S A W P A

SANTA ANA WATERSHED PROJECT AUTHORITY
11615 Sterling Avenue, Riverside, California 92503 • (951) 354-4220

NOTICE OF REGULAR MEETING OF THE PROJECT AGREEMENT 22 COMMITTEE

Interregional Landscape Water Demand Reduction Program

Committee Members:
Halla Razak, General Manager, Inland Empire Utilities Agency
Doug Headrick, General Manager, San Bernardino Valley Municipal Water District
Paul D. Jones, General Manager, Eastern Municipal Water District, Chair
Michael Markus, General Manager, Orange County Water District, Vice Chair
Craig Miller, General Manager, Western Municipal Water District

THURSDAY, AUGUST 23, 2018 – 8:00 A.M.

AGENDA

1. **CALL TO ORDER (Paul D. Jones, Chair)**

2. **PUBLIC COMMENTS**

   Members of the public may address the Committee on items within the jurisdiction of the Committee; however, no action may be taken on an item not appearing on the agenda unless the action is otherwise authorized by Government Code §54954.2(b).

3. APPROVAL OF MEETING MINUTES: MARCH 22, 2018 3

4. **COMMITTEE DISCUSSION ITEMS**

   A. EMERGENCY DROUGHT GRANT PROGRAM SCHEDULE AND BUDGET UPDATE (PA22#2018.23) 7
   Presenter: Ian Achimore
   Recommendation: Receive and file.

   B. UTILIZING $83,605 IN COST SAVINGS FOR HIGH VISIBILITY TURF REMOVAL IN ORANGE COUNTY (PA22#2018.20) 15
   Presenter: Ian Achimore
   Recommendation: (1) Approve utilizing $83,605 in cost savings from the Proposition 84 Drought Grant for Orange County Water District and the Municipal Water District of Orange County's High Visibility and Turf Removal and Retrofit Project, and, (2) Authorize SAWPA to execute a Sub-Grantee Agreement amendment with Orange County Water District to add the $83,605 of grant cost savings to their current funding amount of $880,894.

   C. SAWPA AERIAL IMAGERY AND LANDSCAPE MEASUREMENT DATA – ESRI ON-LINE WEB APPLICATION AND CLOUD SERVICE – YEAR TWO OF SERVICE (PA22#2018.19) 17
   Presenter: Rick Whetsel
   Recommendation: Approve an amount not to exceed $50,000 for ESRI license fees, on-line web application and cloud services as part of an on-going effort to provide agency staff access to SAWPA aerial imagery and landscape measurement data.

D. **WEB-BASED WATER CONSUMPTION REPORTING AND CUSTOMER ENGAGEMENT PROJECT – FINAL PROJECT REPORT (PA22#2018.18)** 23
Presenter: Rick Whetsel
Recommendation: Receive and file.

E. **CONSERVATION-BASED WATER RATES UPDATE (PA22#2018.21)** 95
Presenter: Ian Achimore
Recommendation: Receive and file.

F. **CONFERENCE PANEL AND PRESENTATION ON THE DROUGHT GRANT'S TOOLS (PA22#2018.22)** 99
Presenter: Ian Achimore
Recommendation: Provide feedback on the draft conference panel abstract.

5. FUTURE AGENDA ITEMS

6. ADJOURNMENT

PLEASE NOTE:
Americans with Disabilities Act: Meeting rooms are wheelchair accessible. If you require any special disability related accommodations to participate in this meeting, please contact (951) 354-4220 or kberry@sawpa.org. Notification at least 48 hours prior to the meeting will enable staff to make reasonable arrangements to ensure accessibility for this meeting. Requests should specify the nature of the disability and the type of accommodation requested.

Materials related to an item on this agenda submitted to the Commission after distribution of the agenda packet are available for public inspection during normal business hours at the SAWPA office, 11615 Sterling Avenue, Riverside, and available at www.sawpa.org, subject to staff's ability to post documents prior to the meeting.

Declaration of Posting

I, Kelly Berry, Clerk of the Board of the Santa Ana Watershed Project Authority declare that on Friday, August 17, 2018, a copy of this agenda has been uploaded to the SAWPA website at www.sawpa.org and posted at the SAWPA office, 11615 Sterling Avenue, Riverside, California.

/s/

Kelly Berry, CMC

2018 Project Agreement 22 Committee Regular Meetings
Fourth Thursday of Every Month
(Note: All meetings begin at 8:00 a.m., unless otherwise noticed, and are held at SAWPA.)

July 7/26/18 Regular Committee Meeting	**August** 8/23/18 Regular Committee Meeting
September 9/27/18 Regular Committee Meeting	**October** 10/25/18 Regular Committee Meeting
November 11/15/18* Regular Committee Meeting*	**December** 12/27/18 Regular Committee Meeting

* Meeting date adjusted due to conflicting holiday.

PROJECT AGREEMENT 22 COMMITTEE
Interregional Landscape Water Demand Reduction Program
REGULAR MEETING MINUTES
March 22, 2018

COMMITTEE MEMBERS PRESENT

Doug Headrick, General Manager, San Bernardino Valley Municipal Water District
Michael Markus, General Manager, Orange County Water District [Vice Chair]
Craig Miller, General Manager, Western Municipal Water District
Halla Razak, General Manager, Inland Empire Utilities Agency

COMMITTEE MEMBERS ABSENT

Paul D. Jones, General Manager, Eastern Municipal Water District [Chair]

STAFF PRESENT

Ian Achimore, Larry McKenney, Mark Norton, Zyanya Blancas

1. CALL TO ORDER/PLEDGE OF ALLEGIANCE

The meeting was called to order at 8:00 a.m. by Vice Chair Markus at the Santa Ana Watershed Project Authority, 11615 Sterling Avenue, Riverside, California.

2. PUBLIC COMMENTS

There were no public comments.

3. APPROVAL OF MEETING MINUTES: JANUARY 25, 2018

MOVED, approve the January 25, 2018 meeting minutes.

Result:	**Adopted (Unanimously; 4-0)**
Motion/Second:	Miller/Razak
Ayes	Headrick, Markus, Miller, Razak
Nays:	None
Abstentions:	None
Absent:	Jones

4. COMMITTEE DISCUSSION ITEMS

A. UPDATES TO PA 22 COMMITTEE'S POLICY STATEMENT AND GRANT AGREEMENT REFLECTING CHANGES TO HIGH VISIBILITY TURF REMOVAL AND RETROFIT COMPONENT (PA22#2018.5)

Ian Achimore provided a PowerPoint presentation outlining the proposed Policy Statement No. 5 and an update on the pending amendment to the Proposition 84 Drought Round Grant Agreement (Grant Amendment).

The proposed Policy Statement No. 5 will broaden the definition of "Institutional B" to include highly visible commercial properties to ensure grant funds are utilized by the deadline proposed in the pending Grant Amendment. Golf courses will continue to be excluded. This will require a minor change in the Grant Amendment, which is currently pending with the Department of Water Resources (DWR). The pending Grant Amendment proposes a scope

and schedule change.

SAWPA staff is working with the Municipal Water District of Orange County (MWDOC) and Orange County Water District on expeditiously utilizing the lower watershed's grant allocation of $880,894 for the High Visibility Turf Removal and Retrofit component. To date, MWDOC has utilized $99,014, of the allocation. Due to the public perception that the recent drought has ended, public agencies or HOA properties have low interest in obtaining grant funding; MWDOC has launched a new marketing campaign. MWDOC estimated that 16 average size projects from commercial, public agencies or HOA properties would still be needed by December 31, 2018 deadline to utilize all grant funding. Based on previous turf removal project timelines and widening the eligibility requirements, the 16-project goal is attainable.

Committee member Razak asked about whether other regions outside of Orange County have spent their grant allocation and if it was possible to extend the grant agreement for another year in order to utilize all the funds. Achimore stated that the way they determine if allocated funds have been used is by tracking the invoices SAWPA receives. Communications with agencies indicate that half of their allocated funds have been spent and are on track to utilizing all their allocated monies. He also noted that inquiring about an extension to the Grant Agreement is feasible, but highly discouraged due to an increase in administrative costs if approved and possible rejection due to legislative drive to complete this 2006 Water Bond Grant.

Vice Chair Markus asked if unexpended funds may be transferred to other parts of the Emergency Drought Grant Program. Achimore indicated that he is currently strategizing a way to do that in case there are leftover funds and any proposal will be brought to the Committee for approval.

Committee member Miller expressed his concerns regarding the delay of the Grant Amendment approval by DWR and asked if advertising in the lower watershed can begin prior to DWR approval of Grant Amendment. Achimore explained that DWR is aware that the process has taken longer than usual. Most of their staff has been assigned to handle the Oroville spillway incident and SGMA Groundwater Management program, which has delayed their process. He indicated that he sees no major issues in advertising prior to the approval of the Grant Amendment as communications with DWR signal a certain approval.

Speaker from the audience, Joe Berg, Water Efficiency Program Manager at MWDOC, informed the Committee that MWDOC has a list of projects that qualify to receive funding right away, which will be targeted with the intensive marketing campaign.

MOVED, approved adoption of Policy Statement No. 5 and amending the Proposition 84 Drought Round Grant Agreement to allow highly visible commercial properties to receive turf removal rebates under the Emergency Drought Grant Program.

Result:	**Adopted (Unanimously; 4-0)**
Motion/Second:	Headrick/Razak
Ayes	Headrick, Markus, Miller, Razak
Nays:	None
Abstentions:	None
Absent:	Jones

B. <u>CITY OF RIALTO CONSERVATION-BASED RATE STUDY PROCESS (PA22#2018.6)</u>

Ian Achimore provided a PowerPoint presentation on the conservation-based water rates process for the City of Rialto.

Staff has been working with the City of Rialto since the execution of their Sub-Grantee

agreement to assist them with the process of analyzing conservation-based rates. The City's rate consultant and GIS management consultant have drafted an analysis of their billing data, which has prepared them for moving forward with conservation-based rates. Due to their billing system limitation, the City will not be able to implement conservation-based rates and calculate budgets on a discrete customer basis for approximately three years.

The City has invoiced SAWPA for approximately $57,000 under the Sub-Grantee Agreement. Staff believes that by providing a final summary of their analysis conducted regarding their billing information data, water demand data based on aerial imagery, and revenue requirements, the City complies with the conservation-based rates policy statement.

MOVED, approved City of Rialto's work-to-date of the initial implementation of a rate analysis as complying with the PA 22 Committee conservation-based policy statement.

Result:	**Adopted (Unanimously; 4-0)**
Motion/Second:	Razak/Headrick
Ayes	Jones, Headrick, Markus, Miller, Razak
Nays:	None
Abstentions:	None
Absent:	Jones

C. EMERGENCY DROUGHT GRANT PROGRAM SCHEDULE AND BUDGET UPDATE (PA22#2018.7)

Ian Achimore provided an oral update of the Emergency Drought Grant Program schedule and budget.

Schedule Completion Dates by Components

Project 1 Conservation-Based Reporting Tools and Rate Structure Implementation	Project 2 High Visibility Turf Removal and Retrofit
- Aerial Mapping: (Completed) July 2017 - Conservation Based Rates: December 2018 (Previously July 2019 – change due to the City of Tustin's dropout) - Meter Geocoding & Business Classification: December 2018 - Web-Based Information Tool: June 2018	- Turf Removal: December 2018

Status of Program Spending (As of January 31, 2018 invoices to SAWPA)

	Grant	Required Funding Match	Total
In Grant Agreement	$ 12,860,110	$ 7,051,533	$ 19,911,643
Invoiced ($)	$6,118,805	$ 5,943,834	$12,062,639
Invoiced (%)	48%*	84%*	61%*

* Due to administrative costs, some agencies have opted to submit their invoices to SAWPA at the end of their program and thus impacting the completion percentage.

Vice Chair Markus requested a cost breakdown using charts of each item under the Projects' components.

Committee member Razak voiced her support of collaboration and communication with the agencies that dropped out of the program to fine-tune the program process and avoid drop

outs. Achimore stated that exit interviews are given to the dropped-out agencies and have provided valuable information that can assist future participating agencies.

A discussion ensued regarding the different obstacles participating Cities must overcome compared to water retail agencies. The Committee agreed that it is more difficult for a City to participate in conservation-based water rates and suggested staff use cities who have already implemented conservation-based water rates as models for cities who are struggling to transfer over.

It was noted that although the Emergency Drought Grant Program is due to end at the end of the calendar year, the PA22 Committee is will continue to address all water use efficiency management measures, which include the Santa Ana River Conservation and Conjunctive Use Program (SARCCUP) water use efficiency component.

Vice Chair Markus called for a motion to receive and file Agenda Item No. 4.C. Committee member Miller moved the motion; Committee member Razak seconded the motion.

MOVED, receive and file Emergency Drought Grant Program schedule and budget update.

Result:	**Adopted (Unanimously; 4-0)**
Motion/Second:	Miller/Razak
Ayes	Headrick, Markus, Miller, Razak
Nays:	None
Abstentions:	None
Absent:	Jones

5. FUTURE AGENDA ITEMS

There were no proposed future agenda items.

6. ADJOURNMENT

There being no further business for review, Vice Chair Markus adjourned the meeting at 8:48 a.m.

Approved at a Regular Meeting of the Project Agreement 22 Committee on Thursday, August 23, 2018.

_____
Paul D. Jones II, Chair

Attest:

_____
Kelly Berry, CMC
Clerk of the Board

PA 22 COMMITTEE MEMORANDUM NO. 2018.23

DATE: August 23, 2018

TO: SAWPA Project Agreement 22 Committee

SUBJECT: Emergency Drought Grant Program Schedule and Budget Update

PREPARED BY: Ian Achimore, Senior Watershed Manager

RECOMMENDATION

Receive and file.

DISCUSSION

The following information provides an overview of the scheduled completion dates of each of the Emergency Drought Grant Program's components, and the status of Program's spending in comparison to the overall budget in the Proposition 84 Grant Agreement. There are two sub-projects included in the Program:

- Project 1: Conservation Based Reporting Tools and Rate Structure Implementation.
- Project 2: High Visibility Turf Removal and Retrofit.

Project 1 includes the project components: 1) Aerial Mapping, 2) Conservation Based Rates, 3) Meter Geocoding & Business Type Classification, 4) Web-Based Information Tool, 5) ESRI Cloud Services and Dashboard for Aerial Mapping Data. Project 2 just includes the turf removal and retrofit component.

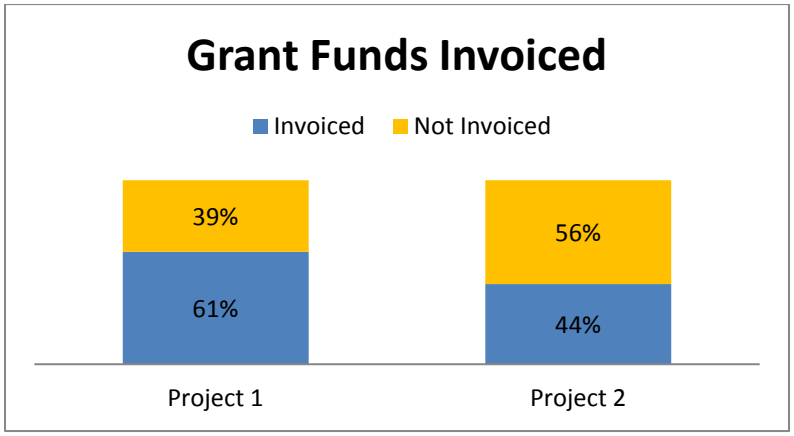
It is important to note the following items when reviewing this memorandum's charts:

- The dates and funding amounts provided for project completion recognize that the DWR Grant Agreement amendment was approved on June 7, 2018 and extended the schedule for implementation of both Projects from June 30, 2018 to June 30, 2019.
- The funding amounts for Project 2 show that the Sub-Grantee agreements have been amended, per the approval of the PA 22 Committee on August 24, 2017. That action increased the funding available to Eastern Municipal Water District, Inland Empire Utilities Agency and Western Municipal Water District.
- The memo reflects the latest invoices that have been submitted to SAWPA by June 30, 2018.

PROGRAM STATUS

	Grant	Required Funding Match	Total
In Grant Agreement	$ 12,860,110	$ 7,051,533	$ 19,911,643
Invoiced ($)	$6,938,115	$ 5,943,834	$12,281,949
Invoiced (%)	**54%**	**84%**	**65%**

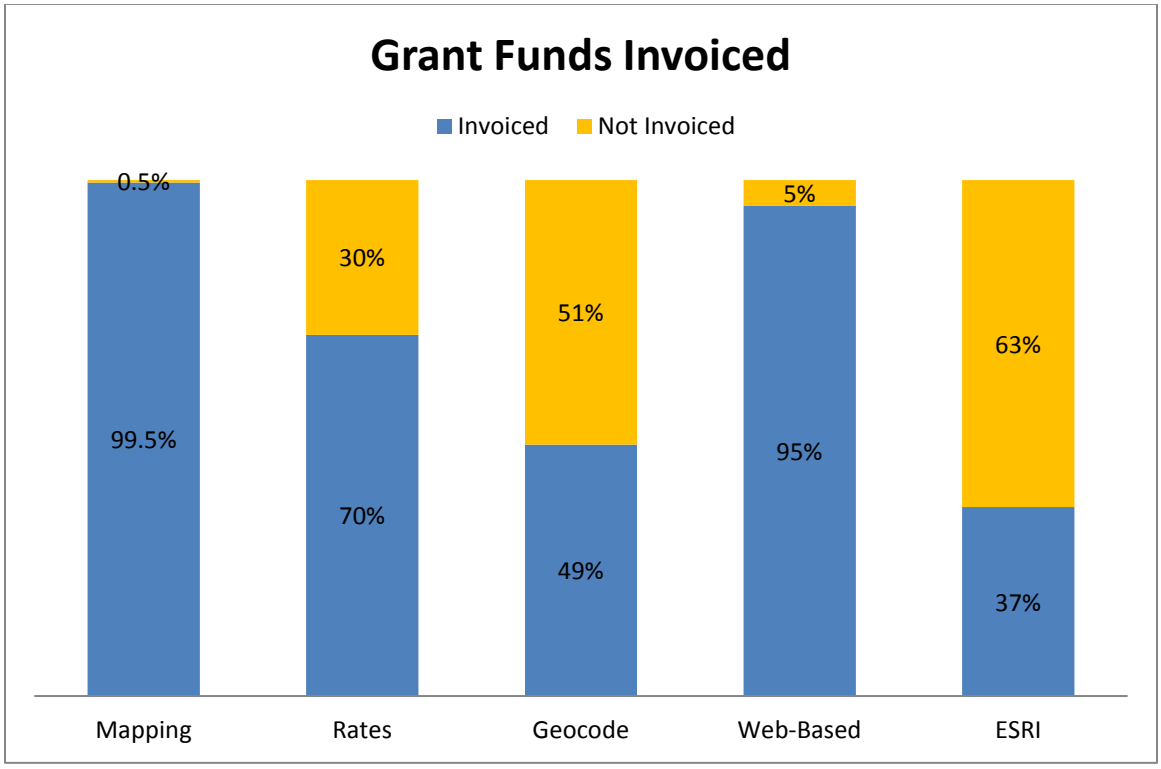
INDIVIDUAL PROJECT STATUS



Scheduled dates of completion:

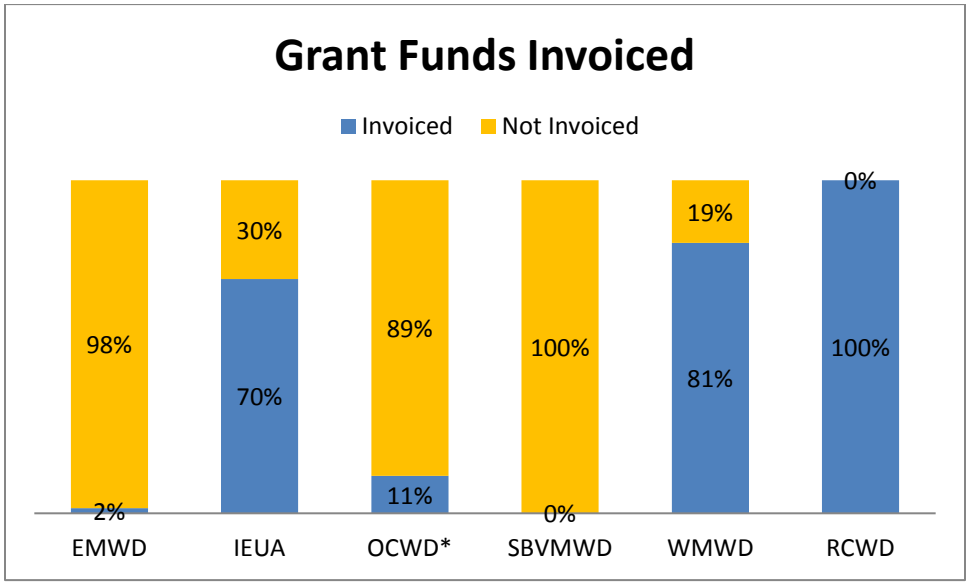
- Project 1: February 2019
- Project 2: March 2019

PROJECT 1 STATUS BY INDIVIDUAL COMPONENTS



- Aerial Mapping: (Completed) July 2017
- Conservation Based Rates: February 2019
- Meter Geocoding and Business Type Classification: December 2018
- Web-Based Information Tool: (Completed) June 2018
- ESRI Cloud Services and Dashboard for Aerial Mapping Data: August 2018

PROJECT 2 STATUSES BY INDIVIDUAL SUB-GRANTEES



* SAWPA has a Sub-Grantee agreement with OCWD; OCWD has an agreement with MWDOC that passes down the conditions from their Sub-Grantee agreement to MWDOC.

As discussed in previous PA 22 Committee meeting, although invoices have not been received, the Sub-Grantees are making major progress on the High Visibility Turf Removal and Retrofit Project component. Some of the agencies are choosing to hold invoices until their overall turf removal program in their service area is complete. By holding invoices, a final and comprehensive invoice package that includes an agency's total turf removal costs can be submitted to SAWPA, which is beneficial for accounting and administration.

Scheduled date of completion:

- Turf Removal: March 2019

CRITICAL SUCCESS FACTORS

1. Administration of the OWOW process and plan in a highly efficient and cost-effective manner.
2. Data and information needed for decision-making is available to all.

RESOURCE IMPACTS

Funding for the Project Agreement 22 updates will come from the Proposition 84 IRWM Drought Grant as shown in the FYE 2019 fiscal year of the Committee's two year budget.

Emergency Drought Grant Program Update

Ian Achimore
Senior Watershed Manager
Santa Ana Watershed Project Authority
August 23, 2018

Emergency Drought Grant Program Components

Project 1: Conservation Based Reporting Tools and Rate Structure Implementation

Project 2: High Visibility Turf Removal and Retrofit

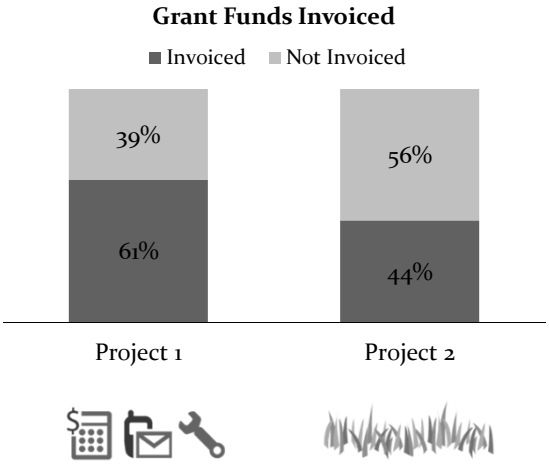
Note the Following Items

- The funding amounts for Project 2 show that the Sub-Grantee agreements have been amended, per the approval of the PA 22 Committee on August 24, 2017.
  - That action increased the funding available to EMWD, IEUA and WMWD.
- The funding amounts reflect the latest invoices that have been submitted to SAWPA by June 30, 2018.
- **Grant Agreement Amendment Approved** by DWR June 7, 2018!

Overall Program Status

	Grant	Required Funding Match	Total
In Grant Agreement	$ 12,860,110	$ 7,051,533	$ 19,911,643
Invoiced ($)	$6,938,115	$ 5,943,834	$12,281,949
Invoiced (%)	**54%**	**84%**	**65%**

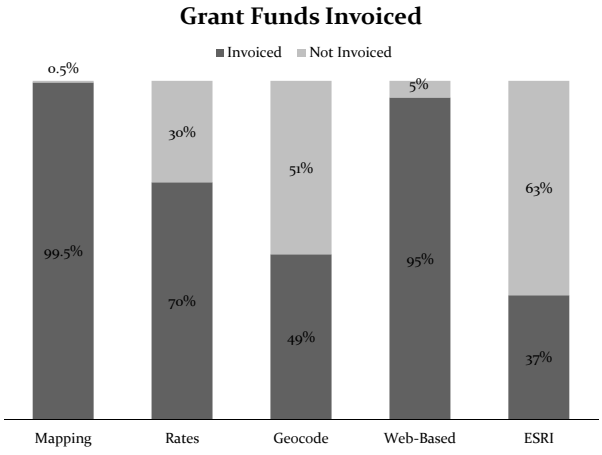
Status by Individual Project



Scheduled dates of completion:

Project 1: Feb 2019
Project 2: March 2019

Status by Component (Project 1)



Scheduled dates of completion:

Mapping: (Completed) July 2017

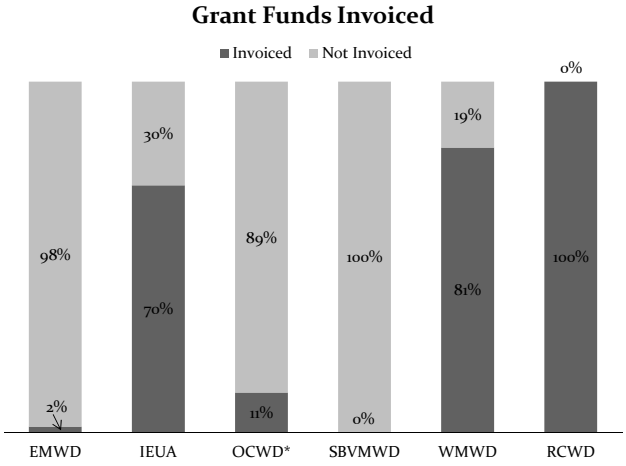
Rates: Feb 2019

Geocoding : Dec 2018

Web-Based Tool: (Completed) June 2018

ESRI Tool: August 2018

Status by Agency (Project 2)



Scheduled date of completion:

March 2019

*OCWD has an agreement with MWDOC that passes down the conditions from their Sub-Grantee agreement to MWDOC

Turf Invoicing

- Although not all invoices have been received, the Sub-Grantees are making major progress and projects are being implemented.
- Some of the agencies are choosing to hold invoices until their overall turf removal program in their service area is complete.
- By holding invoices, a final and comprehensive invoice package that includes an agency's total turf removal costs can be submitted to SAWPA, which is beneficial for accounting and administration.

