

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



How are my programs performing?

A.K.A.

Automating Water Savings Measurements Customized to the Unique
Conditions at your Local Water Utility

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WaterSmart Innovations
3 October, 2019



What is the California Data Collaborative?

- Launched Jan 2016 by water agencies for water agencies.
- Goal: Leverage modern data science to ensure water reliability
- Operated as a 501(c)(3) public data infrastructure nonprofit

Founding Members:



New Members:



Partners:

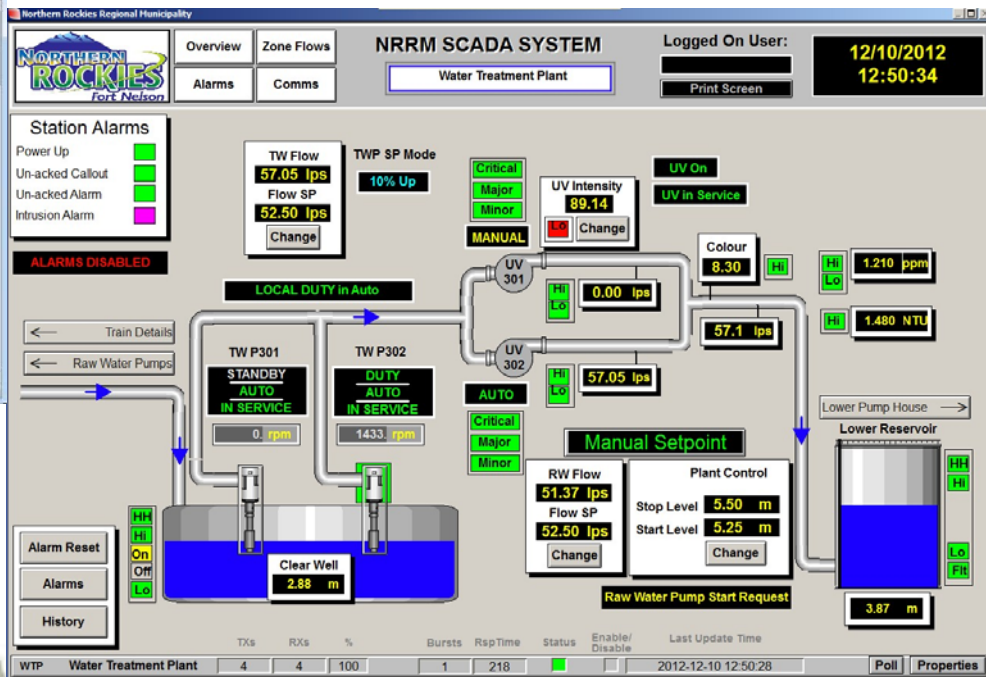


Motivation: Situational Awareness

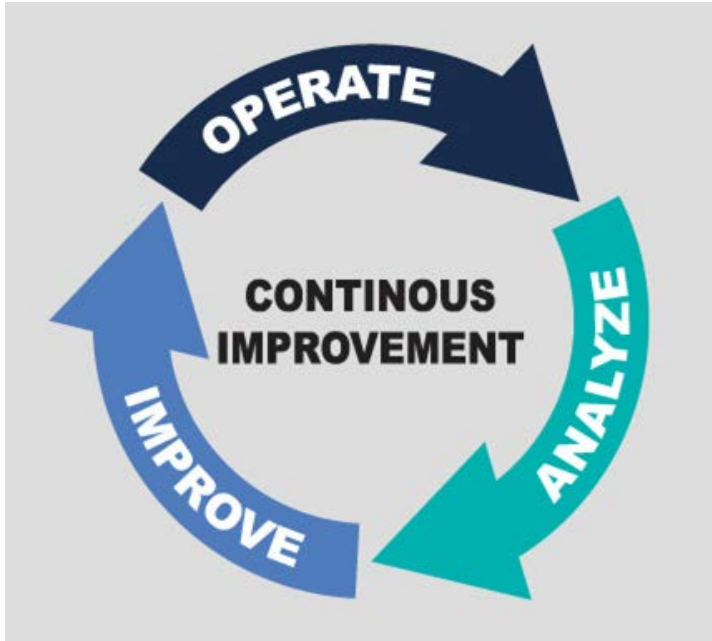
Food Inventory Sheet - Microsoft Excel

Item #	Description	Vendor	Category	Size	Unit	Starting Qty	Starting Value	Wk 1 Qty	Wk 1 Cost	Wk 2 Qty	Wk 2 Cost	Wk 3 Qty	Wk 3 Cost	Wk 4 Qty	Wk 4 Cost
2	492229 TURKEY SLICED .5 OZ	Ben E Keith	2- FROZEN FOOD	0	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
3	662371 DRESSING CAESAR CREAMY	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
4	779243 MARGARINE LIQUID OLEO	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
5	815306 LID PLAS SOUFFLE CLEAR	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
6	860055 LID PLAS 36SL SLOTTED	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
7	860060 CUP FOAM 16OZ 16116	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
8	774704 PAPIKA	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	1.00	\$ 5.79	0.00	\$ -	0.00	\$ -
9	664005 Mustard Prepared	Ben E Keith	4- GROCERY	512 fl oz	0	0.00	\$ -	1.00	\$ 3.75	0.00	\$ -	0.00	\$ -	0.00	\$ -
10	750100 CHEESE PARMESAN SHRED	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	1.00	\$ 13.27	0.00	\$ -
11	250025 EGG FRESH SHELL MED USDA AA	Ben E Keith	1- PRODUCE	0	0	0.00	\$ -	1.00	\$ 15.89	0.00	\$ -	0.00	\$ -	0.00	\$ -
12	686034 VINEGAR APPL CIDER 40GRIN	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	1.00	\$ 17.77	0.00	\$ -	0.00	\$ -
