OUTDOOR SUMMER WATER CONSERVATION IN THE IPSWICH RIVER WATERSHED: COMMUNITY-BASED SOCIAL MARKETING PILOT PROJECT
Presentation Overview

- Review of CBSM and Benefits and Barriers research
- Overview of summer 2017 pilot project
  - Study design
  - Campaigns and implementation
  - Results
- Lessons learned
- Next steps
Background on Project

- Why is DER interested in summer water conservation?
  - Improve streamflow conditions
    - Water use is highest when streamflow is lowest
  - Explore innovative, non-regulatory ways to encourage conservation and reduce summer outdoor water use
  - Increase our understanding of water users and their barriers to reducing summer outdoor water use
Community Based Social Marketing (CBSM)

- Many efforts to encourage consumers to change behavior/reduce resource use have fallen short of expectations.
- More than just information and financial considerations drive behavior — social and psychological factors also play a significant role.
- CBSM merges knowledge from psychology with social marketing.
  - Allows you to better understand water users and target your message so that it is most effective.
CBSM Methods

Five major steps

1. Identify which behaviors are most important
2. ID community-specific barriers & find the benefits — why target audience would elect to participate in behavior change
3. Develop strategies which increase benefits for desired action & reduce barriers to desired action
4. Pilot several strategies against each other & evaluate
5. Implement broadly
CBSM Benefits and Barriers Research

- DER and IRWA began the first steps to develop and implement a CBSM campaign to reduce summer outdoor water use in the watershed in winter 2016
  - Developed a prioritized list of target water use behaviors
  - Conducted mail survey to understand benefits and barriers to adoption of desired water use behaviors
Barriers to not watering grass in summer

Those who water most frequently most strongly believed grass would die if not watered
Benefits to not watering grass

Those who water most frequently are the less likely to believe that not watering will save water.
Pilot project in Wenham and Middleton

Tested 2 strategies versus a control group

- **Feedback Strategy:** Participants received, through postal mail, a personalized feedback sheet comparing their water usage to that of their neighbors along with an educational flyer.

- **Commitment Strategy:** Participants received door-to-door delivery of an educational flyer along with a request to commit to reducing their water usage.

- **Control:** Received no materials.

- 125 households/strategy (375 total per town)
Educational Materials

Introducing Healthy Lawn, Happy Summer

Dear Resident,

Within the next few weeks, you will receive an envelope with materials on the town's new Healthy Lawn, Happy Summer campaign. It will include tips on how to conserve water in the summer months and information on how your water use compares to your neighbors.

Healthy Lawn, Happy Summer encourages those who live in Wenham to save water for themselves and their communities while keeping their lawns healthy all summer.

Be on the lookout for the envelope. Together, we can make a big difference.

Sincerely,

Erik G. Moeckel, Superintendent
Wenham Water Department
emoeckel@wenhamma.gov
(781)688-5520 ext. 16

WATER DEPARTMENT
91 GRAPEVINE RD.
WENHAM, MA 01984

Dear Residents,

As summer approaches, the Town of Wenham is working with the Massachusetts Division of Biological Restoration to support our residents in saving water and money while keeping their lawns healthy. As a community, we have a limited amount of water, even in years when we receive rain, and we need to conserve that resource to make sure there is enough for all.

We know that our residents are already trying to save water. In a 2015 survey of households here in Wenham, more than half of residents reported watering their lawn in the summer normally or less at all. Moreover, our community still has room to improve in saving water during the summer. We developed Healthy Lawn, Happy Summer to help residents keep their lawns healthy in summer while saving water at the same time. Our materials are included with this cover letter.

If you have any questions, please call (781)688-5520 or email emoeckel@wenhamma.gov.

Sincerely,

Erik G. Moeckel
Superintendent, Wenham Water Department

Wenham Water Department

HEALTHY LAWN HAPPY SUMMER

Each of us makes a big impact in Wenham.

Reduce Lawn Watering

Elminating or reducing summer lawn watering makes a big difference. Massachusetts households that water their lawns in the summer use up to 600 gallons a week. That's like running your shower for 5 hours!
The fact is, a Wenham lawn doesn't need much water to stay healthy. Overwatering your lawn can cause shallow roots and make it susceptible to pests, disease, and drought.

Keep It Natural

We get an average of 4 inches of rain per summer month, enough for healthy summer lawns. Lawns need, at most, an inch of water a week to stay healthy.
Sometimes healthy grass goes dormant. Dormant grass is not dead and will go back to green. Going dormant creates more drought-resistant and deeper roots, making a healthier, less sensitive lawn.

LAWN WATERING

300 Gallons
5 Hours!

Save Water & Keep Your Lawn Healthy All Summer

During a Wenham summer, a healthy lawn will likely not need irrigation. However, if you must water your lawn, follow the tips below to water without waste.

