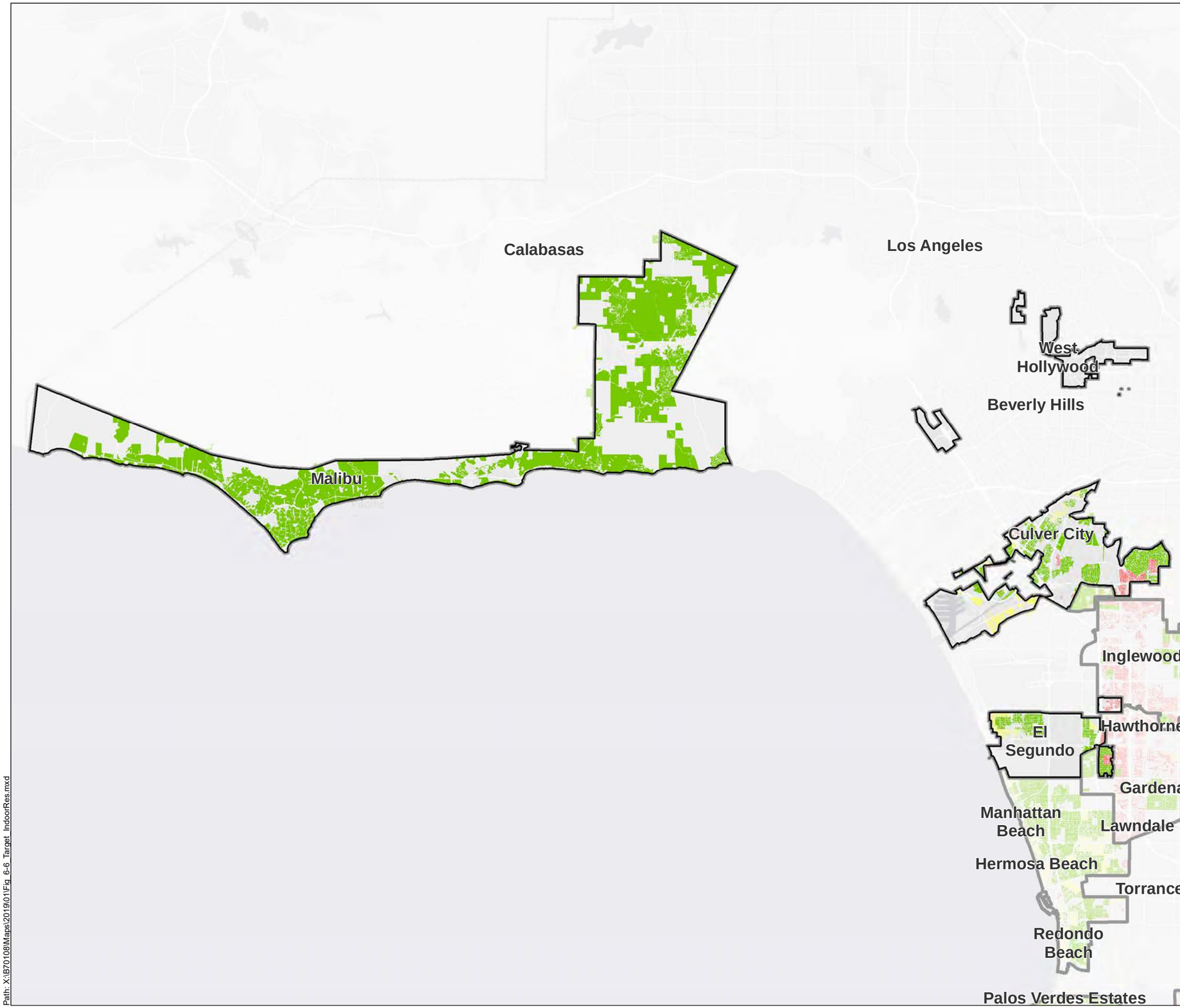
Figure 6-4 D4

Path: X:\B70108\Maps\2019\01\Fig_6-4_Target_IndoorMFR.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (Low Income)
- Medium (≥50% Renter Population)
- Low (Moderate to High Income, <50% Renter Population)

Notes

1. All locations are approximate.
2. Single-family residential parcels are ranked for indoor residential WUE program outreach priority based on median household income and percentage of population that rents their home.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 3 6

(Scale in Miles)

Target Opportunities for Single-Family Residential Indoor WUE Programs Division 4

West Basin Municipan Water District

January 2019

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Figure 6-6 D4

Path: X:\B70108\Maps\2019\01\Fig_6-6_Target_IndoorRes.mxd

Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High Priority
- Medium Priority
- Low Priority

Notes

1. All locations are approximate.
2. Parcels identified as high priority include multi-family residential parcels of five or more units and commercial, institutional, and industrial parcels associated with business types that typically have large landscapes. A detailed list of business types and the desginated priorty is provided in the text.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6

(Scale in Miles)

Target Opportunities for Large Landscape WUE Programs Division 4

West Basin Municipal Water District

June 2019

EKI B70108.00

Figure 6-7 D4

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Path: X:\B70108\Maps\2019\011\Fig_6-7_Target_LargeLandscape-div.mxd

Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Commercial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use. For purposes of this assessment, land uses classified as "recreational" are included with commercial land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6

(Scale in Miles)

WUE Outreach Opportunities for Indoor Commercial WUE Programs
Division 4

West Basin Municipal Water District
June 2019
EKI B70108.00

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Figure 6-8a D4

Path: X:\B70108\Maps\2019\011\Fig_6-8a_Target_Commercial_Indoor-div.mxd

Legend

West Basin Director Division Boundaries

Outreach Priority

Medium

Low

Notes

1. All locations are approximate.
2. Industrial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6

(Scale in Miles)

WUE Outreach Opportunities for Indoor Industrial WUE Programs Division 4

West Basin Municipal Water District

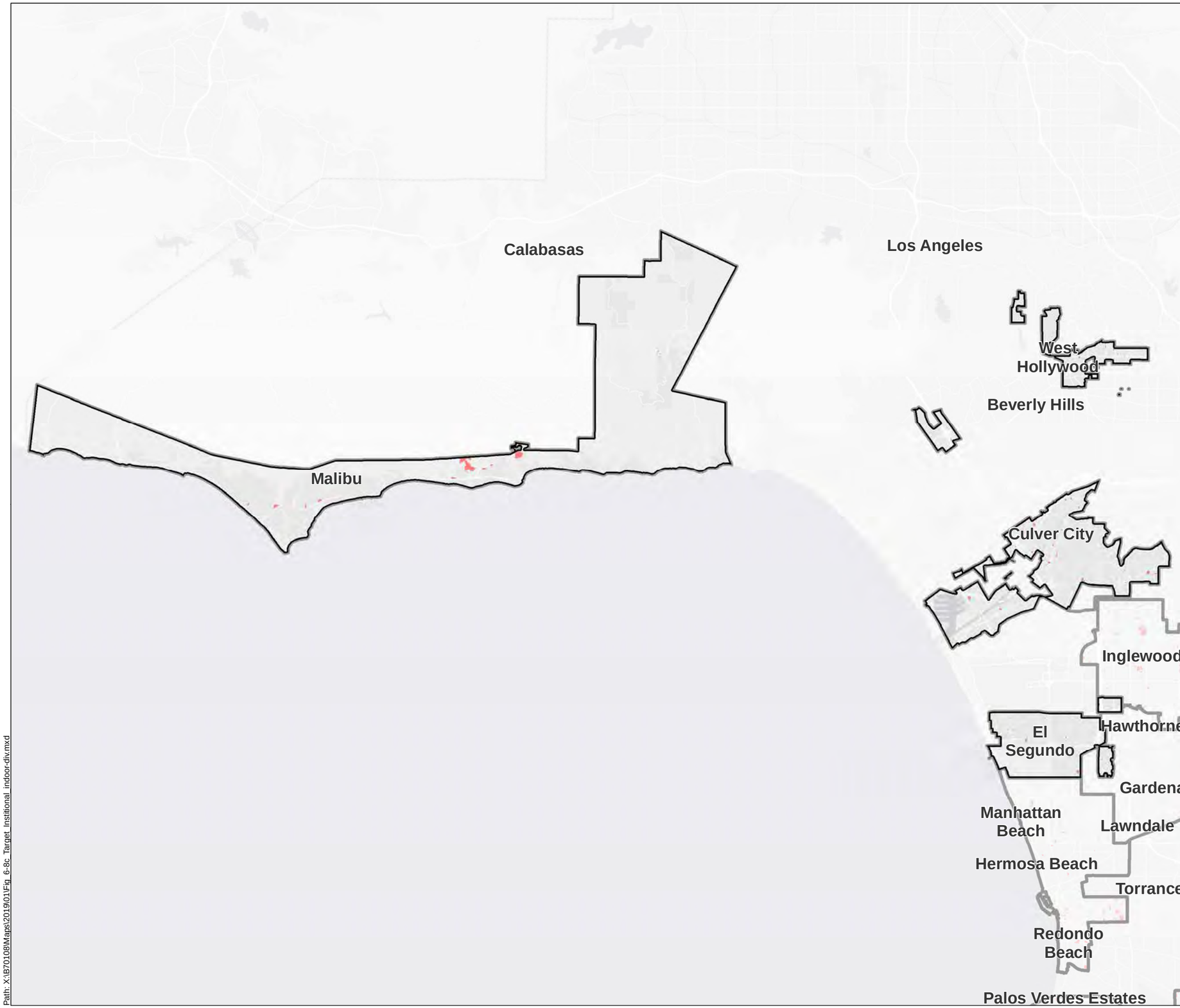
June 2019

EKI B70108.00

Figure 6-8b D4

eki environment & water

Path: X:\B70108\Maps\2019\011\Fig_6-8b_Target_Industrial_indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

High

Medium

Notes

1. All locations are approximate.
2. Institutional land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 3 6

(Scale in Miles)

WUE Outreach Opportunities for Indoor Institutional WUE Programs Division 4

West Basin Municipal Water District

June 2019

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Figure 6-8c D4

Path: X:\B70108\Maps\2019\011\Fig_6-8c_Target_Institional_indoor-div.mxd

Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Public agencies are qualitatively ranked for priority for water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative size of facilities owned by agency.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Los Angeles County, 2018. "Assessor - Publicly Owned Parcels Listing," updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 3 6

(Scale in Miles)

Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties Division 4

West Basin Municipal Water District

June 2019

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Figure 6-9 D4

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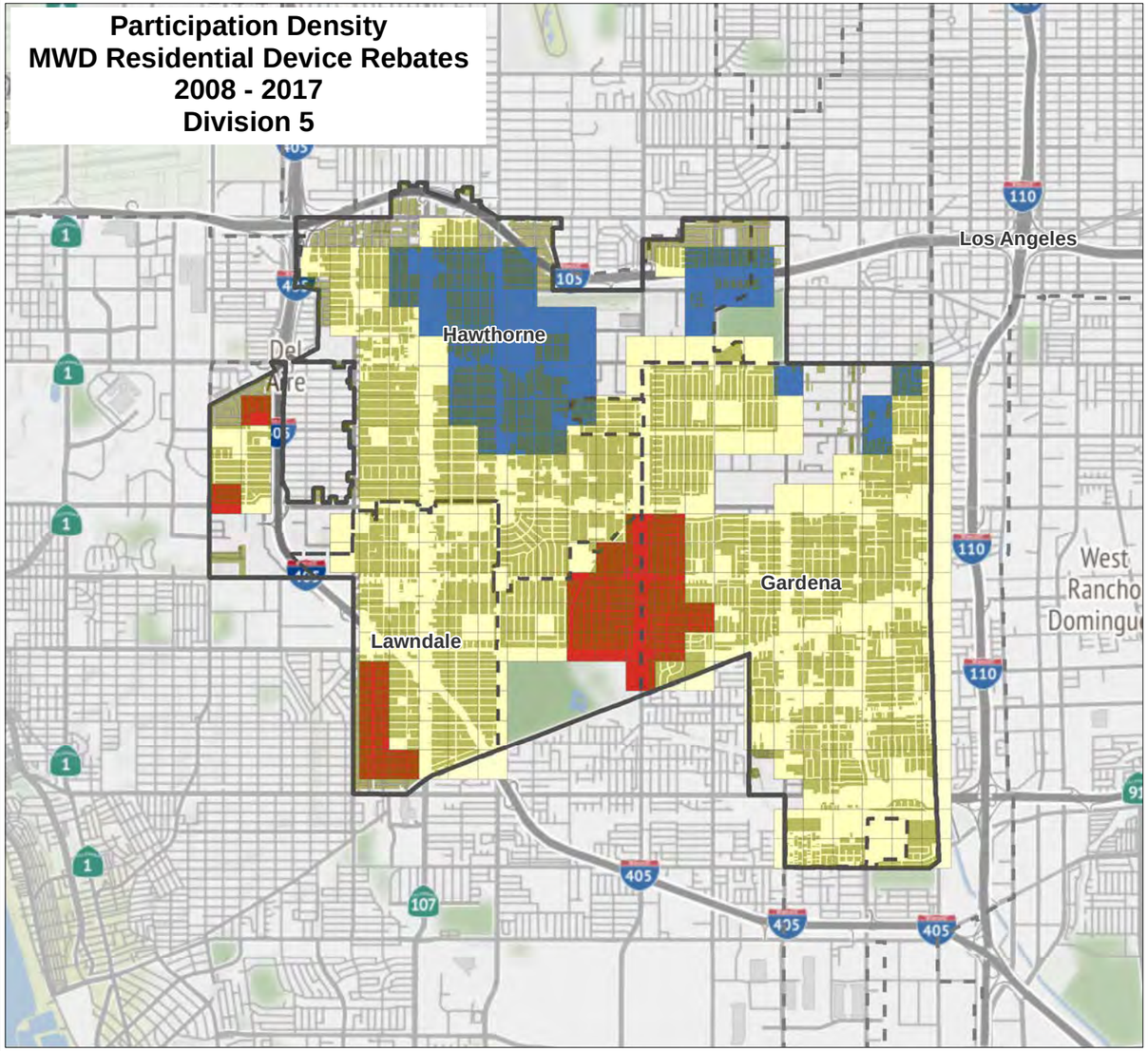
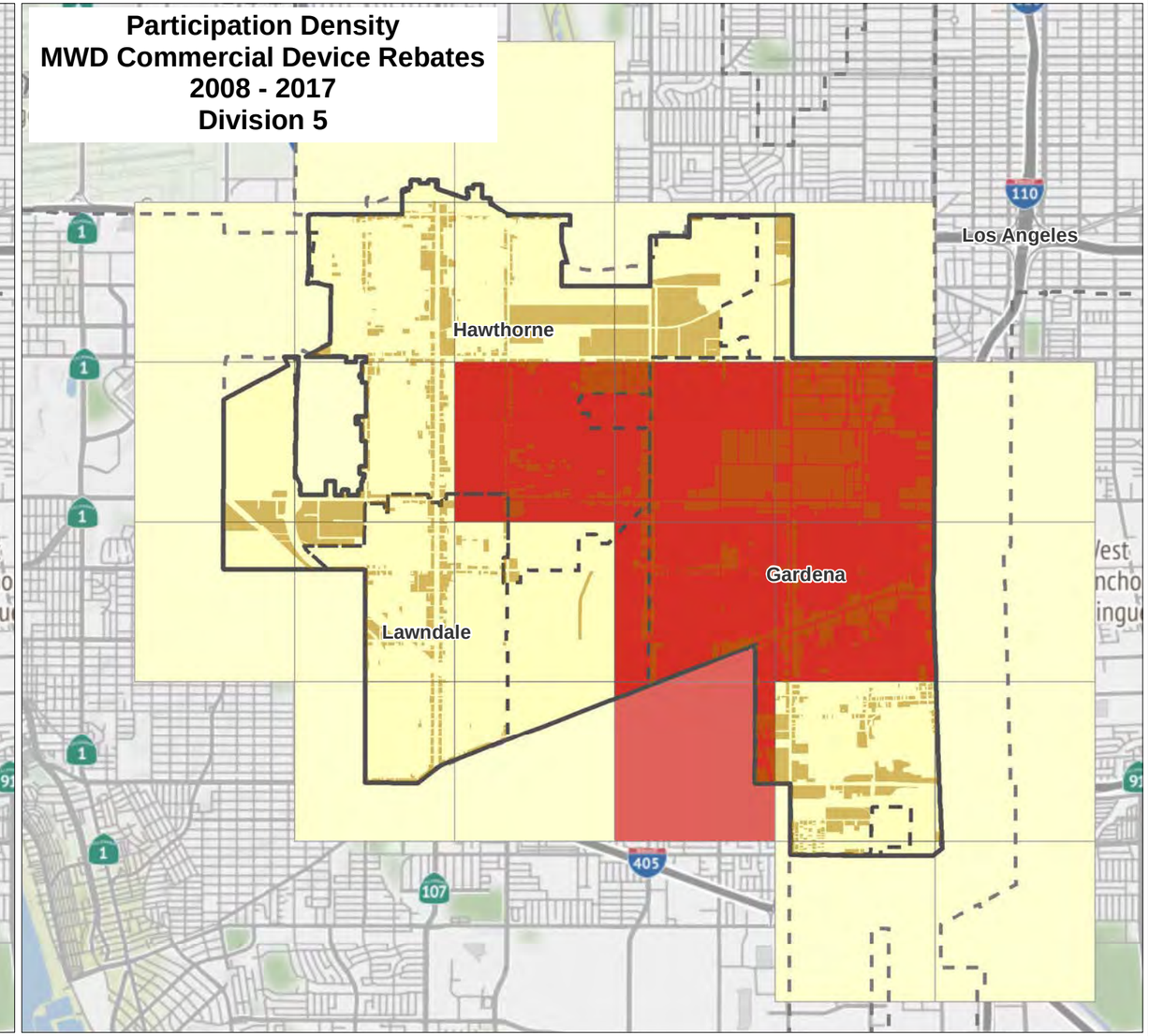
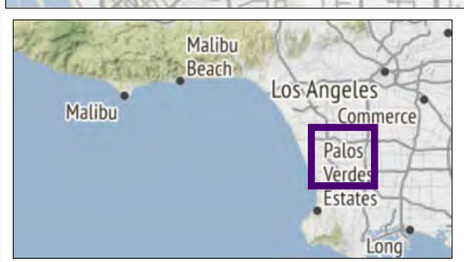
Division 5