13	290708 LIME 12 CT	Ben E Keith	1- PRODUCE	12 CT	0	0.00	\$ -	2.00	\$ 8.99	0.00	\$ -	0.00	\$ -	0.00	\$ -
14	650547 TOMATO DICED W/GREEN CHILES	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	1.00	\$ 18.88	0.00	\$ -	0.00	\$ -	0.00	\$ -
15	286500 Ice Cream Vanilla Cr 3 Gal	Ben E Keith	5- DAIRY	384 fl oz	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
16	650474 KETCHUP FANCY 82% SOLIDS	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	1.00	\$ 20.69	0.00	\$ -	0.00	\$ -	0.00	\$ -
17	140005 MUSHROOM WHITE SMALL BUTTON	Ben E Keith	1- PRODUCE	0	0	0.00	\$ -	1.00	\$ 20.98	0.00	\$ -	0.00	\$ -	0.00	\$ -
18	771313 CROUTON SEASONED HOMESTYLE	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	1.00	\$ 22.36	0.00	\$ -	0.00	\$ -
19	660409 SAUCE LOUISIANA RED HOT	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	1.00	\$ 11.24	0.00	\$ -	1.00	\$ 11.24	0.00	\$ -
20	150015 Onion Green Iceless W/Root	Ben E Keith	1- PRODUCE	32 oz	0	0.00	\$ -	1.00	\$ 8.29	1.00	\$ 8.29	0.00	\$ -	0.00	\$ -
21	780009 SUGAR BROWN LIGHT IN BAGS	Ben E Keith	4- GROCERY	0	0	0.00	\$ -	0.00	\$ -	1.00	\$ 27.69	0.00	\$ -	0.00	\$ -
22	155030 Onion Yellow Jumbo	Ben E Keith	1- PRODUCE	800 oz	0	0.00	\$ -	0.00	\$ -	1.00	\$ 13.99	0.00	\$ -	0.00	\$ -
23	774173 Pepper Red Crushed	Ben E Keith	4- GROCERY	52 oz	0	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -	0.00	\$ -
24	920919 TUMBLER 20 OZ AMBER	Ben E Keith	8- EQUIP & SUPPLY	0	0	0.00	\$ -	0.00	\$ -	1.00	\$ 29.99	0.00	\$ -	0.00	\$ -

VS.



Motivation: Iterate and Improve



- Reallocate funding from low to highperforming programs
- Target outreach to areas with low adoption or above-average savings
- Learn from under and overperforming customers
- Change requirements and eligibility



Goals

A comprehensive system to monitor program performance

- Automation as a way to simplify (do the work once)
- Track various measures of program success
- Use knowledge gained to iterate and improve