1. Let grass grow long to stay healthy.
2. Water early in the morning to avoid water loss.
3. Water infrequently to encourage deep roots.
4. Water by hand, as automatic irrigation uses twice as much water.
5. If you have a lawn care crew, communicate to them that saving water is a priority and share this flyer.

More than half of Wenham homes already let their lawn go dormant each summer. Join them by letting your lawn be healthy and natural while saving water, money, and time.

Save water and money for yourself & your community by watering your lawn wisely or not at all: no more than one inch per week of rain and watering.

www.wenhamma.gov/waterconservation
Feedback materials

Join Wenham Neighbors In Summer Water Savings!

How do you compare?

More than half of Wenham residents—including Town Hall—don’t water their lawns in the summer. These residents are not only saving money, but also doing their part to save water. To prepare for this summer, we wanted to let you know where you stand based on your water usage last summer.

Average Water Use Per Month (May-July 2016)

Your household has some room to improve your water usage.

Check out the Healthy Lawn, Happy Summer flyer for tips to reduce your water use.

During May, June, and July 2016, your household used **more water** than the average similar-sized Wenham household.

Average Water Use Per Month (May-July 2016)

Your household is doing a good job regarding your water usage.

Check out the Healthy Lawn, Happy Summer flyer for tips to reduce your water use.

During May, June, and July 2016, your household used **less water** than the average similar-sized Wenham household.

Your household is doing great, but can save more with your water usage.

Check out the Healthy Lawn, Happy Summer flyer for tips to reduce your water use.

During May, June, and July 2016, your household used the same as the average similar-sized Wenham household.

Thank you for helping your community!

www.wenham.ma.gov/waterconservation
Commitment Materials

HEALTHY LAWN HAPPY SUMMER

Each of us makes a big impact in Wenham.

Reduce Lawn Watering
Eliminating or reducing summer lawn watering makes a big difference. Many households, but water their lawns in the summer use up to 600 gallons a week. That’s like running your shower for 60 hours.

The fact is a Wenham lawn doesn’t need much water to stay healthy. Overwatering your lawn can harm shallow roots and make it susceptible to pests, disease, and drought.

Keep It Natural
We get an average of 4 inches of rain per summer month, enough for healthy summer lawns. Lawns need, at most, one inch a week to stay healthy. Sometimes healthy grass goes dormant. Dormant grass is not dead and will grow back to green. Going dormant creates more drought resistance and deeper roots, making a healthier, less sensitive lawn.

Save Water & Keep Your Lawn Healthy All Summer
During a Wenham summer, a healthy lawn will likely not need irrigation. However, if you must water your lawn, follow the tips below to water without waste.

1. Let grass grow long to stay healthy.
2. Water early in the morning to avoid water loss.
3. Water infrequently to encourage deep roots.
4. Water by head, as automatic irrigation uses twice as much water.
5. If you have a lawn care crew, communicate to them that saving water is a priority and share this flyer.

More than half of Wenham homes already let their lawn go dormant each summer. Join them by letting your lawn be healthy and natural while saving water, money, and time.

Save water and money for yourself & your community by watering your lawn wisely or not at all: no more than one inch per week of rain and watering.

www.wenhamma.gov/waterconservation

During the summer, I, __________, am joining my neighbors in committing to watering wisely or not at all.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Print Your Name As You Would It To Appear Online</th>
<th>Preferred Mode of Contact (email/phone)</th>
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</thead>
<tbody>
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Data/implementation challenges

- Data challenges
  - Extreme outliers, household change, zero use

<table>
<thead>
<tr>
<th>Town Name</th>
<th>Wenham</th>
<th>Middleton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection</td>
<td>By town</td>
<td>By neighboring town</td>
</tr>
<tr>
<td>Data format</td>
<td>Digital</td>
<td>Paper</td>
</tr>
</tbody>
</table>

- Implementation challenges
  - Door to door

- Pilot evaluated using two methods
  - Difference in water use between 2016 to 2017
  - Survey sent to subset of program participants
### Results - Wenham

#### Average change, May-Oct 2016-2017

<table>
<thead>
<tr>
<th>Overall use</th>
<th>Commitment</th>
<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-3761</td>
<td>-5336</td>
<td>-4117</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Households, ranked by use</th>
<th>Overall use</th>
<th>Commitment</th>
<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25% households</td>
<td></td>
<td>385</td>
<td>-94</td>
<td>34</td>
</tr>
<tr>
<td>25-50% households</td>
<td></td>
<td>-2167</td>
<td>3320</td>
<td>-793</td>
</tr>
<tr>
<td>50-75% households</td>
<td></td>
<td>-1308</td>
<td>-7846</td>
<td>-7480</td>
</tr>
<tr>
<td>75-100% households</td>
<td></td>
<td>-4455</td>
<td>-34308</td>
<td>-18643</td>
</tr>
</tbody>
</table>

#### Average percent change, May-Oct 2016-2017

<table>
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<tr>
<th>Overall use</th>
<th>Commitment</th>
<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-13</td>
<td>-11</td>
<td>-12</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Households, ranked by use</th>
<th>Overall use</th>
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<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25% households</td>
<td></td>
<td>9.4</td>
<td>-0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>25-50% households</td>
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<td>-7.2</td>
<td>9.8</td>
<td>-2.0</td>
</tr>
<tr>
<td>50-75% households</td>
<td></td>
<td>-3.3</td>
<td>-16.5</td>
<td>-18.5</td>
</tr>
<tr>
<td>75-100% households</td>
<td></td>
<td>-21.9</td>
<td>-22.2</td>
<td>-21.8</td>
</tr>
</tbody>
</table>
Wenham - Water Use 2016

Control group

Feedback group

Water Use, May–Oct 2016
- 0 – 20,000 gal
- 20,001 – 40,000
- 40,001 – 60,000
- 60,001 – 80,000
- 80,001 – 100,000
- 100,001+
Wenham – Change in Water Use

Control group

Feedback group

Change in Water Use, 2016–2017

- > -20,000 gal
- -10,000 – -20,000
- -10,000 – 0
- 1 – 10,000
- 10,000 – 20,000
- > 20,000
## Results - Middleton

### Average change, April-Sept 2016-2017

<table>
<thead>
<tr>
<th></th>
<th>Commitment</th>
<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall use</td>
<td>-3895</td>
<td>-6867</td>
<td>-6370</td>
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</table>

<table>
<thead>
<tr>
<th>Households, ranked by use</th>
<th>Commitment</th>
<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25% households</td>
<td>5233</td>
<td>-475</td>
<td>1624</td>
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<tr>
<td>25-50% households</td>
<td>-7068</td>
<td>-7373</td>
<td>968</td>
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<tr>
<td>50-75% households</td>
<td>-8800</td>
<td>-6802</td>
<td>-9014</td>
</tr>
<tr>
<td>75-100% households</td>
<td>-9709</td>
<td>-38685</td>
<td>-23592</td>
</tr>
</tbody>
</table>

### Average percent change, April-Sept 2016-2017

<table>
<thead>
<tr>
<th></th>
<th>Commitment</th>
<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall use</td>
<td>-6</td>
<td>-14</td>
<td>-13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Households, ranked by use</th>
<th>Commitment</th>
<th>Feedback</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25% households</td>
<td>24.7</td>
<td>-1.1</td>
<td>15.1</td>
</tr>
<tr>
<td>25-50% households</td>
<td>-12.0</td>
<td>-19.9</td>
<td>6.2</td>
</tr>
<tr>
<td>50-75% households</td>
<td>-12.4</td>
<td>-10.6</td>
<td>-16.0</td>
</tr>
<tr>
<td>75-100% households</td>
<td>3.2</td>
<td>-29.0</td>
<td>-20.7</td>
</tr>
</tbody>
</table>
Usefulness of Materials

Consumers rated Feedback materials as more helpful
Higher consumers of water found materials more helpful
Summary - Results

- The feedback group in both towns saw the largest decrease in gallons between 2016 and 2017.
- While the changes in the feedback group were not statistically significantly different than the control, they point to positive behavioral changes.
- The commitment group saw the lowest reductions in water use.
- Feedback materials were rated as more useful for saving water and keeping lawns healthy, especially with high water users.
Lessons Learned

- Pilot testing is important!
  - Identify and address problems before broad implementation
- If possible, make household’s feedback more recent and timely.
- Deliver more than one communication for mailed materials, such as having a second mailing to the feedback group to increase engagement and recall
- Door-to-door teams may not be appropriate for this topic, location, and available resources
Lessons Learned

- Focus primarily on medium to high water users, or users with a high summer: winter water use ratio
- Use a larger sample size to account for dropouts and high variability in data
- Consider if there are important subgroups that have additional barriers (e.g., if the materials should address lawn service companies in greater detail)
- Consider if materials should further address weather variables, such as if the summer has been rainy, specifically speak to the importance of still conserving
Next Steps

- DEP to pilot feedback strategy in summer 2018 incorporating lessons learned from our project
Questions?

Summer Water Conservation
Community-Based Social Marketing
Pilot Project
Massachusetts Division of Ecological Restoration

Michelle Craddock, Watershed Ecologist
MA Division of Ecological Restoration
michelle.craddock@state.ma.us, 617-626-1544

Final report available at:
https://www.mass.gov/service-details/ipswich-river-flow-restoration