Notes
1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources
1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2
Miles

Legend

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)
- Division Boundary
- City Boundary
- Residential Parcels
- Commercial, Industrial, Institutional Parcels

Participation Density for MWD Device Rebate Program: Division 5

West Basin Municipal Water District
January 2019
EKI B70108.00

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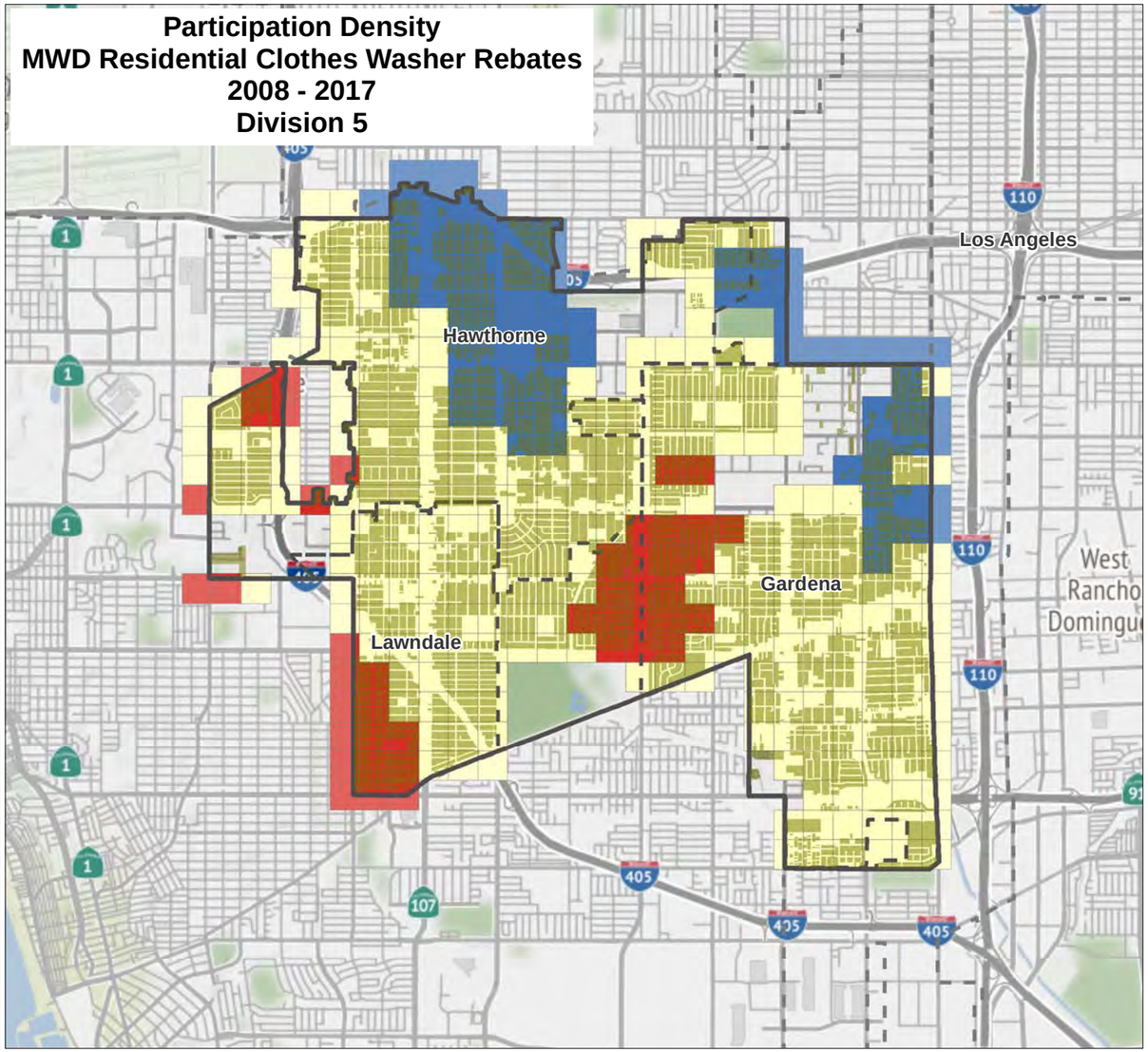
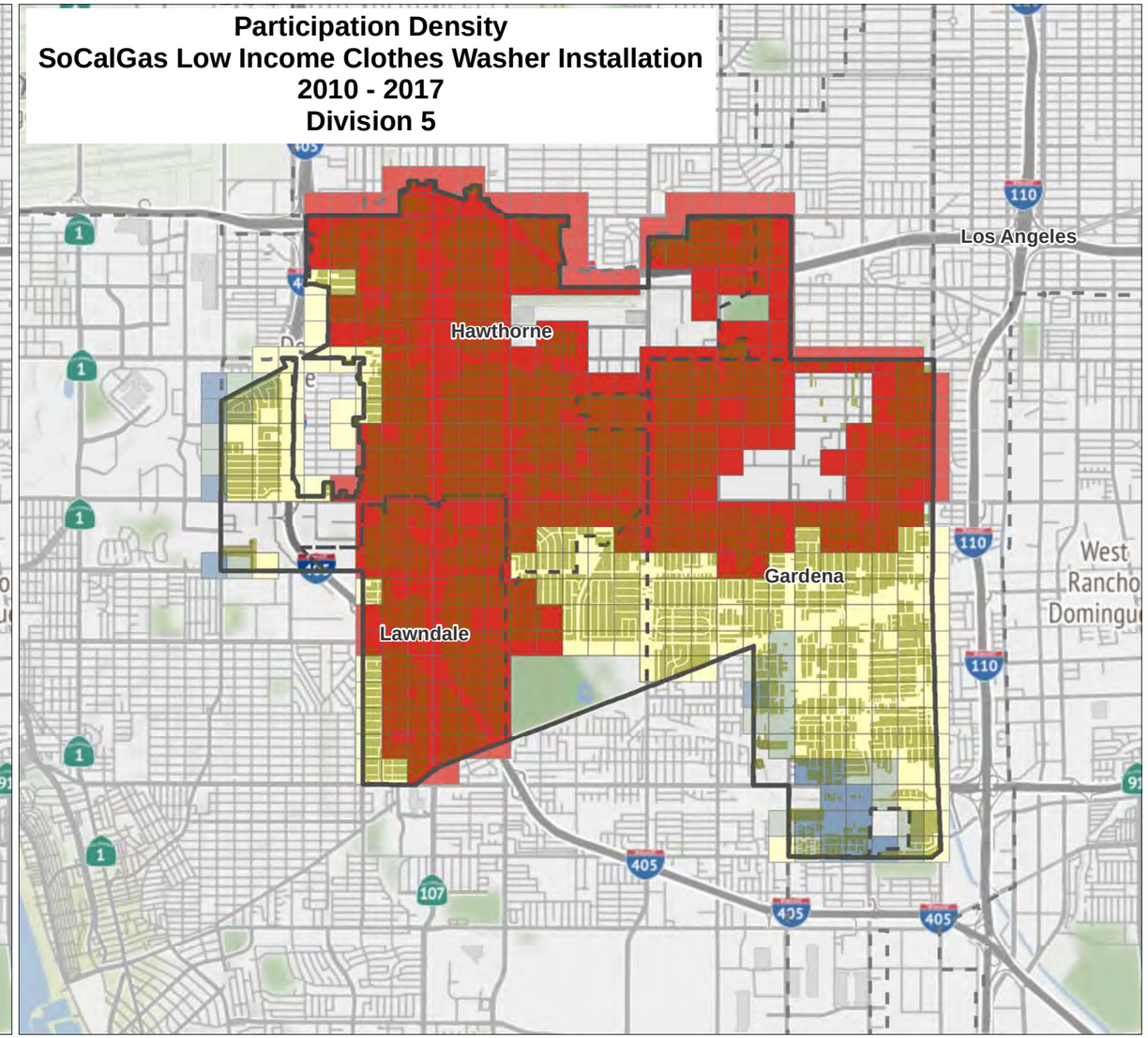
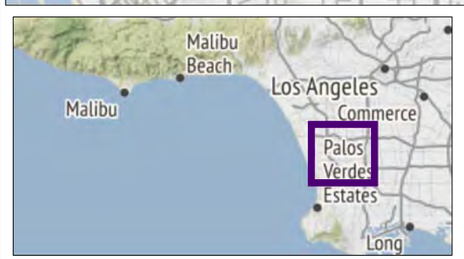
Figure 5-7 D5

Path: X:\B70108\Maps\201901\Fig_5-07_Cluster_MWDRebateD5.mxd







Notes
1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources
1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2
Miles

Legend

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

- Division Boundary
- City Boundary
- Residential Parcels

Participation Density for Residential Clothes Washer Rebate and Installation Programs: Division 5

West Basin Municipal Water District
January 2019
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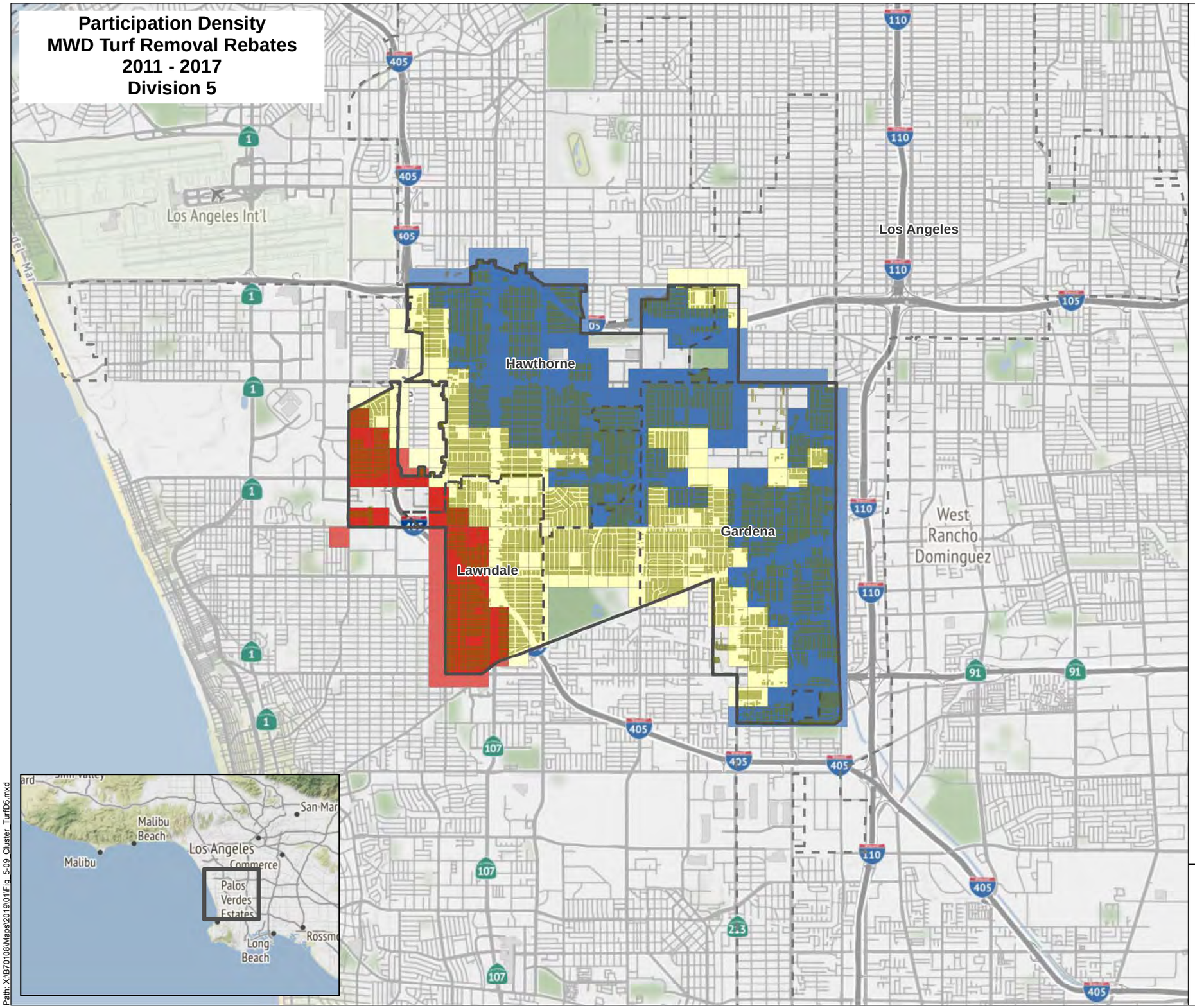
eki environment & water

Figure 5-8 D5

Path: X:\B70108\Maps\2019\01\Fig_5-08_Cluster_ResWashersD5.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

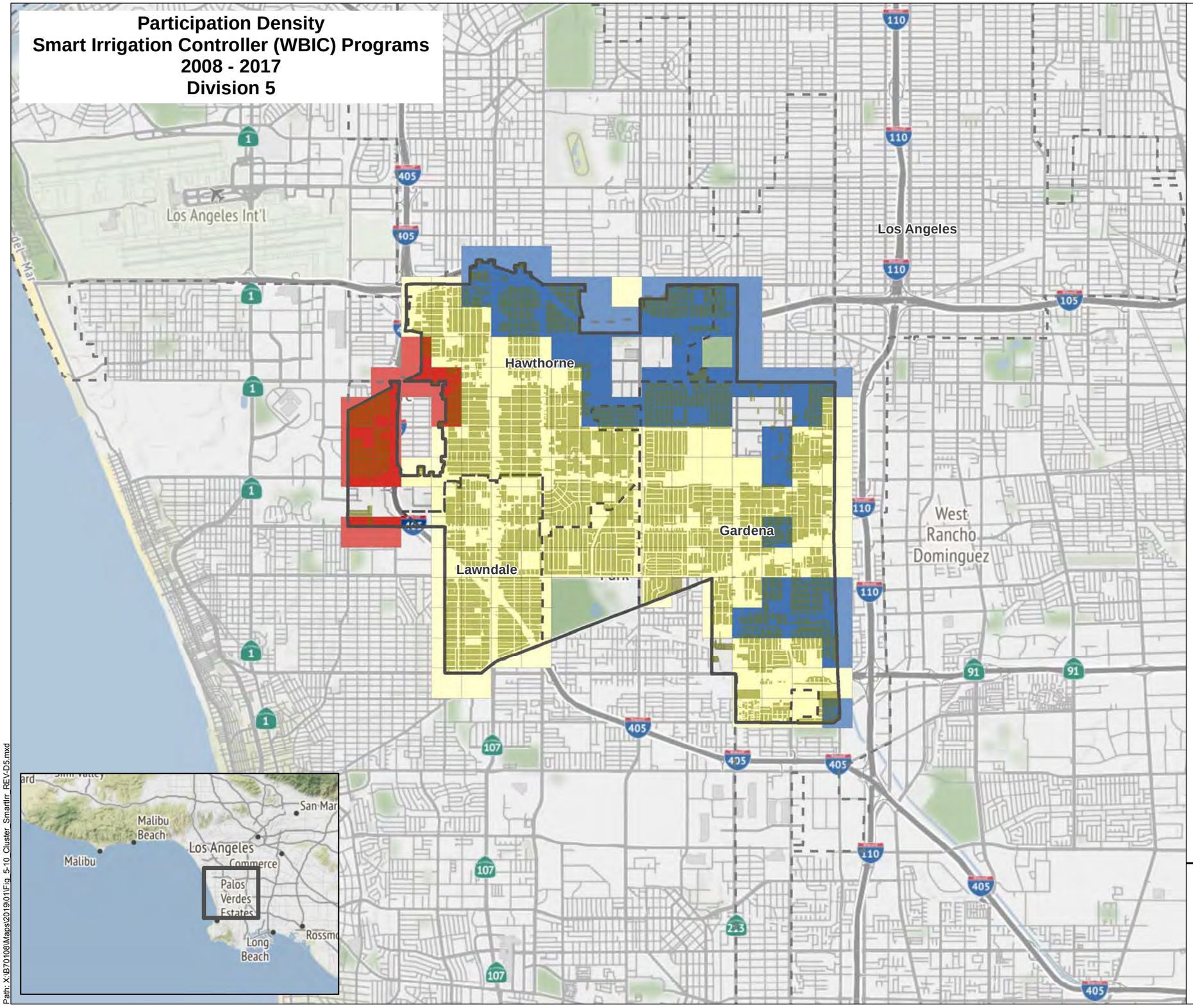
0 1 2
(Scale in Miles)