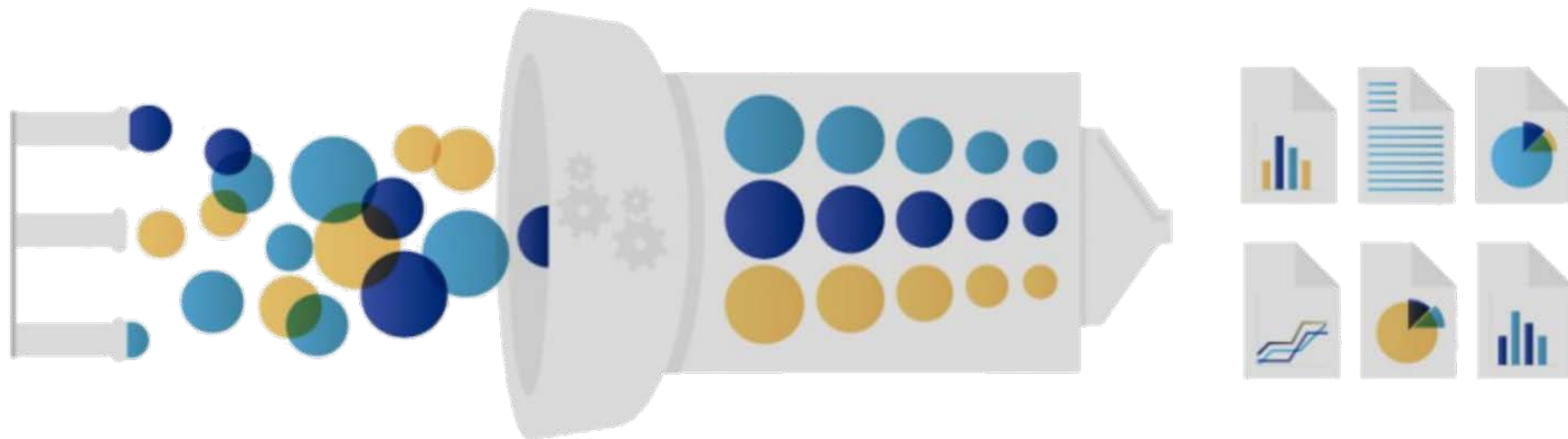
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A Data Pipeline