Questions

PA 22 COMMITTEE MEMORANDUM NO. 2018.20

DATE: August 23, 2018

TO: SAWPA Project Agreement 22 Committee

SUBJECT: Utilizing $83,605 in Cost Savings for High Visibility Turf Removal in Orange County

PREPARED BY: Ian Achimore, Senior Watershed Manager

RECOMMENDATION

1) Approve utilizing $83,605 in cost savings from the Proposition 84 Drought Grant for Orange County Water District and the Municipal Water District of Orange County's High Visibility and Turf Removal and Retrofit Project, and
2) Authorize SAWPA to execute a Sub-Grantee Agreement amendment with Orange County Water District to add the $83,605 of grant cost savings to their current funding amount of $880,894.

DISCUSSION

As discussed at the August 24, 2017 and June 28, 2018 PA 22 Committee meeting, SAWPA budgeted a contingency of $83,605 in Proposition 84 grant funding for the High Visibility and Turf Removal and Retrofit Project (Project). Under the Project, SAWPA provides funding to the SAWPA member agencies[1] and Rancho California Water District (RCWD) on a reimbursement basis for their highly visible commercial, institutional, public agency and homeowner association turf removal and drought tolerant installation rebated projects. Now that the overall Project is closer to completion with all turf removal scheduled to end in March 2019, SAWPA met with the Advisory Workgroup of Conservation Managers[2] to develop an allocation of the funding. At the latest Advisory Workgroup meeting, the group was supportive of Orange County Water District (OCWD) and the Municipal Water District of Orange County (MWDOC) utilizing the remaining contingency. MWDOC has enough projects in their application queue, as well as a buffer for application drop outs, that can utilize the grant funding remaining. The $83,605 in funding would provide for the removal of 41,802 square feet of turf (at the amount of $2 per square foot).

SAWPA staff and the Advisory Workgroup initially contemplated using the funding to compliment Metropolitan Water District's new turf rebate program that was approved by their board in April 2018. As Metropolitan was allowing for projects to be completed within six months after an application is submitted, it was deemed the timeline of the grant and Metropolitan's new turf rebate program would not allow the time for utilizing the entire $83,605 in savings and the Metropolitan rebate program together. Further, MWDOC was able to increase the amount of rebate applicants for the Project following the amendment to the Proposition 84 grant agreement that added the eligibility of highly visible commercial entities. It was also contemplated that the $83,605 could be allocated to the SAWPA member agencies through a competition process, where the first completed projects receive the funding. After designing that process, it was deemed too complicated to administer for a relatively small amount of contingency funding. In addition, the process would be problematic if a SAWPA member agency

[1] OCWD has an agreement with MWDOC that passes down the conditions from the SAWPA-OCWD Sub-Grantee agreement to MWDOC. SAWPA provides grant funding to MWDOC through OCWD.
[2] Workgroup consists of staff from the SAWPA member agencies, MWDOC and RCWD.

promised funding initially to a rebate applicant, but the applicant did not complete the project quickly enough to secure the funding before another project that was involved in the competition process. Under this scenario, it would be difficult for a SAWPA member agency to promise rebate funding during the rebate application process if they do not know exactly when each of the projects involved in the competition will finish their landscape retrofit.

CRITICAL SUCCESS FACTORS

1. Administration of the OWOW process and plan in a highly efficient and cost-effective manner.
2. Data and information needed for decision-making is available to all.

RESOURCE IMPACTS

Funding for the increase in the OCWD Sub-Grantee Agreement is provided by the cost savings from the Proposition 84 IRWM Drought Grant. Cost savings were realized through implementation of the Aerial Imagery and Web-Based Information Tool.

PA 22 COMMITTEE MEMORANDUM NO. 2018.19

DATE: August 23, 2018

TO: SAWPA Project Agreement 22 Committee

SUBJECT: SAWPA Aerial Imagery and Landscape Measurement Data - ESRI On-line Web Application and Cloud Services – Year Two of Service

PREPARED BY: Rick Whetsel, Senior Watershed Manager

RECOMMENDATION
The Conservation Advisory Workgroup and SAWPA staff recommend that the Project Agreement (PA) 22 Committee approve an amount not to exceed $50,000 for ESRI license fees, on-line web application and cloud services as part of an on-going effort to provide agency staff access to SAWPA aerial imagery and landscape measurement data.

DISCUSSION
Esri has completed work on a draft of the GIS web based application to provide water agency staff access to the SAWPA high resolution aerial imagery and landscape vegetation measurement data funded through Proposition 84.

Feedback from agency staff regarding this GIS web based application have been positive, prompting staff to secure additional funding available from proposition 84 to provide access to ESRI managed cloud services and the GIS web based application through the end of the grant window (December 2019).

Fees to ESRI include the following:

- Cloud Environment monitoring and Support Services estimated at $23,400
- Image License Fee estimated at $20,000 (perpetual rate)
- ArcGIS License Fee estimated at $5,000 (10 annual licenses)

Note: the ESRI Perpetual Image License Fee includes an up-front cost of $20,000 and an annual fee for future years of $6,000, as opposed to a regular annual Image License fee of $12,000 per year.

BACKGROUND
June 22, 2017, the Project Agreement (PA) 22 Committee authorized a Task Order with ESRI to develop an on-line web application and managed cloud services to provide water agency staff access to our high resolution aerial imagery and landscape vegetation measurement data.

Cloud services hosted by ESRI will enable SAWPA to deliver up to fourteen terabytes of raster imagery in a scalable cloud computing environment made available both directly to current ESRI clients and through a custom ArcGIS Online application.

Contracting with ESRI, SAWPA is utilizing our existing relationship and leveraging the existing ESRI license agreements of our member agencies in order to achieve a significantly (approximately 50%) lower cost for hosting and serving this dataset. Additionally, through the

cloud services hosted by ESRI, SAWPA and its member agencies will also enjoy the benefit of access to this immense data set without tying up their agency's own computer data storage/networking services.

The on-line web application developed by ESRI using a number of predefined tools will enable water retail agency staff to access SAWPA's aerial imagery and the results of our landscape analysis performed under the Prop 84 Emergency Drought Grant Program. Making these data available through an on-line web application eliminates the need and associated costs to store this large data for all agencies and for those lacking GIS capabilities provides a platform to use the data. Additionally, this will provide the foundation for which future data may be added and shared, both among agency staff and between agencies.

The on-line web application will include many of the capabilities of the original data, allowing the user to view the background imagery in three modes: Natural Color, False Color Infrared and Normalized Difference Vegetation Index (NVDI). Additionally, the user will have access to the results of SAWPA's work to analyze the watershed's landscape using aerial imagery and remote sensing analysis. The results of the landscape analysis will be able to be viewed at both the parcel level, as well as the agency level, which will include a summary of the landscape statistics by land use type.

CRITICAL SUCCESS FACTORS
The following OWOW critical success factors are addressed by this action:

1. Administration of the OWOW process and plan in a highly efficient and cost-effective manner.
2. Data and information needed for decision-making is available to all.

RESOURCE IMPACTS
Funding for these projects will come from the projected cost savings remaining from the Proposition 84 IRWM Drought Grant, Project 1 Conservation Based Reporting Tools and Rate Structure Implementation.

Attachment:

1. PowerPoint presentation

Emergency Drought Grant Program:

ESRI On-Line Web Application & Cloud Services

Rick Whetsel
Senior Project Manager
Santa Ana Watershed Project Authority

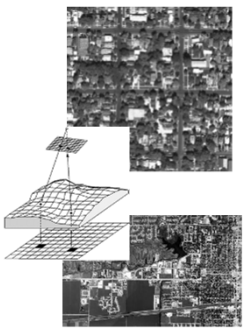
August 23, 2018

SAWPA

On-line Web Application and Cloud Services Project

Objective:

- Create an on-line web application for the high resolution aerial imagery and outdoor landscape measurements for outdoor water budgets developed through the Prop 84 Emergency Drought Grant Program accessible to water managers.



SAWPA

On-line Web Application and Cloud Services

Project Highlights:

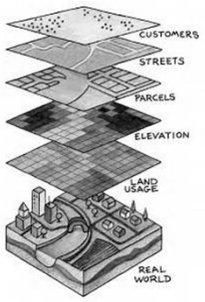
- Managed Cloud services delivering fourteen terabytes of raster imagery in a scalable cloud computing environment
- On-line GIS Based Web Application employing Pre-defined web tools available from ESRI
  - Includes many capabilities of the original data (example: 3 modes of background imagery)
  - User access to the results of SAWPA's landscape analysis.
  - Results available at both parcel level, and agency level.
  - Includes summary of the landscape statistics by land use type.

SAWPA

On-line Web Application and Cloud Services

Benefits of Contracting with ESRI:

- Utilizes SAWPA's existing license and leverages member agencies license agreements to achieve a significantly (approximately 50%) lower cost for hosting and serving data.
- Employs a number of pre-defined tools greatly reducing the development costs



Benefits to Water Retailers:

- Serving data over the cloud reduces demand on agencies computer data storage/networking services.
- On-line web application provides water agencies, particularly those lacking adequate data storage or GIS capabilities, to access this imagery and data

SAWPA

ESRI - Annual Fees

ESRI - Annual Fees		
	FY 2017-18	FY 2018-19
Managed Cloud Services		
Cloud Environment Setup	$ 22,100	
Enhancements to Imagery	$ 3,800	
Cloud Infrastructure, System Monitoring & Support *	$ 31,200	$ 23,400 **
Image License (Perpetual License)		$ 20,000
On-line GIS Based Web Application		
Web GIS Application Configuration	$ 35,000	
ArcGIS License (10 annual licenses)		$ 5,000
Contingency for Product Enhancements	$ 7,900	
	$ 100,000	**$ 48,400**
* Estimated based upon volume of data stored ** Prorated based on nine months of grant eligibility		

SAWPA

Recommendation

Approve an amount not to exceed $50,000 for ESRI license fees, on-line web application and cloud services as part of an on-going effort to provide agency staff access to SAWPA aerial imagery and landscape measurement data.

Fees to ESRI include the following:

- Cloud Environment monitoring and Support Services estimated at $23,400
- Image License Fee estimated at $20,000 (perpetual rate)
- ArcGIS License Fee estimated at $5,000 (10 annual licenses)

SAWPA

Questions?

PA 22 COMMITTEE MEMORANDUM NO. 2018.18

DATE: August 23, 2018

TO: SAWPA Project Agreement 22 Committee

SUBJECT: Web-Based Water Consumption Reporting and Customer Engagement Project – Final Project report

PREPARED BY: Rick Whetsel, Senior Watershed Manager

RECOMMENDATION
Receive and file.

DISCUSSION
EagleView (formerly OmniEarth) staff has delivered the Final Grant project report on the Web-Based Water Consumption Reporting and Customer Engagement Project. This fulfills the contractual requirements of EagleView and Dropcounter for the Proposition 84 Emergency Drought Grant program. This report provides a comprehensive overview of the technical approaches employed, as well as a detailed history of the program management and implementation processes. Most notably, you will find a detailed review of water savings for all participating agencies, and an analysis of the program's findings. Additionally, this report includes the results and related conclusions of a Lessons Learned survey to all participants in order to provide SAWPA with robust feedback on the program.

Background
In September 2015, SAWPA contracted with the team of OmniEarth and Dropcountr to implement the Web-Based Water Consumption Reporting and Customer Engagement Project. This project, funded through the Proposition 84 Emergency Drought Grant, provides hands-on consultant support to retail agencies to estimate an indoor and outdoor water budget for each of their residential customers, identify those users with the greatest potential to save and communicate individualized conservation recommendations to customers. This targeted solution will allow retail agencies to optimize the effectiveness of their outreach while reducing the amount spent and monitor progress towards conservation goals to reduce water consumption.

Through extensive outreach conducted by SAWPA and the team of OmniEarth and Dropcountr twelve retail agencies have executed contracts with OmniEarth, to participate in the project. These include:

City of Brea
Eastern Municipal Water District
City of Fullerton
City Loma Linda
Monte Vista Water District
City of New Port Beach
City of Ontario
City of Rialto
City of Tustin
West Valley Water District
Yorba Linda Water District

CRITICAL SUCCESS FACTORS
The following OWOW critical success factors are addressed by this action:

> Implement or construct SAWPA programs and projects OWOW Plan assigned by SAWPA Commission - SAWPA Project Agreement 22 Committee administration, WUE tasks, budget based water rate support, aerial mapping and area measurement tasks, WUE outreach tools, SARCCUP WUE tasks.

RESOURCE IMPACTS
No impact.

Attachments:
1. Final Report on Web-Based Water Consumption

12 February 2018

Santa Ana Watershed Project Authority
Attn.: Mark Norton
CC: Rick Whetsel
11615 Sterling Ave
Riverside, CA 92503

Dear Mr. Norton,

EagleView, formerly OmniEarth, is delivering this report in fulfillment of the contractual requirements outlined in the Agreement for Services for the Technology Based Information System: Web Based Water Consumption Reporting, Analytics, and Customer Engagement Tool Program, a part of SAWPA's larger Emergency Drought Program. To meet all program requirements, EagleView teamed with DropCountr to provide a water budget-driven technology suite for SAWPA member agencies. Since initiating this program in 2015, EagleView has worked with 11 participating agencies to implement water budget, water efficiency, and customer outreach technology.

This report provides a comprehensive overview of the technical approaches employed, as well as a detailed history of the program management and implementation processes. Most notably, you will find a detailed review of water savings for all participating agencies, and an analysis of the program's findings thus far.

EagleView launched a Lessons Learned survey to all participants in order to provide SAWPA with robust feedback on the program. These results and related conclusions are also included.

We welcome further dialog to refine this report so that it meets SAWPA's needs and expectations. I, and the entire team, are at your disposal for further discussion. Please feel free to contact me at chelsea.minton@eagleview.comor 203.610.5131.

Update: July 12, 2018 - Many of these retailers were still processing data when the original report was submitted. As requested, this report has been updated to include the final datasets for all retailers participating in the program.

Chelsea Minton

Director of Water, Eagleview

Final Report on Web-Based Water Consumption For Santa Ana Watershed Project Authority

December 15, 2017




Submitted by
Chelsea Minton
Director, Water Products
EagleView Technologies, Inc.
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203-610-5131

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A. Executive Summary

In a time of historic drought in California, the Santa Ana Watershed Project Authority (SAWPA) established the Emergency Drought Grant Program to provide tools and funding to water agencies, home owner associations (HOAs), and public agencies throughout their watershed respond to drought. As part of this program, SAWPA issued a request for proposal seeking a web-based water consumption reporting, analytics and customer engagement tool to assist agencies in saving water and improving long term water use efficiency through technology and customer outreach.

In response to these problems, OmniEarth introduced an efficiency-based approach to water savings. With partner DropCountr, OmniEarth proposed a technical solution to make automated water budgets, water efficiency tracking, paper and digital outreach tools, and a web-based analytics interface available to all SAWPA retail agencies. This water-budget driven solution was designed to allow retail agencies to optimize the effectiveness of their outreach by quantifying potential savings for each account, thereby improving the relevance and cost effectiveness of customer communications. The intent of the program was threefold:

1) To assist water agencies in meeting their mandated conservation targets;
2) To achieve a minimum savings goal of 3,236 acre-feet of water year-over-year; and
3) To improve the cost effectiveness of customer outreach.

SAWPA awarded the program to the OmniEarth team in mid-2015, and the first participating member agency we enabled launched their toolset in January of 2016. While water budgeting was not a requirement of SAWPA's initial RFP, this water efficiency approach was complementary to other SAWPA programs, principally land cover classification and the pursuit of budget based rates.

Eleven SAWPA member agencies participated in the program. These agencies:

- Met their mandated conservation target during the drought emergency
- Improved their savings against budget year-over-year. Each participating agency was more efficient after a year participating in the program.
- Are better prepared to implement budget-based rates or budget-driven conservation programs
- Piloted new and exciting uses of land cover and water budget data (outside of their traditional use for budget-based billing) for auditing, code changes, and conservation program improvements

During this effort, OmniEarth was acquired by EagleView Technologies. Hereafter in this document, our organization will be referred to as EagleView.

B. Program Overview

B.1 SAWPA Organization

The Santa Ana Watershed Project Authority (SAWPA) is a joint powers authority classified as a special district (government agency) under the laws of California. SAWPA focuses on a broad range of functions useful to its five member agencies: Eastern Municipal Water District (EMWD), Inland Empire Utilities Agency, Orange County Water District (OCWD), San Bernardino Valley Municipal Water District (SBVMWD), and Western Municipal Water District (WMWD). Their shared interests include water supply reliability, water quality improvement, recycled water, wastewater treatment, groundwater management, brine disposal, and integrated regional planning.

SAWPA works with its member agencies, as well as other water agencies outsides its boundaries, to use grant funding provided by the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84, Chapter 2) and to implement the emergency drought procedures and activities. Specifically, this program includes a project component to assist retail water agencies with reducing overall water demand in response to the current drought.

EagleView's Water Consumption, Reporting, and Analytics Tool was made available across SAWPA's 2,850 sq-mi service area, which includes approximately 120 water retailers. Of these, 11 agencies in the watershed chose to participate in the grant program. Agencies were allowed to participate either in the full program (EagleView and DropCountr, water budgeting, efficiency, and customer outreach); or an EagleView-only option (water budgeting and efficiency for internal use only).

B.2 The Need for an Efficiency-Driven Approach

At the time SAWPA began exploring technology to achieve water savings, there was concern that traditional approaches to conservation wouldn't deliver the steep cuts in water usage required in California. Indoor efficiencies had already been realized through water-efficient appliances. Substantial strides had been made conservation education, xeriscape design, and turf replacement initiatives. However, resulting water savings from each was difficult to quantify and sometimes inconsequential on a large scale. Billboards, radio, and press were good at driving awareness, but not at driving individualized action.

Technology that used social norming techniques only motivated certain consumers and, even then, missed potential water savings by comparing consumers to peers who lived nearby rather than those with comparable property and water needs. Further, those technologies were showing savings ceilings around 5%, and many agencies required savings to extend beyond that.

The water industry has largely accepted that outdoor water affords the largest area of viable savings, but rigorous determination of landscape area is time consuming, expensive, and quickly outdated. Traditional land cover generation done by geospatial technicians, rather than machines could produce high quality results but was not subject to human error, was not consistent across outputs, and often took months to produce. Rigorous determination of landscape area is fundamental to the derivation of

accurate outdoor water budgets, but inaccurate landscape assessments can result in erroneous budgets and prejudice a customer.

In response to these problems, EagleView introduced an efficiency-based approach to water savings to meet SAWPA's web-based consumption, reporting, and analytics technology requirements. Perhaps most importantly, EagleView utilized an automated, imagery-based analysis to determine current land cover classification and water budgets per parcel. This process was fast, repeatable, and able to produce outdoor budget estimates accurate to within 5%.

Efficiency-based analysis does not highlight customers who may use more but are already practicing strong conservation techniques, nor does it allow long-term inefficient users to be missed simply because they use less than a generalized GPCD (gallons per capita daily) target. Instead, the type of efficiency based data produced by EagleView allows SAWPA agencies to shift conservation efforts from traditional focus on heavy users, to those consumers with the greatest potential to save water.

Only efficiency-based solutions provide quantifiable information on the consumer's ability to conserve so that conservation outreach efforts are targeted effectively at inefficient consumers. Parcel-level data and integrated demographic information also allows agencies to maximize the cost effectiveness of their conservation programs by identifying relevant audiences (i.e., homes with turf, homes with pools, multi-family homes) and targeting consumers most likely to respond to particular programs.

The EagleView and DropCountr solution still compares similar peers, but makes the efficiency of each consumer the comparative standard, rather than relativity to their historical usage or peers. As these personalized budgets are calculated from the individual number of residents, local weather, and current landscape, they enable judicial use of water while maintaining a sustainable lifestyle for each customer. Thus, the technology increases the likelihood of achieving higher savings than the 5% that social norming alone can achieve.

Additionally, efficiency driven technology inherently accounts for previous water efficiency efforts – and, thus, does not require a historical baseline. This approach was particularly attractive to agencies that already had highly efficient service areas.

B.3 Summary of Work Completed

B.3.1 User Subscriptions

Every participating agency was provided with a 12 month subscription to the EagleView and DropCountr water technology platforms. Specifically, this included delivery of:

Eagleview Water Efficiency Platform

Data Services

- Water Budget by Parcel
- Water Use by Parcel
- Water Savings/Efficiency by Parcel (delta between water budget and actual use)
- Land Cover by Parcel*
- Inefficient User Identification Layer
- Historical Usage Data, including 2013 Baseline

Platform & Data Tools

- 3 Dashboards
- Agency Water Budget, Use, and Savings Summary information
- Unlimited Export Capabilities
- 10 logins

Professional Services

- Adoption Workshops
- Individual Agency Training*
- Monthly Reports (program progress provided to SAWPA monthly)
- Final Report (summary report provided at the end of the program)
- Lessons Learned Customer Survey & Report**

DropCountr CLEAR & Customer Outreach

- Utility-Facing Platform (CLEAR)
- Push Notifications (automated or staff-generated)
- Water Consumption History Tracking
- Conservation Program Recommendations (based on user profile, as well as customer participation tracking)
- Customer-Facing Mobile and Web Interfaces (for up to 25% of customers)
- Paper Water Reports (for 10% of customers)
- Staff support and training

* *Contracted for 3 SAWPA-wide training workshops. Conducted approximately 15 agency-specific trainings.*

** *Not contracted for; by provided pro bono by EagleView team. Valued at $129,797.*

B.3.2 Workshops & Onboarding Process

At the outset of the program, EagleView and SAWPA hosted four workshops for member agencies to learn about the technology being offered through the grant. Three workshops were held initially, and an additional workshop was added later to provide an additional opportunity for agencies to be exposed to the program. Agencies were encouraged to attend these, which were held:

- Sept 21, 2015; San Bernardino Valley Municipal Water District
- Sept 22, 2015; SAWPA
- Sept 23, 2015; OCWD
- Dec 1, 2015; OCWD

After the workshops were held, the EagleView team initiated a standard onboarding process to streamline the education and contracting process. Agencies typically required one-on-one meetings for additional clarification and question-answer sessions. The Eagleview team held approximately 70 of these individual meetings with retailers throughout the course of 2015 and 2016 to discuss the program further. Many agencies requested board meeting support and/or additional follow up meetings to obtain appropriate management or board approval. A complete list of these meetings is provided in Appendix D.

All participating entities were required to pay a $5,000 opt-in fee at the initiation of their program post contract signing.

B.3.3 Implementation Process

Following onboarding, agencies were taken through a four-phase implementation process lasting approximately four weeks. This process included 4 hours of individual agency meetings which identified key milestones in the implementation process. Phase I of the implementation process included the onboarding process and a one hour project kick-off meeting, where individual agencies were given the opportunity to meet their implementation team and review the project expectations.

Following the project kick-off, a one hour data discovery meeting was arranged to outline the specific data requirements for each agency, ultimately resulting in the transfer of account and meter data to EagleView for data ingestion. The bulk of the work would be completed by the implementation team following the receipt of agency data, including the platform configuration and generation of agency/parcel level datasets.

Once the EagleView platform and logins were delivered, a one-hour training session was organized for each agency to review dashboard functionality and capabilities. After training was completed, each agency entered into the “post-implementation” phase where they were offered monthly data updates and continuous customer support throughout the duration of their subscription periods.

After EagleView completed handoff of platform logins, the DropCountr portion of the program was initiated. Data was automatically pushed to the DropCountr CLEAR platform, and shortly after the EagleView platform was delivered, DropCountr provided logins to their CLEAR platform. DropCountr also engaged agency staff at this time to prepare a customized paper and digital outreach program for launch to their customers.

B.3.4 Final Report

This volume analyzes and documents the results of the program and presents agency-level summaries, and represents the final contractual obligation (outside of ongoing subscription services) outlined in the Agreement for Services for the Technology Based Information System: Web Based Water Consumption Reporting, Analytics, and Customer Engagement Tool Program, a part of SAWPA’s larger Emergency Drought Program.

C. Technical Overview

C.1 EagleView Land Cover

EagleView is an industry leader in automated land cover classification – a foundational source dataset required to inform water budget analyses. Therefore, despite not being funded to provide land classification for this project, the company chose to provide a land cover analysis for SAWPA and all participating agencies at no cost to the program to maximize the benefit to all program participants.

As a standard, all EagleView land cover products use 3 - 6-inch imagery. The land cover for SAWPA's service-area wide land cover was provided using .5-meter imagery; a lower resolution that still provides an acceptable accuracy in the machine generated output. Participating agencies received land cover analysis that was generated using .5-meter or better imagery, depending on availability. All imagery was flown within 6-18 months of project launch (varied by agency). Imagery for initial dashboards provided to SAWPA internally was half meter resolution satellite imagery. All agency land covers were completed using aerial imagery in the above specifications.