Participation Density for Turf Removal Rebate Program: Division 5

West Basin Municipan Water District
January 2019
EKI B70108.00

Figure 5-9 D5

Path: X:\B70108\Maps\2019\01\Fig. 5-09 Cluster_TurfD5.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2

(Scale in Miles)

Participation Density for Smart Irrigation Controller Programs: Division 5

West Basin Municipan Water District
January 2019
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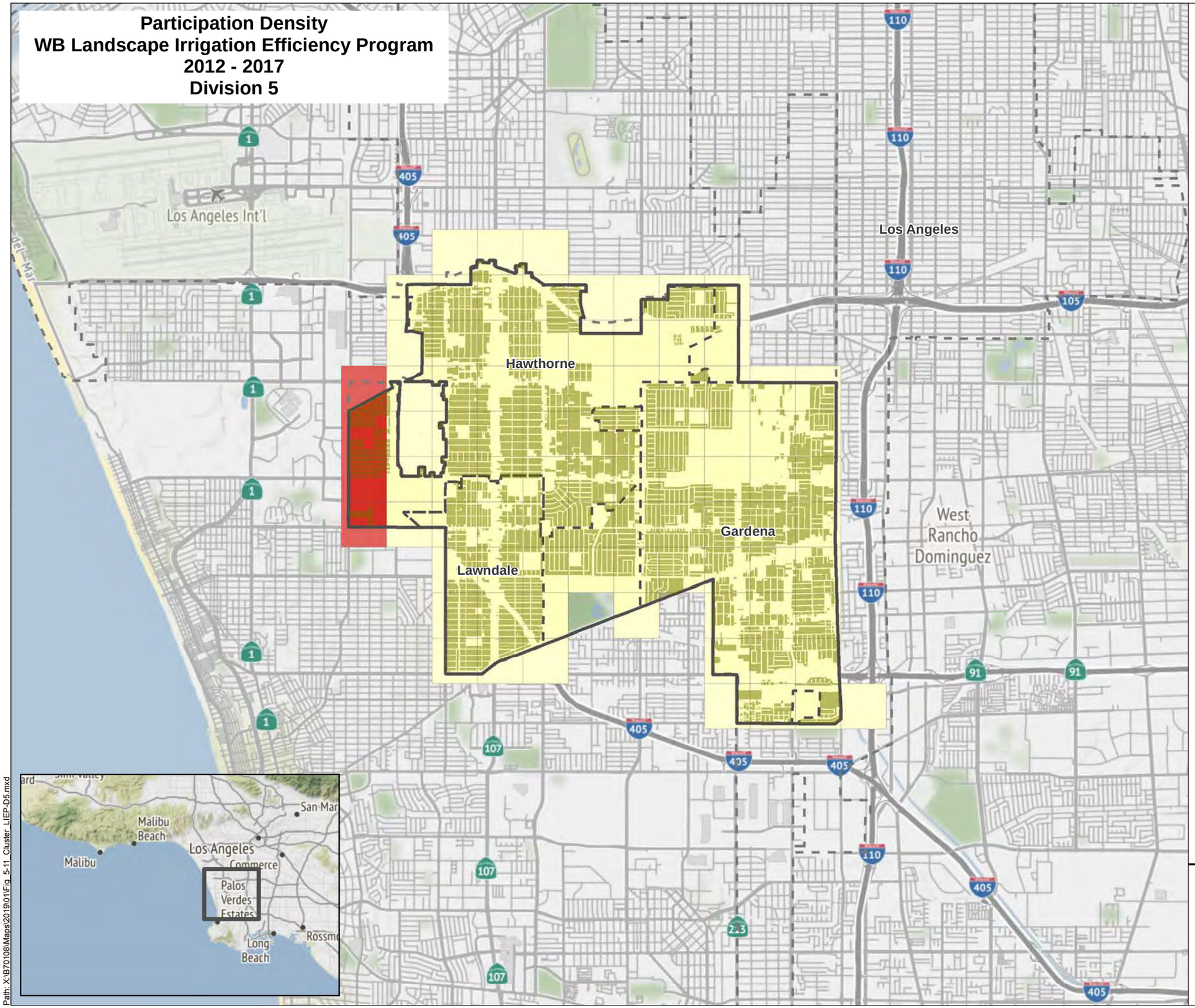
Figure 5-10 D5

Path: X:\B70108\Maps\2019\011\Fig_5-10_Cluster_SmartIrr_REV-D5.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2
(Scale in Miles)

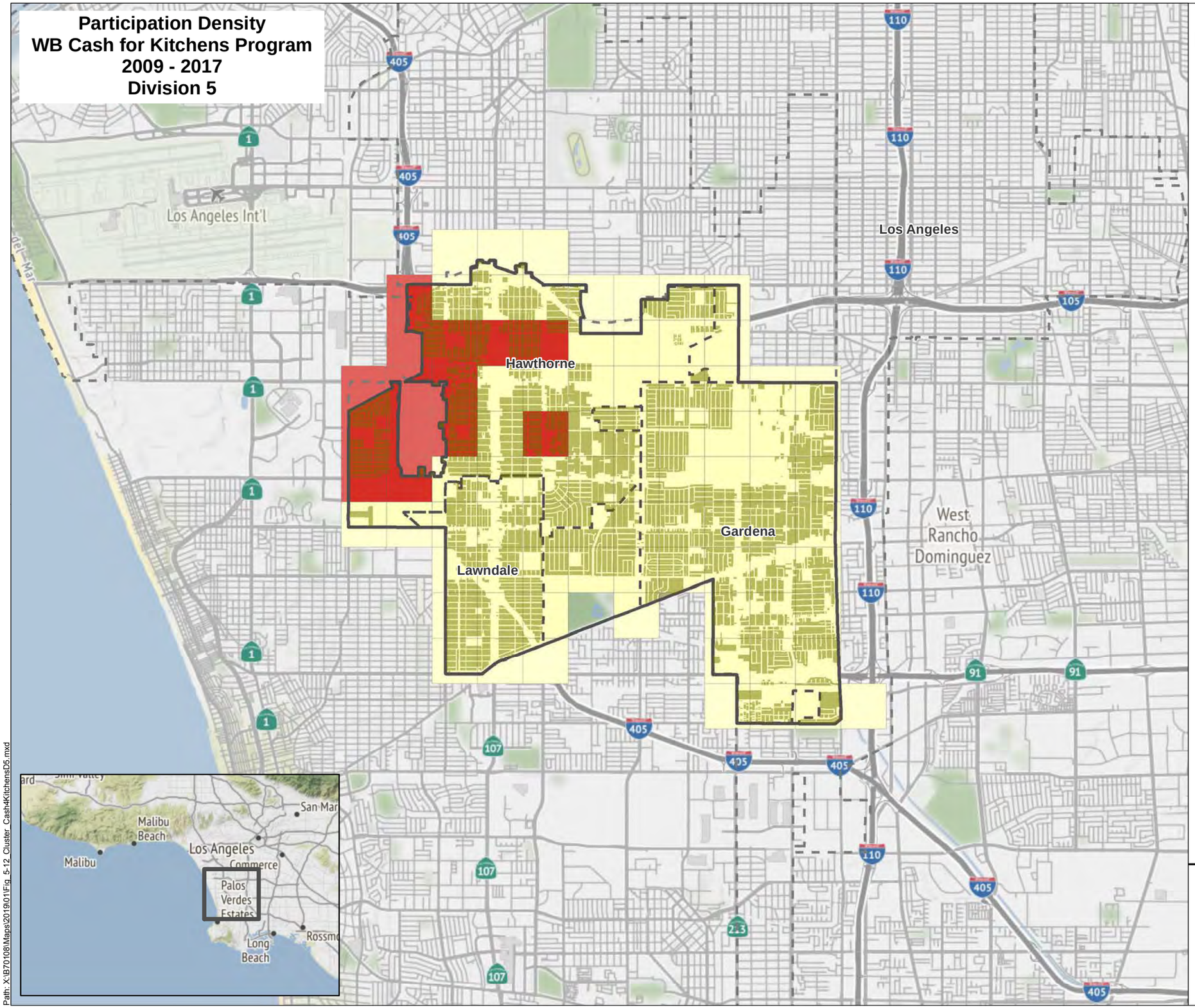
Participation Density for Landscape Irrigation Efficiency Program (LIEP): Division 5

West Basin Municipan Water District
January 2019
EKI B70108.00

Figure 5-11 D5

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig_5-11_Cluster_LIEP-D5.mxd



Legend

- Division Boundary
- City Boundary
- Residential Parcels

Participation Hot and Cold Spots

- Cold Spot (≥90% Confidence)
- Neither Hot nor Cold Spot
- Hot Spot (≥90% Confidence)

Notes

1. All locations are approximate.
2. Program participation hot and cold spots were evaluated using the Esri AcrGIS 10.3.1 Optimized Hot Spot Analysis tool, which calculates a Getis-Ord GI* statistic. This statistic is a measure of the spatial distribution of incidents (participation) relative to a random, equally-spaced distribution.

Sources

1. Water use efficiency program data provided by West Basin March and April 2018.
2. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.
3. Basemap provided by ESRI.

N

0 1 2
(Scale in Miles)

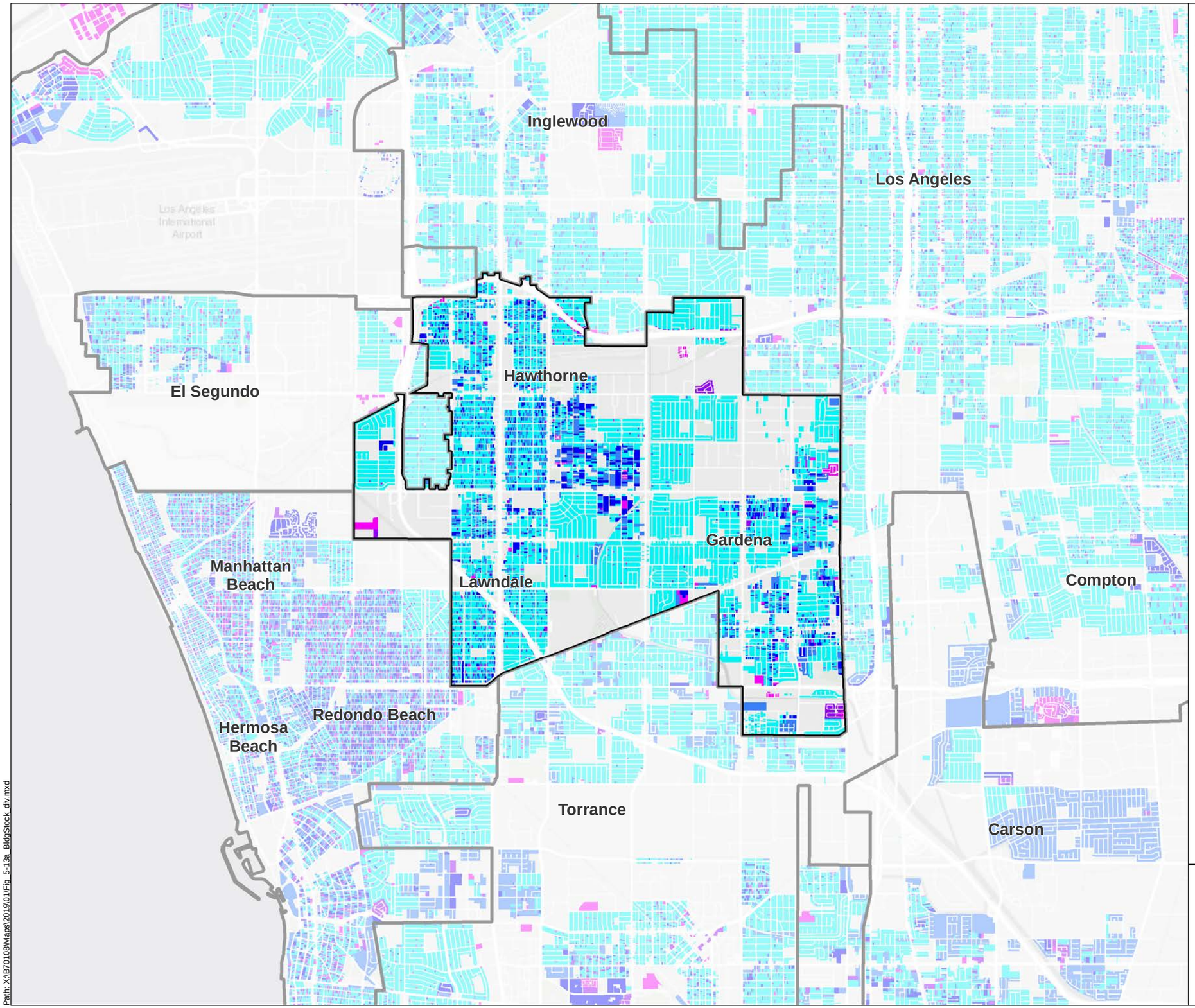
Participation Density for Cash For Kitchens Program: Division 5

West Basin Municipan Water District
January 2019
EKI B70108.00

eki environment & water

Figure 5-12 D5

Path: X:\B70108\Maps\2019\011Fig_5-12_Cluster_Cash4KitchensD5.mxd



Legend

West Basin Director Division Boundaries

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Age of Building Stock - Residential
Division 5

West Basin Municipal Water District
June 2019
EKI B70108.00

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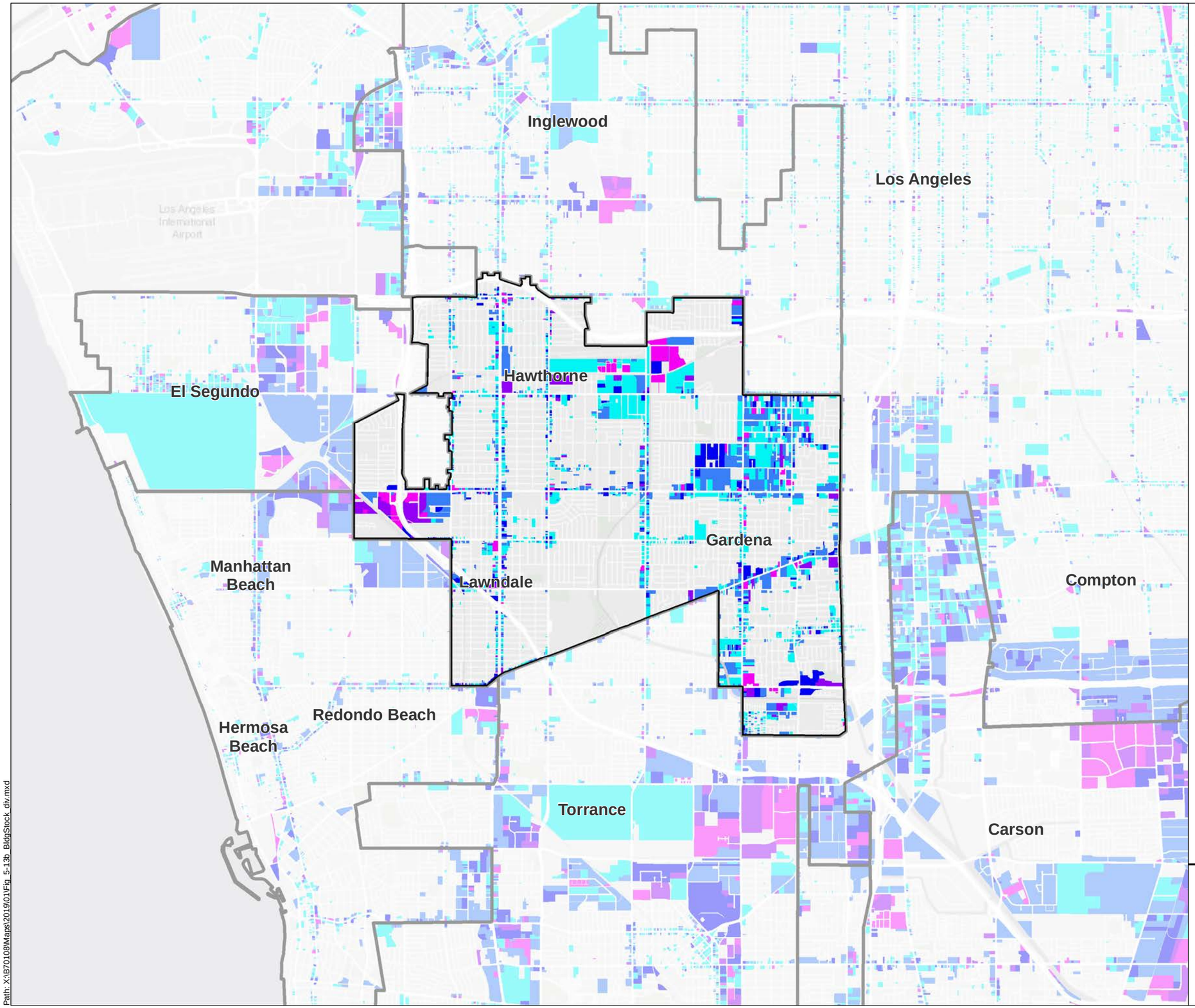
Figure 5-13a D5