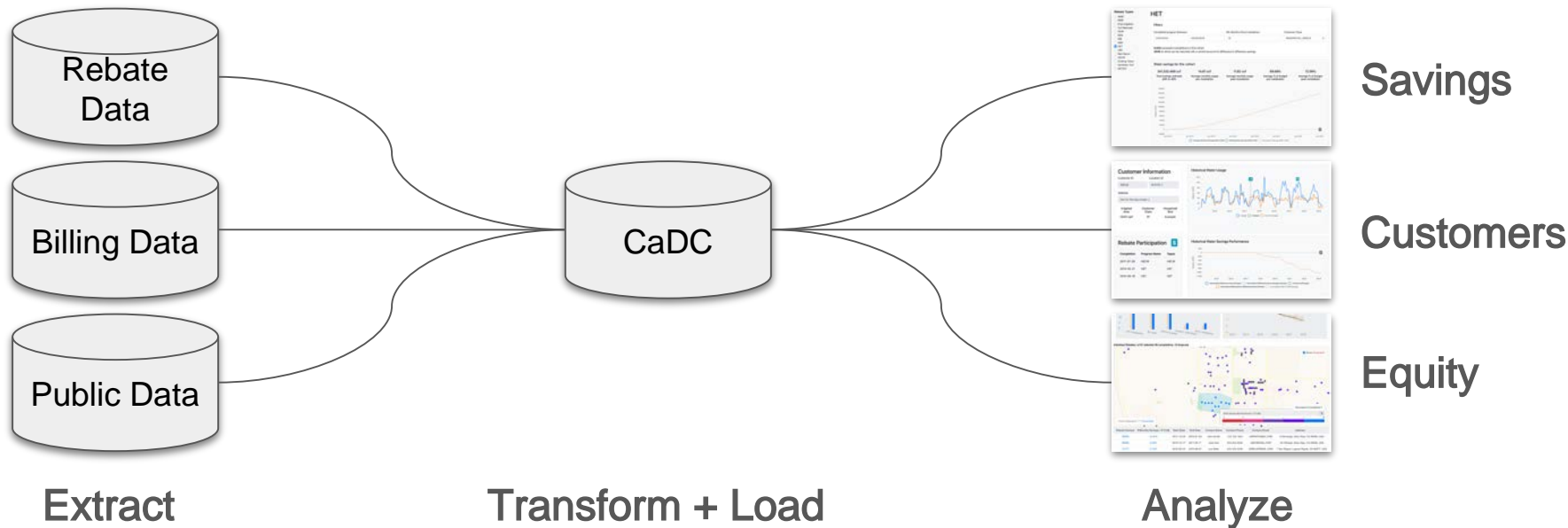
Extract

Transform + Load

Analyze



A Water Efficiency Data Pipeline



Goals

A comprehensive system to monitor program performance

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Elements of Success

- Water Savings
- Happy Customers
- Equitable and Effective Use of Funds



Elements of Success

- **Water Savings**
- Happy Customers
- Equitable and Effective Use of Funds



Rebate Types

- ☐ WBIC
- ☐ RWR
- ☐ Drip Irrigation
- ☐ Turf Removal
- ☐ CCW
- ☐ RSN
- ☐ WB
- ☐ IMM
- ☒ HET
- ☐ LRS
- ☐ Rain Barrel
- ☐ HECW
- ☐ Cooling Tower
- ☐ Synthetic Turf
- ☐ WCTCC

HET

Filters

Completed program between

01/01/2010

04/30/2019

Min Months Since Installation

12

Customer Class

RESIDENTIAL_SINGLE

5,945 successful completions in this cohort

3049 of which can be matched with a control account for difference in difference savings

Water savings for this cohort

341,532.488 ccf

Total savings estimate
(diff-in-diff)

14.81 ccf

Average monthly usage
pre-installation

11.82 ccf

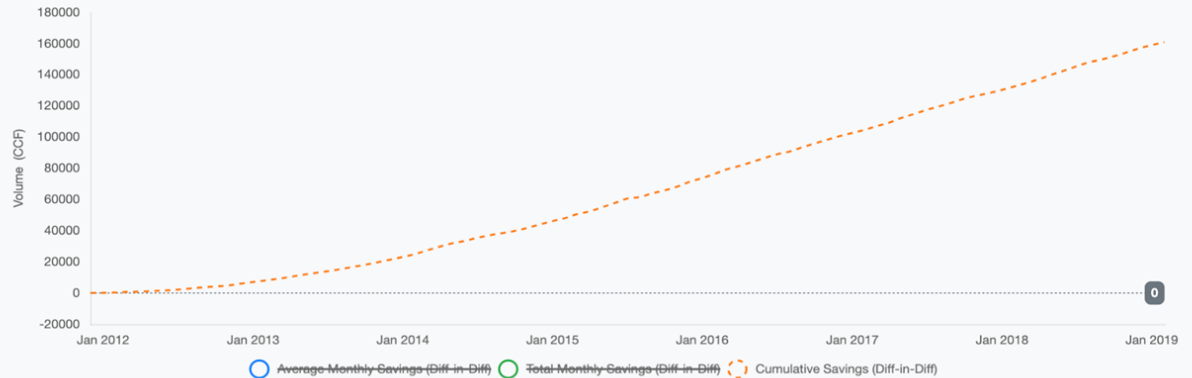
Average monthly usage
post-installation

89.68%

Average % of budget
pre-installation

72.96%

Average % of budget
post-installation



*Program-level
water savings*

*Program-level
water savings*

Rebate Types

- ☐ WBIC
- ☐ RWR
- ☐ Drip Irrigation
- ☒ Turf Removal
- ☐ CCW
- ☐ RSN
- ☐ WB
- ☐ IMM
- ☐ HET
- ☐ LRS
- ☐ Rain Barrel
- ☐ HECW
- ☐ Cooling Tower
- ☐ Synthetic Turf
- ☐ WCTCC

Turf Removal

Filters

Completed program between

01/01/2010

04/30/2019

Min Months Since Installation

12

Customer Class

RESIDENTIAL_SINGLE

1,584 successful completions in this cohort

598 of which can be matched with a control account for difference in difference savings

