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

Christopher Tull
Project Manager, California Data Collaborative
chris@argolabs.org

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 non-profit
Motivation: Situational Awareness
Motivation: Iterate and Improve

- Reallocate funding from low to high-performing 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
Goals

A comprehensive system to monitor program performance

- Automation as a way to simplify (do the work once)
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A Water Efficiency Data Pipeline

- Extract
- Transform + Load
- Analyze

 Rebate Data
 Billing Data
 Public Data

 CaDC

 Savings
 Customers
 Equity

CALIFORNIA DATA COLLABORATIVE
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
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
Program-level water savings

### HET

**Filters**

<table>
<thead>
<tr>
<th>Completed program between</th>
<th>Min Months Since Installation</th>
<th>Customer Class</th>
</tr>
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<tbody>
<tr>
<td>01/01/2010</td>
<td>04/30/2019</td>
<td>12</td>
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**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**

- Total savings estimate (diff-in-diff): 341,532,488 ccf
- Average monthly usage pre-installation: 14.81 ccf
- Average monthly usage post-installation: 11.82 ccf
- Average % of budget pre-installation: 89.68%
- Average % of budget post-installation: 72.96%

![Graph showing water savings over time](image)
**Program-level water savings**

**Turf Removal**

**Filters**
- Completed program between: 01/01/2010 and 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**
- Total savings estimate (diff-in-diff): 481,286.88 ccf
- Average monthly usage pre-installation: 15.78 ccf
- Average monthly usage post-installation: 11.91 ccf
- Average % of budget pre-installation: 111.78%
- Average % of budget post-installation: 86.88%
**Synthetic Turf**

**Filters**
- Completed program between: 01/01/2010 and 04/30/2019
- Min Months Since Installation: 12
- 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**
- Total savings estimate (diff-in-diff): 96,752.291 ccf
- Average monthly usage pre-installation: 15.53 ccf
- Average monthly usage post-installation: 12.6 ccf
- Average % of budget pre-installation: 105.55%
- Average % of budget post-installation: 87.26%

**Program-level water savings**
Elements of Success

- Water Savings
- Happy Customers
- Equitable and Effective Use of Funds
Customer-level rebate participation and savings performance

**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

**Historical Water Usage**

**Rebate Participation**

- **Completion**
  - 2017-07-28: HECW - HECW
  - 2014-05-21: HET - HET
  - 2014-06-18: HET - HET

**Historical Water Savings Performance**
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### Historical Water Usage

![Graph showing water usage over time with peaks and troughs.]

### Rebate Participation

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### Historical Water Savings Performance

![Graph showing water savings performance over time with peaks and troughs.]

Customer-level rebate participation and savings performance
Customer-level rebate participation and savings performance

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Historical Water Usage

Historical Water Savings Performance
Elements of Success

● Water Savings

● Happy Customers

● Equitable and Effective Use of Funds
Spatial Distribution of Rebates

Legend:
- DAC
- Turf Rebate

Landuse Filter:
- Low-Density Residential
- Parks and Recreation
- Low-Medium Density Residential
- Government Facilities
- Commercial
- Greenbelt Concept
- Medium Density Residential
- School
- Religious Use
- None - Road
- High Density Residential
- None - Flood Control
- Office
- Industrial
- Railroad
- American Heights Specific Plan
Impact of Marketing and Outreach
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More info:

http://CaliforniaDataCollaborative.org