Path: X:\B70108\Maps\2019\01\Fig_5-13a_BldgStock_div.mxd



Legend

West Basin Director Division Boundaries

Date of Construction

Year Built

- <1961
- 1961 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 and beyond

Notes

1. All locations are approximate.

Source

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Age of Building Stock - CII
Division 5

West Basin Municipal Water District
June 2019
EKI B70108.00

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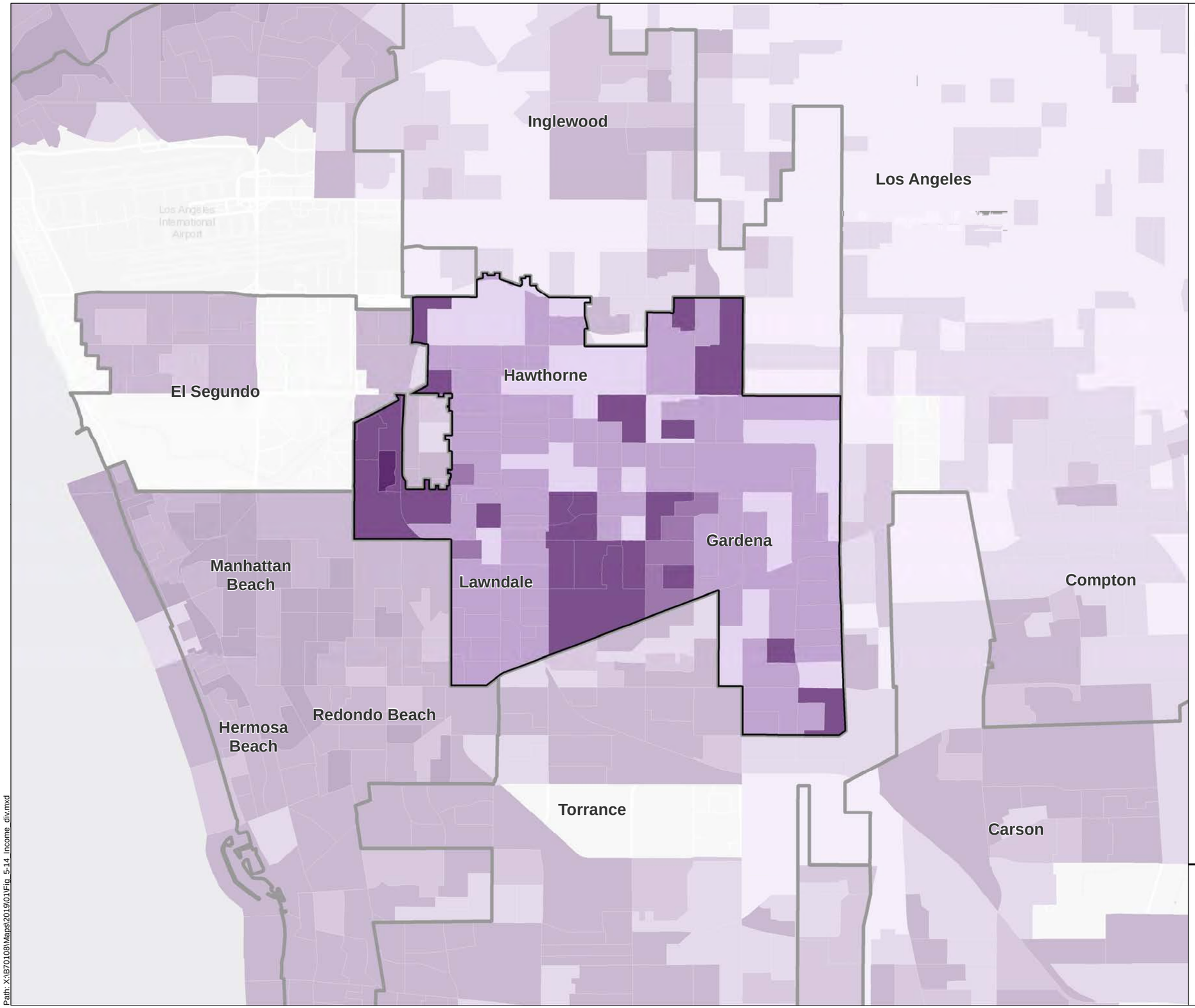
Figure 5-13b D5

Path: X:\B70108\Maps\201901\Fig_5-13b_BldgStock_div.mxd



Legend

West Basin Director Division Boundaries

Household Median Income, Census

- Very Low <$38,450
- Low $38,451-$61,500
- Moderate $61,501-$70,000
- High $70,001 - $140,000
- Very High >$140,001

Notes

1. All locations are approximate.
2. Household income is based on estimated 2014 median household income by Census Block Group, per Census (2016). Income level groupings are based on California Department of Housing and Community Development ("HCD") income levels for Los Angeles County for a 3-person household in 2014 (HCD, 2014). Very high income is shown as greater than two times the Couinty-wide median household income.

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1 2

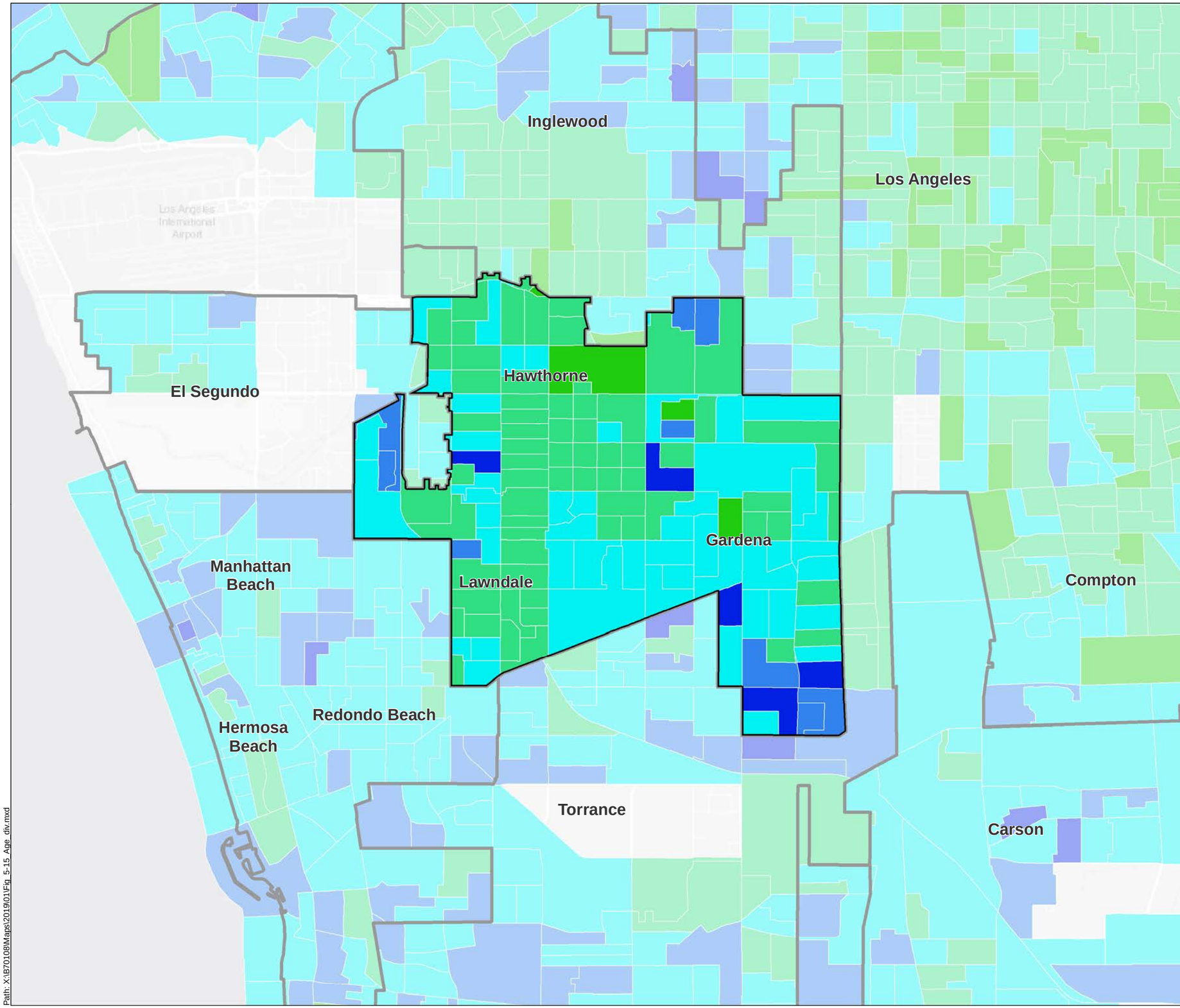
(Scale in Miles)

Median Household Income
Division 5

West Basin Municipal Water District
June 2019
EKI B70108.00
Figure 5-14 D5

eki environment & water

Path: X:\B70108\Maps\2019\011Fig_5-14_Income_div.mxd



Legend

West Basin Director Division Boundaries

Median Household Age by Census Block Group

- <25
- 25-35
- 35-45
- 45-55
- >55

Notes

1. All locations are approximate.
2. Household age is based on the estimated 2014 median age of household members by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.
2. HCD, 2014. Memorandum: State Income Limits for 2014, California Department of Housing and Community Development, dated 28 February 2014.
3. Los Angeles County Assessor Parcel Data, 2014 Tax Roll, Open Data Portal.

N

0 1 2

(Scale in Miles)

Median Household Age
Division 5

West Basin Municipal Water District
June 2019
EKI B70108.00

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Figure 5-15 D5

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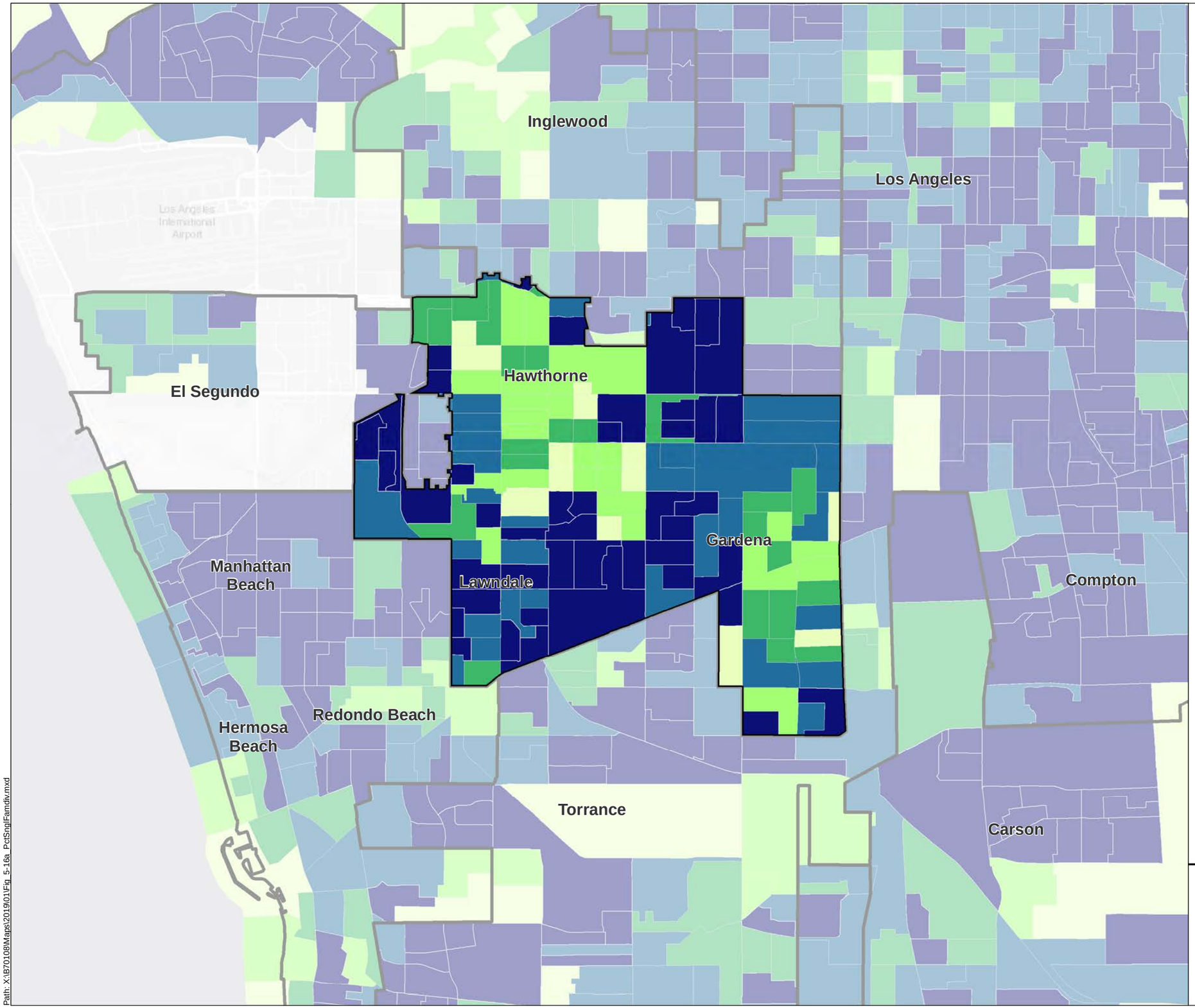

Legend

West Basin Director Division Boundaries

Percentage of Population in Single-Family Units

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in single-family homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Single-Family Homes Division 5

West Basin Municipal Water District
June 2019
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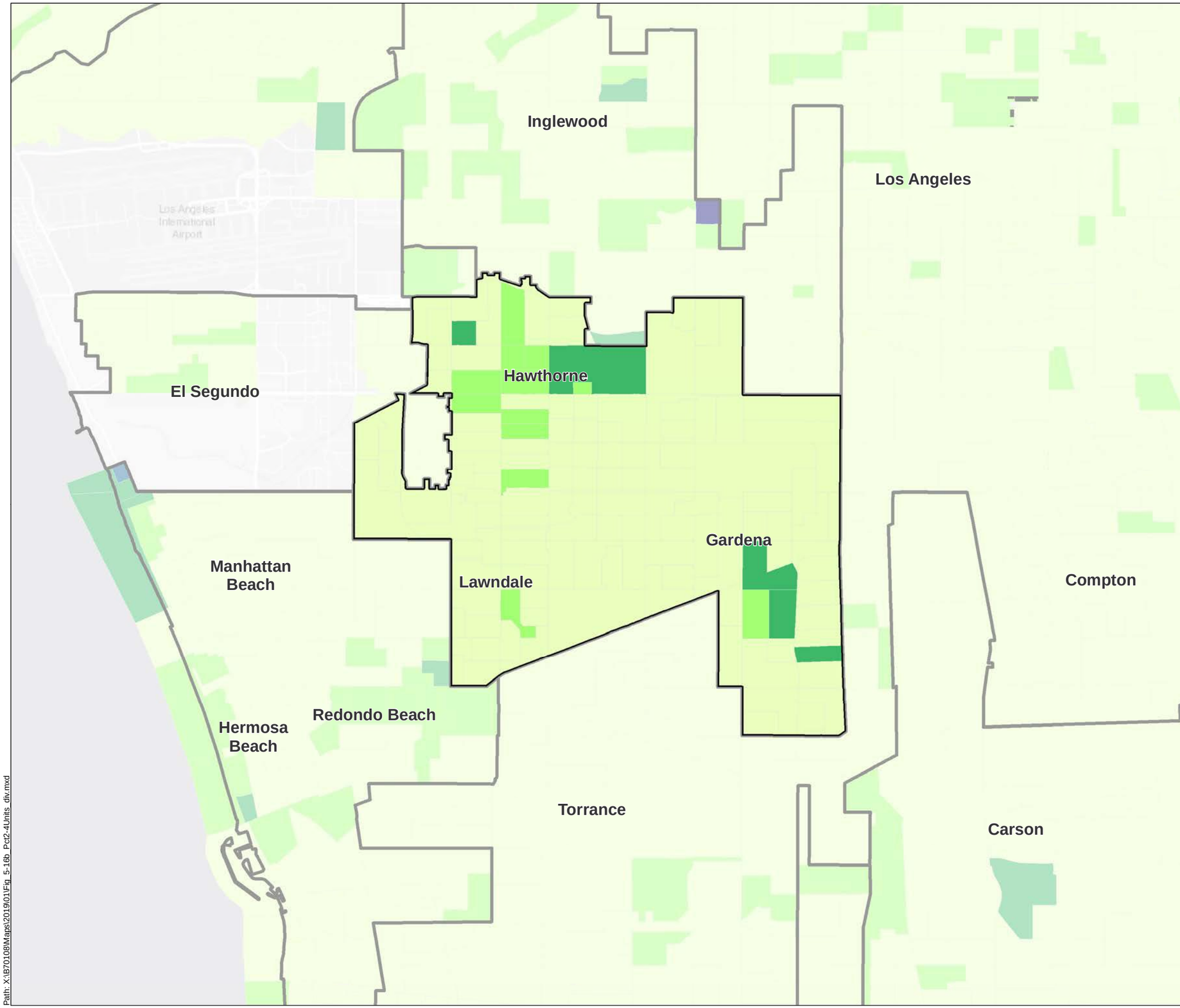
Figure 5-16a D5