Water savings for this cohort

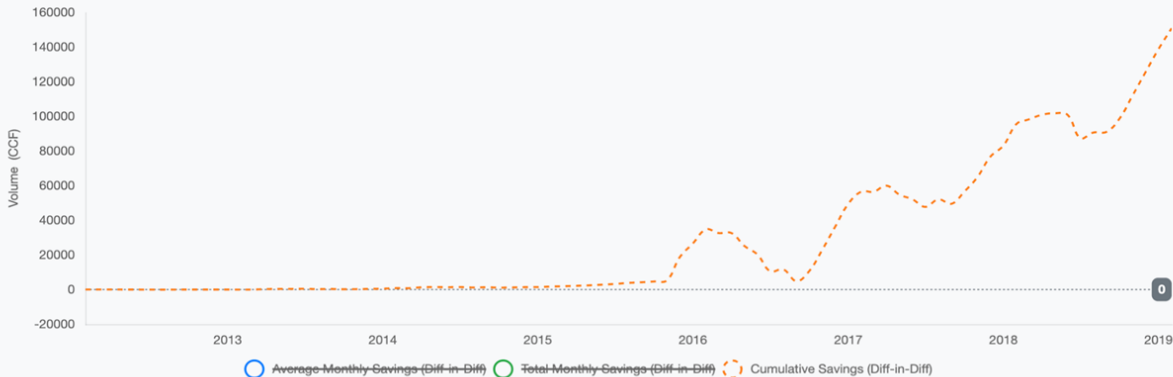
481,286.88 ccf
Total savings estimate
(diff-in-diff)

15.78 ccf
Average monthly usage
pre-installation

11.91 ccf
Average monthly usage
post-installation

111.78%
Average % of budget
pre-installation

86.88%
Average % of budget
post-installation



*Program-level
water savings*

Rebate Types

- ☐ WBIC
- ☐ RWR
- ☐ Drip Irrigation
- ☐ Turf Removal
- ☐ CCW
- ☐ RSN
- ☐ WB
- ☐ IMM
- ☐ HET
- ☐ LRS
- ☐ Rain Barrel
- ☐ HECW
- ☐ Cooling Tower
- ☒ Synthetic Turf
- ☐ WCTCC

Synthetic Turf

Filters

Completed program between

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Customer Class

RESIDENTIAL_SINGLE

1,044 successful completions in this cohort

601 of which can be matched with a control account for difference in difference savings

Water savings for this cohort

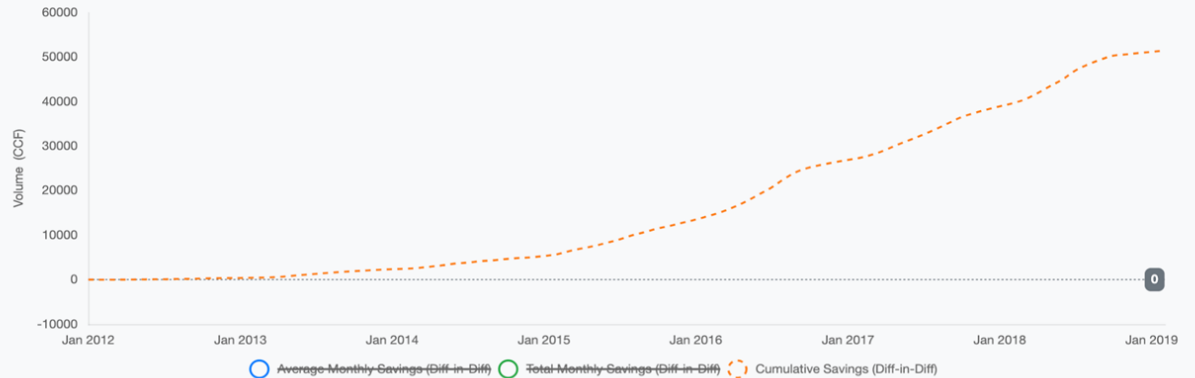
96,752.291 ccf
Total savings estimate
(diff-in-diff)

15.53 ccf
Average monthly usage
pre-installation

12.6 ccf
Average monthly usage
post-installation

105.55%
Average % of budget
pre-installation

87.26%
Average % of budget
post-installation



Elements of Success

- Water Savings
- **Happy Customers**
- Equitable and Effective Use of Funds



Customer Information

Customer ID

58028

Location ID

810116-1

Address

Not for the big screen ;)