EagleView's land cover classification was performed using artificial intelligence and supervised classification. This process leveraged advanced machine learning techniques, cloud computing, and a host of proprietary algorithms to generate a supervised land cover in a rapid and repeatable fashion. EagleView has built regionally specific land cover models that call on libraries of pre-validated (or "trained") objects to ensure accuracy while still taking variability of microclimates and regional vegetation into account. Using these proprietary models, The EagleView team ran atmospheric correction and machine learning algorithms on the imagery to detect the following land cover classes:

- Turf
- Trees and Shrubs
- Non-Irrigated/Bare Earth
- Man-made/Impervious surfaces
- Pools

Average expected accuracy was 93%, ±5%, dependent on imagery available. Shadows were classified for

Exhibit 1. *EagleView analytics distinguishes both irrigated turf and potentially irrigable area – which can be used to generate different water budgets.*

identification, but are then distributed in area based on weighting the ratio of parcel level classification of the five-major classes listed above.

This method was not only consistent and fast, but it facilitated broad and area analysis at high resolution without requiring extensive imagery calibration and normalization, as necessitated in traditional land classification approaches.

Irrigated vs. Irrigable Area. Irrigated area represents the identified area that is currently being watered; irrigable area, on the other hand, represents the land area that could potentially be irrigated, including golden lawns or partially landscaped yards. EagleView's land-cover analysis included calculations of both irrigable and irrigated area, which enabled agencies to compare these distinct landscape features and their corresponding water budgets, while providing a comprehensive picture of potential water demand.

C.2 EagleView Water Budgets

As described above, EagleView used its proprietary land cover analysis as the source data for our outdoor water budgeting algorithms.

Outdoor Budget. EagleView combined the parcel-level land cover data by parcel using ETo data from CIMIS weather stations (California Irrigation Management Information System). The ETo reference closest to each parcel was used to calculate that parcel's water budget. To determine the parcel-by-parcel water budget estimates, the MAWA calculation from California's Model Water Efficient Landscape Ordinance (MWELO) was used. This budget was then aligned to the billing cycle of the meter reading information of each agency. EagleView converted the resulting budget into different units for reporting purposes, including gallons or CCF. The total allocation includes indoor budget calculation determined by agency preference for residential properties. Commercial properties were not included in these analyses. For reference, EagleView's standard water efficiency calculation formula is:

MAWA = (ETo) (0.62) [(ETAF x LA) + ((1 - ETAF) x SLA)] where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
0.62 = Conversion Factor (converts acre-inches per acre per year to gallons per sq ft per year)
ETAF = ET Adjustment Factor
LA = Landscape Area including Special Landscape Area (sq ft)
SLA = Special Landscape Area (sq ft)

Indoor Budget. An indoor water budget was calculated for each account using agency's choice of indoor budgeting estimation methods. EagleView's standard method is to derive household occupancy from the existing demographic data at the census-block level and use that average in conjunction with a standard for indoor usage per person. Some agencies preferred a more generalized method to focus the savings analysis on outdoor inefficiencies, and assumed a standard household occupancy of 3 people per household and 55 GPCD. Agencies could also have chosen to adjust the GPCD value to a specific preference. Wherever individual consumers were using DropCountr and provided the actual number of occupants per home, EagleView adjusted the indoor budget accordingly.

EagleView Efficiency Tracking. Eagleview ingested water meter data and automatically compared actual usage with budgeted usage, showing the difference over time in both tabular and chart format. EagleView also provided a geospatial map layer that visually highlighted the most wasteful parcels using tiered color ramps (Exhibit 2). Efficiency data was also tied to each individual parcel in tabular format. This identification data was used to find residences that benefited the most from conservation outreach and could also be utilized to identify potential water theft. This allowed for maximum returns on conservation efforts as well as effective campaigns to correct revenue loss.

C.3 EagleView Platform

Dashboards & Logins. Users received access to several dynamic dashboards, such as *Water Budget by Parcel*, *Water Use by Parcel*, *Land Cover by Parcel*, *Summary Water Use by Agency*, and *Summary Land Cover by Agency Data*. Water budget data was shown in tabular format, while land cover classification data was visualized through a raster layer on the map. EagleView also provided a geospatial map layer that visually highlighted the most wasteful parcels using tiered color ramps. Efficiency data was tied to each individual parcel in tabular format. Platform subscriptions included 50 logins to the cloud-based system.

Feature Functionality. EagleView provided filtering and search capabilities, access to in-system recent aerial imagery for every parcel, export of tabular and chart data, and pre-defined filters for quick use. Users had the ability to export any filtered data in tabular (.csv) format and export capability that extended to map features so users can export .jpg "map snapshots" of individual parcels.

Customer Support. With every platform subscription, EagleView offered 10 hours of training, support,

Exhibit 2. *Screenshot of EagleView's water usage tool showing geospatial map layer that visually highlights the most wasteful parcels using tiered color ramps.*

and standard services. Standard services included system setup, customization of predefined filters, training sessions for various user groups, manual data formatting, and inclusion of static map layers (i.e., location of other on-the-ground assets). For each subscription, EagleView assigned an account manager to track customer issues, requests, and questions throughout the duration of the subscription.

Platform Security. EagleView's platform servers resided in the ISO-27001 certified Amazon Web Services™ data centers and all communications were encrypted through public key infrastructure (PKI) and standard secure web protocols. The EagleView platform was built on the JBoss application server and used PostgreSQL databases to store and process business and metadata. In addition, the EagleView platform used a secure, encrypted, high-performance connection to web-based map tile services to store and display geospatial information.

Access to EagleView applications and their corresponding associated components was restricted to authenticated users with appropriate permissions. User access to EagleView applications was provided via browser using secure, encrypted channels (SSL only), and communication between the EagleView application server, EagleView database, and external data sources was also via a secure SSL channel using the OAUTH protocol.

C.4 DropCountr Platform

DropCountr technology was used for all water customer-facing engagements, including customer service representatives that are interfacing with the customer on a regular basis. DropCountr's web and mobile technology gave a visual interface for customers to understand their personalized water usage. In addition, the DropCountr CLEAR platform was used by customer service representatives and conservation managers to rapidly view the information that was supplied to users.

Exhibit 3. *Screenshot of DropCountr's consumer web access portal showing yearly usage.*

DropCountr offered a product portfolio that featured mobile and web applications, and included paper-based home water use reports. The digital and paper products focused on visual design to ensure customer engagement, and utilized social norms and community dynamics that amplified conservation benefits and increased participation. DropCountr worked with each participating agency to provide mobile, web and paper communications.

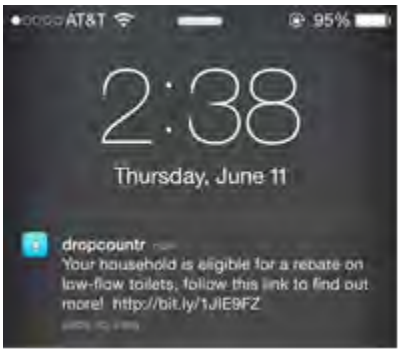


Exhibit 4. *DropCountr's push notification screen, as received by a user in the mobile app.*

DropCountr CLEAR. DropCountr CLEAR was a utility-facing web portal that included an integrated communications module which

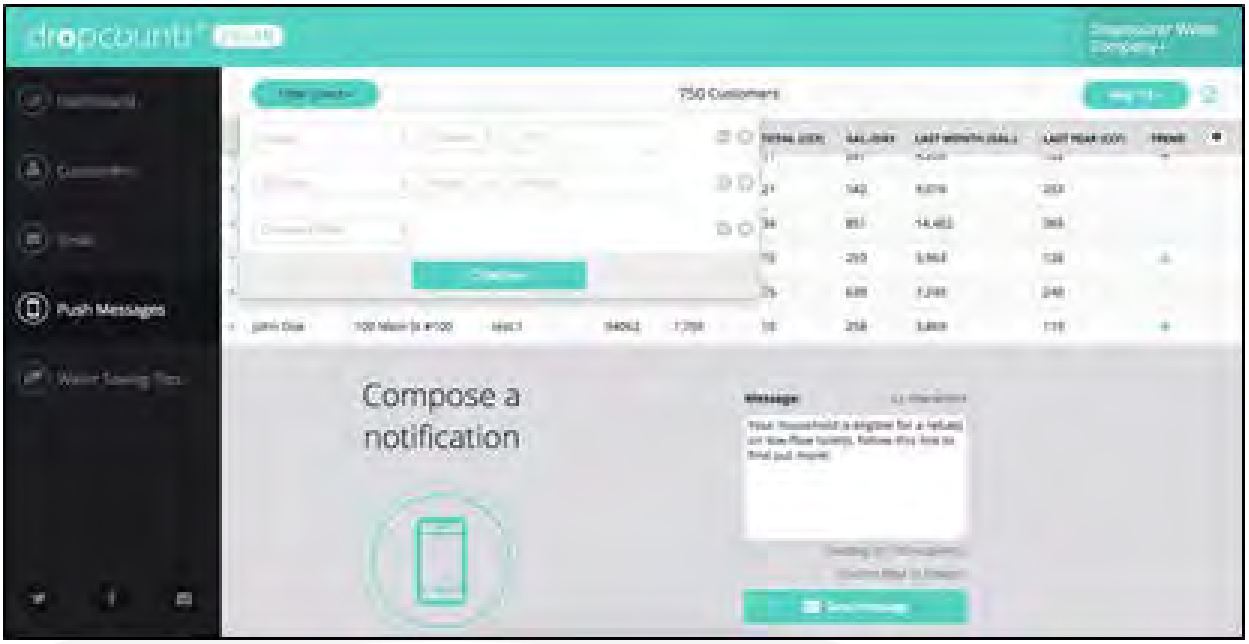


Exhibit 5. *DropCountr's CLEAR messaging platform made it easy for utility workers to send targeted messages to customers.*

supported direct-to-consumer email and push message functionality. This "push notification" functionality did not require a customer mobile phone number - it was conducted through the app itself. SAWPA agencies were be able to filter and sort accounts by high usage, leak flag, budget compliance, or geographic area before sending targeted and immediate messages to those customers. Several valuable options are listed below:

- Leak and usage alerts
- Water budget status
- Water bill availability
- Rate tier updates
- Waters restrictions (frequency, day of week by account)
- Emergency messages

Customers employed a host of positive and constructive messaging to drive conservation behavior amongst agency customers. By using the CLEAR messaging function, conservation managers were able to filter and identify specific demographics based on current needs and priorities. Examples of this included customers that: fell into the top 10% of use; lived in certain neighborhoods, had large outdoor irrigation space; and/or were eligible for rebate based on specific qualifications.

Exhibit 6. *Screenshot of DropCountr's mobile app showing rate tiers.*

Consumer Mobile Access. The DropCountr mobile application (app), was made available to SAWPA agency customers for free download. Agency customers were able to evaluate usage, contextualized with individualized

budgets, unique rate tier information and had access to targeted conservation tips and presentment of rebates.

Consumer Web Access. The DropCountr consumer web application was accessible to retail agency customers from any internet-capable computer with a web browser. Via this secure web portal, customers could access their account and profile data, historical water consumption trend analysis and all other DropCountr features. DropCountr maintained consumer engagement on mobile and web by sending each user a monthly email. This monthly report summarized their usage and conservation performance, could include important announcements from their utility regarding rebates and initiatives, and reminded them to engage via mobile and web applications.

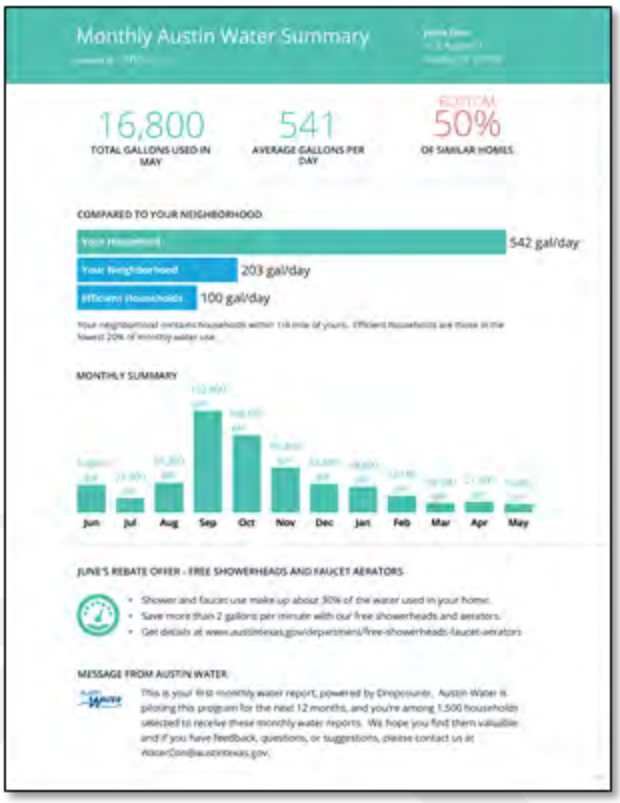


Exhibit 7. *Sample DropCountr monthly water usage paper report.*

Residential Paper Water Use Reports. Paper water use reports were printed versions of monthly email summary reports described above. They included a summary of usage, and indication of conservation performance, and included important announcements and targeted rebate and tip information. These paper reports were delivered to SAWPA agency customers separately from bills.

C.5 EagleView Connection to DropCountr Data and Platform

As the prime contractor, EagleView served as the main point of data transfer for all incoming customer data. Upon receiving customer data, EagleView used an automated process to ingest and clean the data, while using patented water budget technology to calculate each home's monthly budget and their rank in an overall inefficiency analysis. The data was then automatically passed to DropCountr via SFTP (secure file transfer protocol). DropCountr pulled this data (on a nightly basis) and loaded it directly into their secure s3 server – querying for (1) completion (is the transfer whole?), (2) coordinates (do all customers have coordinates as expected?) and (3) customer status (are accounts transferred active or inactive?). Once this data was accepted on the DropCountr side, materialized views were refreshed on the utility customer's CLEAR portal and end-user's HOME portal.

EagleView water budgets were viewed by the end user via the DropCountr application as a "goal line" compared to their monthly usage. Our inefficiency analysis allowed us to easily identify the top 25% of inefficient water users and how they ranked within both the EagleView platform and the DropCountr CLEAR console.

D. Presentation of Results

To properly consume the results of this program, we must define several variables for discussion: Efficiency, usage, savings, and under/over budget. Efficiency is budget versus usage, where agencies (or accounts) under budget are considered “efficient”. Mathematically speaking, for the purposes of this report, potential savings is defined as usage subtracted from budget, so a positive number or positive trend is an indication of efficiency or trending towards efficiency. An agency or account, however, can be over budget but becoming increasingly efficient – meaning, they are still consuming more than budgeted, but are increasing in efficiency over time. Accounts can also be under budget but increasingly inefficient – meaning, they were more efficient in 2015 than they were in 2017, so while they are still efficient/under budget, their usage is increasing and efficiency is decreasing.

Usage is widely understood in the industry as how much water an account or service area consumed, and may be expressed alone or relative to budget. Savings is an expression of usage and budget that may be temporal. It is possible for an agency to have saved more water this year than last, but still be inefficient (over budget). It is possible for an agency to have seen usage go down year after year, but not see an increase in the savings trend (in other words, saving 100 acre feet year-over-year means a decrease in usage, but the savings have increased by 0%). For the purposes of our study, we focused on savings and efficiency increases during the year agencies employed the data and toolsets provided by SAWPA, when compared to savings and efficiencies achieved in previous years.

With rolling enrollment and implementation periods, each agency had various dates of note. Contract signed meant the agency was officially enrolled in the SAWPA program. A kickoff date was set as soon as the opt-in fee was paid and the agency was prepared to begin their implementation process. The end of the EagleView implementation period was marked by a platform handoff date, when agency employees got access to their system, populated with Eagleview data analytics.

At this point, data would automatically begin rolling into the DropCountr platform, and DropCountr would engage agencies in moving towards customer outreach. The initial intention was to being the DropCountr subscription period when agencies were ready to launch their customer-facing toolset, thus providing 12 months of digital outreach capabilities. However, as agencies faced internal challenges in launching this part of the program, DropCountr began to provide logins to CLEAR in a phased approach to delivery. Subscription end dates were 12 months from handoff. Often, these handoff dates extend beyond the period of the contract.

To ensure agencies got additional time to optimize the use of both toolsets together, EagleView offered agencies allotted time extensions beyond the 12 months of subscription service covered by the grant. These are noted in the “Services Supported Through” column (see Exhibit 8).

Customer	Contract Signed	Kickoff Meeting Date	EagleView Subscription Start/Platform Handoff Date	DropCountr Subscription Start/CLEAR Handoff Date	Subscription End	Contract End Date	Services Supported Through
City of Newport Beach	8/22/16	10/6/16	12/27/16	N/A	12/28/17	12/27/17	12/27/17
Monte Vista Water District	11/3/16	(renewal)	11/4/15	5/4/17	11/3/17	11/3/17	5/4/18
Yorba Linda Water	5/12/16	8/25/16	11/27/16	3/21/17	11/26/21	11/26/21	3/21/18
City of Brea	4/18/16	6/8/16	1/16/17	4/4/17	1/16/18	1/16/18	4/4/18
City of Ontario	1/9/17	(renewal)	1/10/17	N/A	1/11/18	1/11/18	1/11/18
City of Rialto	2/25/16	3/23/16	11/21/16	TBD	11/20/17	11/20/17	TBD
Eastern Municipal Water District	3/14/16	4/7/17	1/1/17	3/14/17	1/1/18	1/1/18	3/14/18
City of Fullerton	11/2/15	11/16/15	1/12/16	12/8/15	1/11/17	?	11/11/17
City of Loma Linda	12/2/15	12/15/15	5/24/16	5/4/16	5/23/17	10/19/16	5/4/16
City of Tustin	1/7/16	1/20/16	6/9/16	6/9/16	6/8/16	?	6/30/17
West Valley Water District	10/29/15	11/23/15	4/7/16	7/1/16	4/7/17	4/7/17	8/1/17
SAWPA			N/A	N/A	N/A	12/31/20	12/31/20

Exhibit 8. *Program-wide agency dates of engagement.*

D.1 Agency-Level Data Summaries

Agencies implemented their 12 month subscription program from Dec 2015 through mid-2017. As a requirement of the program, agencies needed to share their account and meter data with EagleView once per month. The majority of agencies were able to do this an maintain a regular cadence. Agencies were encouraged to provide historical data as well, dating back as far as 2013.

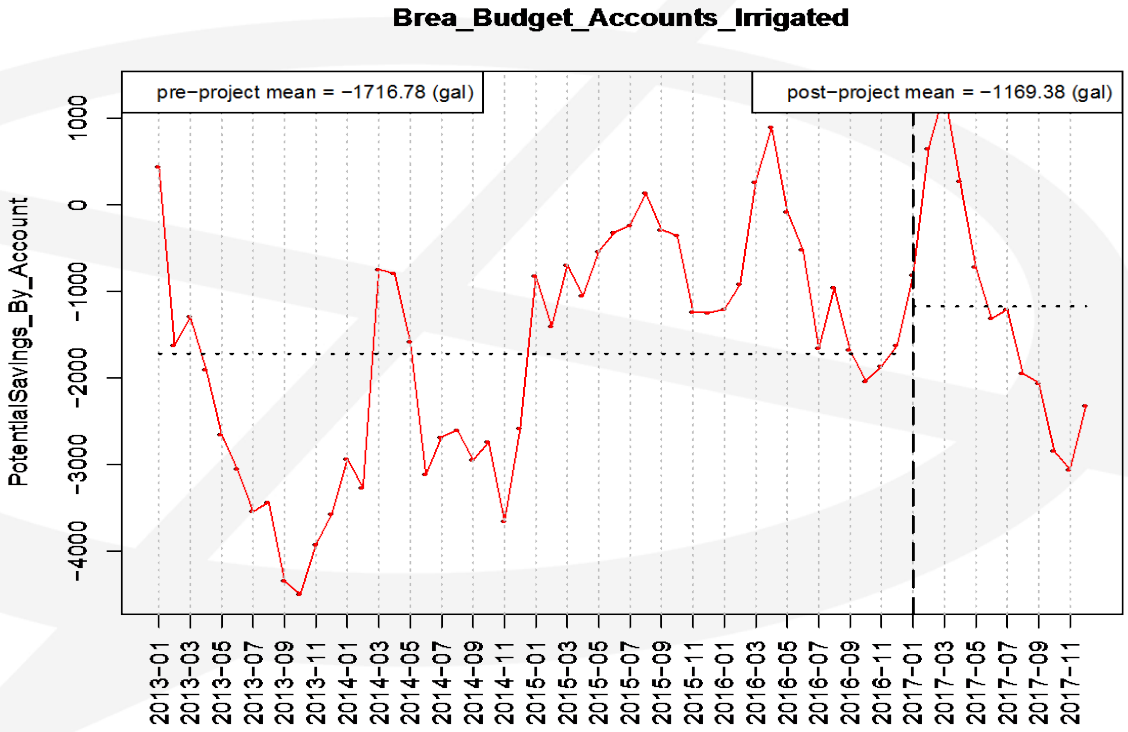
Each agency was provided with a customized EagleView web interface that displayed account, land cover, and budget data. Agencies that launched DropCountr were also provided with the DropCountr CLEAR platform for utility employees, and a mobile onboarding application for their customer base. Representative screenshots for each can be found in Appendix A.

Below, a summary of data collected from each agency is provided, including efficiency trends during the course of the program, and savings achieved by the program to date are calculated for each agency. Total water savings for the program can be find in Section E, Program Findings, Exhibit 22.

D.1.1 City of Brea

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	9,139
Available Years of Data	2013 – 2017 (half year)

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	107,654,213.2
Non-Irrigated	83,513,196.4
Pool	589,487.5
Tree/Shrub	44,298,093.5
Turf	16,760,396.8

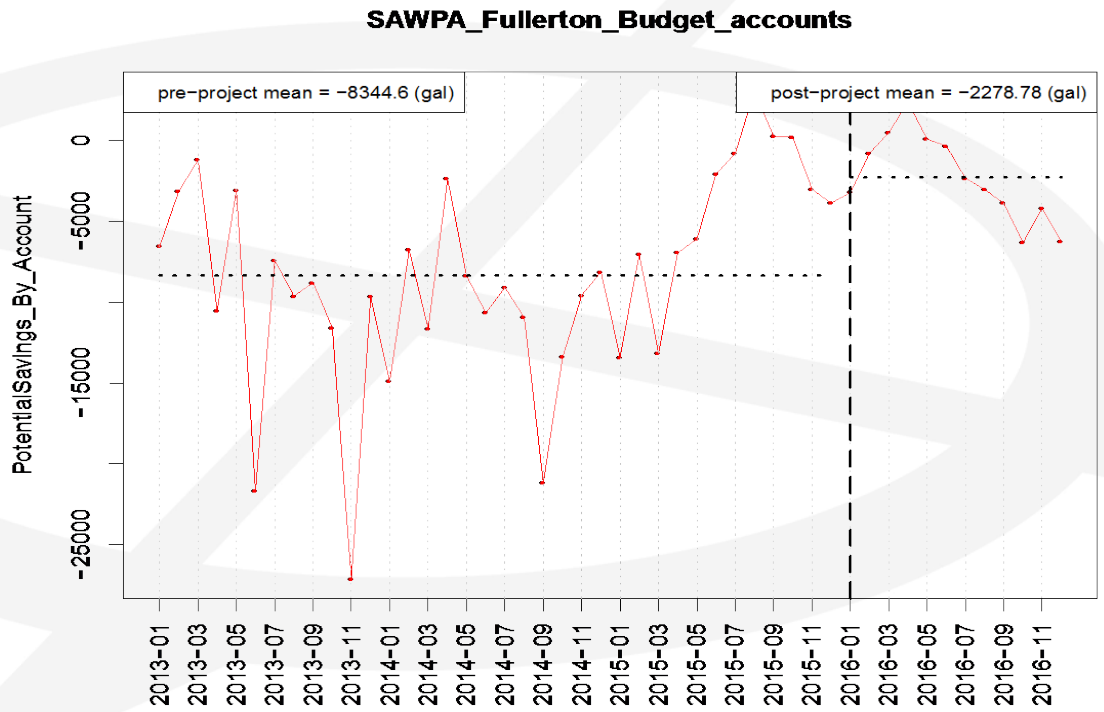


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-1716.78
Average post-project savings per account (Total Budget – Usage in gal/acct)	-1169.38
Average additional savings achieved with grant tools (gal/acct)	547.40
Total savings achieved via project to date (acre feet for entire service area)	15.35
Percent Increase in Efficiency (post project)	32%

D.1.2 City of Fullerton

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	12,838
Available Years of Data	2013 – 2016

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	318,087,165
Non-Irrigated	44,359,692
Pool	2,231,120
Tree/Shrub	112,703,571
Turf	27,651,582

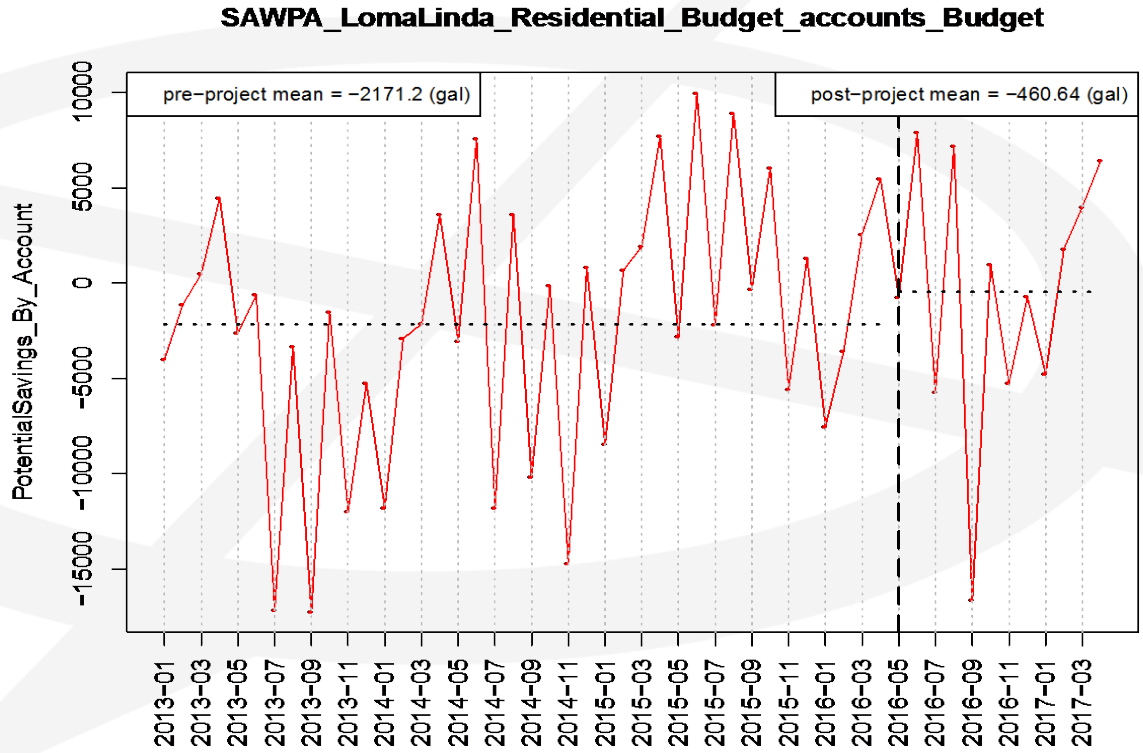


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-8344.60
Average post-project savings per account (Total Budget – Usage in gal/acct)	-2278.78
Average additional savings achieved with grant tools (gal/acct)	6065.82
Total savings achieved via project to date (acre feet for entire service area)	238.98
Percent Increase in Efficiency (post project)	72%

D.1.3 City of Loma Linda

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	1,776
Available Years of Data	2013 – 2017 (4 months)

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	117,712,736
Non-Irrigated	130,573,231.1
Pool	29,7066.2
Tree/Shrub	21,848,118.1
Turf	12,847,018.2

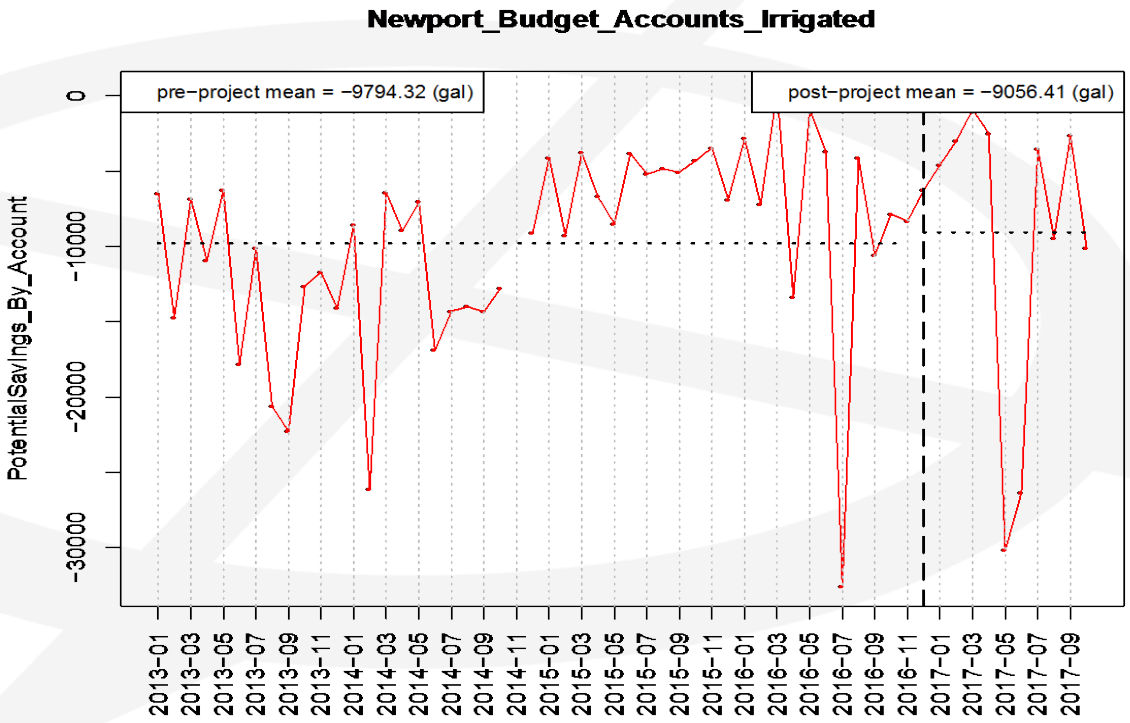


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-2171.20
Average post-project savings per account (Total Budget – Usage in gal/acct)	-460.64
Average additional savings achieved with grant tools (gal/acct)	1710.56
Total savings achieved via project to date (acre feet for entire service area)	9.33
Percent Increase in Efficiency (post project)	79%

D.1.4 City of Newport Beach

Programmatic Overview	
Services Enrolled	Eagleview
Number of SFR Accounts	9,294
Available Years of Data	2013 – 2017 (4 months)

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	207,859,159.8
Non-Irrigated	135,684,489.2
Pool	1,496,914.8
Tree/Shrub	124,147,795.3
Turf	50,680,361.5

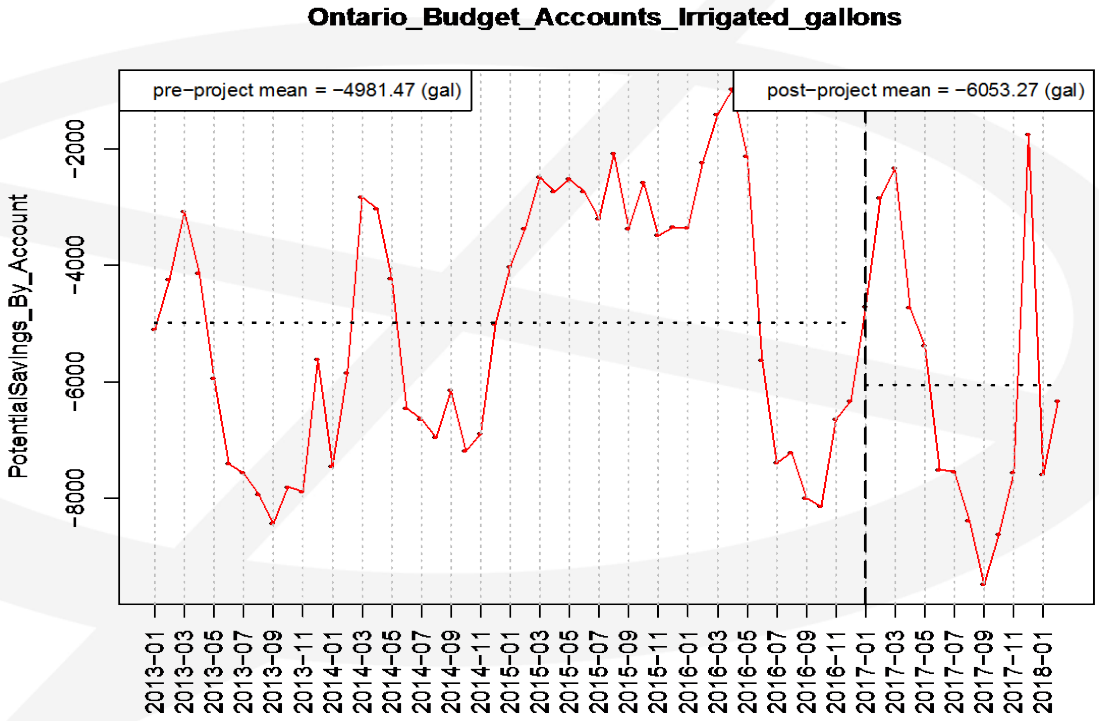


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-9794.32
Average post-project savings per account (Total Budget – Usage in gal/acct)	-9056.41
Average additional savings achieved with grant tools (gal/acct)	737.91
Total savings achieved via project to date (acre feet for entire service area)	21.04
Percent Increase in Efficiency (post project)	7%

D.1.5 City of Ontario

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	23,994
Available Years of Data	2013 – 2017

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	553,938,272.3
Non-Irrigated	286,331,594.4
Pool	2,038,575.067
Tree/Shrub	11,4344,397.1
Turf	71,514,090.26

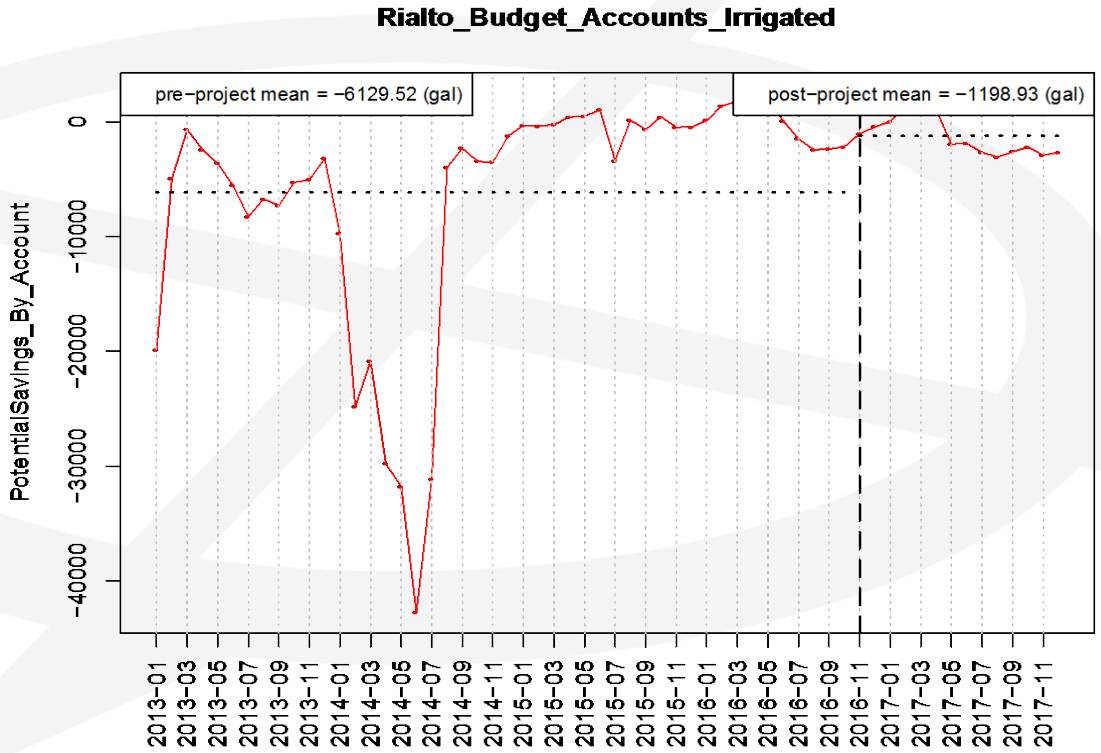


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-4981.5
Average post-project savings per account (Total Budget – Usage in gal/acct)	-6053.3
Average additional savings achieved with grant tools (gal/acct)	-1071.8
Total savings achieved via project to date (acre feet for entire service area)	-77.6
Percent Increase in Efficiency (post project)	-21.5%

D.1.6 City of Rialto

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	11,783
Available Years of Data	2013 – 2016

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	93,177,394.1
Non-Irrigated	57,291,996.9
Pool	694,701
Tree/Shrub	2,0428,868.4
Turf	16,040,592.6

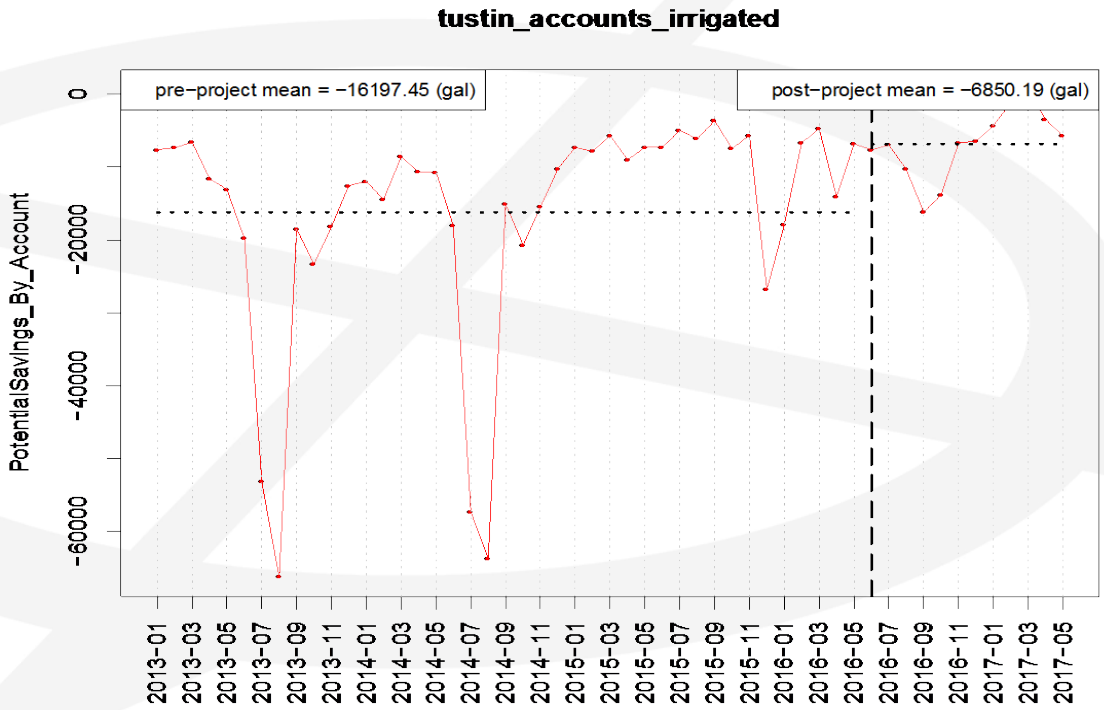


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-6129.52
Average post-project savings per account (Total Budget – Usage in gal/acct)	-1198.93
Average additional savings achieved with grant tools (gal/acct)	4930
Total savings achieved via project to date (acre feet for entire service area)	178.27
Percent Increase in Efficiency (post project)	80%

D.1.7 City of Tustin

Programmatic Overview	
Services Enrolled	Eagleview
Number of SFR Accounts	9,184
Available Years of Data	2013 – 2016 (4 months)

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	115,333,672.8
Non-Irrigated	19,727,473.6
Pool	945,278.1
Tree/Shrub	22,051,707.9
Turf	5,526,857.4

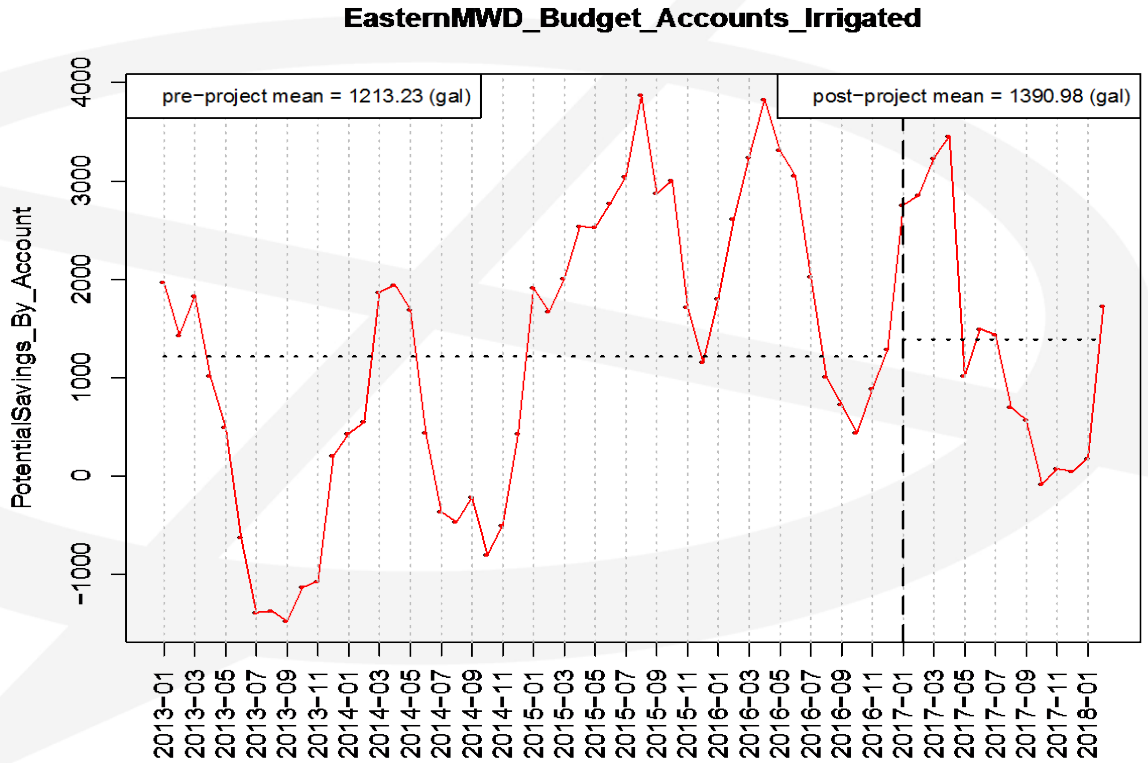


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-16197.45
Average post-project savings per account (Total Budget – Usage in gal/acct)	-6850.19
Average additional savings achieved with grant tools (gal/acct)	9347.26
Total savings achieved via project to date (acre feet for entire service area)	263.44
Percent Increase in Efficiency (post project)	58%

D.1.8 Eastern Municipal Water District

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	102,130
Available Years of Data	2013 – 2017

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	1,547,765,216
Non-Irrigated	7,712,774,172
Pool	5,462,569.4
Tree/Shrub	1,060,357,144
Turf	414,516,766.1



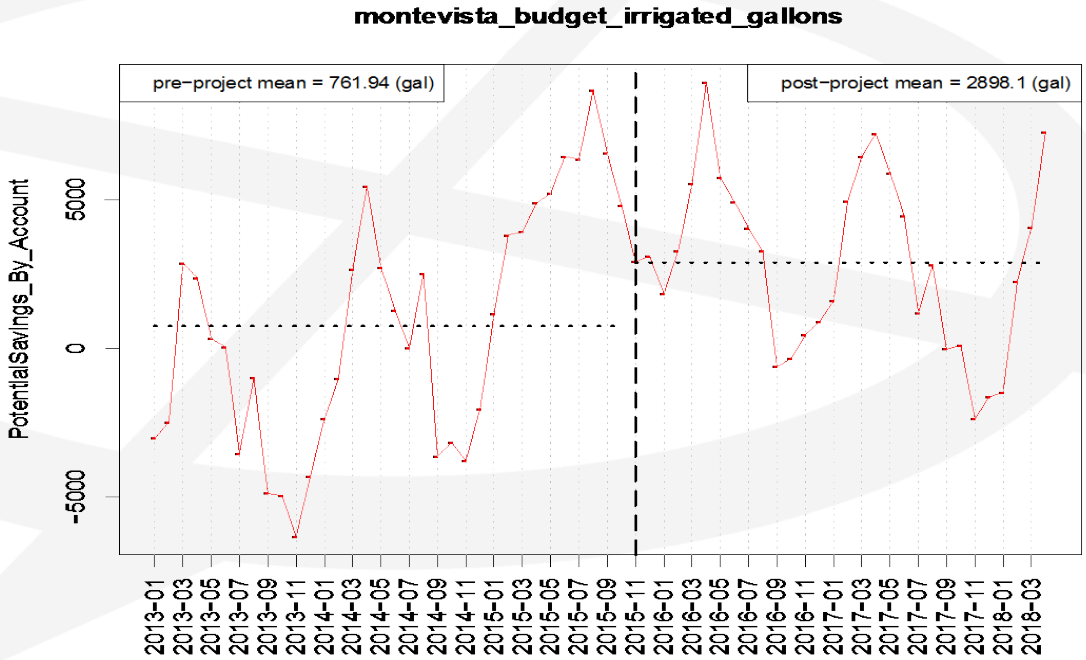
Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	1213.2
Average post-project savings per account (Total Budget – Usage in gal/acct)	1391
Average additional savings achieved with grant tools (gal/acct)	177.8
Total savings achieved via project to date (acre feet for entire service area)	134.5
Percent Increase in Efficiency (post project)	14.7%

D.1.9 Monte Vista Water District

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	9,365
Available Years of Data	2015 – 2017

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	125,882,450.5
Non-Irrigated	37,162,600.7
Pool	364,513.5
Shadow*	1,456,833.5
Tree/Shrub	32,493,719
Turf	21,610,043.5

** Monte Vista enrolled in EagleView's subscription program prior to the SAWPA grant; as a result, an additional land cover class is available for that agency.*

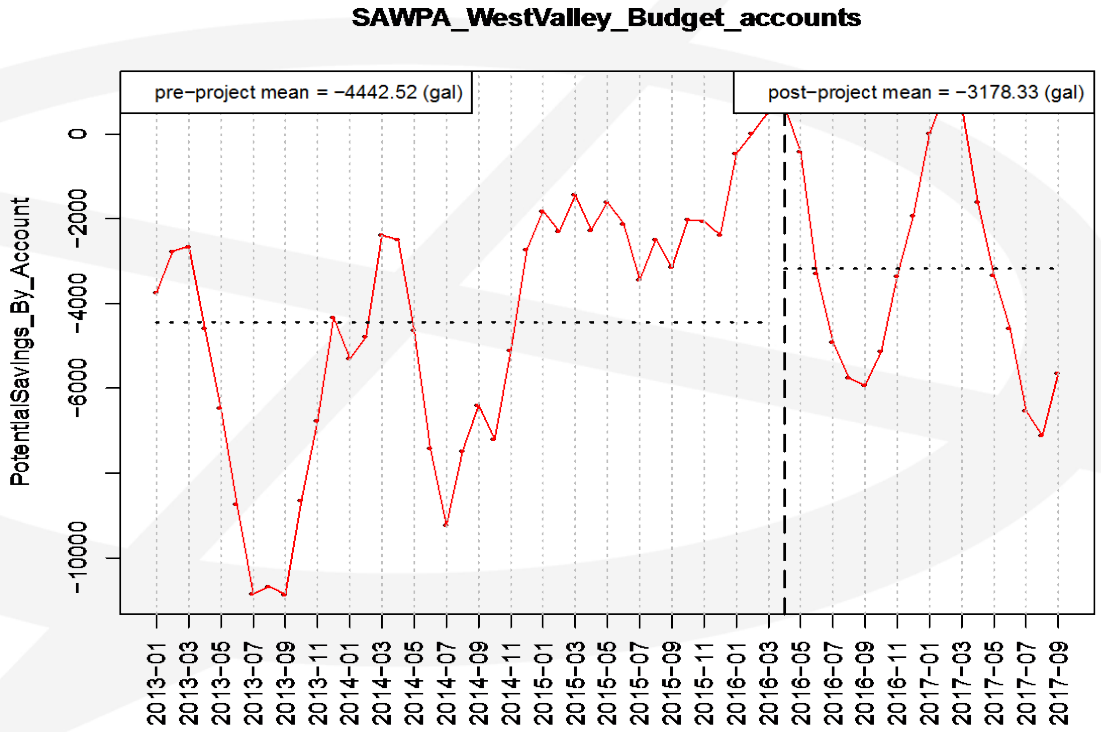


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	761.9
Average post-project savings per account (Total Budget – Usage in gal/acct)	2898.1
Average additional savings achieved with grant tools (gal/acct)	2136.2
Total savings achieved via project to date (acre feet for entire service area)	29.7
Percent Increase in Efficiency (post project)	280%

D.1.10 West Valley Water District

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	18,693
Available Years of Data	2013 – 2017

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	382,242,383.9
Non-Irrigated	313,220,516.7
Pool	1,170,907.4
Tree/Shrub	88,764,281.6
Turf	19,751,719.1

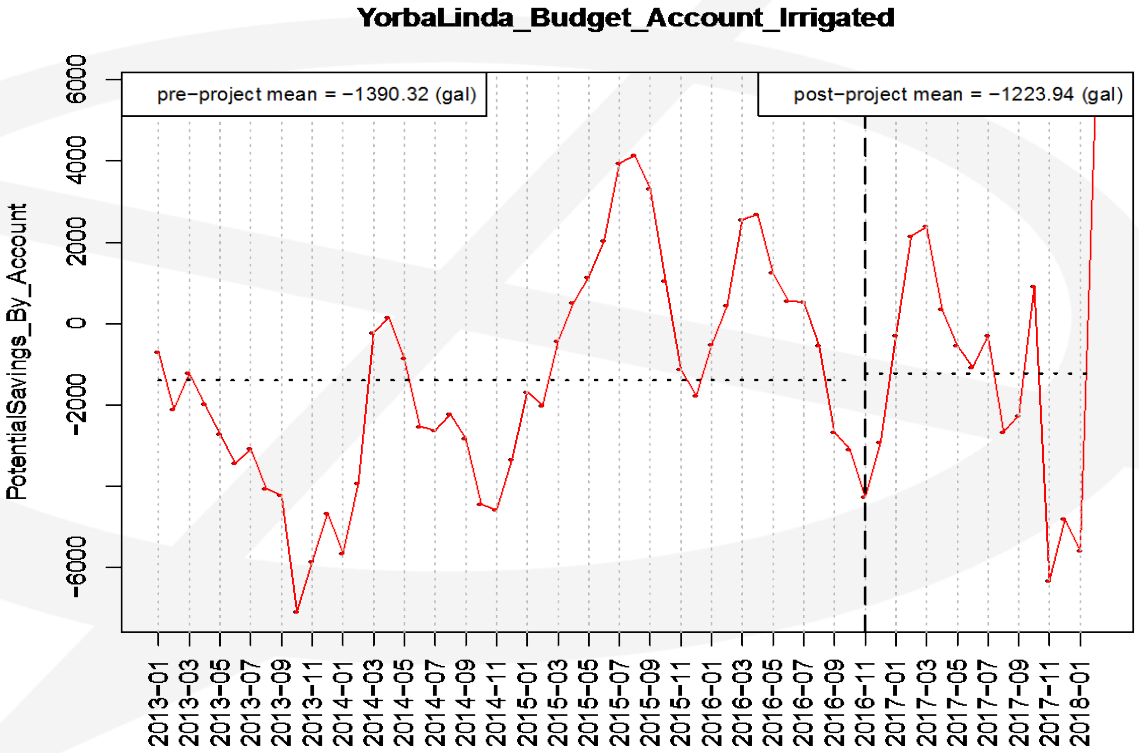


Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-4442.52
Average post-project savings per account (Total Budget – Usage in gal/acct)	-3178.33
Average additional savings achieved with grant tools (gal/acct)	1264.19
Total savings achieved via project to date (acre feet for entire service area)	72.55
Percent Increase in Efficiency (post project)	28%

D.1.11 Yorba Linda Water District

Programmatic Overview	
Services Enrolled	Eagleview and DropCountr
Number of SFR Accounts	22,160
Available Years of Data	2013 – 2017

Land Cover Breakdown (Service Area-Wide)	
Land Cover	Area (sq ft)
Impervious	200,701,305.1
Non-Irrigated	218,812,240.8
Pool	4,733,415.1
Tree/Shrub	113,859,672.8
Turf	43,678,347.5



Usage vs. Budget	
Average pre-project savings per account (Total Budget – Usage in gal/acct)	-1390.3
Average post-project savings per account (Total Budget – Usage in gal/acct)	-1223.9
Average additional savings achieved with grant tools (gal/acct)	166.4
Total savings achieved via project to date (acre feet for entire service area)	6.82
Percent Increase in Efficiency (post project)	12%

To quantify temporal trends in water consumption across each SAWPA agency, temporal linear regression analysis was conducted on water usage totals. The least squares linear regression lines show the trends in water consumption over time. To infer temporal changes of water usage, a sample of accounts from each agency with identical active service durations were used. The figures show the trend of monthly total usage across these accounts for each SAWPA agency. The aim of this analysis was to express potential correlations between the implementation of the SAWPA toolset and water consumption. The trends are generally positive in that they indicate decreasing usage nearly across the board, but it is difficult to attribute this directly to the program with limited customer outreach.

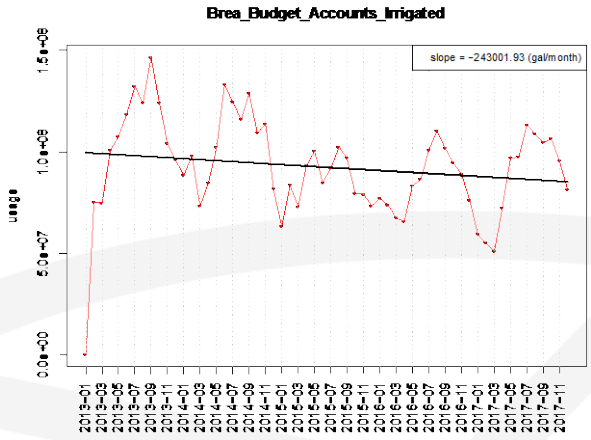


Exhibit 9. *City of Brea trend analysis.*

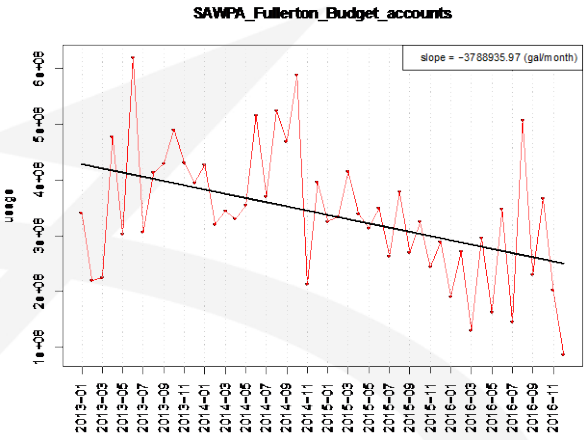


Exhibit 10. *City of Fullerton trend analysis.*

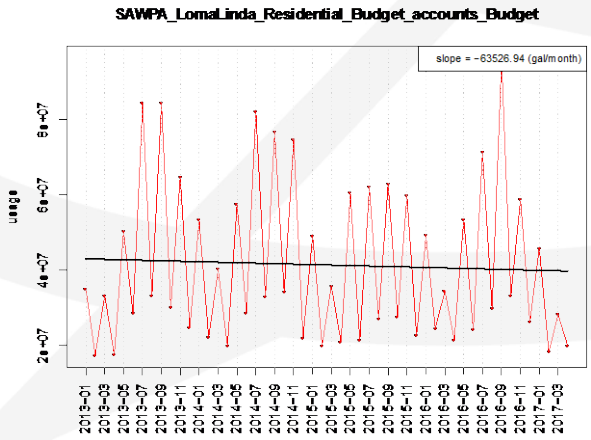


Exhibit 11. *City of Loma Linda trend analysis.*

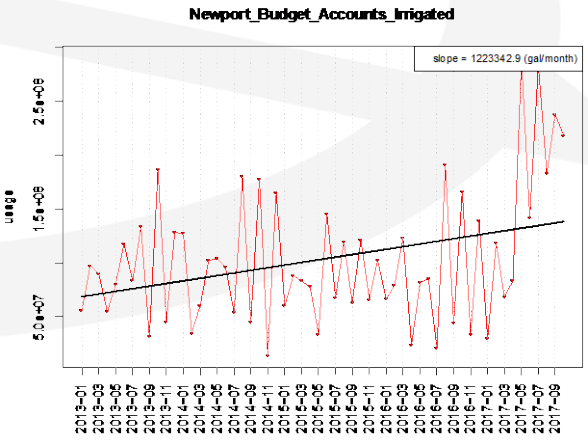


Exhibit 12. *City of Newport Beach trend analysis.*

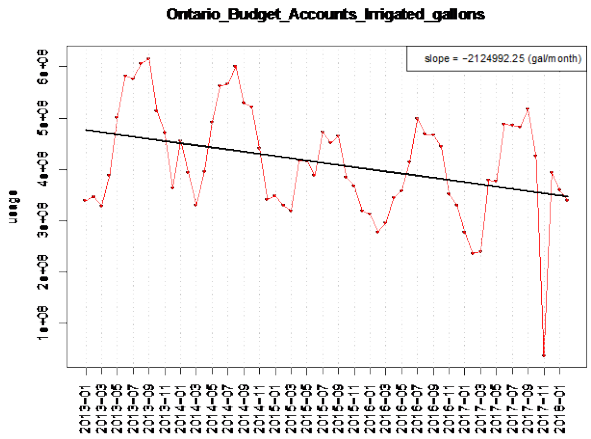


Exhibit 13. *City of Ontario trend analysis.*

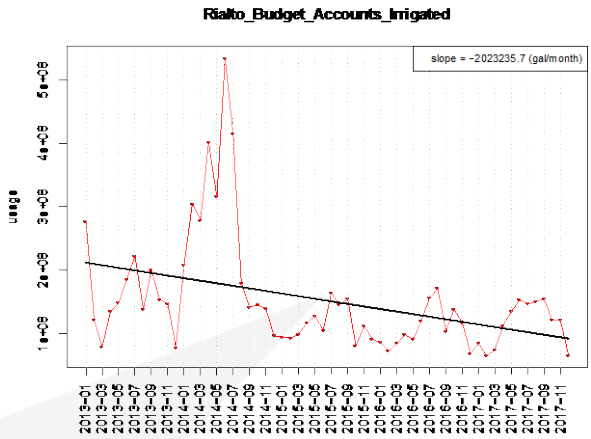


Exhibit 14. *City of Rialto trend analysis.*

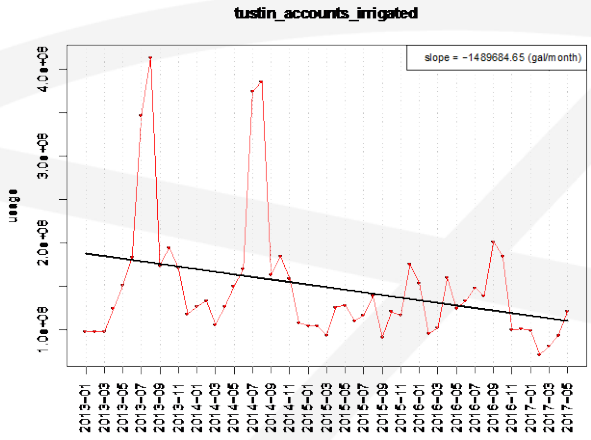


Exhibit 15. *City of Tustin trend analysis.*

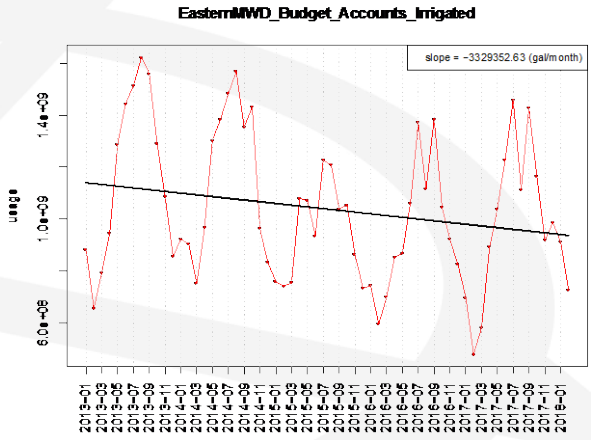


Exhibit 16. *Eastern Municipal Water District trend analysis.*

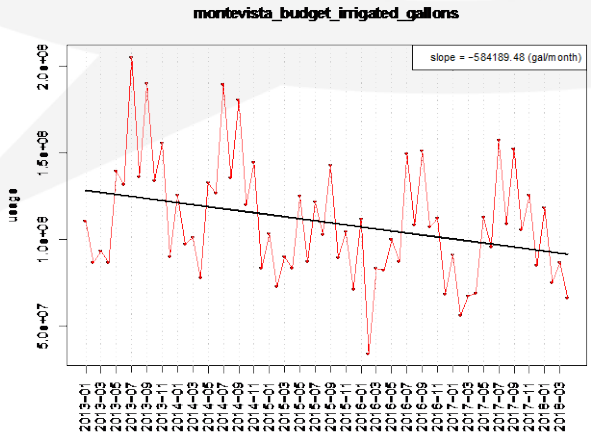


Exhibit 17. *Monte Vista Water District trend analysis.*

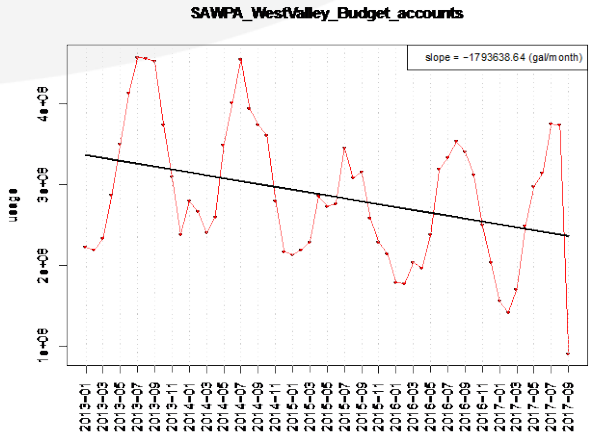


Exhibit 18. *West Valley Water District trend analysis.*

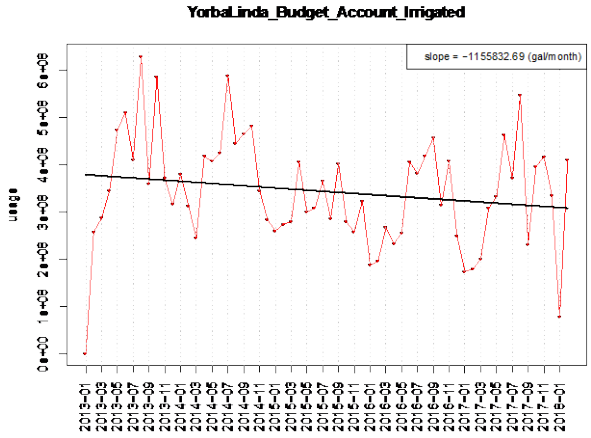


Exhibit 19. *Yorba Linda Water District trend analysis.*

D.2 Dropcountr Outreach

Out of 11 retailers that chose to participate in the grant, 9 contracted with both EagleView and DropCountr. The DropCountr product was implemented after the EagleView product, and meter data was passed directly from EagleView to Dropcountr. Under the grant, only 25% of an agency's total accounts were eligible for digital outreach through DropCountr's customer-facing mobile app; 10% were eligible for paper outreach via home water reports (see Exhibit 20).

SAWPA Customers	Status	Total Accounts	Accounts Eligible for Digital Outreach	Emails on File	# Registered on App	% Registered (of total eligible)
Monte Vista Water District	Active	9,811	2,453	3,798	662	26.9%
Yorba Linda Water District	Outreach to customers Jan 2018	23,360	5,840	7,726	pending	pending
West Valley Water District	Completed pilot, chose not to launch	23,084	5,771	10,190	583	10.1%
City of Loma Linda	Completed pilot	4,512	1,128	0	18	0.40%
Eastern Municipal Water District	In Progress	97,777	24,444	70,184	pending	pending
City of Rialto	In Progress	10,273	2,568	4,053	pending	pending
City of Brea	Chose not to launch	9,102	2,276	2,616	N/A	N/A
City of Fullerton	Chose not to launch	26,268	6,567	3,798	N/A	N/A
City of Tustin	Chose not to launch	9,763	2,441	7,726	N/A	N/A

Exhibit 20. *DropCountr Accounts Overview.*

Though digital and paper outreach was covered for only a portion of a retailer's constituents, 100% of account data was processed and available to utilities for analysis and tracking in the DropCountr CLEAR platform. Several agencies that contracted for DropCountr services used the utility-facing portal but did not launch the customer outreach portion. There is more discussion of this in Section E.3 (Challenges).

SAWPA Customers	Paper Outreach	% of Total Eligible for Outreach	Emails sent by Dropcountr (to date)	Email Waves	Average Weekly Registration
Monte Vista Water District	980	100%	28,452	9	26 homes
Yorba Linda Water District	pending	pending	0	pending	pending
West Valley Water District	2,108	92%	0	-	12 homes
City of Loma Linda	380	85%	0	-	<1
Eastern Municipal Water District	pending	pending	0	pending	pending
City of Rialto	pending	pending	0	pending	pending
City of Brea	N/A	-	0	-	-
Fullerton	N/A	-	0	-	-
Tustin	N/A	-	0	-	-

Exhibit 21. *DropCountr Digital & Paper outreach activity to date.*

D.3 Lessons Learned

In addition to conducting internal lessons learned between EagleView and DropCountr staff, we believed it was important to also understand the experiences and opinions of the program participants. Therefore, we conducted a survey for the registered users of the system prior to completing this report.

The main purpose of this survey was to identify and quantify challenges agencies faced that impacted their participation in the grant and, ultimately, to validate the feedback collected from agencies during their subscription period.

The survey was titled “SAWPA Lessons Learned Survey” was sent out using TechValidate, a third party survey technology. TechValidate allows for automated emails, response collection and organization of results on behalf of EagleView. The sA copy of these questions is provided in Appendix E.

The survey was sent to all individuals who received logins for the EagleView platform during their subscription period, totaling 64 recipients across 11 agencies (18 individuals), with a two week response window. The response window was extended a week to allow for additional responses to be submitted. Each recipient received three automated emails to participate, as well as a direct reminder email from an EagleView team member.

Survey results were used to supplement Program Findings (Section E). Questions and results of this survey can be found in Appendix E.

E. Program Findings

E.1 Water Savings

Overall, SAWPA customers were more efficient with budget based conservation employed, regardless of whether or not customer outreach was employed to communicate water use targets (budgets) to individual customers. This suggests that water budget data is employed in many different ways to support conservation initiatives.

Approximately 92% of participating agencies saw an increase in service area-wide efficiency over the course of the project. These agencies saw more water savings with access to the water budget and land cover datasets during the SAWPA program than they had before. This was found by comparing water savings during the year/years the project was implemented to average savings from years prior. Agencies that saw increased efficiencies recognized an average of 55% more savings per account after the implementation of the SAWPA project. Only one agency saw a decrease in efficiency (Ontario). The agencies that saw savings had a combined savings of 287,364,688 gallons, or 881.89 acre feet. The program was expected to deliver 3,236 acre feet of water savings per year, and thus fell far short of the goal. However, several agencies are still mid-subscription.

SAWPA Member Agency	Total Program Savings (gal)	Total Program Savings (acre_feet)
Monte Vista Water District	2,136.2	29.7
Yorba Linda Water District	166.4	6.82
West Valley Water District	23,969,232	72.55
City of Loma Linda	3,040,189	9.33
Eastern Municipal Water District	177.8	134.5
City of Rialto	58,089,447	178.27
City of Brea	5,002,688	15.35
City of Tustin	85,842,172	263.44
City of Newport Beach	6,855,903	21.04
Ontario Municipal Water District	-1,071.8	-77.6
City of Fullerton	77,872997	238.98
TOTALS:	287,364,688	881.89

Exhibit 22. *Total water savings for each of the SAWPA member agencies that participated in the program.*

Not surprisingly, the two participating agencies that have already implemented budget-based rates (Eastern Municipal Water District and Monte Vista Water District) were the only two agencies whose service areas ranked as “efficient,” or where overall usage was below overall budget.

92% of agencies saw overall usage trend down during the Program (see Exhibits 9 – 19). Ontario saw a decrease in efficiency during the program, but the data did not bear out the reason why. Newport Beach only increased in efficiency very slightly – and yet they were some of the most active users of the data provided by the SAWPA program. The assumption was that a change in the municipal code at Newport Beach was the only thing likely to have a real impact on efficiency (see Section E2).

Half of participating agencies saved over 1,000 gallons (on average) per account during the SAWPA grant program. Tustin and Fullerton were far and away the highest with 9000+ and 6500+ gallons respectively; trailed by Rialto, Monte Vista, Loma Linda, and West Valley. These agencies saw the greatest increases in average savings per account during the program. These agencies do not have service area size in common, nor do they share any pre-existing policies on budget based rates (Monte Vista is the only retailer of the group with budget based rates implemented). Four of these top performers are cities, and the other 2 are water districts. While only one of these agencies concluded the program with a fully launched customer outreach program via DropCountr, four of these agencies successfully piloted the customer, which suggests customer outreach was a top organizational priority. Further, these top performers were all amongst the earliest to implement the program, with start dates between January and June of 2016. This suggests that early adopters were best able to capitalize on conservation momentum provided by the drought (maintaining focus both internally and with their customers). In general, agencies that saved the most per account during the project period both implemented earliest and engaged in the customer outreach portion of the program.

It should be noted that while the City of Tustin and City of Rialto both recorded extensive savings per account during the grant period, both cities had severe water usage spikes in 2013 and 2014 that drove average historical usage numbers way up, and thus provided a larger relative margin for improvement. Further, Tustin provided inconsistent and intermittent data during their participation in the program, which impacted our level of confidence in their results.

While they did not save the most per account, Monte Vista, Rialto, Loma Linda, and Fullerton saw the highest increases in efficiency, all with over 70% increases in efficiency during the course of the program. Once again, early adoption was a theme, but not the defining factor: West Valley was the first to kick off with a high level engagement, but still only registered a 28% increase in efficiency during the grant program. This suggests there was more at play than just timing the drought. Some of these agencies had the most savings to give – ie., were over-users prior to the drought. This, too, however is not a universal explanation for success, as Monte Vista started the program was a highly efficient budget-based rate agency, and still managed to improve efficiency by a whopping 241%. Monte Vista was the most successful user of DropCountr tools, and saw a 30% adoption rate of the DropCountr tool by eligible customers. We expect this successful implementation of both water budget and customer technology (as SAWPA envisioned it) was at least in part responsible for such tremendous gains in efficiency.

Almost all agencies saw a loss of efficiency from January to May of 2017, which EagleView attributes to heavy snow/rains in Northern California, and the popular belief that the drought was coming to an end. As a result, we believe some agencies saved less during the program than they otherwise would have if

their program had concluded before this time period. Regardless of the 2017 dropoff, efficiency rebounded during the hotter months, suggesting conservation has become more of a "way of life" in California than it was before the drought.

The breakdown of land cover shows that the agencies with the highest square footage of turf are a combination of most efficient agencies and the least efficient agencies, with Eastern Municipal accounting for 59% of the total turf in all grant participant's service areas. The higher the percentage of turf a service area had, the more likely it was that the agency would fall towards either side of the efficiency spectrum. When managed well, efficiencies in outdoor watering was a strong indicator for the agency's overall efficiency. Conversely, outdoor watering for turf is still the place where the greatest potential savings may be found, and remains the largest contributing factor towards overall inefficiency.

E.2 Business Cases Beyond Conservation

Since launching the program with SAWPA, EagleView has seen greater success introducing their water budget and water efficiency data in cross-department initiatives. We now know that stormwater and planning departments all have similar needs for land cover and water budget data, and organizational commitment to a toolset tends to be higher when multiple users can find value in the product. Further, conservation team respondents said that rate studies or exploration of budget based rates was the second most valuable use of water budget data for their organizations – but it is unclear as to whether the data could be used successfully towards this end if it was siloed in the Conservation department. In order to drive larger success with this program, the initiative could have been driven through multiple departments wherever possible.

While some agencies put the customer outreach and budgets to use as envisioned, others leveraged the data and tools beyond the original purpose of the grant. In the City of Newport Beach, the budget data has been used as a catalyst for updating existing municipal code as the city shifts towards an efficiency model in times of drought. In the City of Rialto, EagleView data is being actively used in a rate study to review the potential for switching budget based rates for future billing practices. Agencies with existing budget-based billing, like Monte Vista Water District, have used the data to evaluate the accuracy of their budgets which uses an estimated landscape area versus EagleView's highly accurate combination of actual measured landscape area and daily evapotranspiration information.

Organizational buy-in was key with the most successful and active grant participants. At the City of Newport Beach, for instance, the General Manager was a program advocate. He made use of the data to inform potential changes to the municipal code, while Conservation team members employed the same data to track their more inefficient customers. The team at Newport felt that this type of data was invaluable for better pursuing efficiency in a service area that is otherwise not highly responsive to traditional conservation levers (fees, etc).

Sixty-five percent of grant participants stated they felt the toolsets and data provided by the program were either "valuable" or "incredibly valuable", with remaining participants saying the program offered moderate value. Almost all responders saw value in using this toolset to meet California state

regulations; but over 90% said they also saw value for lowering the cost of customer communications and improving service area wide efficiency over time (or some combination).

E.3 Challenges Encountered

While participating agencies were able to leverage SAWPA's grant for a host of valuable work in their conservation departments, ultimately the program fell short of expectations − both in terms of directly achieved water savings and overall engagement. Generally speaking, retailers were slower than expected to opt in to the program and lacked strong usage of the technology tools once delivered. Some agencies neglected to provide data updates for long periods of time during their subscription period, and one agency failed to launch any customer outreach whatsoever, despite having push notifications and home water reports ready and available to them.

There were a variety of reasons for this, including shifting organizational priorities, a lack of approval from management/boards, and a lack of resources.

In 2015, SAWPA launched their technology grant for a web-based water consumption reporting, analytics, and customer engagement tool, during the height of the drought. For the first time in history, California water agencies were required to meet state-mandated conservation targets.

The drought provided an opportunity for water retailers to spark change in their organizations. Conservation funding was more readily available, and the industry welcomed technologies and practices that could improve efficiencies, lower costs, and contribute significant water savings towards conservation targets. Unfortunately, the drought also placed incredible demand on staff time and resources for many agencies. MWDOC, for instance, saw the number of applications for their turf rebate program jump from 11 per month in 2013 to a whopping 550 per month in 2014. This type of extreme acceleration of conservation programming taxed water agency staff throughout the SAWPA region.

These drought-specific resource constraints − even at larger organizations − were a primary reason some agencies chose not to participate. 36% of participants stated that even after contracting, lack of internal resources made it difficult to stick to the implementation schedule.

In several participating agencies − Fullerton, West Valley, and Yorba Linda − staff turnover and board member changes resulted in moderate to full loss of support for the program.

Further, at a time when agencies were facing increased public scrutiny, boards and management teams evaluated new programs with extreme caution, particularly when it involved any aspect of public communication. About one fourth of agencies who did ultimately contract through the grant reported difficulty obtaining management approval moving the program forward. Presumably that number would be higher if the survey pool also included SAWPA member agencies that chose not to participate.

At some agencies, the end of the drought presented another challenge: a de-escalation of conservation as an organizational priority. The majority of participating agencies (69%) noted that the tools and datasets provided by this program were most valuable for meeting/preparing to meet California state regulations around conservation. It is not a surprise then, that with the Emergency Drought declaration

and mandated conservation targets were lifted, 44% of participating agencies reported that their organizational priorities have shifted away from conservation, and over half of participants reported changing organizational goals forced them to de-prioritize the SAWPA program implementation. For some agencies, this meant abandoning the customer outreach portion of the program provided by the DropCountr technology; for others it meant a slowdown in overall usage.

It is difficult to point to a single factor that ultimately drove such low engagement with the Dropcountr program. Rather, there were many variables that impacted agency participation. Amongst agencies that contracted to launch DropCountr but ultimately chose not to do so, 60% of respondents cited the end of the drought as a hurdle; with 50% calling it a significant challenge. 67% of agencies also state that lack of internal alignment or internal approval to launch presented at least a minor hurdle. Only one agency cited resource limitations as the single greatest limiting factor to getting the DropCountr program off the ground, but a little more than half of agencies said they did have some level of difficulty with technical limitations or internal resources.

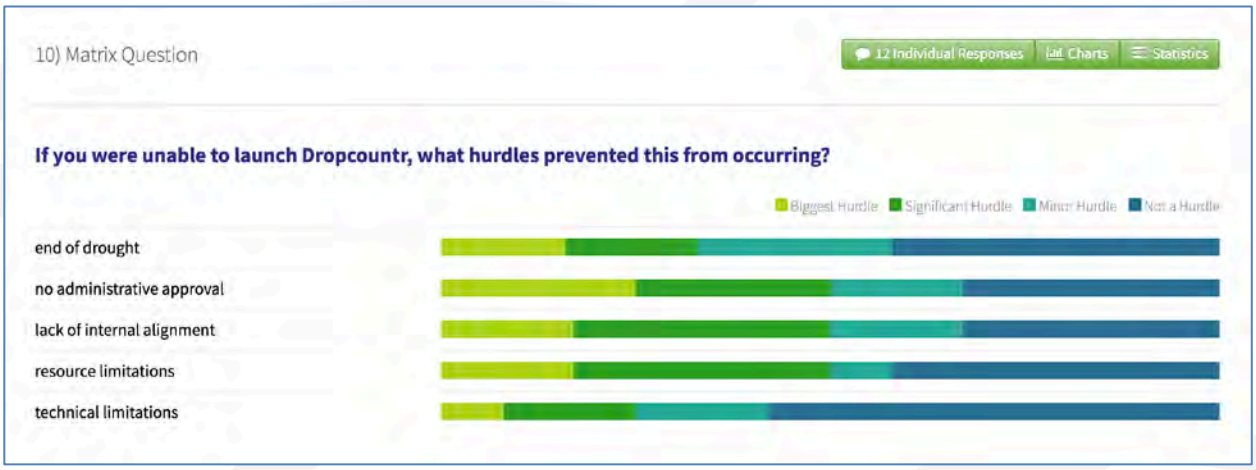


Exhibit 23. *Chart of responses from agencies that did not launch DropCountr*

Ultimately, challenges agencies are familiar with – lack of budget, limited resources, internal/board approvals, and clarity on organizational priorities – were all exacerbated during the drought. It is our conclusion that even though the drought required immediate action and provided ample opportunity to introduce new toolsets, in many organizations launching a technology rollout during the height of the drought ultimately hampered the success of the program. In fact, 50% of retailers who participated stated that challenges in maximizing this toolset were internal to their organization and could not have been addressed by SAWPA.

It cannot be overlooked that, as a technology-focused program, data readiness was a significant challenge for our retailers. One of our retailers spent the entire duration of their subscription cleaning, formatting, and developing a successful export of their data. Several others paid for geocoding services outside of the grant in order to render their data viable to participate. Surprisingly, only one retailer stated in their exit survey that geocoding and data availability slowed their implementation process, so retailers did not recognize this as a challenge, despite that fact that about half of agencies experienced

program slowdown due to data constraints on their side. This suggests data readiness is a widespread and known issue, and not one that retailers felt was a challenge unique to this program.

Data availability impacted implementation times and customer outreach alike. DropCountr digital outreach was limited to the percentage of the retailer's customer base with known email addresses. In the case of Loma Linda, for instance, digital outreach would have been impossible (beyond the test users who completed the pilot launch) without an effort on the agency's behalf to collect email addresses for their customers.

In general, data standards are lacking across the water industry – from agreement on meter and property types to definitions of what comprises irrigable versus irrigated area. To provide relevant and valuable data outputs, technology providers like EagleView and DropCountr must have an intimate understanding of the retailer's unique definitions and data requirements. Technologies must accommodate unique requirements and definitions of individual customers, which makes the product standardization difficult and keeps costs high for water agencies. This lack of basic data standardization ultimately leaves the industry beholden to traditional (and costly) consultants by raising the barrier of entry for private sector tech companies.

Almost all program participants said that having more time to make use of the tools provided by SAWPA would have increased the value of the program to their organization. The primary finding here is two-pronged. First, the water industry is not yet used to working with subscription-based services. Contracting vehicles are designed for traditional consultants and construction teams; monthly and annual charges/updates require a learning curve; and value needs to be found during the term of the subscription. Second, if agencies are not assured of available budget beyond Year 1, many are hesitant to engage at all, even if the initial toolset provided is equal to or more robust than a one-time delivery from a consultant.

A smaller hurdle presented itself in the contracting/legal departments: some retailers, like the City of Colton, required changes to the grant agreement that could not be accommodated as it was already the governing agreement in place for previously participating agencies. When changes could be accommodated, it often slowed the contracting process.

While not widespread, there was intermittent feedback that the opt-in fee posed a hurdle for some; however in retrospect the lackluster participation numbers suggest that perhaps the barrier to entry should have been higher to ensure participants were committed to the project.

E.4 Reducing Capital Expenditures

One way to measure the impact of conservation efforts like that put forward by EagleView through the SAWPA grant program is not just in gallons saved, but in the avoided expenditures. In our survey, almost every participating agency stated that they would be using aerial imagery and GIS to complete a landscape area measurement project in the future. SAWPA provided the funding vehicle for this data through this grant and others under the Emergency Drought Grant Program, therefore saving agencies from the certain funding burden of pursuing this work themselves.

Beyond the direct cost of data, agencies will undoubtedly realize other savings in avoided Capital Expenditures by making long term investments in all types of conservation programs. A study by the Environmental Protection Agency (EPA)[1] illustrates some of the tangible results achieved by water conservation programs implemented at the local level.

Summary of Conservation Case Studies			
City	**Problem**	**Approach**	**Results**
Irvine Ranch Water District, California	IRWD has experienced dramatic population grown, drought conditions in the late 80s and early 90s, and increasing wholesale water changes	IRWD's primary conservation strategy was a new rate structure instituted in 1991. The five-tiered rate structure rewards water-efficiency and identifies when water is being wasted. The goal is to create a long-term water efficiency ethic, while maintaining stable utility revenues.	After the first year of the new rate structure, water use declined by 19%. Between 1991 and 1997, the district saved an estimated $33.1 million in avoided water purchases.
Houston, Texas	Houston's groundwater sources have experienced increasing problems with land subsidence, saltwater intrusion, and flooding. These problems, along with a state regulation to reduce groundwater use, led Houston to explore methods for managing groundwater supplies.	Houston implemented a comprehensive conservation program that included an education program, plumbing retrofits, audits, leak detection and repair, an increasing block rate structure, and conservation planning.	The dramatic success of pilot programs has led Houston to predict a 7.3% reduction in water demand by 2006 and savings of more than $260 million.
Santa Monica, California	Santa Monica faced rapid population growth, which put a strain on its water supplies. Also, contamination was found in several wells in 1996, forcing the city to increase their water purchases.	Santa Monica instituted a multifaceted water conservation program that includes water-use surveys, education, landscaping measures, toilet retrofits, and a loan program.	Santa Monica was able to reduce its water by 14% and wastewater flow by 21%. The toilet retrofit program resulted in a reduction of 1.9 mgd and net savings of $9.5 million from 1990 to 1995.
Metropolitan Water District of Southern California	Metropolitan Water District is the largest supplier of water for municipal purposes in the United States. Metropolitan recognized the need for conservation, given increased economic and population growth, drought, government regulations, water quality concerns, and planned improvement programs.	Metropolitan's Conservations Credits Program provides funding for a large percentage of water conservation projects. Projects have included plumbing fixture replacement, water efficiency surveys, irrigation improvements, training programs, and conservation-related projects.	Conservation efforts have considerably reduced the cost estimate of Metropolitan's capital improvement. Water savings have amounted to approximately 66,000 acre-feet per year, a savings of 59 mgd.

Exhibit 24. *Excerpt from EPA study entitled "Case in Water Conservation: How Efficiency Programs Help Water Utilities Save Water and Avoid Costs "illustrating the various types of savings associated with water conservation programs like the one described herein.*

[1] Whitman, Christine Todd. "Case in Water Conservation: How Efficiency Programs Help Water Utilities Save Water and Avoid Costs." www.epa.gov/sites/production/files/2017-03/documents/ws-cases-in-water-conservation.pdf.

Water utilities across the United States have saved large amounts of water through water-efficiency programs. Capital and operating savings are also produced as a result of these programs and has allowed systems to avoid significant costs and expenditures for water supply and wastewater facilities. The EPA conducted and assembled several case studies to show how certain water-efficiency programs have impacted certain water agencies across the United States. Although these agencies vary in size, geography and other conditions, the results show that water conservation and efficiency programs, in addition to water savings, produce many environmental benefits including reduced energy use, reduced wastewater discharges, and protection of aquatic habitats. This has resulted in the increase of incidences of water conservation and water reuse programs over the last decade, and has spread from beyond the dry West to the rest of the United States. Exhibit 12 shows a summary of these case studies.

What these studies show is that SAWPA agencies will reap financial benefits from today's investments in conservation for years to come, and only then can true cost savings be calculated.

F. Conclusion

While this program experienced challenges with participation, it was the first regional effort of its kind to illustrate that parcel-level data – specifically, water budgets and efficiency tracking – are new and powerful tools that water agencies can leverage for drought response, long-term planning, rate studies, and increasing efficacy of consumer-facing conservation programs. While some agencies have pursued water budget development internally, SAWPA's program has proven that technology is finally able to account for critical variability in weather, climate, slope, demographics, and landscape across agencies, suggesting that it will be possible to introduce efficiency as a benchmark metric for water agencies and consumers in the future. For this forward-thinking initiative, SAWPA should be applauded.

The execution of the program illustrated that agencies still face resource constraints and, even when budget is available, limits on staff time often impact the agency's ability to successfully implement a new program. As an industry, inconsistent data standards continue to drive higher costs of providing data services because customization or professional services (i.e., "help") is nearly always required.

The private water technology sector is well poised to vastly expand their offerings to the water sector in coming years. At a time of rapid evolution in the artificial intelligence and aerial imagery industries, water utilities and regional entities like SAWPA should prepare internally for subscription-based services to become the new status quo (even for imagery acquisition). Consulting dollars will be better focused on complex problems, like rate studies, rather than data generation (i.e., land cover classification).

It should not be overlooked that SAWPA is a unique organization, and private sector technologies typically struggle to bring their tools to small cities and water agencies where larger funding streams are not available. For private companies, the cost of customer acquisition is high, and ultimately those costs get passed on to the customer. For instance, for the SAWPA program alone, OmniEarth engaged in 4 workshops and over 70 individual customer meetings to get agencies to opt-in to the program (see Appendix D). Entities like SAWPA and BAWSCA make it far easier to offer technologies to interested parties through a single contracting vehicle with available budget.

This is the right time for agencies to invest in data cleansing and geocoding efforts, which will enable them to quickly adopt and fully leverage new technologies, like those offered in this program. In a change from traditional consulting practices, newly automated data services – such as imagery, land cover, water budgeting, and weather data – are nearly always more cost effective to obtain at large scale, they should continue to be pursued through large grant programs. (For this reason, CADWR is currently assessing the potential for a statewide land cover and water budget dataset.)

Another "investment" water agencies should make is in standardizing requirements so that automation can be implemented to reduce future costs. As illustrated in Appendix A, each agency required a slightly different set of information, adding substantially to costs.

When buying data and technology services in this future scenario, organizations may begin to strongly consider any potential loss of value from using or obtaining outdated data, and prioritize quality and

time to delivery over cost in procurement. We also recommend that agencies understand the return on every data investment they make. In many business cases, the majority of professional services time and cost is spent on addressing a very small percentage of outliers. Whether it be geocoding meters, obtaining survey results, or conducting a landscape area measurement survey, agencies should demand quality data, but know when they can cut costs by accepting a data package that is "good enough." Data is almost never perfect, but the industry should move forward embracing data-driven solutions regardless.

Moving forward, EagleView has decided not to expand their presence in the water industry, and will not be taking on new water utility customers. However, DropCountr and other technology-driven companies like WaterSmart Software, Waterfluence, and Rachio continue to bring a variety of automated technology to utilities and their consumers in a way that will certainly continue to drive positive change in the water industry. Any current EagleView users are encouraged to contact their EagleView support staff for specific recommendations on how to best transition to other data and service providers.

Appendix A: Screenshots of Agency Systems (EagleView)

Appendix A.1 City of Brea

Appendix A.2 City of Fullerton

Appendix A.3 City of Loma Linda

Appendix A.4 City of Newport Beach

Appendix A.5 City of Ontario

Appendix A.6 City of Rialto

Appendix A.7 City of Tustin

Appendix A.8 Eastern Municipal Water District

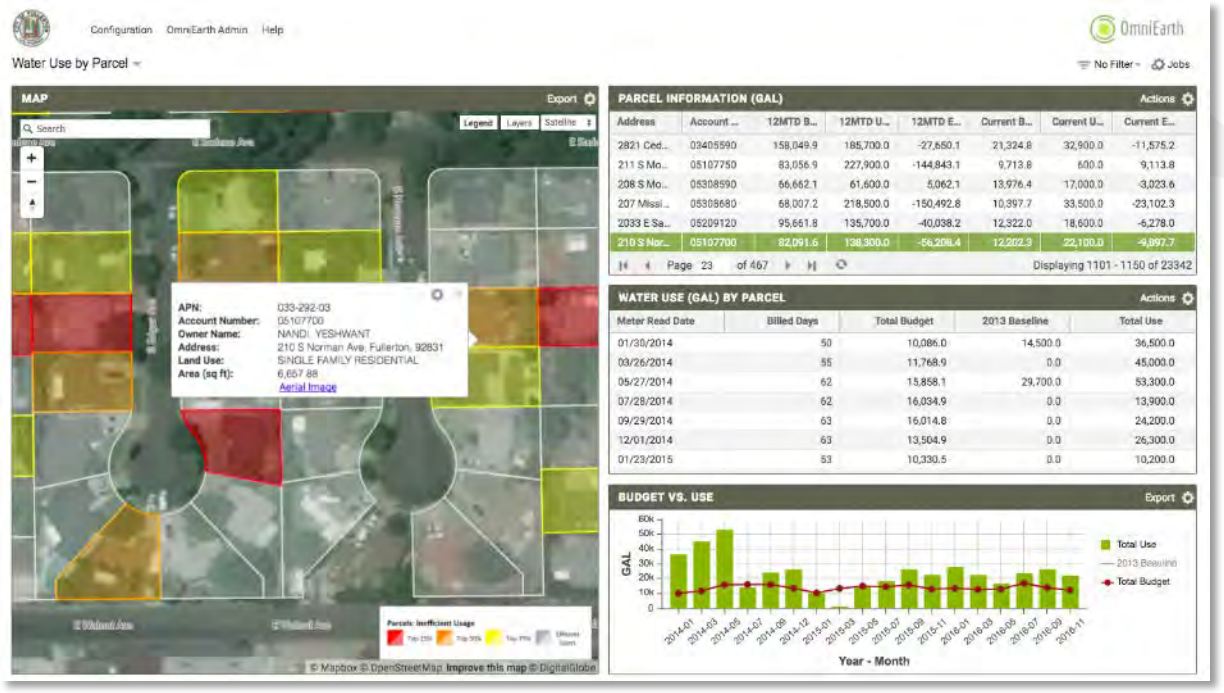
Appendix A.9 Monte Vista Water District

Appendix A.10 West Valley Water District

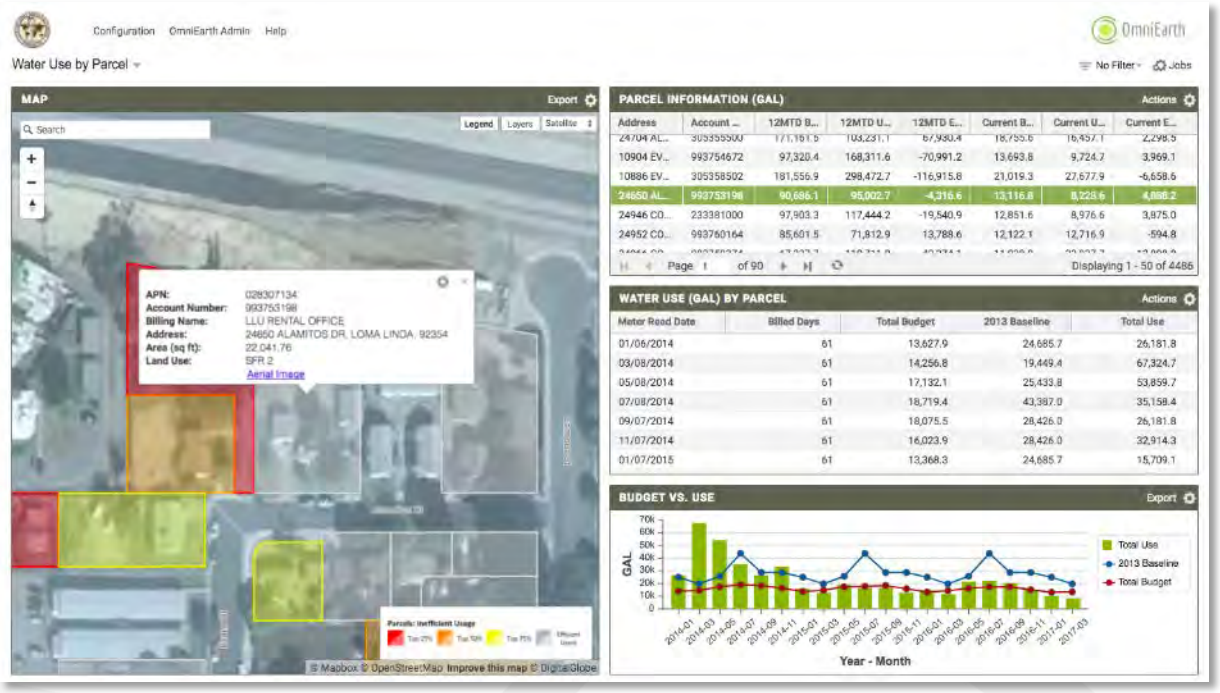
Appendix A.11 Yorba Linda Water District

Appendix A.1 City of Brea

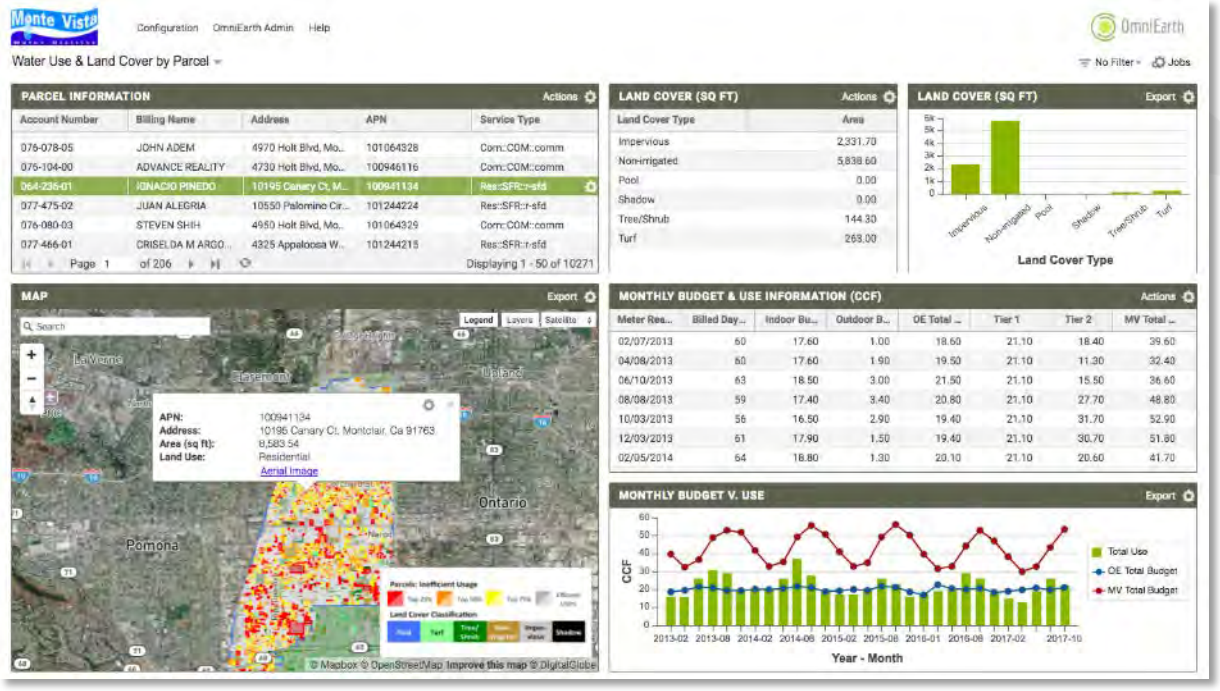
Appendix A.2 City of Fullerton



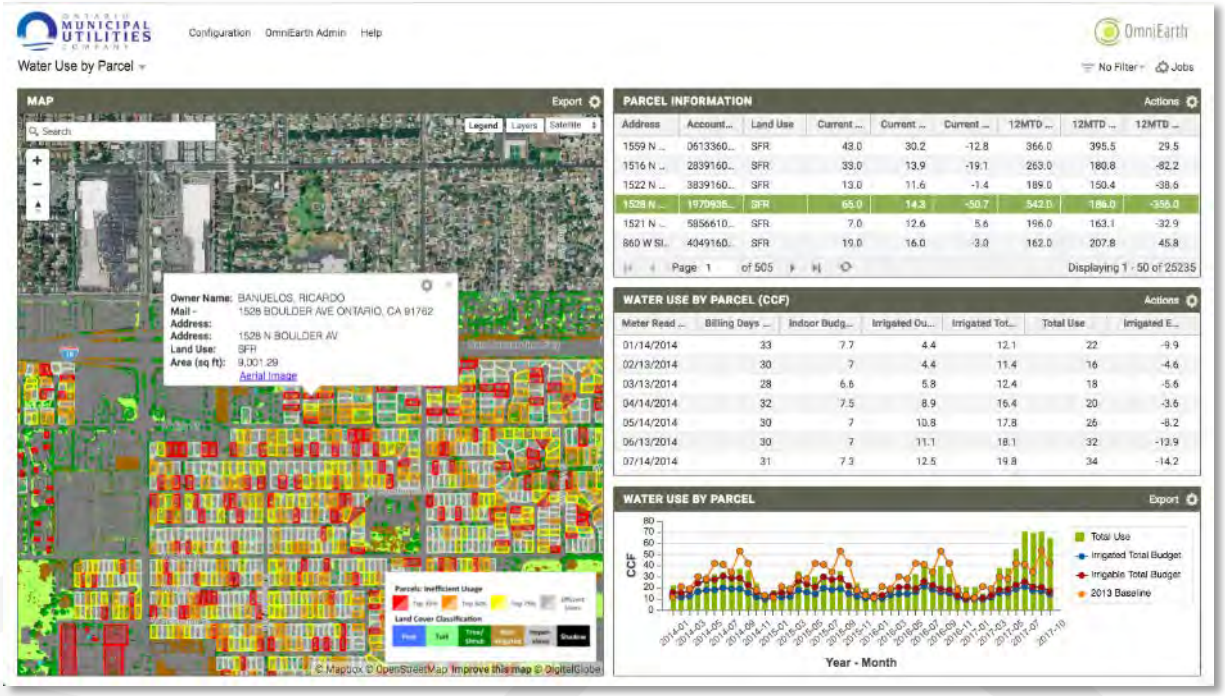
Appendix A.3 City of Loma Linda



Appendix A.4 City of Newport Beach



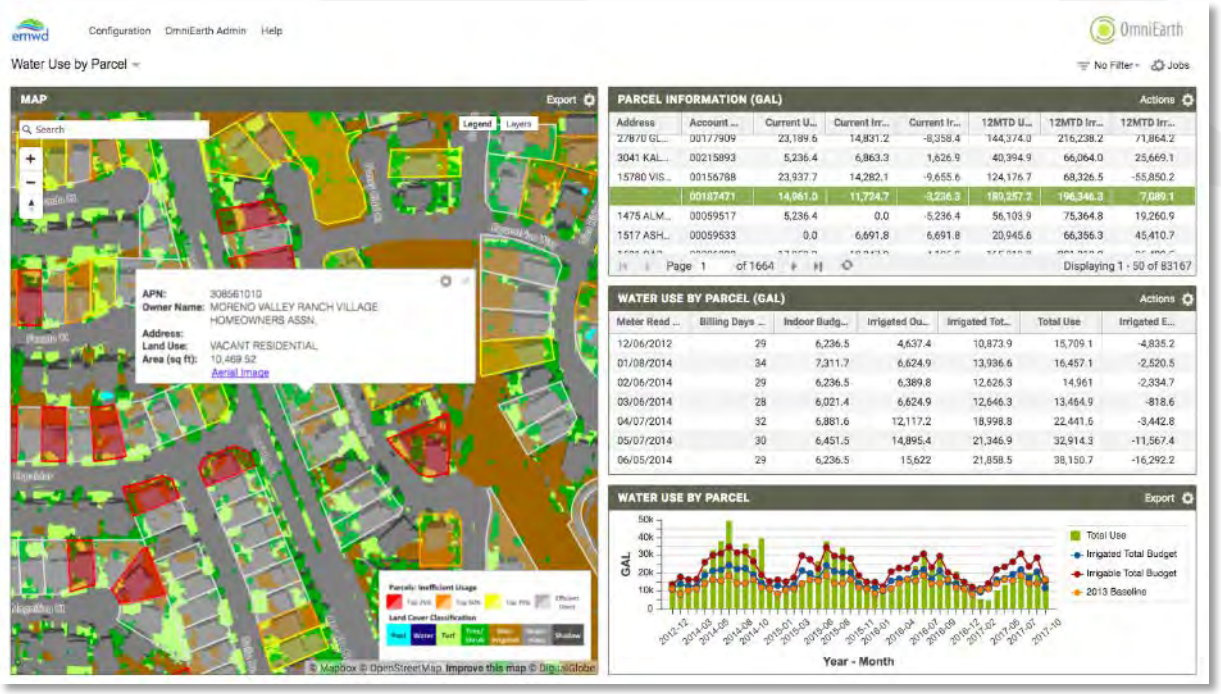
Appendix A.5 City of Ontario



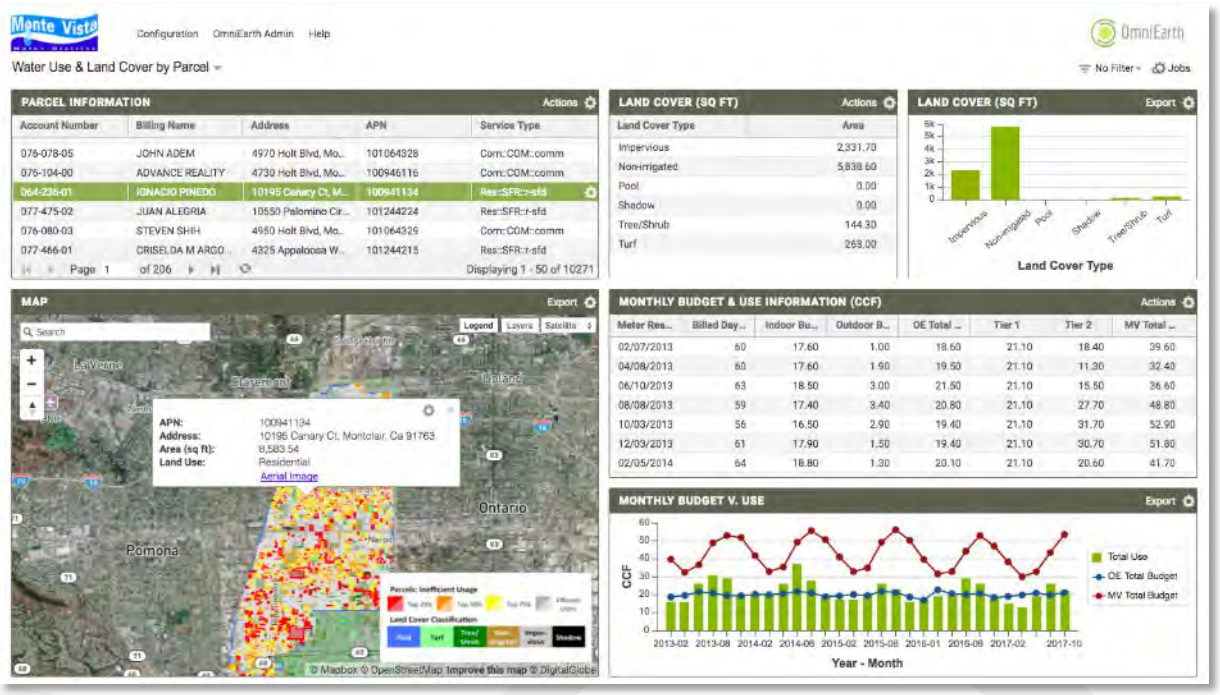
Appendix A.6 City of Rialto

Appendix A.7 City of Tustin

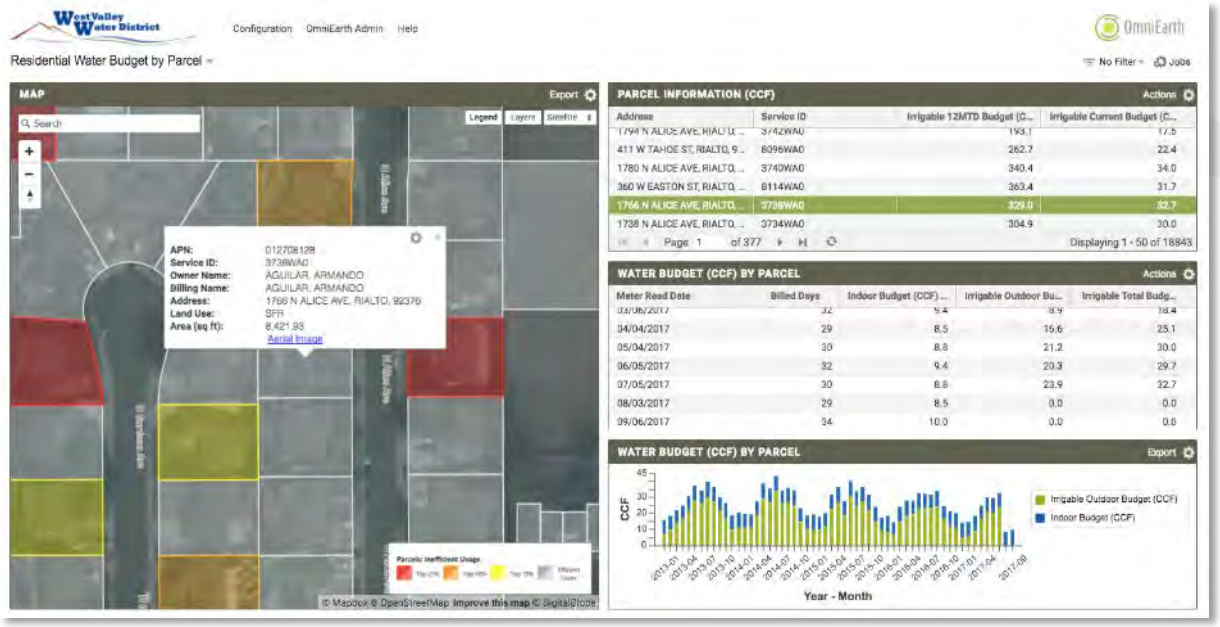
Appendix A.8 Eastern Municipal Water District



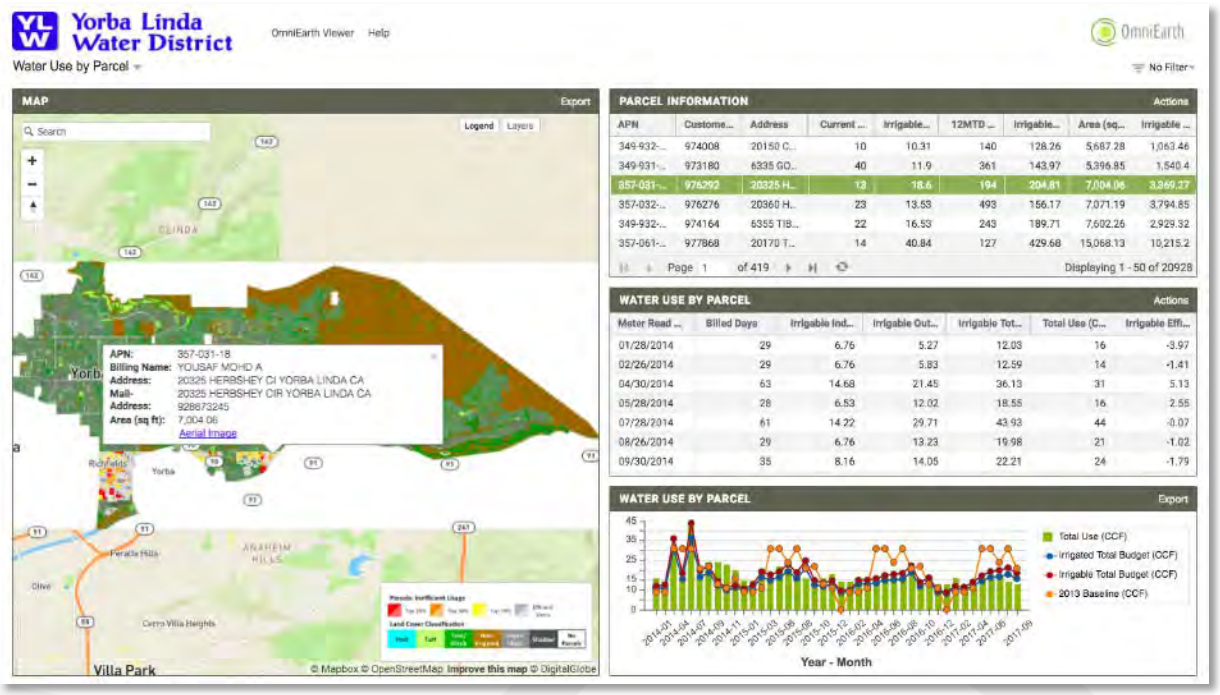
Appendix A.9 Monte Vista Water District



Appendix A.10 West Valley Water District



Appendix A.11 Yorba Linda Water District



Appendix B: Sample DropCountr Paper Report

Following is a sample paper report generated by DropCountr for use by water retailers.

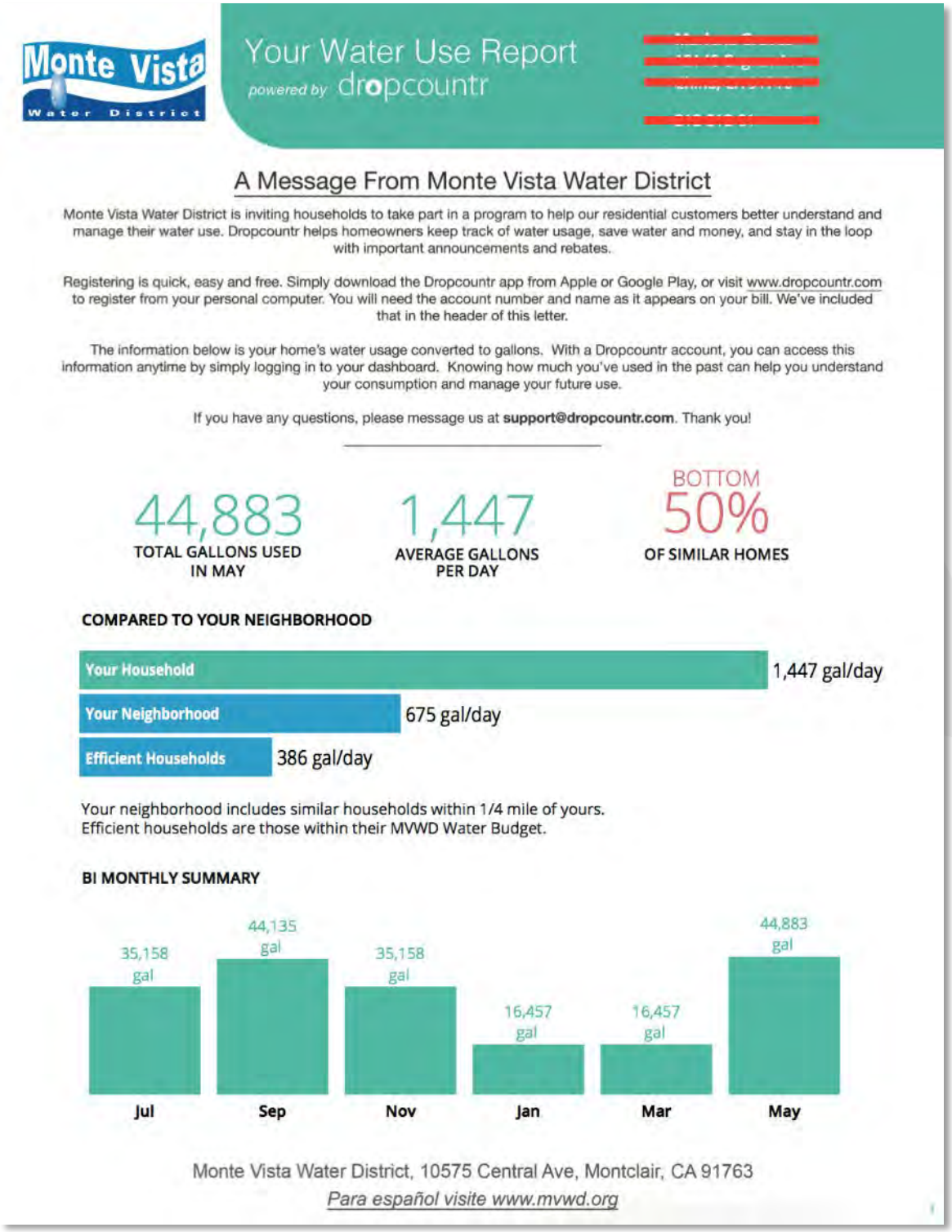


Exhibit B-1. *Sample DropCountr paper report.*

Appendix C: Implementation

During the onboarding process, participants were provided a timeline, shown below, so that they could prepare their staff for change associated with the program (next four pages, Exhibit C-1). Also during the onboarding period, participants were provided a list of file formatting requirements, as shown in Exhibit C-2 (2 pages following Exhibit C-1), to ensure successful integration of data.

OmniEarth

Working with OmniEarth

Congratulations on choosing the OmniEarth Water Resource Management platform, the most comprehensive and accurate source for water budget information. All of our water budgets are physically verifiable via satellite or aerial imagery, and provide the most in depth view of the water budget and water consumption in your region. Please find an outline of expected timelines and contributions for the project below. Our Implementation Team looks forward to working with you, and if you have any questions throughout the process, please contact one of our team members.

What Am I Receiving from OmniEarth?

OmniEarth's web-based Water Resource Management Retailer Application includes:

- **Data Integration:** OmniEarth normally ingests 3 main datasets:
  - Parcel data
  - Aerial or Satellite Imagery*
  - Water Meter data
- **Ongoing, automatic updates of water budget data**: See your analysis results automatically update each month
- **Logins** for 5+ Users
- **System Security**: Control over who can view and administer your system
- **Dashboards:** Up to 5 dashboard views, depending on the product level your agency has selected for residential accounts.

Custom Analytics Results datasets, including:

- **Water budget dataset by parcel or region**: Tells you how much water this parcel or region should use, based on MWELO standards, local ET rates, and indoor water usage standard.
- **Indoor water budget attribute calculated using one of the following methods (SAWPA preference)**
  - The information about lifestyle and use captured through the Dropcountr mobile application (where available)
  - 55 GPCD, multiplied by one the average household members by residence type, determined by the census average of the agency's region
- **Agency Conservation Analysis:** Shows you which users have the greatest potential savings in GPCD, and how their individual savings can contribute to

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your agency's overall conservation target (if water meter data is provided by participating agency)

General Support, including:

- **Training Sessions:** in-person half-day sessions (locations to be determined by SAWPA)
- **Help documentation**
- **Support:** Phone and email service and support for duration of your subscription

Implementation Timeline

Phase	Includes:	Duration (Weeks)

Phase I: Project Initiation	• Prior to kick-off:
	  • Pre-sales support
	  • Opt-in
	  • Signed contracts and non-disclosure agreement (if applicable)
	  • Data and system configuration consultation
	• Kick-off meeting
		Prior to project start

Phase II: System Configuration	• Platform configuration • Initial dataset ingestion • Setup of initial logins	1
Phase III: Analysis and Platform Delivery	• Generation of parcel-level water budget • Generation of agency-level summaries • Dashboard delivery	2
Phase IV: Training and Handoff	• Platform Training • Customer Review	1
Post-Implementation	• Support for the duration of your subscription • Automated updating of your data	Ongoing during subscription

Assumptions:

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- All districts will follow same application template per product level (same result datasets, same attributes, same dashboards)
- All meetings include prep time and meeting time for 2 individuals (a project lead and technical lead)

What Do I Need to Contribute?

Data and Information

- **List of Beta Access Users**
  - Must include: User Name, Email Address
    - *.csv or .xls is preferred.*
  - *Ideally project stakeholders will provide login information at kickoff meeting*
  - *These users will be given administrator access at the end of implementation, and will have the capability to add additional users*

Time (in Hours)

- Data Prep and Delivery time (varies)
- 4 hours (total) of individual agency meetings:
  - **Project Kickoff Meeting**
  - **Data Discovery and System Configuration Meeting:** Review the quirks of your meter data with technical leads, and discussion of any organizational requirements for the system configuration.
  - **Update Meeting:** Let us fill you in on where we are!
  - **Delivery Meeting:** OmniEarth turns over the product for review and feedback
- Training (1 hour)

Want More?

Additionally, you have the option to upgrade your Water Resource Management Application to OmniEarth's Plus product. As a Plus customer, OmniEarth will ingest your water meter data to provide the following insights and visualizations:

- **Water Efficiency by Parcel:** Compares actual usage to budgeted usage
- **2013 Baseline Savings**: Compares the current billing period's use to the corresponding period in 2013, and is compliant with the CA Governor's executive order. Requires historical billing data from 2013 onward.
- **Total Agency Savings**: View the cumulative water savings in your agency over time in Acre Feet

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- **Inefficient Parcel identification layer:** A mapped data layer that identifies inefficient users by percent & gallons over budget (if water meter data is provided by participating agency)

Water meter data analysis requires that you provide the meter data for your agency. The water meter data should include the following information:

- Billed consumption monthly total (and measuring units)
- Billing date
- Field that links to the parcel data (either APN or locid)
- Customer ID in parcel or water meter data (if you want the data to be searchable by customer)
- Data dictionary that explains acronyms, code numbers, etc.

Please provide the raw export format from your billing system. Acceptable file formats may include:

- .xls (spreadsheet format used by Microsoft Excel)
- .csv (database file format that can be opened in text editors, spreadsheet editors, or database tools like MIcrosoft Access)
- .dbf (database file format used by ESRI ArcGIS, and can be opened in some spreadsheet editors)

Want *Even* More?

OmniEarth provides a suite of premium solutions that enable custom data functionality, integration, and perspectives. We can provide access to updated imagery, lidar data, and a number of other data types. Please inquire for a separate quote to deliver enhanced value for your agency or wholesale region.

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SAWPA File Formats for OmniEarth and Dropcountr

This document outlines the preferred file formats for the OmniEarth and Dropcountr platforms. At the initiation of the project, OmniEarth requires a bulk download of the following tables. OmniEarth will then work with your IT team to automate the transfer of the meter reading data into OmniEarth's secure database.

Accounts

Preferred format: CSV or pipe-delimited
Example File: accounts.csv

Attribute	Description
Billing Name	Name of the account holder
Account Number	Account number associated with the meter/service address. Typically, this number does not change when the account holder changes. This number may also be combined with the customer number.
Customer Number	Optional. Customer number of each customer
Billing Address	Billing address for the account number
Service Address	Address associated with the meter location
Service Latitude*	Optional if APN is included. Latitude associated with the meter location
Service Longitude*	Optional if APN is included. Longitude associated with the meter location
Service Type	Type of account associated with the meter, such as domestic or irrigation. OmniEarth analyzes domestic and irrigation meters on residential properties. If the service type is not provided, all meters will be analyzed as residential
APN*	Assessor's Parcel Number associated with the meter location.
Email	Email associated with the account holder. This value is used for customer outreach through the Dropcountr application. This information is also captured for new users by the Dropcountr mobile application.
Account Status	Status of the account (Active or Closed)

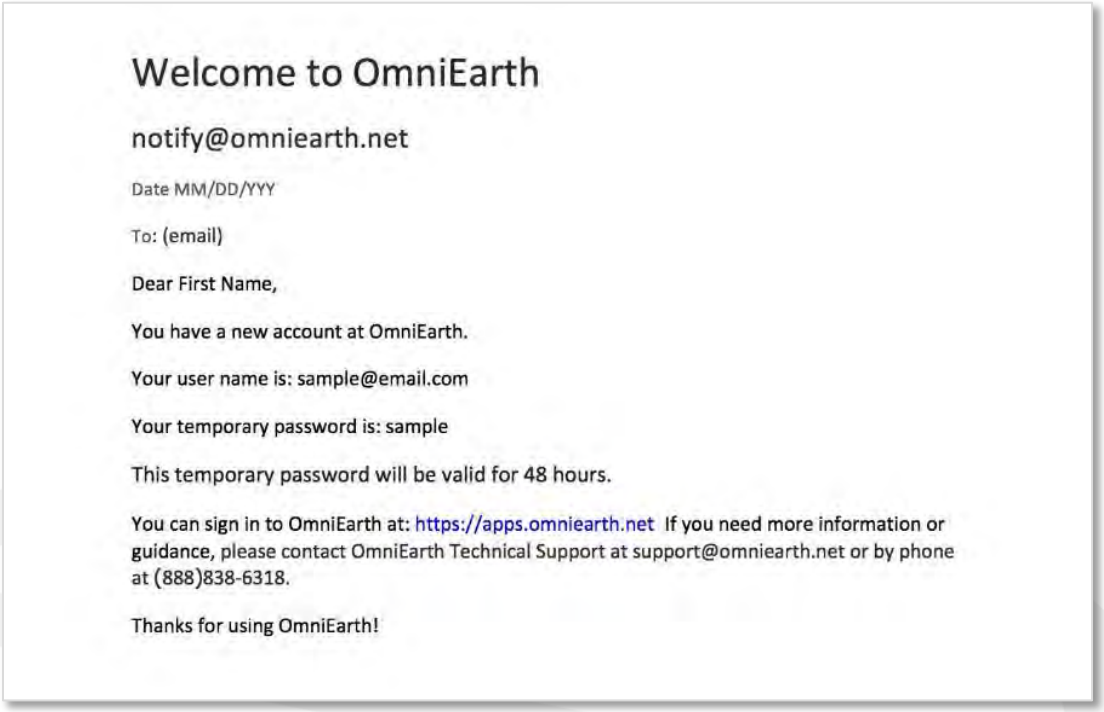
Meter Readings

Preferred format: CSV or pipe-delimited
Example File: meter_reads.csv

Attribute	Description
Account Number	Account number associated with the meter/service address. This number may also include the customer number.
Customer Number	Optional. Customer number of each customer
Meter Read Date	Date the meter was read
Usage	Water usage, in CCF or Gallons
Leak Flag	This attribute notes the presence of a detected leak by the meter or technician. This attribute is common with AMI meters, but is not common with AMR meters.

*If your account or meter data is not geospatially located, OmniEarth can provide these services for an additional services fee.

Platform users were generated using an agency-provided list during the implementation process. Each agency was allowed up to 50 individual platform logins. Exhibit C-3 shows a screenshot of the login email that was sent to new users. Exhibit C-4 is a table of all registered platform users.



Welcome to OmniEarth

notify@omniearth.net

Date MM/DD/YYY

To: (email)

Dear First Name,

You have a new account at OmniEarth.

Your user name is: sample@email.com

Your temporary password is: sample

This temporary password will be valid for 48 hours.

You can sign in to OmniEarth at: https://apps.omniearth.net If you need more information or guidance, please contact OmniEarth Technical Support at support@omniearth.net or by phone at (888)838-6318.

Thanks for using OmniEarth!

Exhibit C-3. *Screenshot of the login email sent to new users.*

Exhibit C-4. *Table of all registered users.*

Firs Name	Last Name	Email/Login	Organization	Date Login Email Sent/ Username Created
Alma	C.	almac@ci.brea.ca.us	City of Brea	3/2/17
James	Dao	JimmyD@ci.brea.ca.us	City of Brea	1/16/17
Brian	Ingallinera	BrianI@ci.brea.ca.us	City of Brea	1/16/17
Ron	K.	Ronkr@cityofbrea.net	City of Brea	3/2/17
Alicia	L.	alicial@ci.brea.ca.us	City of Brea	3/2/17
Valleri	P.	vallerip@ci.brea.ca.us	City of Brea	3/2/17
Rita	S	ritas@ci.brea.ca.us	City of Brea	3/2/17
Ramona	Castaneda	ramonac@ci.fullerton.ca.us	City of Fullerton	12/22/15
Rex	Davidson	RexD@cityoffullerton.com	City of Fullerton	12/22/15
Gar	Huang	GarH@ci.fullerton.ca.us	City of Fullerton	12/22/15
Chris	Negrete	ChrisN@ci.fullerton.ca.us	City of Fullerton	12/22/15
Phuong	Nguyen	PhuongN@ci.fullerton.ca.us	City of Fullerton	12/22/15
Wendi	Ogata	WendiO@ci.fullerton.ca.us	City of Fullerton	5/25/16

Jon	Orndorff	JonO@ci.fullerton.ca.us	City of Fullerton	12/22/15
Julio	Ortega	JulioO@ci.fullerton.ca.us	City of Fullerton	12/22/15
Dave	Schickling	DavidS@ci.fullerton.ca.us	City of Fullerton	12/22/15
Dennis	Bolt	dbolt@lomalinda-ca.gov	City of Loma Linda	4/27/16
Diana	DeAnda	ddeanda@lomalinda-ca.gov	City of Loma Linda	4/27/16
Sandra	Delgadillo	sdelgadillo@lomalinda-ca.gov	City of Loma Linda	4/27/16
Russ	Handy	rhandy@lomalinda-ca.gov	City of Loma Linda	4/27/16
Carry	Howard	choward@lomalinda-ca.gov	City of Loma Linda	4/27/16
Jeff	Peterson	jpeterson@lomalinda-ca.gov	City of Loma Linda	4/27/16
Jarb	Thaipejr	jthaipejr@lomalinda-ca.gov	City of Loma Linda	4/27/16
Shane	Burckle	SBurckle@newportbeachca.gov	City of Newport Beach	11/18/16
Steffen	Catron	SCatron@newportbeachca.gov	City of Newport Beach	11/18/16
Michael	Le	mle@newportbeachca.gov	City of Newport Beach	11/18/16
Avery	Maglinti	AMaglinti@newportbeachca.gov	City of Newport Beach	11/18/16
George	Murdoch	GMurdoch@newportbeachca.gov	City of Newport Beach	11/18/16
Ryan	Stadlman	RStadlman@newportbeachca.gov	City of Newport Beach	2/9/17
Amy	Bonczewski	ABonczewski@ontarioca.gov	City of Ontario Water Department	7/28/16
Peter	Witherow	pwitherow@ci.ontario.ca.us	City of Ontario Water Department	7/2/15
Thomas	Crowley	tjcrowley@rialtoca.gov	City of Rialto	11/22/16
Art	Griffith	art@fg-solutions.com	City of Rialto	11/22/16
Aaron	Kraft	Aaron.Kraft@veolia.com	City of Rialto	11/22/16
Robert	Lee	robert.lee@veolia.com	City of Rialto	11/22/16
Clarence	Mansell	clarence.mansell@veolia.com	City of Rialto	11/22/16
Katie	Nickel	knickel@rialtoca.gov	City of Rialto	11/10/16
Rolf	Ohlemutz	Rolf.Ohlemutz@weareharris.com	City of Rialto	11/22/16
Omni	View	ryan.soldin@omniearth.net	City of Rialto	1/9/17
Susanne	Wilcox	swilcox@rialtoca.gov	City of Rialto	11/22/16
Julie	Interrante	JInterrante@Tustinca.org	City of Tustin	6/9/16
Sean	Tran	STran@tustinca.org	City of Tustin	5/3/16
Art	Valenzuela	AValenzuela@tustinca.org	City of Tustin	5/3/16
Mike	Baca	bacam@emwd.org	Eastern Municipal Water District	2/7/17
Louise	Briones	brionesl@emwd.org	Eastern Municipal Water District	2/7/17
Dan	Carney	carneyd@emwd.org	Eastern Municipal Water District	1/31/17
Anna	Garcia	garciaan@emwd.org	Eastern Municipal Water District	10/19/17
Dora	Llaneras	llanerad@emwd.org	Eastern Municipal Water District	1/23/17
Elizabeth	Lovsted	lovstede@emwd.org	Eastern Municipal Water District	1/31/17
Gordon	Ng	ngg@emwd.org	Eastern Municipal Water District	2/7/17
Sara	Quintero	quinters@emwd.org	Eastern Municipal Water District	1/31/17

Irma	Rodriguez	Rodrigui@emwd.org	Eastern Municipal Water District	2/7/17
Stacy	Rodriguez	rodriguezs@emwd.org	Eastern Municipal Water District	1/31/17
Juan	Zamora	zamoraj@emwd.org	Eastern Municipal Water District	2/7/17
Marivel	Barillas	mbarillas@mvwd.org	Monte Vista Water District	8/29/17
Riki	Clark	rclark@mvwd.org	Monte Vista Water District	10/11/17
Gabby	De La Cruz	gdelacruz@mvwd.org	Monte Vista Water District	8/14/15
Gisela	Lopez	glopez@mvwd.org	Monte Vista Water District	12/12/16
Leah	Nazaroff	lnazaroff@mvwd.org	Monte Vista Water District	10/16/17
Barry	Rowley	browley@mvwd.org	Monte Vista Water District	8/29/17
Justin	Scott-Coe	jscottcoe@mvwd.org	Monte Vista Water District	8/14/15
Jazmine	Soto	jsoto@mvwd.org	Monte Vista Water District	8/29/17
Rosie	Tock	ritock@mvwd.org	Monte Vista Water District	8/29/17
Lauren	Albrecht	lalbrecht@wvwd.org	West Valley Water District	7/6/16
Brent	Almasi	balmasi@wvwd.org	West Valley Water District	1/12/16
Daisy	Farias	dfarias@wvwd.org	West Valley Water District	1/12/16
Linda	Jadeski	ljadeski@wvwd.org	West Valley Water District	1/12/16
Matthew	Litchfield	mlitchfield@wvwd.org	West Valley Water District	1/12/16
Andrea	Regalado	aregalado@wvwd.org	West Valley Water District	1/12/16
Jon	Stephenson	jsteph@wvwd.org	West Valley Water District	1/12/16
Jose	Velasquez	jvelasquez@wvwd.org	West Valley Water District	1/12/16
Alberto	Yulo	ayulo@wvwd.org	West Valley Water District	1/12/16
Cynthia	Botts	cbotts@ylwd.com	Yorba Linda Water District	11/9/16
Cat	Erbacher	cerbacher@ylwd.com	Yorba Linda Water District	11/29/16
Keri	Hollon	khollon@ylwd.com	Yorba Linda Water District	11/29/16
Delia	Lugo	dlugo@ylwd.com	Yorba Linda Water District	11/29/16
Pati	Medina	pmedina@ylwd.com	Yorba Linda Water District	11/29/16
Damon	Micalizzi	dmicalizzi@ylwd.com	Yorba Linda Water District	11/29/16
Irma	Munguia	imunguia@ylwd.com	Yorba Linda Water District	11/29/16
Malissa	Muttaraid	mtem@ylwd.com	Yorba Linda Water District	11/29/16
Rachel	Padilla	rpadilla@ylwd.com	Yorba Linda Water District	11/29/16
Marie	Pagenkopp	mpagenkopp@ylwd.com	Yorba Linda Water District	11/29/16
Robyn	Shaw	rshaw@ylwd.com	Yorba Linda Water District	11/9/16
Alfredo	Vargas	avargas@ylwd.com	Yorba Linda Water District	11/29/16
Kaden	Young	kyoung@ylwd.com	Yorba Linda Water District	9/27/17

Appendix D: Meetings and Workshops

A series of introductory workshops were held over the past two years, including:

1/7/2015	City of Rialto
1/19/2015	Western Municipal Water District
1/20/2015	City of Tustin
6/7/2015	Irvine Ranch Water District
8/25/2015	Yorba Linda
9/28/2015	West Valley Water District
9/28/2015	Fullerton
9/29/2015	Monte Vista
9/30/2015	City of Loma Linda
9/30/2015	West Valley Water District
9/30/2015	City of Garden Grove
10/2/2015	Western Municipal Water District
10/7/2015	City of Loma Linda
10/7/2015	City of Tustin
10/12/2015	PA22
10/19/2015	City of Rialto
10/22/2015	City of Riverside
10/28/2015	Irvine Ranch Water District
11/2/2015	Eastern Municipal Water District
11/2/2015	City of Garden Grove
11/16/2015	City of Fullerton
11/23/2015	West Valley Water District
12/2/2015	City of Rialto
12/10/2015	City of Redlands
12/14/2015	City of Colton
12/14/2015	Beaumont Cherry Valley
12/15/2015	City of Upland
12/16/2015	City of Rialto
12/17/2015	PA22
12/31/2015	Western Municipal Water District
1/28/2016	City of Newport Beach
1/28/2016	Big Bear Lake
2/3/2016	unknown SAWPA agency
2/4/2016	Rancho California
2/16/2016	Rancho California
2/23/2016	City of Newport Beach
2/25/2016	Irvine Ranch Water District

3/9/2016	Beaumont Cherry Valley
3/15/2016	City of Brea
3/21/2016	City of Ontario
3/22/2016	City of Newport Beach
3/22/2016	City of Buena Park
4/6/2016	Yorba Linda
4/12/2016	Monte Vista
4/14/2016	Fountain Valley
4/20/2016	City of Colton
4/20/2016	Cucamonga Valley Water District
4/21/2016	Yorba Linda Board Meeting
5/9/2016	City of Colton
5/18/2016	San Bernardino Valley Municipal Water District
5/19/2016	Carpinteria
5/24/2016	Santa Clarita
6/8/2016	Yorba Linda
7/27/2016	Monte Vista
7/27/2016	City of Newport Beach

Exhibit D-1 (next page) is a copy of an agenda associated with those meetings.

Workshop One	Workshop Two	Workshop Three
Monday, September 21	Tuesday, September 22	Wednesday, September 23
SBVMWD	**SAWPA**	**OCWD**
380 East Vanderbilt Way	**11615 Sterling Avenue**	**18700 Ward Street**
San Bernardino, CA 92408	**Riverside, CA 92503**	**Fountain Valley, CA 92708**

AGENDA

10:00 am – 10:05 am	Workshop Host Welcome
10:05 am – 10:15 am	Grant Funding Support **Mark Norton** (SAWPA Grant Project Manager)
10:15 am – 10:30 am	Aerial Imagery and Spatial Analysis Tools **Dean Unger** (SAWPA IS/IT Manager)
10:30 am – 10:45 am	What is the Technology? **Tom Ash** (IEUA Senior Environmental Resources Planner)
10:45 am – 11:45 am	Water Consumption Reporting Analytics and Customer Outreach Tool **OmniEarth Inc.** ▪ Efficiency Based Analytics Technology Overview ▪ Water Budget Demonstration ▪ Targeted Outreach **Dropcountr** ▪ Mobile and Web Outreach ▪ CLEAR Platform Overview
11:45 am – 12:00 pm	How to get Started **Tom Ash** (IEUA Senior Environmental Resources Planner)
12:00 pm – 1:00 pm	Lunch Served Question & Answer Session and SAWPA Grant Sign-up

Appendix E: Survey Results

1. How often do/did you log into your OmniEarth platform?

Choice	Responses	Percentage
Daily	1	6%
Weekly	4	22%
Monthly	6	33%
Quarterly	5	28%
Never	2	11%

2. Does your agency currently use budget based rates?

Choice	Responses	Percentage
Yes	3	17%
No	15	83%

3. Which of the following datasets provided by OmniEarth was the MOST useful for your agency?

Choice	Responses	Percentage
Land cover and land area measurements	5	28%
Water Budgets	2	11%
Inefficiency Analysis (identifying inefficient water users)	10	56%
Imagery	0	0%
None of the above	1	6%

4. How have you used/did you intend to use your OmniEarth water budget data?

Choice	Responses	Percentage
Conservation	13	76%
Marketing & Outreach	7	41%
Billing Integration	2	12%
Customer Service	5	29%
Long-term planning	4	24%
Turf Validation	2	12%
Rate Study or exploration of budget based rates	7	41%

5. How have you used/do you intend to use landscape area measurements (from this program or another source)?

Choice	Responses	Percentage
Conservation	13	87%
Marketing/Outreach	5	33%
Stormwater Analysis	1	7%
Long Term Planning	3	20%
Turf Validation	2	13%
Rate Study	4	27%

6. Is your agency planning to pursue landscape area measurements in the next 1-3 years?

Choice	Responses	Percentage
Yes	9	56%
No	7	44%

7. If you are planning a future landscape area measurement project, what method(s) are you considering to use to complete the task?

Choice	Responses	Percentage
Field measurements	5	50%
Aerial imagery digitization - manually drawn	3	30%
Aerial imagery digitization - computer processed/GIS derived	9	90%
Landscape design	1	10%

8. Does your organization have an internal GIS team (or staff member)?

Choice	Responses	Percentage
Yes	13	76%
No	4	24%

9. Were you able to successfully launch the Dropcountr Outreach tool to your end users?

Choice	Responses	Percentage
Yes	5	29%
No	12	71%

10. If you were unable to launch Dropcountr, what hurdles prevented this from occurring? (Please make a selection in each row)

End of Drought

Response	Responses	Percentage
Biggest Hurdle	2	17%
Significant Hurdle	4	33%
Minor Hurdle	7	58%
Not a Hurdle	12	100%

No Administrative Approval

Response	Responses	Percentage
Biggest Hurdle	3	25%
Significant Hurdle	6	50%
Minor Hurdle	8	67%
Not a Hurdle	12	100%

Lack of Internal Alignment

Response	Responses	Percentage
Biggest Hurdle	2	17%
Significant Hurdle	6	50%
Minor Hurdle	8	67%
Not a Hurdle	12	100%

Resource Limitations

Response	Responses	Percentage
Biggest Hurdle	2	17%
Significant Hurdle	6	50%
Minor Hurdle	7	58%
Not a Hurdle	12	100%

Technical Limitations

Response	Responses	Percentage
Biggest Hurdle	1	8%
Significant Hurdle	3	25%
Minor Hurdle	5	42%
Not a Hurdle	12	100%

11. If you launched Dropcountr, which of the following freely provided outreach mechanisms did you utilize?

Choice	Responses	Percentage
Paper Outreach	4	40%
Digital Outreach (i.e. marketing emails)	5	50%
Push Notifications (phone app)	2	20%
None of the above	5	50%

12. If you launched Dropcountr, how did you promote the application within your service area?

Choice	Responses	Percentage
Paper Mailer	1	20%
Email Announcement	1	20%
Logo on agency website	1	20%
Public ad space (bus stop, billboards, etc.)	0	0%
Social Media	1	20%
Other	1	20%

6 people responded "I don't know / Not applicable".

13. What hurdles/obstacles did you encounter in the contracting/onboarding process during the SAWPA grant?

Choice	Responses	Percentage
Unique legal concerns slowed the process down	0	0%
Difficult to obtain board approval	1	7%
Difficult to secure necessary budget (opt-in fee)	1	7%
Difficult to get support from internal management	3	21%
Unclear if required resources would be available to implement the tools	4	29%
Difficult timing during drought	1	7%
Did not encounter any hurdles	6	43%
Other	2	14%

14. What experiences did you encounter during the implementation process with OmniEarth/Dropcountr?

Choice	Responses	Percentage
Changing organizational priorities forced us to de-prioritize our implementation	6	43%
Lack of internal resources made it difficult to keep to schedule	5	36%
Poor data formatting/lack of geocoded meters made it difficult to keep to schedule	1	7%
Vendor was not responsive/slow to deliver	0	0%
Implementation process ran largely on schedule	3	21%
Other	2	14%

15. Do you feel the data provided under the SAWPA grant is/would be helpful in:

Choice	Responses	Percentage
Preparing for/meeting the proposed California state regulations	11	69%
Lowering cost of customer communications by targeting specific customer cohorts	6	38%
Improving service area wide water use efficiency over time	9	56%
Long term planning or rate studies	8	50%
None of the above	2	13%

16. How have your organizational objectives changed since you signed up for the grant?

Choice	Responses	Percentage
They have not changed	3	19%
Emergency conservation has become less critical	7	44%
Long term conservation has become more critical	3	19%
Revenue stability has become more critical	4	25%

17. Overall, how would you rank the value of the data and tools provided by the SAWPA grant (whether or not your organization implemented them)?

Choice	Responses	Percentage
Incredibly Valuable	4	24%
Valuable	7	41%
Moderately Valuable	6	35%
Not Valuable At All	0	0%

18. In your view, what would have increased the value of the data/toolset provided by SAWPA?

Choice	Responses	Percentage
Offered at a different time	2	13%
More comprehensive data	1	6%
Included consulting resources to address resource/technical constraints at agencies	2	13%
More time to make use of the data	8	50%
Challenges maximizing toolset were internal to agency and could not have been addressed by SAWPA	5	31%

19. How likely would you be to recommend EagleView to a friend or colleague? (scale of 1 – 10, with 0 being very unlikely and 10 being very likely)

NPS® Category	Responses	Percentage
Promoters (answered 9 or 10)	6	33%
Passives (answered 7 or 8)	6	33%
Detractors (answered 0-6)	6	34%

Appendix F: List of Progress Reports Provided

SAWPA Progress Report 2-12-15 CSF-final.pdf

SAWPA Progress Report 3-9-16.pdf

SAWPA Progress Report 04-30.16.pdf

SAWPA Progress Report 05-31-2016.pdf

SAWPA Progress Report 06-30-16.pdf

SAWPA Progress Report 08-15-16.pdf

SAWPA Progress Report 09-15-16.pdf

SAWPA Progress Report 10-15-16.pdf

SAWPA Progress Report 11-15-16.pdf

SAWPA Progress Report 12-15-16.pdf

SAWPA Progress Report 1-15-17.pdf

SAWPA Progress Report 2-15-17.pdf

SAWPA Progress Report 3-15-17.pdf

SAWPA Progress Report 4-15-17.pdf

SAWPA Progress Report 5-15-17.pdf

SAWPA Progress Report 6-15-17.pdf

SAWPA Progress Report 07-15-17.pdf

SAWPA Progress Report 8-15-17.pdf

SAWPA Progress Report 9-15-17.pdf

SAWPA Progress Report 10-11-17.pdf

SAWPA Progress Report 11-2-17.pdf

SAWPA Progress Report 12-8-17.pdf

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PA 22 COMMITTEE MEMORANDUM NO. 2018.21

DATE: August 23, 2018

TO: SAWPA Project Agreement 22 Committee

SUBJECT: Conservation-Based Water Rates Update

PREPARED BY: Ian Achimore, Senior Watershed Manager

RECOMMENDATION

Receive and file.

DISCUSSION

There are currently three retail water agencies involved in the Emergency Drought Grant Program's Conservation-Based Water Rates component – the cities of Chino, Chino Hills and Hemet. Chino adopted their conservation-based rate structure on June 19, 2018 and Chino Hills adopted it on May 8, 2018. After adoption, the cities are developing shadow bills and making final adjustments to their billing software so it calculates discrete customer budgets based on landscape measurement and weather data. Both cities are scheduled to reflect the new rate structure on their customer bills by November 2018.

The City of Hemet is planning to hold their rate hearing this November and implement the structure in February 2019. The City is currently finalizing their rate study with consultant Bartle Wells Associates and matching customer water meter data to the 2015 landscape measurement data provided by SAWPA. To assist with each cities outreach efforts, the PA 22 Committee approved a $25,000 task order with public relations firm CV Strategies on October 27, 2016. The task order scope of work includes the creation of succinct fact sheets that answer topical questions related to conservation-based rates such as how to explain fixed costs and what is the legality of the rate structure in light of the recent San Juan Capistrano decision.

In order to ensure the conservation-based rates and related aerial imagery tools, such as the ESRI Cloud Services and Dashboard, are utilized by retail water agencies throughout the region, staff executed a $15,150 change order with CV Strategies ($40,150 total) to publicize the benefits of the tools. The scope includes developing new webpages on the SAWPA website, creating graphics, drafting text, editing the SAWPA website using WordPress software, and uploading website content. Information will also be included on the new webpages about the two bills signed by the Governor in May 2018, SB 606 (Hertzberg) and AB 1668 (Friedman), that implement most of the May 2016 Executive Order entitled "Marking Water Conservation a California Way of Life." The webpages will include a fillable form where retailers can sign up to receive technical assistance on utilizing the ESRI and Miller Spatial tools. A workshop is also being planned for late summer 2018 where staff will present the tools, 2015 aerial imagery dataset and conservation-based water rates to retail water agencies in order to solicit further interest in the water use efficiency tools offered by SAWPA and the grant.

BACKGROUND

CV Strategies has developed seven factsheets with SAWPA and Mr. Tom Ash of Inland Empire Utilities Agency utilized approximately 70% of the $25,000 CV Strategies Task Order to date. These seven topics include common questions asked by city staff and customers:

1. Why Conservation Based Rates and Why Now?
2. What is the Difference Between Conservation-Based and Other Rate Structures?
3. Preparing for a Successful Public Process.
4. Legality of Conservation-Based Rates. Why Are They Defensible? San Juan Capistrano?
5. How to Talk About Fixed Costs.
6. How Are Conservation-Based Rates Fair to All Customers?
7. Maintaining the Structure during the Implementation Phase.

Staff is currently working with CV Strategies to develop an eighth factsheet focused on the major phases of rate implementation such as rate modeling and billing software modifications.

CRITICAL SUCCESS FACTORS

1. Administration of the OWOW process and plan in a highly efficient and cost-effective manner.
2. Data and information needed for decision-making is available to all.

RESOURCE IMPACTS

Funding for the $15,150 increase in the CV Strategies task order is provided by the cost savings from the Proposition 84 IRWM Drought Grant. Cost savings were realized through implementation of the Aerial Imagery and Web-Based Information Tool.

Attachments

1. CV Strategies Additional Scope of Work

Scope of Work for Outreach Material on Conservation-Based Water Rates and Related Aerial Imagery Tools

Serve as a consultant to SAWPA to support the retail water agencies that are involved in the Conservation-Based Water Rates Project of the Emergency Drought Grant Program and develop website content, and edit SAWPA Wordpress website to upload content, to explain rate and related aerial imagery tools to retail and wholesale water agencies in the Santa Ana River Watershed.

Outreach Task	Scope of Work	Estimated Hours	Costs
Phase 1			
Targeted Topic Web Page Content Development	Craft compelling content, design graphic elements and build web page layout for water conservation, aerial imaging and conservation-based rates pages	35 - 40	$7,400
Video Development	Develop 3-5 micro-videos/gifs that educate the viewer on specific aspects of the aerial imaging process.	15	$2,500
Subtotal		**55**	**$9,900**
Phase 2			
Web Design Implementation	Populate site with content from Phase 1 using WordPress.	24	$4,250
Subtotal		**24**	**$4,250**
Other			
Materials	Hard costs will be billed with a nominal service charge of 10% of what is paid for the materials (not to exceed $250 per item). This includes all anticipated hard costs such as printing, mailing, photography, video, advertising, etc.	Not Applicable	$1,000
Subtotal			**$1,000**
Grand Total		**79**	**$15,150**

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PA 22 COMMITTEE MEMORANDUM NO. 2018.22

DATE: August 23, 2018

TO: SAWPA Project Agreement 22 Committee

SUBJECT: Conference Panel and Presentation on the Drought Grant's Tools

PREPARED BY: Ian Achimore, Senior Watershed Manager

RECOMMENDATION

Provide feedback on the draft conference panel abstract.

DISCUSSION

At the June 28, 2018 PA 22 Committee meeting, Committee member Doug Headrick highlighted the importance of informing the watershed of SAWPA's ability, through the Emergency Drought Grant Program's tools, to assist with compliance efforts related to new regulations that will be promulgated per the signing of SB 606 (Hertzberg) and AB 1668 (Friedman). Together, the two bills implement some of Governor Edmund Brown's May 2016 Executive Order entitled "Making Water Conservation a California Way of Life." Mr. Headrick also suggested that a panel at an Association of California Water Agencies (ACWA) conference would be a good forum to share the benefits of the tools. Since the June meeting, SAWPA staff has drafted the attached conference panel abstract as well as questions that would be asked of the panel.

ACWA's next upcoming major conference is taking place in San Diego from November 27 to November 30, 2018.

The draft conference panel abstract document is included in the agenda packet for the PA 22 Committee members to review and provide feedback during the Committee's August 23, 2018 meeting.

CRITICAL SUCCESS FACTORS

1. Administration of the OWOW process and plan in a highly efficient and cost-effective manner.
2. Data and information needed for decision-making is available to all.

RESOURCE IMPACTS

Funding for the Project Agreement 22 updates will come from the Proposition 84 IRWM Drought Grant as shown in the FYE 2019 fiscal year of the Committee's two year budget.

Attachment:

1. Draft ACWA Conference Panel Abstract

ACWA Fall 2018 Conference SAWPA Abstract

November 27 – 30, 2018 | San Diego

Draft Panel Lineup:

- DWR Director Karla Nemeth
- SAWPA Senior Watershed Manager Ian Achimore
- Retail Agency Public Works Director

Abstract:

The Governor signed two bills on May 31, 2018 - SB 606 (Hertzberg) and AB 1668 (Friedman) - which codify most of his Executive Order *Making Water Conservation a California Way of Life*. This legislation marks a major shift in State water policy for California moving from conservation based on a historical baseline as seen during the 2014-2016 and the mandatory cut backs, to a water use efficiency framework based on water use budgets (or "objectives") based on the actual water needs of a water agency. Annually beginning November 2023, each of the approximately 400 urban water agencies will be required to calculate its own water use objective based on the water needed in its service area for certain demands such as efficient indoor residential water use, outdoor residential water use and commercial, industrial and institutional (CII) irrigation with dedicated meters.

The experience of the Emergency Drought Grant Program - which is administered by SAWPA and funded by the SAWPA member agencies through local match and a Department of Water Resources' Proposition 84 Integrated Regional Water Management Grant - can provide some insights to help the State implement and the approximately 400 urban water agencies respond to the newly minted legislation. Through the Program, SAWPA mapped 2,500 square miles across the Santa Ana and Upper Santa Margarita watersheds, developed a web-based mapping tool to quantify outdoor water use based on imagery and weather data, assisted several water agencies with setting budget-based rates, and deployed a customer water use efficiency engagement tool. Retail Agency was a participant in that program and has led the way with a new generation of water agencies in the Santa Ana River Watershed who have adopted budget-based water rates.

Questions:

1) For DWR, What is meant by the term "urban water use objective" that the State uses as part of the new laws and how is it central to the State's objectives for this new policy?
2) For Retail Agency, You've managed the water system during the 2013-2016 California Drought during a time when it was required that the City was required to cut water use by 28%. What are some takeaways from that experience that will inform you going forward as you comply with the new twin bills?
3) For Ian, What are some lessons learned from the aerial mapping exercise undertaken by SAWPA? What is the appropriate size area to map that makes logistical and financial sense?

What image resolution do you recommend using for creating an aerial mapping data set that can be utilized for creating outdoor water budgets?

4) For Retail Agency, are there any obstacles – like lack of data infrastructure - to meeting the new legislative framework that has been signed by the Governor?
5) For Ian, What are some lessons learned from your landscape measurement tool that was provided to some retail water agencies in your service area? How does it fit in with the mix of some of the other tools that were provided by the Emergency Drought Grant Program?
6) For Retail Agency, how does the fact that you now have budget-based rates influence your city's planning or outlook when it comes to complying with the new twin bills? Does it give you any additional tools when it comes to water use efficiency programs or outreach to customers?
7) For DWR, We know that California uses the California Irrigation Management Information System (CIMIS) and its 145 automated weather stations to monitor evapotranspiration rates and plans to provide aerial imagery to all the urban water agencies by January 1, 2021. In that context, what type of technical assistance along with this data does the State plan to provide to help them set outdoor water budgets and will new CIMIS stations be included in the additional support to urban water agencies? What kind of plans does the State have to help areas of California without enough data to produce accurate water use objectives?
8) For DWR, What kind of process will be set up so the State can determine if supplemental local data, such as an urban water agency's own weather station or aerial mapping data, can be used in place of the data provided by CIMIS and the 2021 aerial imagery?
9) For Ian, A lot of joint planning and collaboration went on to not only fund the Emergency Drought Grant Program by the SAWPA member agencies through local match, but also implement it with staff from your member agencies and the expertise from urban water agencies in your service area. If an agency is not in the Santa Ana River Watershed, how do you propose they form local partnerships like the Emergency Drought Grant Program?
10) For All, If you could invest in any tool that would help a water agency successfully meet the water use objectives that will be required by the State Water Board, what would the tool look like and why?