Path: X:\B70108\Maps\2019\011Fig_5-16a_PctSnglFamdiv.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in 2-4 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in multi-family housing consisting of 2 to 4 units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

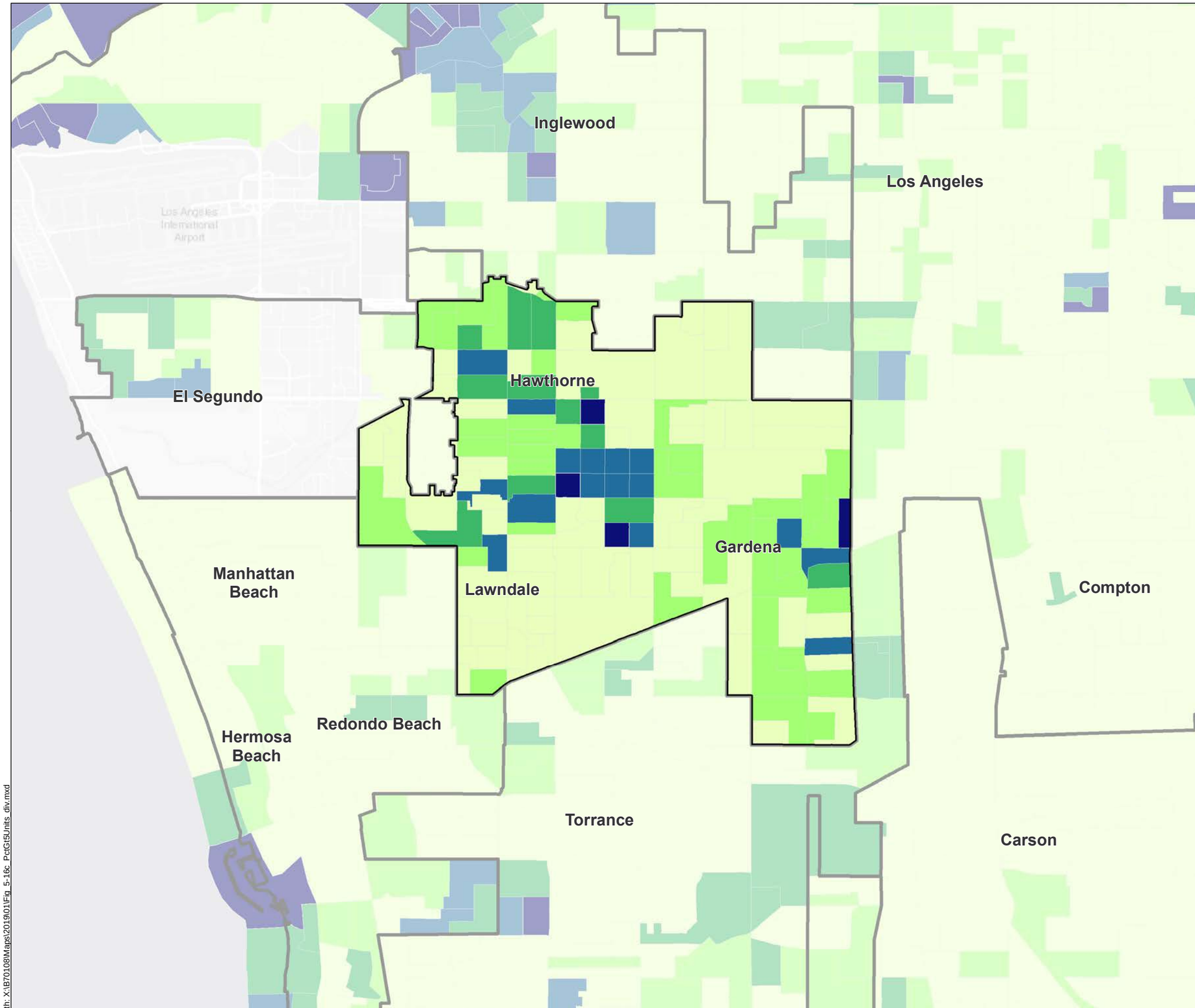
Percentage of Population in Multi-Family Homes (2-4 Units) Division 5

West Basin Municipal Water District
June 2019
EKI B70108.00

eki environment & water

Figure 5-16b D5

Path: X:\B70108\Maps\2019\01\Fig_5-16b_Pct2-4Units_div.mxd



Legend

West Basin Director Division Boundaries

Percentage of Population in ≥5 Unit Multi-Family Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of 5 or more units is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Multi-Family Homes (≥5 Units) Division 5

West Basin Municipal Water District
June 2019
EKI B70108.00

eki environment & water

Figure 5-16c D5

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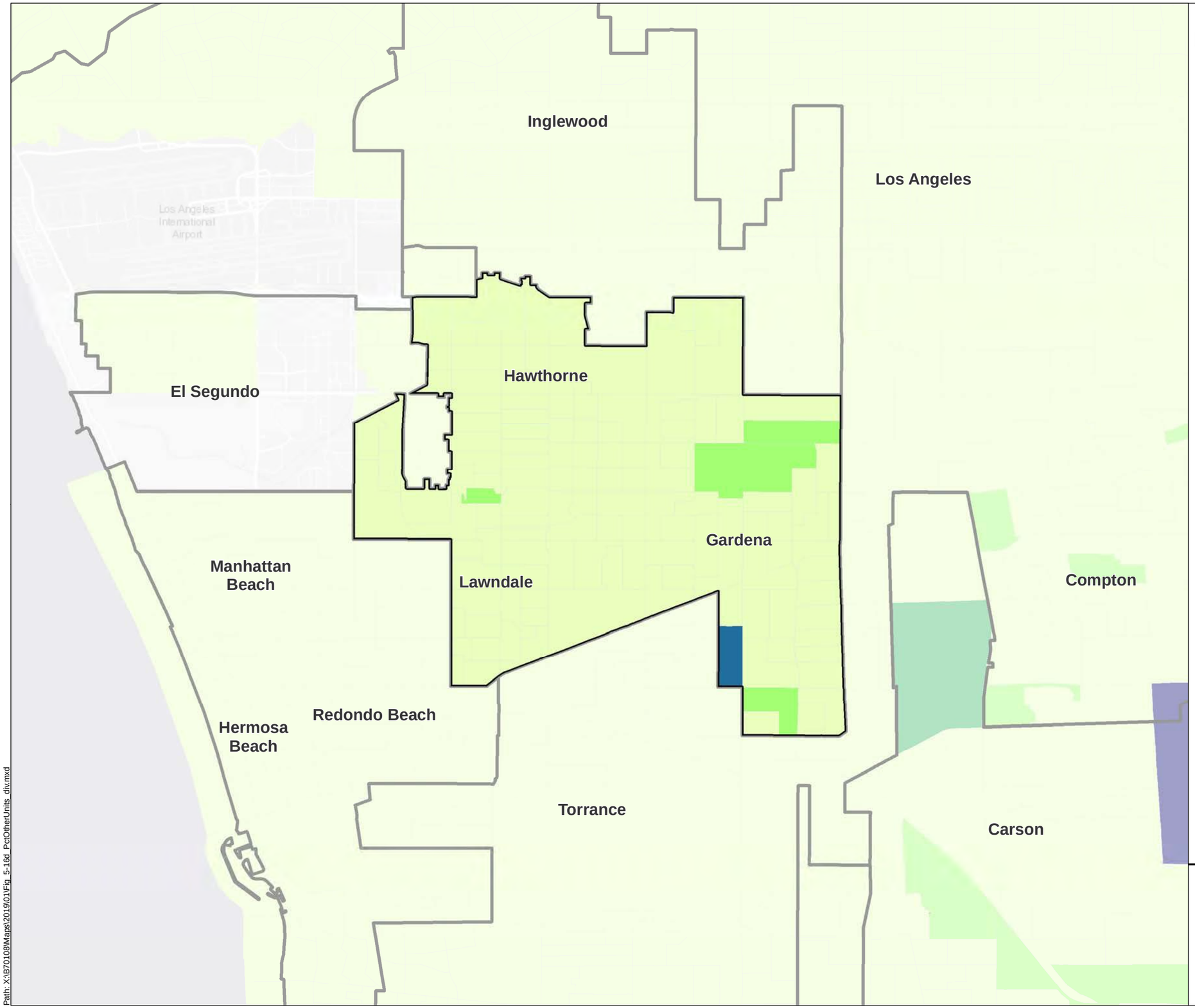

Legend

West Basin Director Division Boundaries

Percentage of Population in Mobile Homes

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%

Notes

1. All locations are approximate.
2. Percentage of population in housing consisting of mobile homes is based on population in occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Population in Mobile Home Housing Division 5

West Basin Municipal Water District
June 2019
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Figure 5-16d D5

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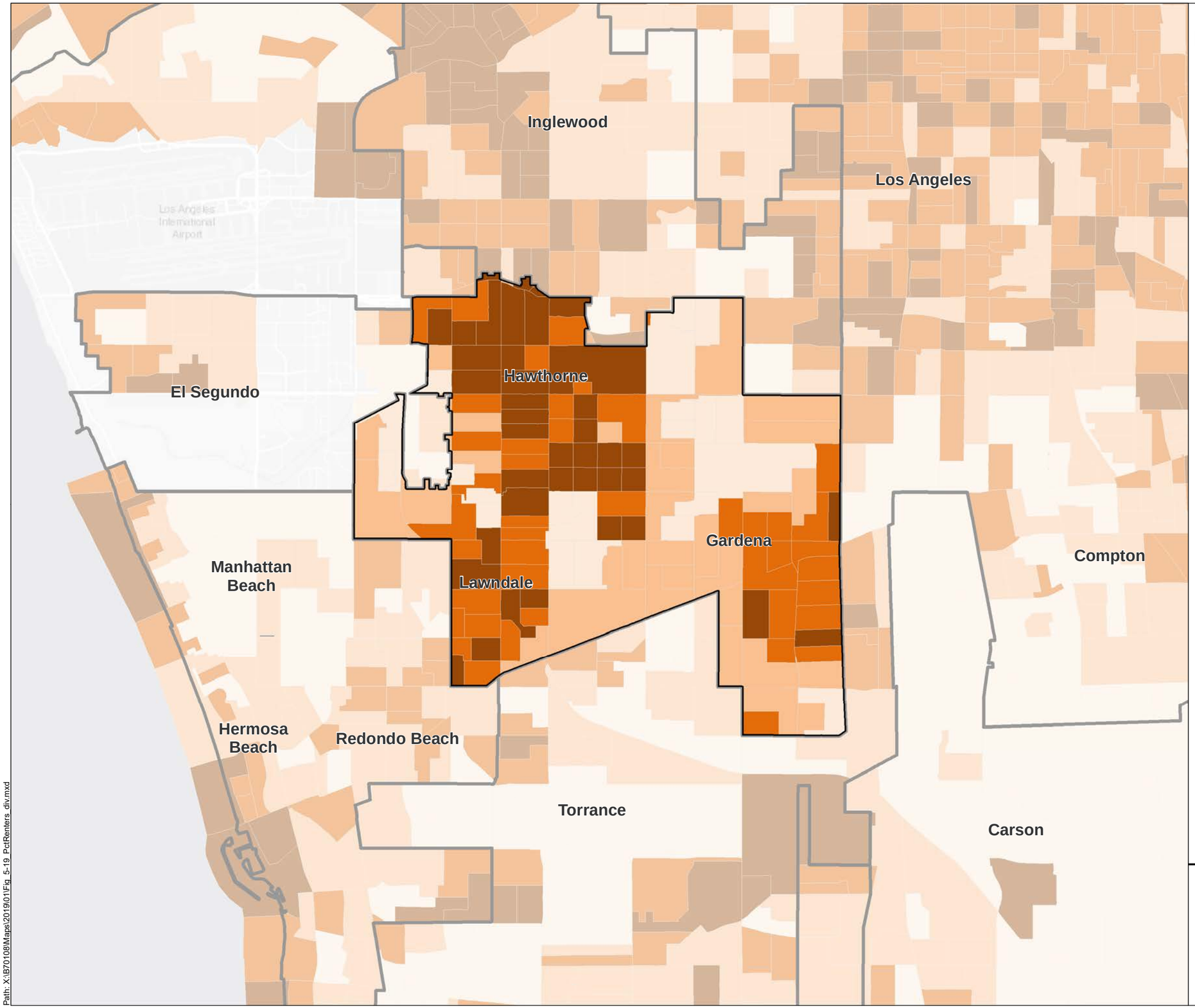


Legend

West Basin Director Division Boundaries

Percentage of Renters

- ≤25%
- 25.1% - 50%
- 50.1% - 75%
- ≥75%

Notes

1. All locations are approximate.
2. Percentage of renter-occupied housing units is based on the estimated 2014 number of renter-occupied housing units by Census Block Group, per Census (2016),

Sources

1. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Percentage of Renter-Occupied Housing Units Division 5

West Basin Municipan Water District

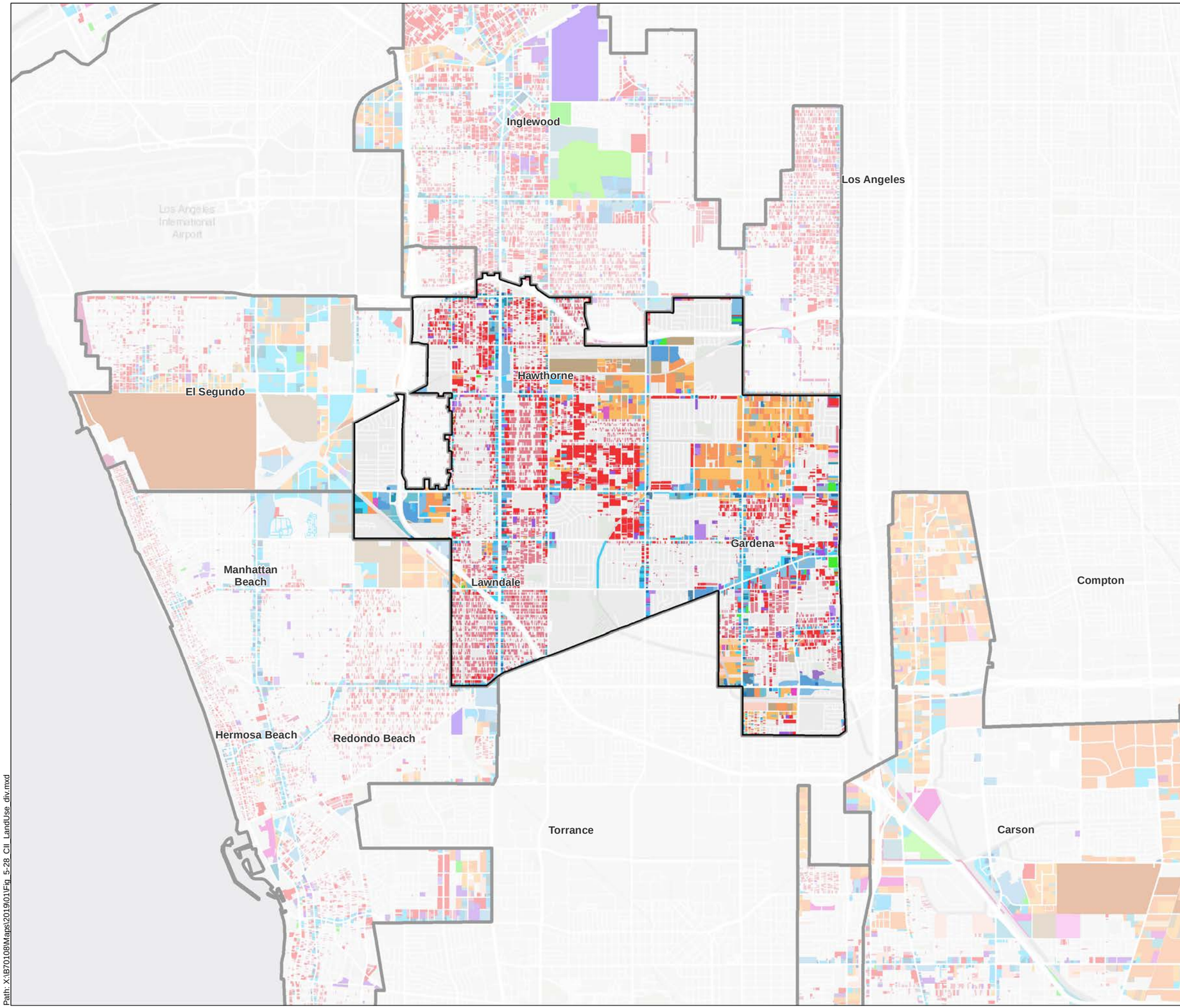
January 2019

EKI B70108.00

Figure 5-19 D5

eki environment & water

Path: X:\B70108\Maps\201901\Fig_5-19_PctRenters_div.mxd



Legend

West Basin Director Division Boundaries

Multi-Family Residential
- Multi-Family Residential - 2-4 Units
- Multi-Family Residential - 5+ Units
- Residential - Mobile Home/Other

Commercial
- Animal Kennel
- Auto Service Station
- Bank, Savings and Loan
- Car Sales/Service
- Car Wash
- Commercial Unknown/Miscellaneous
- Department or Warehouse Store
- Hotel and Motel
- Non-Auto Shop, Paint Shop, or Laundry
- Office Building
- Parking Lot/Structure
- Professional Building
- Restaurant
- Shopping Center
- Store
- Supermarket
- Wholesale and Manufacturing Outlet