Irrigated
Area
13351 sqft

Customer
Class
R1

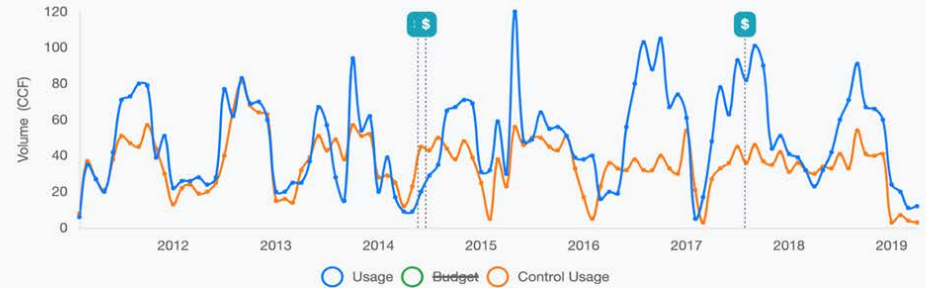
Household
Size
6 people

Rebate Participation

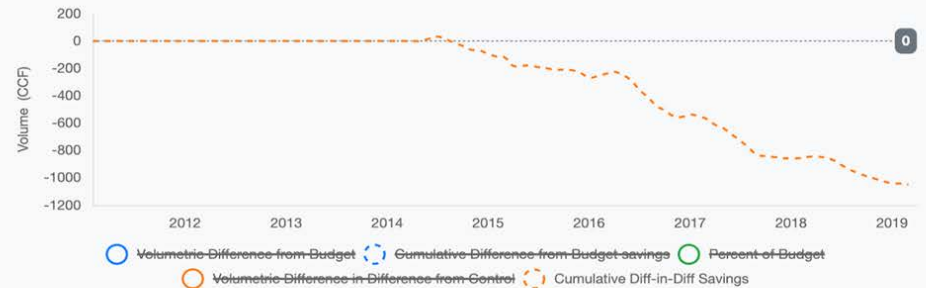


Completion	Program Name	Types
2017-07-28	HECW	HECW
2014-05-21	HET	HET
2014-06-18	HET	HET

Historical Water Usage



Historical Water Savings Performance



*Customer-level
rebate participation
and
savings performance*

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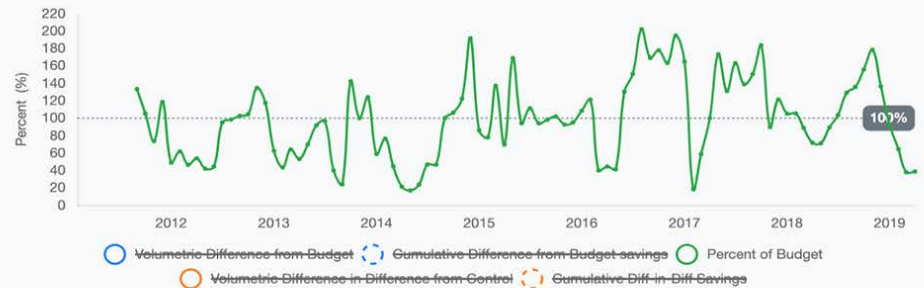


Completion	Program Name	Types
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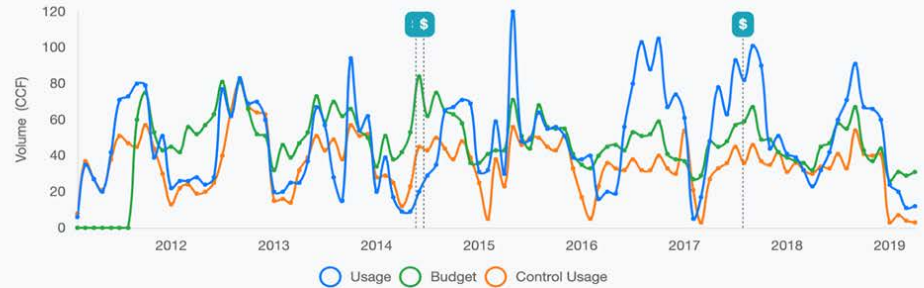
6 people

Rebate Participation

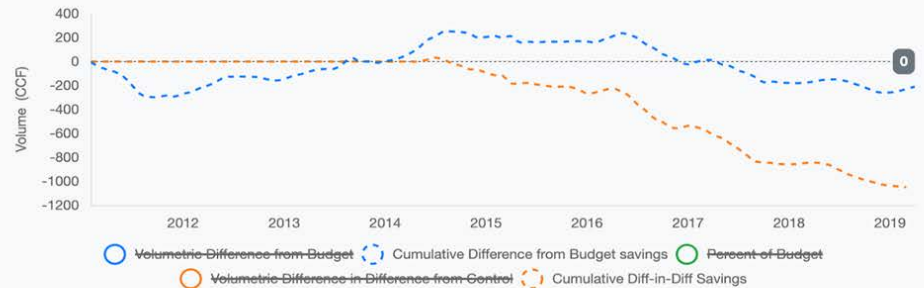


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Historical Water Usage



Historical Water Savings Performance



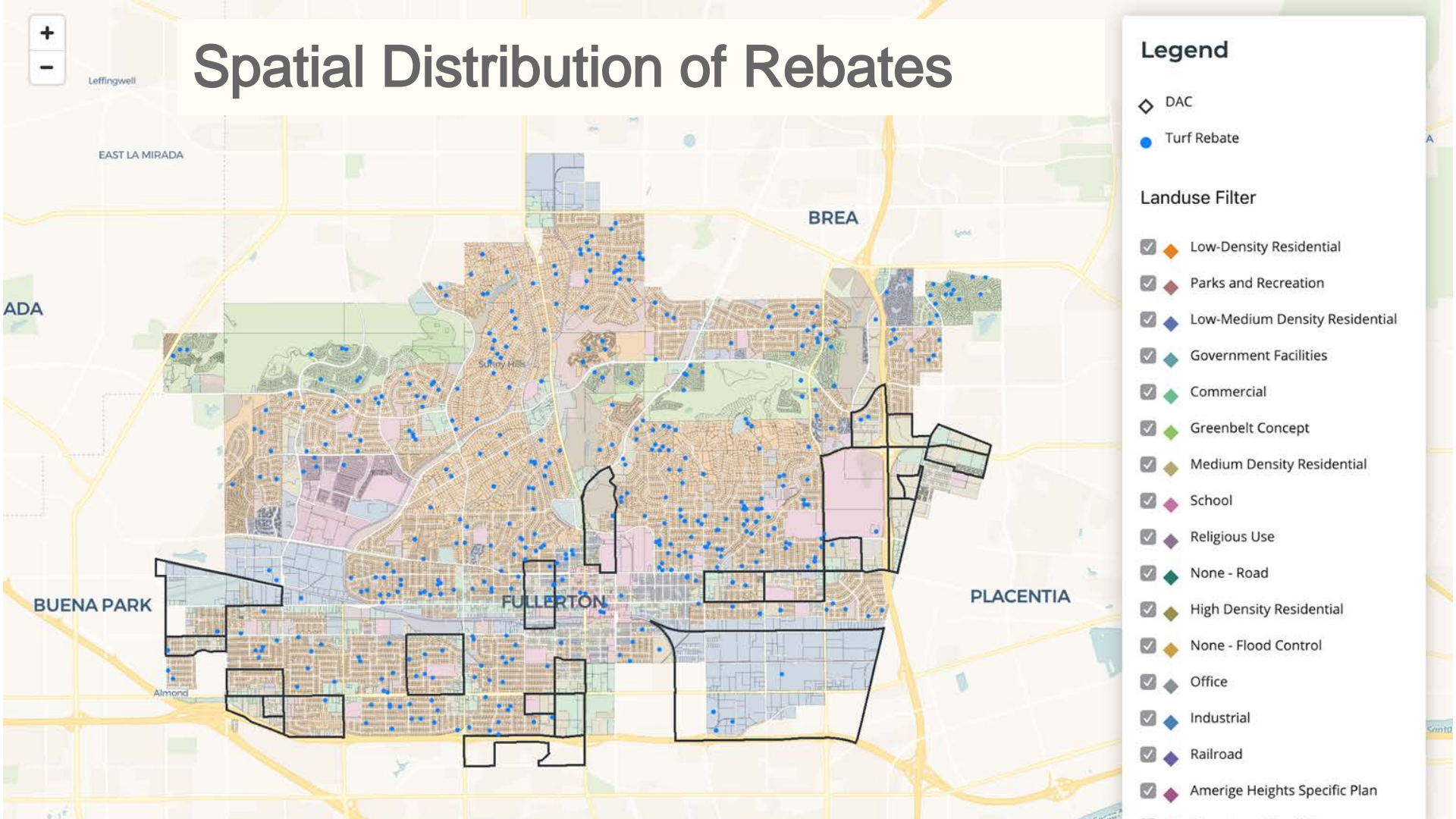
*Customer-level
rebate participation
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Elements of Success

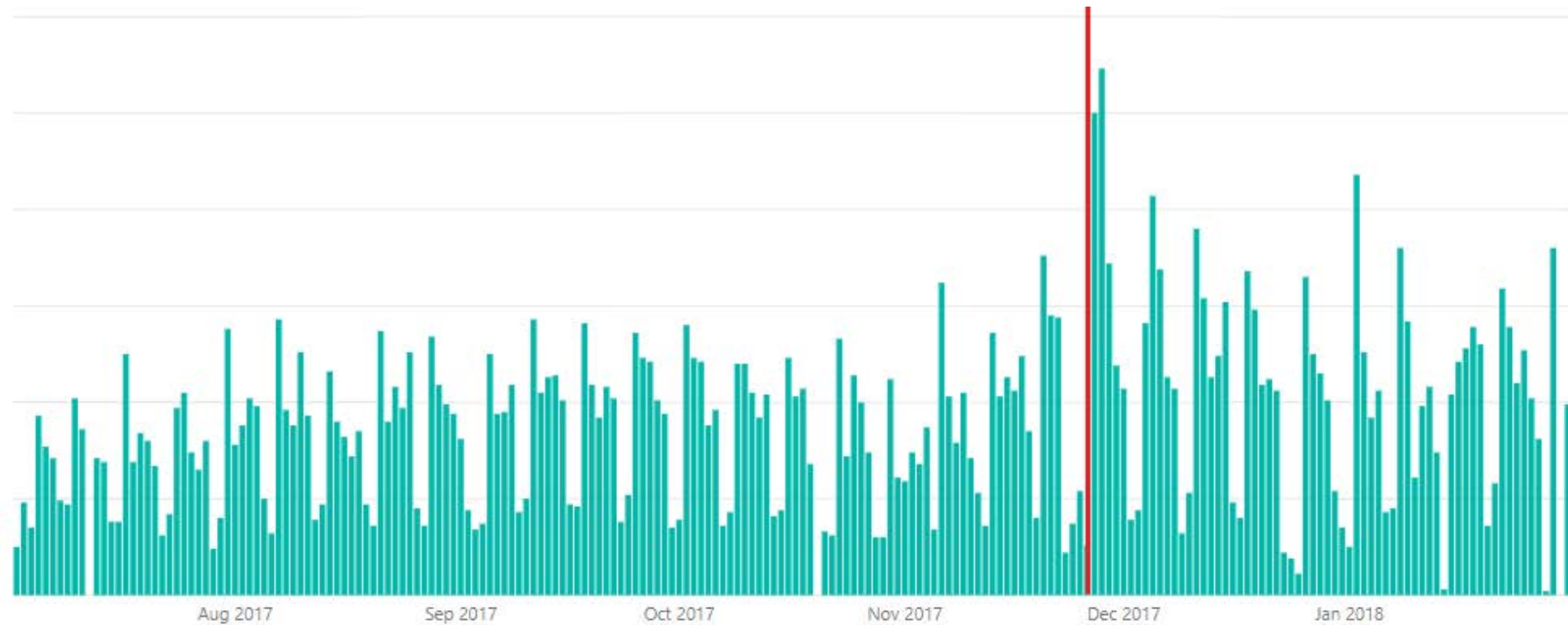
- Water Savings
- Happy Customers
- **Equitable and Effective Use of Funds**



Spatial Distribution of Rebates



Impact of Marketing and Outreach



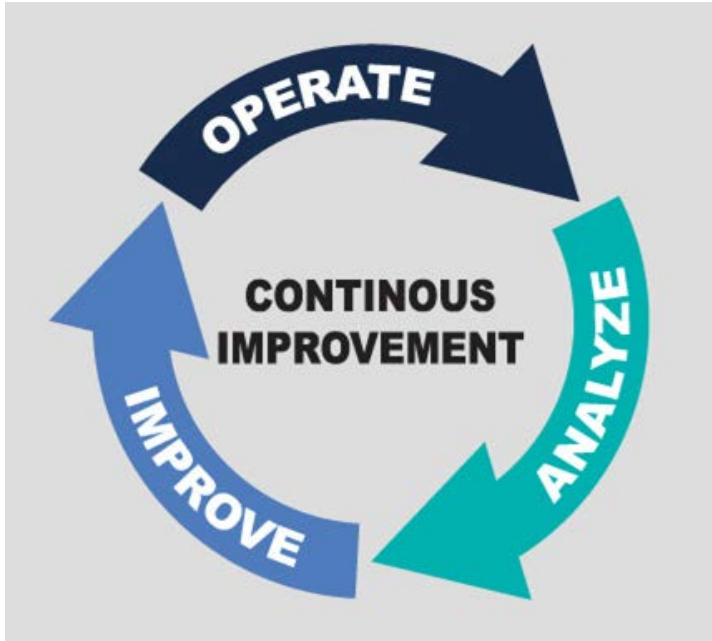
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Contact

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More info:
<http://CaliforniaDataCollaborative.org>