Institutional
- Adult Care Facility
- Cemetery, Mausoleum
- Children's Day Care Center
- Church
- College, University
- Convalescent Hospital, Nursing Home
- Hospital
- Mortuary, Funeral Home
- Public School
- School (Private)

Industrial
- Cement, Rock and Gravel Plant
- Food Processing Plant
- Heavy Manufacturing
- Light Manufacturing
- Lumber Yard
- Other Mineral Processing
- Radio/Television Transmission Facility
- Warehousing, Distribution, Storage

Recreational
- Athletic/Amusement/Recreational Facility
- Golf Course
- Movie or Stage Theater
- Race Track
- Recreational Unknown/Miscellaneous

Miscellaneous
- Agriculture
- Other Unknown/Miscellaneous
- Petroleum and Gas Mining/Processing
- Utility/Rights of Way
- Wireless Communication Tower

Notes

1. All locations are approximate.
2. Land use type classifications are based by Assessor's parcel records.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2
(Scale in Miles)

CII Land Use Types within Division 5

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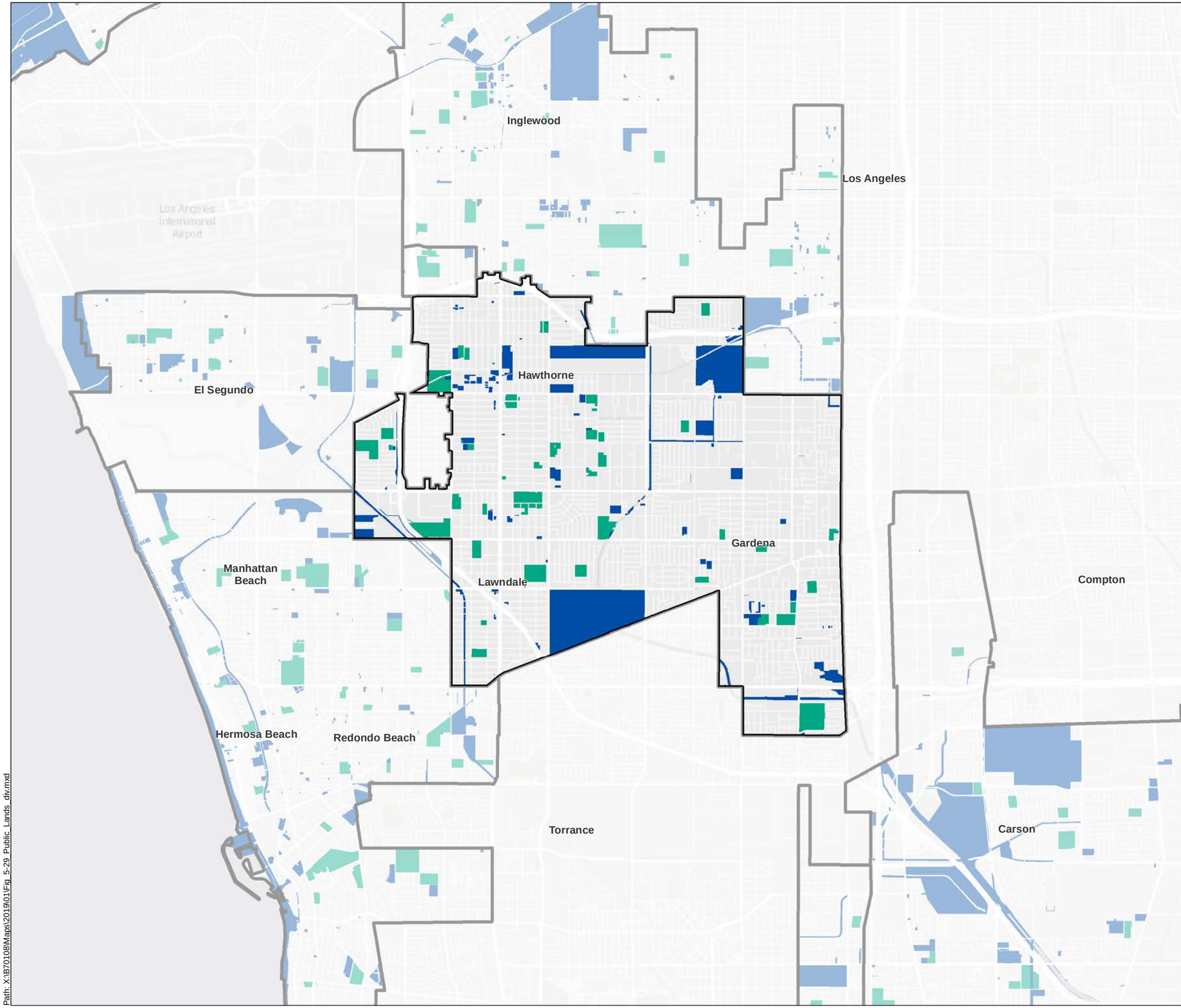
West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-28 D5

Path: X:\B70108\Maps\2019\01\Fig_5-28_CII_LandUse_div.mxd



Legend

- West Basin Director Division Boundaries
- Publicly Owned Parcels Designated as Schools
- Other Publicly Owned Parcels

Notes

1. All locations are approximate.
2. Parcels indicated as schools are based on the provided agency name. Publicly owned parcels include those owned by cities, the state, and other agencies, including but not limited to property used for offices, operations, parks, parking, etc.

Sources

1. Assessor - Publicly Owned Parcels Listing, updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1 2
(Scale in Miles)

Publicly-Owned Lands within Division 5

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West Basin Municipal Water District
June 2019
EKI B70108.00

Figure 5-29 D5

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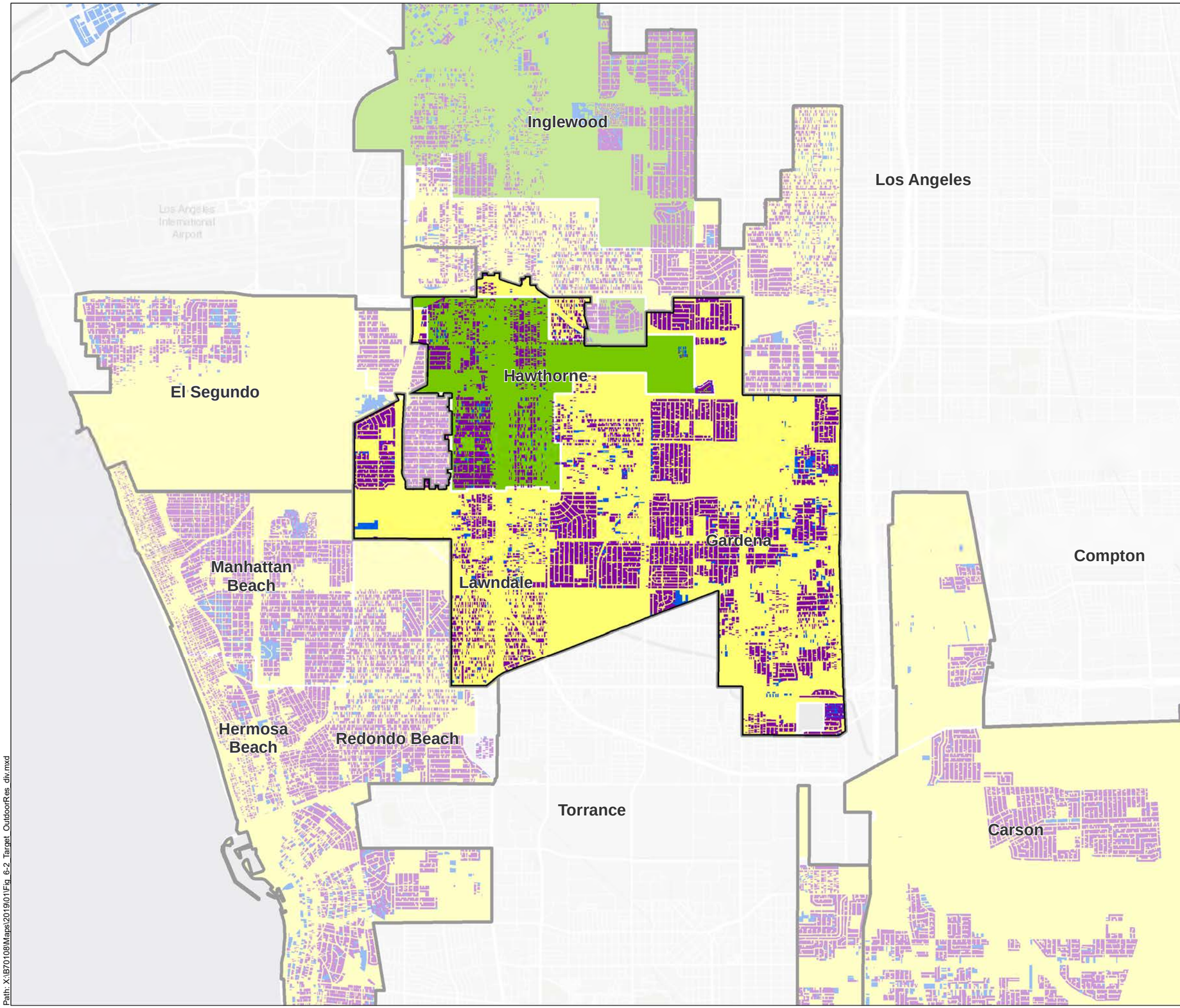


Legend

West Basin Director Division Boundaries

Program Targeting

Landscape Transformation Programs (≤9,000 sq ft lot)

Irrigation Device Replacement Programs (>9,000 sq ft lot)

WUE Program Outreach Priority

Low (≤20% Outdoor Water Use)

Medium (20-40% Outdoor Water Use)

Notes

1. All locations are approximate.
2. West Basin potable water customer agencies are ranked for outdoor residential WUE program outreach priority based on the estimated percentage of outdoor water use within their service area.
3. The type of residentual outdoor WUE program for targeting is based on parcel lot size.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Target Opportunities for Single-Family Residential Outdoor WUE Programs Division 5

West Basin Municipan Water District

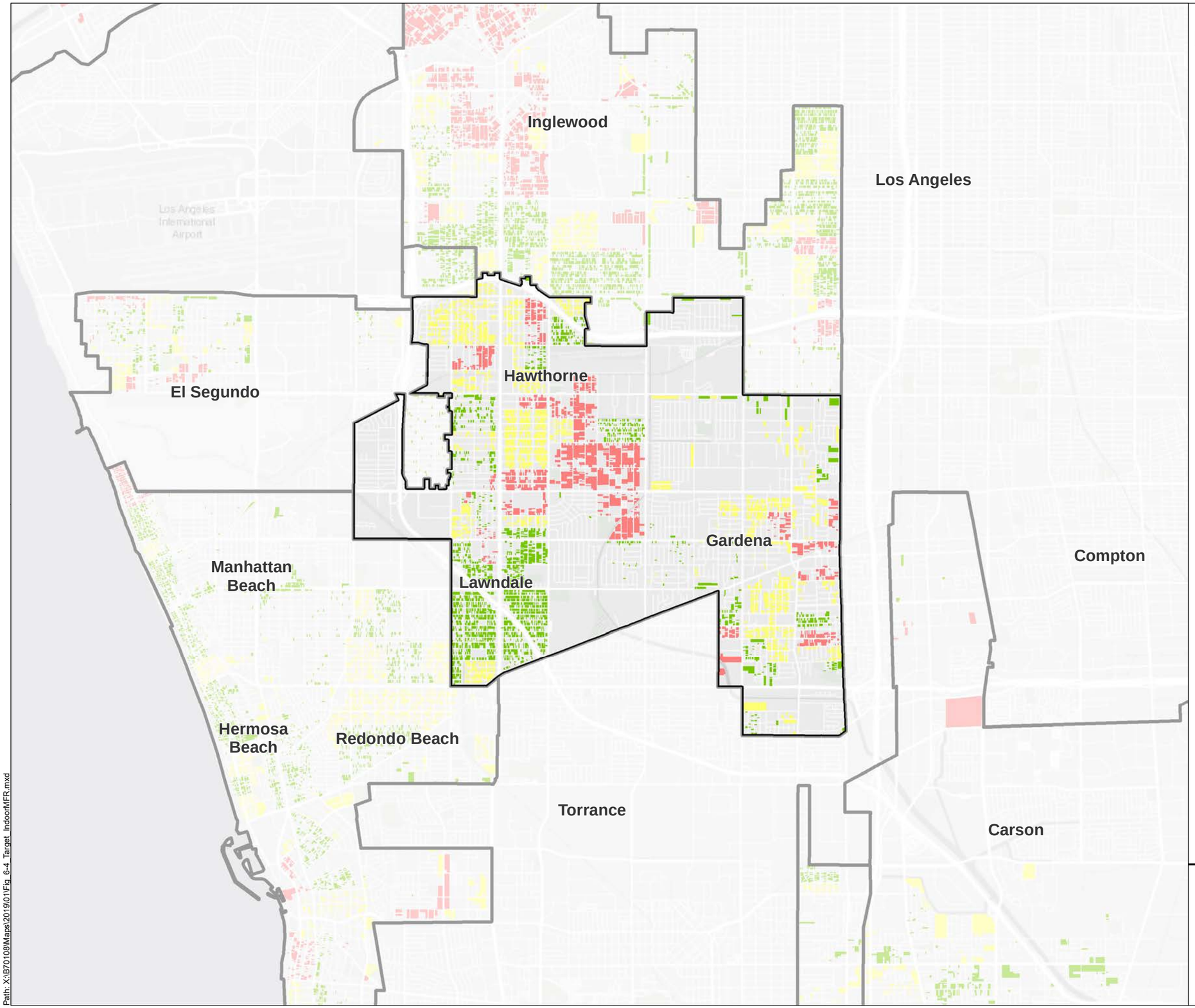
January 2019

EKI B70108.00

Figure 6-2 D5

eki environment & water

Path: X:\B70108\Maps\2019\011\Fig_6-2_Target_OutdoorRes_div.mxd



Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (≥50% Population in Multi-Family Housing)
- Medium (25-50% Population in Multi-Family Housing)
- Low (≤25% Population in Multi-Family Housing)

Notes

1. All locations are approximate.
2. Multi-family residential parcels are ranked for indoor residential WUE program outreach priority based on the proportion of an area's population that lives in multi-family residiental homes, based on Census block group. For purposes of this assessment, manufactured homes are considered to be multi-family.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Target Opportunities for Multi-Family Residential Indoor WUE Programs Division 5

West Basin Municipan Water District

January 2019

EKI B70108.00

Figure 6-4 D5

eki environment & water

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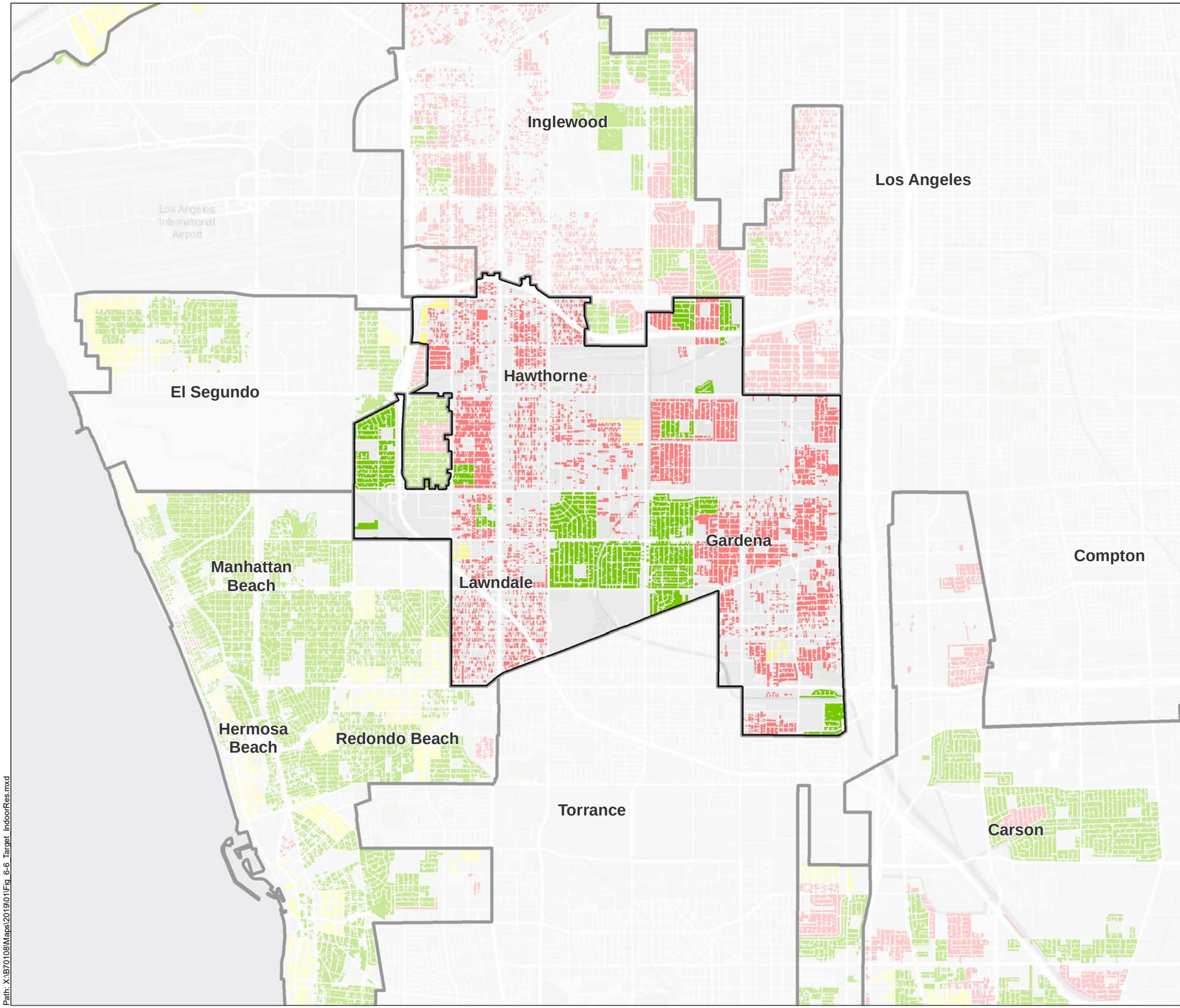

Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High (Low Income)
- Medium (≥50% Renter Population)
- Low (Moderate to High Income, <50% Renter Population)

Notes

1. All locations are approximate.
2. Single-family residential parcels are ranked for indoor residential WUE program outreach priority based on median household income and percentage of population that rents their home.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Census, 2016. 2010-2014 American Community Survey (ACS) 5-year estimates, TIGER/Line Shapefiles by Block Group, https://www.census.gov/geo/maps-data/data/tiger-data.html, United States Census Bureau.

N

0 1 2

(Scale in Miles)

Target Opportunities for Single-Family Residential Indoor WUE Programs Division 5

West Basin Municipan Water District

January 2019

EKI B70108.00

Figure 6-6 D5

eki environment & water

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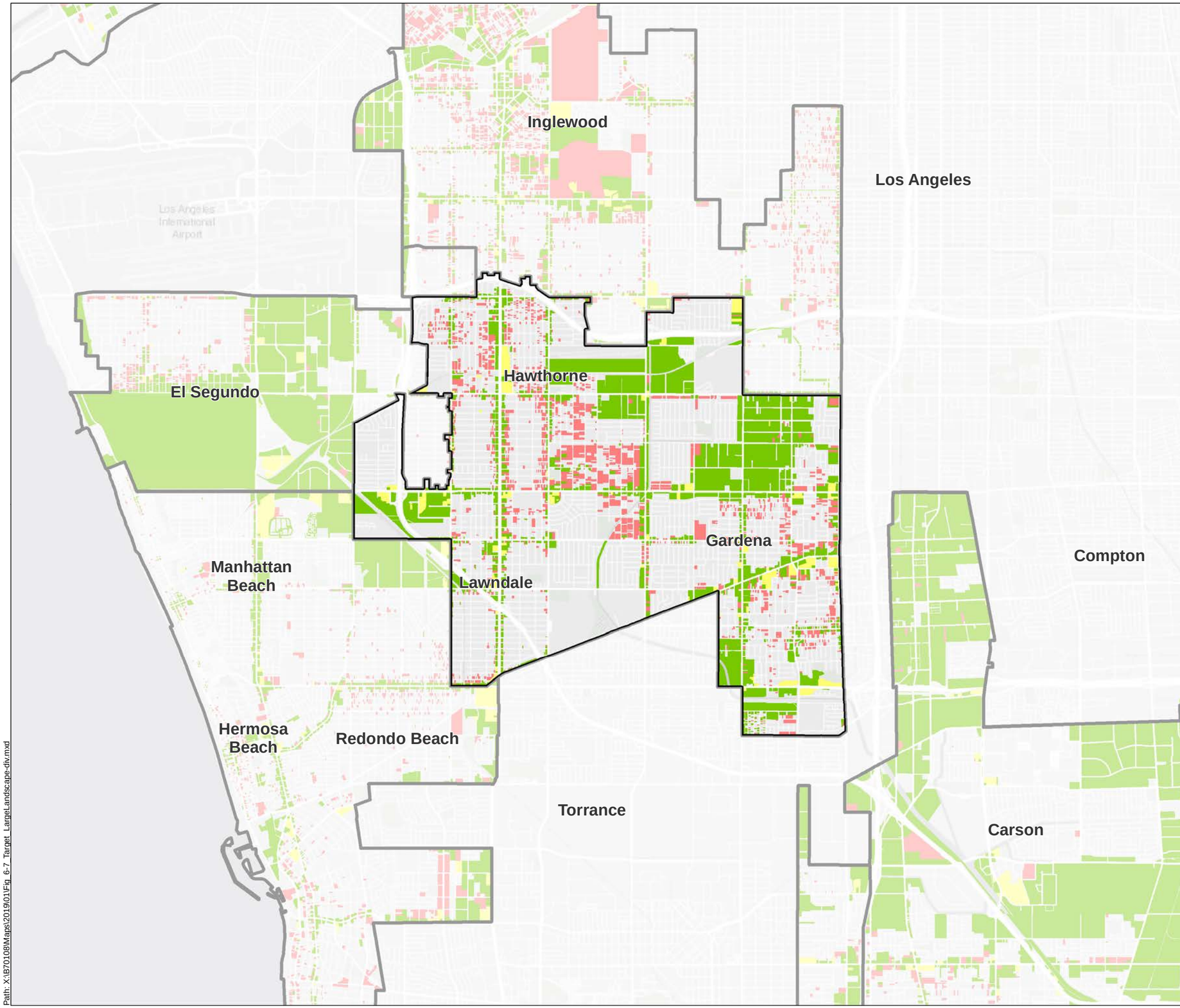


Legend

West Basin Director Division Boundaries

WUE Program Outreach Opportunities

- High Priority
- Medium Priority
- Low Priority

Notes

1. All locations are approximate.
2. Parcels identified as high priority include multi-family residential parcels of five or more units and commercial, institutional, and industrial parcels associated with business types that typically have large landscapes. A detailed list of business types and the desginated priorty is provided in the text.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

Target Opportunities for Large Landscape WUE Programs Division 5

West Basin Municipal Water District

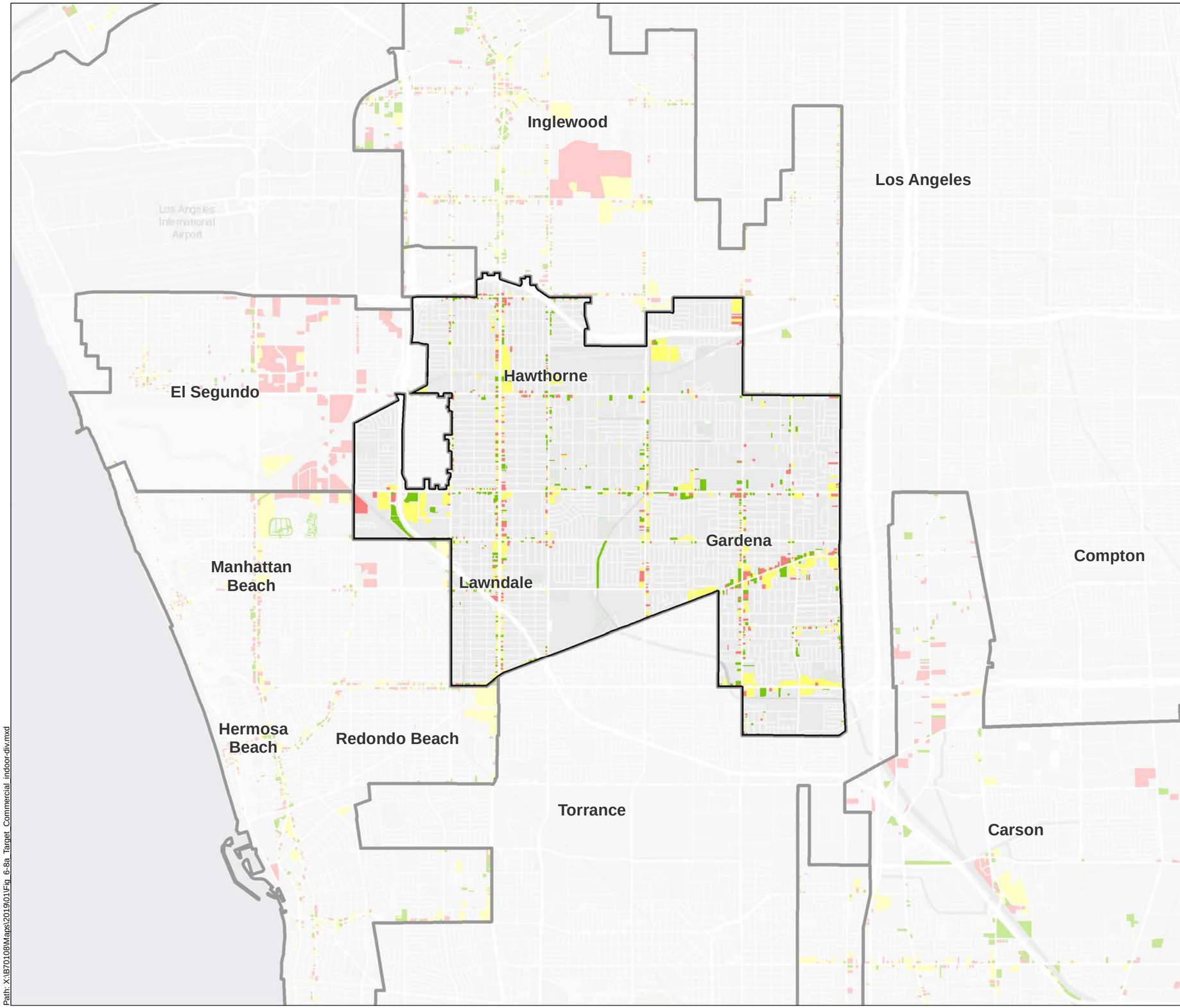
June 2019

EKI B70108.00

Figure 6-7 D5

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig 6-7 Target LargeLandscape-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Commercial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use. For purposes of this assessment, land uses classified as "recreational" are included with commercial land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Commercial WUE Programs Division 5

West Basin Municipal Water District

June 2019

EKI B70108.00

Figure 6-8a D5

eki environment & water

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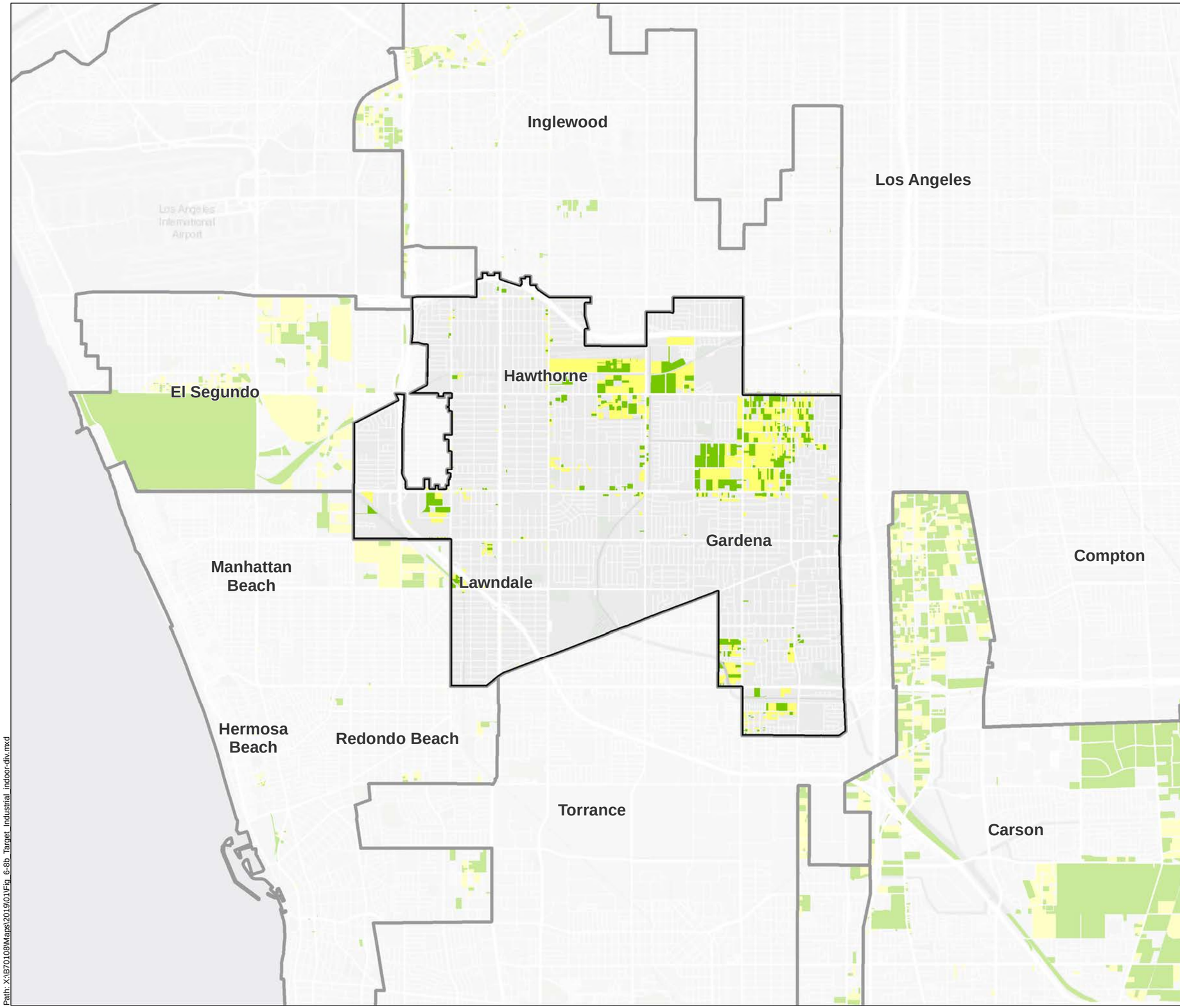


Legend

West Basin Director Division Boundaries

Outreach Priority

Medium

Low

Notes

1. All locations are approximate.
2. Industrial land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Industrial WUE Programs Division 5

West Basin Municipal Water District

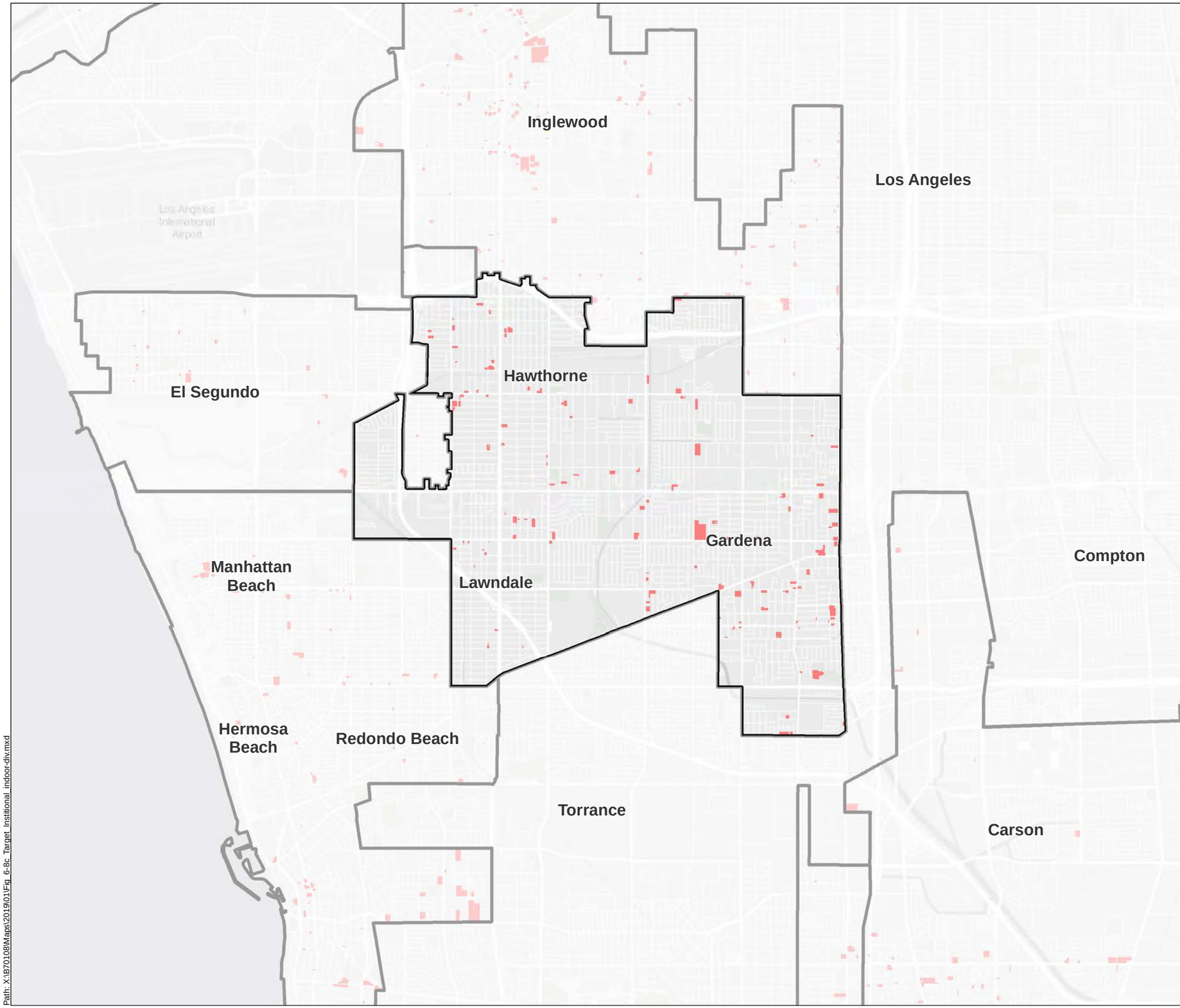
June 2019

EKI B70108.00

Figure 6-8b D5

eki environment & water

Path: X:\B70108\Maps\2019\01\Fig 6-8b Target Industrial indoor-div.mxd



Legend

West Basin Director Division Boundaries

Outreach Priority

High

Medium

Notes

1. All locations are approximate.
2. Institutional land use types are qualitatively ranked for priority for indoor water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative acres of land use.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.

N

0 1 2

(Scale in Miles)

WUE Outreach Opportunities for Indoor Institutional WUE Programs Division 5

West Basin Municipal Water District

June 2019

EKI B70108.00

Figure 6-8c D5

eki environment & water

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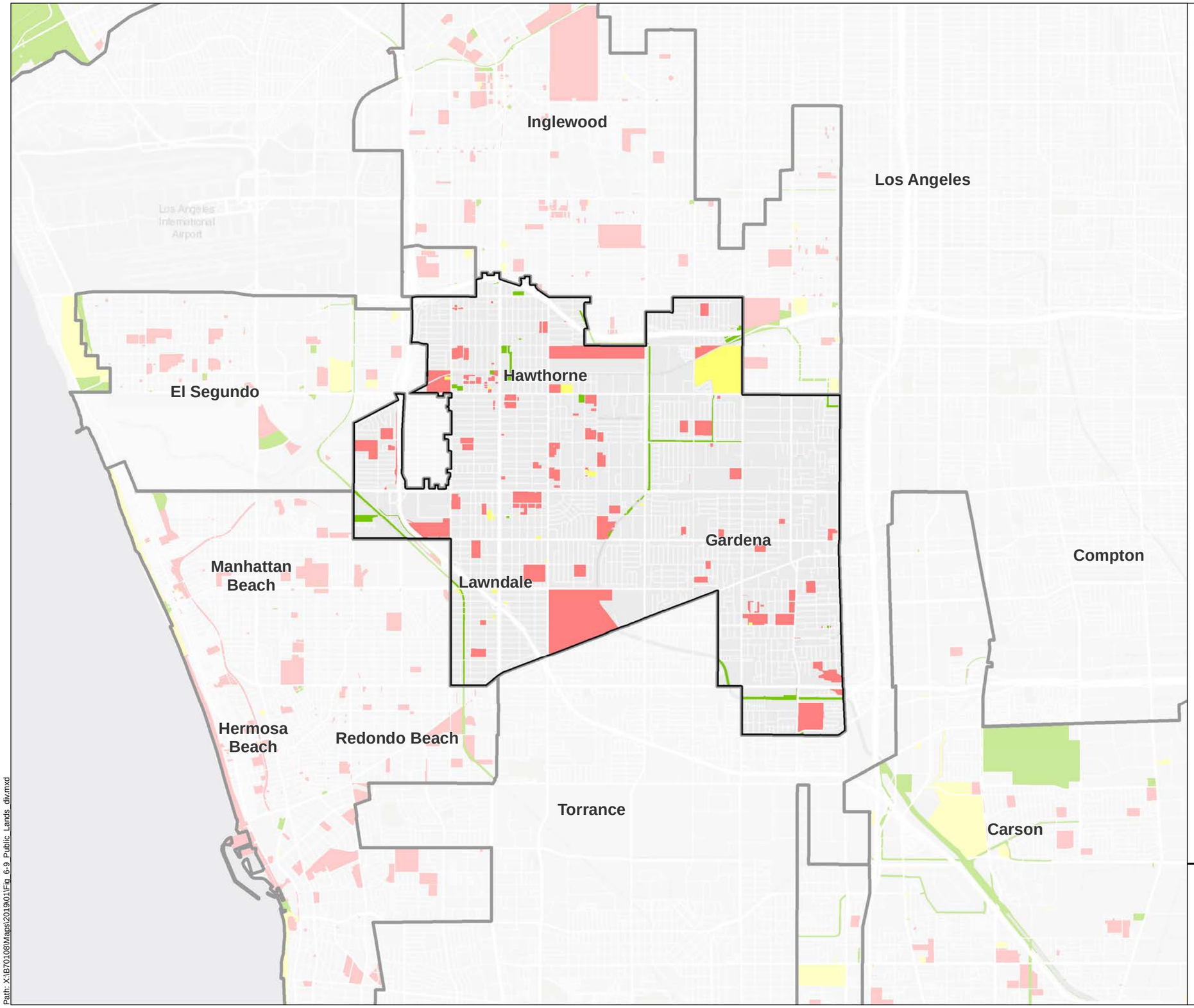

Legend

West Basin Director Division Boundaries

Outreach Priority

- High
- Medium
- Low

Notes

1. All locations are approximate.
2. Public agencies are qualitatively ranked for priority for water efficiency program outreach based on assumed water using activities, opportunities for increased water efficiency, and relative size of facilities owned by agency.

Sources

1. Los Angeles County Assessors Parcel Data, 2014 Tax Roll, Los Angeles County Data Portal.
2. Los Angeles County, 2018. "Assessor - Publicly Owned Parcels Listing," updated 17 October 2018, downloaded from County of Los Angeles Open Data website: https://data.lacounty.gov/Parcel-/Assessor-Publicly-Owned-Parcels-Listing/a9jw-tqfp.

N

0 1 2

(Scale in Miles)

Outreach Opportunities for Water Use Efficiency Programs for Publicly Owned Properties Division 5

West Basin Municipal Water District

June 2019

EKI B70108.00

Figure 6-9 D5

eki environment & water

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APPENDIX B

Water Use Efficiency Program Survey

Water Use Efficiency (WUE) Program Survey

Contact Information

An asterisk (*) next to a survey question number indicates an answer is required.

*** 1. Name:**

*** 2. Title:**

*** 3. City/Agency/Company:**

*** 4. Phone Number:**

*** 5. Email:**

6. If different from above, who should we contact with questions about this survey or other information relevant to West Basin's Water Use Efficiency Strategic Plan? Please provide name, title, and contact information.

Current Water Use Efficiency Programs

Water use efficiency programs are offered by multiple entities, including through Metropolitan Water District (MWD), West Basin Municipal Water District (West Basin), and retail water agencies and cities. The questions below are intended to help West Basin understand, (1) which water use efficiency programs are most valued and (2) what water use efficiency programs are being offered at the local level.

*** 1. Below is a list of water use efficiency programs currently or recently offered by West Basin and MWD. In your opinion, how effective are each of these programs in your agency's service area. An asterisk (*) indicates program is offered through MWD. For information about specific West Basin programs listed, please see: https://conservation.westbasin.org/programs**

	Not effective 1	2	Moderately effective 3	4	Very effective 5	Not used by my agency	Not aware of program
Residential Programs							
Hands-On Workshops	○	○	○	○	○	○	○
California Landscape Training and Turf Removal Classes*	○	○	○	○	○	○	○
Disadvantaged Communities Water-Energy Savings Program (washing machines)	○	○	○	○	○	○	○
High-Efficiency Toilet Distribution Events *(program recently concluded)*	○	○	○	○	○	○	○
Landscape Irrigation Efficiency Program (LIEP)	○	○	○	○	○	○	○
Ocean Friendly Demonstration Gardens	○	○	○	○	○	○	○
Rain Barrel Distribution Events	○	○	○	○	○	○	○
Rainwater / Greywater Workshops	○	○	○	○	○	○	○
Device Rebate Program*	○	○	○	○	○	○	○
Turf Removal Program* (limited eligibility)	○	○	○	○	○	○	○
Weather-Based Irrigation Controller Exchange Events *(program recently concluded)*	○	○	○	○	○	○	○
CII Programs							
Cash for Kitchens	○	○	○	○	○	○	○
Hotel / Motel Direct Install Program *(program recently concluded)*	○	○	○	○	○	○	○
Landscape Irrigation Efficiency Program (LIEP)	○	○	○	○	○	○	○
Large Landscape Surveys*	○	○	○	○	○	○	○
Recirc & Save *(program recently concluded)*	○	○	○	○	○	○	○
Device Rebate Program*	○	○	○	○	○	○	○
Turf Removal Program* (limited eligibility)	○	○	○	○	○	○	○
Water Savings Incentive Program (WSIP)*	○	○	○	○	○	○	○
Public Agency Landscape (PAL) Program	○	○	○	○	○	○	○

2. What feedback, if any, have you received from your management and/or governing body regarding the water use efficiency programs offered by West Basin and/or MWD?

3. What feedback, if any, have you received from your customers regarding the water use efficiency programs offered by West Basin and/or MWD?

*** 4. List any water use efficiency programs currently offered by your agency, in addition to those offered by West Basin and/or MWD.**

Program 1

Program 2

Program 3

Program 4

Program 5

*** 5. For each of the programs listed above, check the relevant program characteristics from the matrix below. Check all that apply.**

	Residential Sector	CII Sector	Indoor Water Use	Outdoor Water Use	Fixture or Turf Replacement/ Rebate	Survey or Audit	Alternative Non-Potable Supply	Water Loss/ Leak Detection	Building or Planning Policy	School Education Program	Public Workshop or Class	Public Engagement and Marketing	Other
Program 1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Program 2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Program 3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Program 4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Program 5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Other (please specify)

6. Please describe any planned or anticipated changes to the water use efficiency program offerings you indicated above.

Water Use Efficiency Drivers

Per the Making Water Conservation a California Way of Life Executive Order (B-37-16), the California state legislature is updating the California Water Code to revise requirements for Urban Water Management Plans (UWMPs) and water use efficiency targets. Water suppliers will be required to use a service-area-wide water budgeting approach to establish water use efficiency targets that will be calculated based primarily on service area population, landscape area, and distribution system water loss. The following questions are intended to help West Basin understand the factors motivating water conservation and efficiency efforts across its service area, including, and in addition to, the forthcoming UWMP and water efficiency requirements.

*** 1. Do you feel your agency is currently well-positioned to meet the forthcoming service-area-wide water budget-based UWMP water use efficiency targets?**

- ◯ Yes
- ◯ No
- ◯ Not sure

*** 2. Do you anticipate your agency changing its approach to water use efficiency as a result of the forthcoming service-area-wide water budget-based UWMP water use targets?**

- ◯ Yes
- ◯ No
- ◯ Not sure

*** 3. How is your agency's future water supply reliability characterized in planning documents (e.g., UWMP, Master Plans, etc.)?**

- ◯ Sufficient to meet demands if water efficiency/conservation efforts are continued
- ◯ Sufficient to meet demands if new or additional supply sources are developed
- ◯ Sufficient to meet demands except in drought conditions
- ◯ Sufficient to meet demands, even without water efficiency/conservation or additional sources
- ◯ Other (please specify)

[ ]

*** 4. Are any of the following efforts currently planned or implemented in your agency's service area? Please indicate independent efforts by your agency. Check all that apply.**

- [ ] Development of new water supplies through transfers or agreements
- [ ] Development of new groundwater supply sources
- [ ] Development of new emergency and drought-relief water supply sources
- [ ] Addition or expanded use of recycled water
- [ ] Expansion of water or wastewater treatment plant capacity
- [ ] None of the above
- [ ] Other (please specify)

5. Please describe any planning efforts identified in Question 4, above.

*** 6. In your opinion, how strong of a driver are each of the factors below in your agency's need to increase water use efficiency?**

	Not a strong driver 1	2	Moderate driver 3	4	Very strong driver 5	Not applicable
Forthcoming UWMP water use efficiency standards	○	○	○	○	○	○
Costs and challenges to obtain additional water supply	○	○	○	○	○	○
Limited water or wastewater treatment capacity	○	○	○	○	○	○
Reduced long-term water supply reliability resulting from climate change or other factors	○	○	○	○	○	○
Reduced short-term water supply reliability during drought conditions	○	○	○	○	○	○
Allow for additional economic growth and redevelopment in the service area	○	○	○	○	○	○
Customers and community have a desire for sustainability	○	○	○	○	○	○

Other (please specify)

7. Please discuss any additional drivers not indicated in Question 6, above.

8. Please describe any other factors that contribute to your agency's need or desire to increase water use efficiency planning and/or implementation.

Potential Future Programs

West Basin is working to develop its Water Use Efficiency Strategic Plan, which will evaluate and recommend potential water use efficiency programs to be made available over the next 5-10 year planning period. The following questions are intended to help West Basin identify water use efficiency programs that will be most useful and beneficial to customers and customer agencies in its service area.

*** 1. In your agency's service area, what water use sectors and/or end uses do you think have the greatest potential for increased water use efficiency?**

	Very little potential 1	2	Moderate potential 3	4	Significant potential 5
Residential indoor water use	○	○	○	○	○
Residential outdoor water use	○	○	○	○	○
CII indoor water use	○	○	○	○	○
CII outdoor water use	○	○	○	○	○
Distribution system water loss control	○	○	○	○	○
Customer water loss control	○	○	○	○	○
Use of recycled water	○	○	○	○	○
Use of greywater	○	○	○	○	○
Use of stormwater (on-site)	○	○	○	○	○

*** 2. Various water use efficiency program types and approaches are listed below. For each, please list your agency's interest in participating in, or providing such programs to, your customers.**

	My agency is currently implementing	My agency would like to implement on its own	Would like to partner with West Basin to implement	Do not forsee implementing or participating in
Indoor fixture replacement				
Sprinkler and irrigation controller replacement				
Turf and landscaping replacement				
Detailed water use surveys or audit (residential, CII, or landscape)				
Alternative water supply (recycled water, greywater, stormwater)				
Customer-level water loss management and leak detection				
Distribution system-level water loss management and leak detection				
Programs specifically for disadvantaged communities/households				
Water demand offset or other water neutrality policies				
Water efficient landscape policies that are significantly different from the state Model Water Efficient Landscape Ordinance (MWELO)				
Incentivizing compliance with water budgets (large landscape, and/or CII)				
On-site stormwater capture and reuse requirements				
School education programs				
Public workshops and classes				
Public engagement and marketing campaigns				
Customer-focused water use reporting/tracking tools				
Tiered water rates				
Surcharges for high water use during drought conditions				
Water budgets for individual accounts				

Other (please specify)

*** 3. Below is a list of water use efficiency programs currently or recently offered by West Basin and MWD. As West Basin considers what programs to offer in the future, please indicate how you feel each program should be prioritized over the next 5 to 10 years. An asterisk (*) indicates program is offered through MWD.**

	Low priority	Medium priority	High priority
Residential Programs			
Hands-On Workshops	○	○	○
California Landscape Training and Turf Removal Classes*	○	○	○
Disadvantaged Communities Water-Energy Savings Program (washing machines)	○	○	○
High-Efficiency Toilet Distribution Events *(program recently concluded)*	○	○	○
Landscape Irrigation Efficiency Program (LIEP)	○	○	○
Ocean Friendly Demonstration Gardens	○	○	○
Rain Barrel Distribution Events	○	○	○
Rainwater / Greywater Workshops	○	○	○
Device Rebate Program*	○	○	○
Turf Removal Program* (limited eligibility)	○	○	○
Weather-Based Irrigation Controller Exchange Events *(program recently concluded)*	○	○	○
CII Programs			
Cash for Kitchens	○	○	○
Hotel / Motel Direct Install Program *(program recently concluded)*	○	○	○
Landscape Irrigation Efficiency Program (LIEP)	○	○	○
Large Landscape Surveys*	○	○	○
Recirc & Save *(program recently concluded)*	○	○	○
Device Rebate Program*	○	○	○
Turf Removal Program* (limited eligibility)	○	○	○
Water Savings Incentive Program (WSIP)*	○	○	○
Public Agency Landscape (PAL) Program	○	○	○

*** 4. Are there any water use efficiency programs that you would like to implement, but have not been able to start or maintain?**

- ◯ Yes
- ◯ No

If yes, please describe the water use efficiency programs that you would like to implement, but have not been able to start or maintain and why.

*** 5. In general, what do you find to be the greatest barriers to starting new water use efficiency programs? (Check all that apply)**

- ☐ Securing funding
- ☐ Lack of interest from customers and community
- ☐ Lack of support from management and/or governing body
- ☐ Lack of staff resources to support program
- ☐ Selecting and initiating contracts with appropriate vendors
- ☐ Public push-back against programs
- ☐ Challenges designing a suitable program
- ☐ None of the above
- ☐ Other (please specify)

6. Please describe the barriers your agency faces when starting new water use efficiency programs.

7. Are there any specific water use efficiency programs that you would like to see made available to your customers in the future, either through your agency or by West Basin? Please describe:

8. Have you received any feedback or requests from the public for new water use efficiency programs in your agency's service area? Please describe:

9. Are there any additional factors that have not been covered here that you would like West Basin to consider through this Water Use Efficiency Strategic Planning process? Please describe: