Toolkit Implementation Guide for the *Food: Too Good to Waste* Pilot

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West Coast Climate and Materials Management Forum
# Toolkit Implementation Guide for the *Food: Too Good to Waste* Pilot

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Disclaimer: This is a draft product of the West Coast Climate and Materials Management Forum and is intended to support organizations implementing the *Food: Too Good to Waste* pilot. Please note: All Web addresses in this document were working as of the time of publication, but links may break over time as sites are reorganized and content is moved.
1.0 Guide’s Purpose

This guide is intended to support implementation of the Food: Too Good to Waste pilot, a project developed by the EPA-convened West Coast Climate and Materials Management Forum. It describes the purpose and use of the tools in the Food: Too Good to Waste Pilot Toolkit as well as provides guidance on pilot design and implementation. The intended audience for this guide is governments and organizations considering a Food: Too Good to Waste pilot implementation.

The tools in the Food: Too Good to Waste Pilot Toolkit are designed to be adaptable to the needs of the implementing jurisdiction or organization based on their objectives and resources. At the same time, the toolkit offers a thoroughly researched and vetted implementation model that will help organizations target limited resources effectively.

In addition to the assistance offered by this guide, Forum members meet regularly to learn from each other and coordinate their efforts in the development of an evidence-based model program for reducing wasted food from households. For more information on becoming a part of this network, please contact WestCoastForum@epa.gov.

1.1 Community-Based Social Marketing

The Food: Too Good to Waste (FTGTW) pilot is a community-based social marketing campaign aimed at reducing wasted food from households.

Community-based social marketing (CBSM) is an approach to supporting behavior change through community initiatives. These initiatives help remove barriers to beneficial activities (behaviors), while simultaneously enhancing those activities’ advantages over less desirable activities. CBSM includes the following six steps:

1. Identify desired behaviors
2. Identify barriers and benefits of desired behaviors
3. Design pilot program with behavior change strategies and messaging
4. Implement pilot program
5. Evaluate pilot program
6. Replicate successful strategies from pilot

Planning for FGTW began in 2011; over 25 state, city, and county government partners from the West Coast Climate and Materials Management Forum (the Forum) convened to collaboratively develop a residential food waste prevention program. In the pilot’s development stage (Steps 1 through 3) five behavior change strategies were selected on the basis of their potential impact. This included a comprehensive evaluation of potential waste reduction behaviors using CBSM criteria. The background
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research on which the selection was based has been published in a report, Food: Too Good to Waste Pilot, a background research report. The report is available [here](#).

Forum members then used the information gathered through the background research and through focus groups to design behavior change strategies and associated messages and tools (Step 3). Tool design was also informed by CBSM principles (see Section 1.1.1 below).

The first implementations of the pilot occurred in the fall of 2012 and several more implementations have begun in 2013 (Step 4). This guide incorporates refinements to the FTGTW strategies, tools and toolkit based on feedback from initial implementations. A pilot evaluation report (Step 5) detailing these modifications will be available in December 2013.

### 1.1.1 CBSM principles

The CBSM framework differs from more well-known behavior change models in its emphasis on the psychological and social dimensions of human behavior.

Organizations considering a pilot are encouraged to align their implementation choices with CBSM principles when at all possible. Following is a short list of CBSM principles compiled from several sources. Additional information on CBSM is available at [www.cbsm.com](http://www.cbsm.com) or [here](#).

- **Remove/minimize barriers to preferred behaviors and emphasize benefits:** Implementation choices should make pilot participation convenient, not add to barriers to participation. For example, pilots that provided a means of people measuring their waste at the individual household level (e.g. by giving people scales to measure waste) had much greater participant retention rates than pilots that did not.

- **Focus on target populations:** The strategies and tools in the toolkit have been designed for particular target populations with the potential to achieve large waste reductions. The choice of other target populations may require message and tool modifications.

- **Deliver at the community level:** CBSM takes into account that behavior change is influenced strongly by membership in various communities or social networks (i.e. groups where we socialize). For this reason, it is important to seek commitments [to engage in behaviors] in social groups (e.g. neighborhood associations, community groups, and church groups) or to use a target audience’s existing points of contact to seek commitments.

- **Emphasize personal contact:** Consistent with the research on CBSM, pilots that use personal contact to engage participation have greater success in recruiting and retaining participants. As noted by our colleagues in Australia carrying out a [large-scale food waste campaign](#), “Media and communications helps to create the ‘buzz’ around the issue yet direct outreach/education provides householders with the skills and capacity to be able to make the change.”
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- **Create feedback:** Even practice doesn’t help improve behaviors if there is no feedback. In the case of food waste behaviors, feedback obtained through measuring the amount of food going to waste makes the costs more salient.
- **Make norms visible:** This principle is particularly important to scaling up from pilots to broad scale campaigns. The intent is to create a new social norm of acting to reduce household food waste in line with community values. Giving the new norm visibility, for example, by publicizing participation rates, will give further momentum to a campaign.

1.2 Pilot Objectives

The *Food: Too Good to Waste* pilot aims to engage households in efforts to reduce food waste and its impacts through a CBSM campaign.

Its purpose is to test CBSM strategies and tools to inform their design. The pilot also serves to help organizations interested in food waste reduction programs gain experience on the particulars of the food waste issue and the CBSM approach to behavioral change. This experience is crucial to success in scaling up the pilot to a broad reach campaign. This edition of the Toolkit Implementation Guide focuses primarily on pilot design and implementation. However, to assist implementing organizations in scaling up, the guide also addresses issues involved in implementing a broader scale CBSM campaign.

The pilot’s data objectives are two-fold:
- **Determine Pilot Reach and Effectiveness:** Did the pilot result in the desired behavior changes? This includes assessments of participation rates and strategy and tool effectiveness.
- **Determine Pilot Impact:** Did the pilot result in quantifiable reductions in food waste?

1.3 Pilot Design Principles

In addition to embodying CBSM principles in the FTGTW strategies and tools, the pilot aims to address the needs of implementing communities. To facilitate implementation and ensure robustness, the pilot was designed with the following principles in mind:
- **Remove/minimize barriers to preferred behaviors and emphasize benefits:** This is a key principle of the CBSM approach to behavior change.
- **Contextualize preferred behaviors:** To motivate and sustain behavioral changes, the pilot aims to draw the linkages between household practices and environmental and social issues at a broader scale. In particular, stories are useful for motivating behavioral change.
- **Engage at the community level and speak to community values:** The ability to adapt the pilot messages and tools to the needs of the community begins with engaging the community in its implementation, even as early as the design phase. Implementing organizations are encouraged to think about outreach through social networks (or webs of relationships) in addition to target audiences.
Leverage existing resources: Communities are called on to be resourceful in implementing new programs. This encourages the engagement of community-based partners in program implementation as well as a networked approach to program development.

Design for breadth and depth: To achieve quantifiable reductions in food waste at the community level, it will be necessary to engage and sustain behaviors that have a significant impact at the household level (depth) as well as engage a significant percentage of the general population in adopting the behaviors (breadth).

Collect evidence for policy-making and program design: A solid evidence base that supports the effectiveness of the strategies and tools is needed to justify scaling up the pilot to long term, broad scale programs.

1.4 Toolkit and Guide Contents

The tools in the Food: Too Good to Waste Toolkit include tools that both support specific behavior change strategies, such as the Fruit and Vegetable Storage Guide and the Shopping List Template, and those that support a broader shift in awareness of food waste as both an environmental and economic issue, for example, the infographic/poster and the community workshop presentation. We refer to these as behavior change and outreach tools respectively. The two types of tools are described in Sections 2 and 3. Pilot planning and implementation guidance is given in Section 4. Section 5 of the guide focuses on challenges related to scaling up from pilots to full-scale campaigns.
2.0 Pilot Strategies and Behavior Change Tools

The *Food: Too Good to Waste* pilot’s focus is on assisting households to make small shifts in how they shop, prepare, and store food. The strategies selected during the pilot’s design phase as well as their associated tools and messaging have been refined after the first round of implementations to reflect pilot findings on tool effectiveness.

Currently, the pilot’s five targeted strategies and the associated behavior change tools are as follows:

- Get Smart: See How Much Food (and Money!) You Are Throwing Away, supported by the Food: Too Good to Waste Challenge
- Smart Shopping: Buy What You Need, supported by the “Meals in Mind” Shopping List Template
- Smart Storage: Keep Fruits and Vegetables Fresh, supported by the Fruit and Vegetable Storage Guide
- Smart Prep: Prep Now, Eat Later
- Smart Saving: Eat What You Buy, supported by the “Eat Me First” Prompt

The tools and their use are described in greater detail below.

2.1 Food: Too Good to Waste Challenge

The FTGTW Challenge serves a dual purpose as both a behavior change and a measurement tool. Challenges support behavioral change as a form of commitment while also drawing attention to the need for new behaviors. Specifically, the tool challenges households to track their food waste generation for a period of two weeks or more.

By measuring the amounts of food thrown out before and after adopting strategies to reduce waste, households become aware of how much food gets wasted in their homes. A key lesson from the first round of implementation is that this awareness plays an integral role in motivating the adoption of strategies to reduce waste. Waste aversion is a strong psychological motivator but most household are not aware of how much they waste and may even question that they waste food. There is some evidence from the early pilots that households with higher incomes can especially benefit from taking the challenge.

In addition to raising awareness around food waste behaviors in participating households, this tool presents an opportunity for implementing partners to collect data from the pilot’s household participants by which to evaluate the pilot’s effectiveness and impact. It is the pilot’s principle method for assessing impact.

From the implementing organization’s perspective, the challenge consists of three phases. In the first phase, the organization recruits households for participation (see Section 4.3 below). The second phase
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is the period in which the household track their waste generation. In the third period the agency collects data. These three phases may overlap.

The measurement tool itself consists of printed bags (in some pilots, printed labels were affixed to store bought bags) in which to collect waste, instructions and worksheets. The instructions provide guidance on how to participate in a two to six week challenge (the length of this challenge has varied by implementation, however 6 weeks is recommended). The worksheets are to be used to collect data.

In the challenge, households are asked to measure preventable and/or non-edible food waste.
- PREVENTABLE food waste is food you bought to eat but has since spoiled or food that was prepared but was not eaten and then thrown away.
- NON-EDIBLE food waste includes items such as egg shells, bones, fruit pits, and non-edible peels—food parts that are typically discarded during food preparation or consumption.

Focusing on the preventable waste portion keeps the challenge simple and doable for households.

Measurement can also be done on either a volume or weight basis (or both). In general, the volume method is more easily accomplished in most households while the weight method is a more accurate means of measuring waste generation. Some pilots provided scales as an incentive for participation.

The length of time of the challenge, the choice between measuring waste by volume or by weight, and the choice between tracking (and collecting data on) preventable and/or non-edible waste will depend on the implementing organization’s objectives. There is a trade-off between keeping measurement simple and how much data you wish to collect (see data collection in Section 4.4 below for further discussion of this issue.)

Most challenges have averaged around four to six weeks in length. Earlier implementations suggest that it takes at least two weeks for households to establish a routine with measuring their food waste. Participants have also noted that it takes approximately a month to make a new habit, in this case, to successfully adopt the behavior change strategies around smart shopping, storage, prep and eating. This suggests a length of six weeks – two weeks to establish a measuring routine and four weeks to test different strategies. This length, however, can be varied based on pilot objectives. If the purpose of the Challenge is to raise household awareness of food waste in their homes, then two weeks may be a sufficient length of time.

A key lesson learned in the early pilots is to keep participation convenient. Recruitment and retention was greater in pilots that offered scales for weighing food waste.

2.2  “Meals in Mind” Shopping List Template

The shopping list template provides an easy-to-use tool for making a shopping list with meals in mind. It was designed to create awareness around how much food will be needed for upcoming meals and, as
such, is intended to be a step towards meal planning. This tool is an example of priming, where people are more likely to do something when they are asked - in this case, buying only what they reasonably expect to use until their next shopping trip. The tool also focuses on cost-saving benefits of using up what food has already been purchased as communicated by the phrase, “Shop your kitchen first”. The template is available in both English and Spanish.

It was hypothesized that the tool would be effective with young adults who find the time it takes to do meal planning a barrier given that the decision on whether to eat at home or eat out is driven by their “dynamic lifestyle”. Thus, it is important to emphasize to potential participants that this tool helps to simplify food management, not make it more burdensome through having to plan meals.

People are more likely to use the template if it is provided to them rather than needing to download it from a website. Implementing partners can add their logo if so desired.

2.3 Fruit and Vegetable Storage Guide

The fruit and vegetable storage guide is designed as a prompt tool for household use. A prompt is a visual aid to remind households of the desired behavior. Prompts are particularly useful when designed to engage people in positive behaviors and are presented in close proximity to where the action takes place.

The guide provides useful information on keeping produce fresh and is available in both English and Spanish. It was printed in bright colors on a half sheet suitable for posting on the refrigerator. The guide can also be distributed at tabling and community workshop events.

Households found this guide to be very effective in the early pilot implementations. Implementing partners can add their logo if so desired.

2.4 Eat Me First Prompt

The "Eat Me First" visual, like the fruit and vegetable guide, is designed as a prompt. Households are encouraged to designate an area in their refrigerators for food that needs to be eaten relatively soon to be kept from spoiling, using the prompt as a visual reminder. The “Eat What You Buy” strategy was more strongly favored in pilots that included this prompt.

The prompt was designed to be read easily. Implementing partners can add their logo if so desired.
3.0 Outreach Tools

The toolkit’s outreach tools serve to focus pilot delivery at the community or social network level.

Outreach tools developed for the pilot include the following:
- Message Map
- Workshop Presentation (for a community audience or pilot participants)
- Infographic/Poster for Community Tabling Events

3.1 Message Map

The message map is a document to help guide and ensure effective, consistent and impactful campaign messaging across jurisdictions and organizations implementing the pilot. It addresses the following elements:
- Campaign’s target audiences
- Overall pilot message and elevator speech
- Value proposition for the desired behavior change
- Messaging for the top five waste prevention strategies being encouraged for adoption.
- Proof points for key messages

The message map can be used to help develop and tailor outreach materials and activities. This message map offers a roadmap for developing a customized messaging campaign in any community.

3.2 Community Workshop Presentation

The workshop presentation tool is a PowerPoint slide show with an accompanying narrative.

Community workshops are a good way to engage households in thinking through strategies to reduce food waste. They provide the opportunity to both tell the story of why we should care about food waste reduction and give participants strategies to reduce waste. In addition, participants are engaged in creating new social norms through their interactive discussion of the issues and strategies.

Community-based organizations are good partners to sponsor workshops because many already have formed strong social ties among their members who can support commitment to behavior change. The workshop presentation ends with asking participants to take a challenge (see Section 2.1 for a discussion of this tool).

Suggested audience size for a workshop would be in the range of eight to twenty to allow ample time for participant discussion. The suggested length for the workshop is 1.5 hours, but it can be tailored for a shorter time frame (see Notes below). Over a third of the time is participant discussion.
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Workshop duration can be customized by reducing the content of the presentation or by reducing discussion time. However, it is strongly recommended that some discussion be included to allow people to make an active commitment to the ideas being presented. Content from this presentation can also be integrated into existing healthy eating curriculums, community meetings about composting, or cooking classes, for example.

### 3.2.1 Notes on the Presentation

A suggested presentation script is included in the slide notes. These can be printed out beforehand. The script is in bold font.

Also, in the notes is a time recommendation for each slide and a few preparation notes. It is recommended to practice the presentation and to develop a time agenda before presenting to a group.

Slides 4, 19, and 26 present opportunities to engage the audience in discussion of food waste and how it impacts their families and community. If you want to reduce the time you may consider reducing discussion time by eliminating one or more of the discussions.

### 3.3 Infographic Poster and Tabling at Community Events

Tabling at community events and venues provides an opportunity for one-on-one interaction with the target population. Personal contact has been shown to be more effective in engaging target populations in preferred behaviors than indirect outreach methods such as mailed brochures. The infographic is used to attract people to the table to learn more.

The purpose of the infographic is to tell a story about why food waste matters. The infographic provides a means of contextualizing food waste as an issue in relation to its environmental and economic impacts. This infographic can be used online, or as a poster or handout at community events and venues, such as sustainability fairs, farmers markets, and local grocery stores.

Another goal for tabling may be to collect data on awareness of food waste as an issue in determining the pilot’s reach and to sign-up people to take the challenge. Implementing partners can add their logo if so desired.
4.0 Pilot Implementation Guidance

In order to have a successful pilot, it is important for implementing organizations to fully consider several pilot design elements as well as plan recruitment/retention and data collection strategies.

Since October 2012, several communities and local governments have implemented a FTGTW pilot and provided essential feedback on the successes and barriers they encountered in the process. Some of these observations are documented in the pilot implementation descriptions found in Appendix A. The pilot implementation descriptions are also useful in understanding the different organizations’ design choices.

In general, the pilot process involves several overlapping steps: design; materials preparation; outreach and recruitment; monitoring and support; data collection; and analyzing and sharing results. In this guide, we refer to the period of public activity (outreach, recruitment, monitoring, support, data collection) as the “pilot implementation” but time will also be needed to prepare for implementation and afterwards to analyze the results and plan for the next level of engagement.

4.1 Pilot Design

Pilot design involves addressing of the following considerations which are outlined here and discussed in greater detail in the subsections below.

- Objectives (Section 4.1.1):
  - How is this pilot relevant to your community/government organization’s goals and objectives?
  - What are your pilot goals and objectives?
- Target Population and Sample Size (Section 4.1.2):
  - Who is your target audience and why?
  - How large is your sample size?
  - Does the sample size reflect an acceptable trade-off between depth and breadth relative to your organization’s objectives?
  - Do the sample demographics reflect your target audience in the larger population?
- Targeted Strategies and Tools (Section 4.1.3):
  - What strategies and tools will you choose to target?
- Resources (Section 4.1.4):
  - What is the budget and staff time allocated for the pilot?
  - What additional tools and resources do you have to support implementation?
- Time Frame and Pilot Implementation Length (Section 4.1.5):
  - What is your timeline/timeframe for implementing this pilot?
  - How long is your pilot implementation (period in which you engage households)?
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- Outreach and Community Partners (Section 4.3):
  - What is your outreach and recruitment strategy?
  - How will you keep participants engaged in the pilot?
  - Have you identified community partners who can help with this effort?
  - How will they help?

- Data Collection and Analysis (Section 4.4):
  - How much data will you collect?
  - What types of data will you collect?
  - How does this data serve your pilot objectives?
  - What systems do you need to put in place to collect this data?

It is important to note that your implementation choices involve trade-offs, primarily between the extent and quality of household participation in the pilot and the availability of resources. In turn, household participation will determine the pilot’s impact. To maximize resource effectiveness, pilot implementations are being coordinated through the EPA and the Forum, making it possible to cross-validate and pool observations and findings.

For a questionnaire that can support the design process, please see Appendix B. The questionnaire is designed to be completed with limited support from the EPA. Interested parties outside of EPA Regions 9 or 10 may or may not be eligible for support. For more information please contact: westcoastforum@epa.gov

Appendix C provides a list of research questions and possibilities of interest to the Forum’s network.

4.1.1 Identifying Implementing Organization’s Objectives

Implementing partners will want to consider how the FTGTW pilot aligns with their organization’s long-term objectives. This will help to garner the necessary internal support for implementing the pilot and scaling it up. Examples of such longer-term objectives include reducing solid waste management costs or mitigating the carbon footprint of food waste or building a sustainable food system. A clear pilot objective will also help to allocate pilot resources effectively.

Depending on the organization, it may take up to several months to obtain management buy-in and allocate the necessary resources for the pilot.

4.1.2 Selecting Target Population and Sample Size

The target population refers to the demographic the implementing organization hopes to engage in the pilot. The sample size refers to the number of households from which the
implementing organization will collect data. Usually, the target population size is larger than the sample size.

A number of considerations go into selecting a target population and sample size. Among the considerations are the demographics of the implementing organization’s area population, the type and amount of resources the implementing organization has available, the time frame of the pilot, the implementing organization’s objectives, and the pilot data objectives.

Two principal target populations were selected in crafting the model pilot messaging and strategies: families with young children and young adults (ages approximately from 18 to 30). These target populations were chosen on the basis of previous research indicating that these two demographics generate the largest amounts of food waste. There is also preliminary evidence to support the proposition that high income households waste more food proportionally than do lower income households but as of yet FTGTW messaging and tools have not been tested with this demographic.

If your organization chooses to focus on an alternative demographic to the two target populations, you will need to consider how these choices serve your organization’s longer term objectives and whether the pilot tools and messaging are appropriate for your selected demographic.

A key consideration in developing your pilot is how to balance achieving both breadth and depth in household engagement. As noted above in the section on design principles, to achieve quantifiable reductions in food waste at the community level, it is necessary to engage and sustain behaviors that have a significant impact at the household level (depth) as well as engage a significant percentage of the general population in adopting the behaviors (breadth). This is seen in the following calculation:

50% of the population reducing their waste by 10% has same impact as 10% of the population reducing their waste by 50%:

Breadth: .50 of population * .10 waste reduction/person = .05 waste reduction
Depth: .10 of population * .50 waste reduction/person = .05 waste reduction

The sample size should then be large enough to draw conclusions relative to the implementing organization’s objectives. If you are collecting data to test behavior change tool efficacy, such as comparing the effectiveness of different versions of the fruit and vegetable guide or testing the response of young adults to meal planning messaging, a minimum of 15 households is recommended.
However, 15 households is too small a sample size to draw conclusions relative to the behavior of the general population of most towns, cities or counties, that is, to determine the pilot’s reach and effectiveness in engaging households in behavior change without intensive personal contact (which is likely how a broad-scale campaign will be implemented).

This trade-off may be partially resolved by testing the response of local social networks, such as young mothers’ or fathers’ groups, to the pilot, which requires a smaller sample, and then developing an extended campaign around targeting those social networks.

Ultimately, resource availability is a significant factor in determining the sample size. If resources are limited, then focusing on a small sample that provides additional information for scaling up the pilot may be the preferred option. A larger, more robust sample will provide more substantive evidence regarding the expected impact of a larger scale campaign.

Also, it is important to note that the choice of a depth or a breadth approach in the pilot affects what tools you will want to test. Achieving large reductions per person (depth) is more resource intensive and takes more time, but the behaviors are more likely to be sustained over time. The network has gathered less data on the effectiveness of outreach tools in reaching households. Likewise, different data collection methods are suggested for depth and breadth approaches, which will affect your budget in turn.

Finally, the sample should either reflect the demographics of the target population or be selected to provide additional information for designing programs for other specified demographics.

4.1.3 Choosing Targeted Behaviors and Tools

Initially, the workgroup identified five behaviors with a significant potential to reduce food waste in households. In addition, the CBSM literature was reviewed to identify effective tools to support the targeted behaviors. Based on findings from the initial pilots, the original five behavior change strategies have been expanded to include a strategy focusing on creating awareness of how much food goes to waste at the household level. In addition, two strategies were combined: Buy What You Need and Make a List with Meals in Mind. The resulting five strategies that are currently being tested through the pilot are listed in Section 2.0 above.

As discussed in Sections 2 and 3 above, several tools have been designed to effect specific behaviors, like the Fruit and Vegetable Storage Guide, while others, such as the infographic/poster and the community workshop presentation, are designed to promote general awareness of food waste. To access all of these tools, please email westcoastforum@epa.gov.
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It should be noted there is limited research on which behavior change strategies will be the most effective at reducing household food waste. One benefit of the pilot is the opportunity to evaluate the comparative effectiveness of the different behavior change strategies on reducing wasted food. This will require collecting data across the range of behaviors. By pooling data from the different implementing organizations, it may be possible to compare behaviors and their effectiveness.

Implementing organizations may choose to focus on one or more of the behavior change strategies in the pilot along with the corresponding tools. All of the initial pilots chose to introduce all five strategies to participating households in connection with the FTGTW Challenge in order to collect data on strategy and tool effectiveness and impact.

The to-date pilot findings have shown that certain strategies and tools are perceived to be more effective by households. For example, households have found the Fruit and Vegetable Storage Guide very useful. However, household perceptions of the effectiveness of different strategies may or may not be correlated with the strategies’ impact. Further research is necessary to determine each tool’s impact and the impact of using them in combination. For example, the Australian research has shown that meal planners generate the least food waste because they are more likely to adopt the other strategies. At the same time, our pilots show that many households perceive meal planning as difficult to undertake.

It is recommended that careful consideration be given to limiting the number of strategies to include in the pilot based on budget, intended reach and pilot objectives. A major consideration is whether your organization wishes to collect impact data.

There is a substantial opportunity for implementing organizations to contribute to our shared understanding of outreach tool effectiveness through a carefully designed pilot. These opportunities are listed in Appendix C.

4.1.4 Allocating Resources

While the toolkit provides the essential components for a FTGTW pilot, implementing organizations should consider what additional resources, including staff time, can be allocated to support the pilot program. For this reason, we recommend drafting an initial budget.

Fixed implementation costs include costs to print the CBSM tools, cost of measurement bags used in the Challenge, and staff time. In addition, several early pilots used incentives to engage individual households, the costs of which include both time to procure the items and the cost of the incentives themselves.
Food scales have proved to be popular incentives as scales serve the purpose of facilitating household participation in the Challenge by which implementing organizations collected data on the impact of the behavior changes. Electronic scales were purchased for $15 each in one pilot and $37 each in another.

Staff time may include time spent in the following: gaining organizational approval for the pilot; materials preparation and modifying the tools for local use; outreach and collecting data; and time spent evaluating and disseminating pilot results. (For more information on how much time might be required for various tasks based on the early pilots, refer to the pilot descriptions in Appendix A.)

It is assumed that in most cases local government will take the lead in implementing the pilot. However, there is good potential to engage other partners in providing additional resources to carry out CBSM food waste reduction pilots and programs.

Potential partners include other government programs, civic groups, non-profits, schools and after-school programs. Additional partners include food purveyors, such as groceries and restaurants, and other businesses and organizations with a stake in waste reduction.

- Government programs that have expressed interest in food waste reduction include waste management, climate change response, and food programs.
- Civic or community groups and non-profits may have constituencies who are parts of the target audience or an interest in related issues. These organizations are able to do outreach through their social networks.
- Food purveyors (restaurants, groceries) and other businesses may assist with outreach and also provide incentive goods (see the discussion below on measurement/awareness tools).
- Farmers markets, community supported agriculture (CSA) businesses and municipal waste management companies are also likely partners.
- Schools may wish to integrate information on food waste prevention into their curriculum and colleges and universities often support sustainability programs aimed at the young adult demographic.

4.1.5 Determining Time Frame and Pilot Implementation Length

The overall length of the early pilots ranged from four to eight months. This included the time it took for planning, adapting and preparing materials, outreach and recruiting households, engaging households during the Challenge, data collection and analysis, results dissemination, and network participation. Please refer to the pilot descriptions in Appendix A for more information on how long it took organizations to perform various tasks.
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The length of time needed to engage households has ranged from 6 to 14 weeks. Typically, the length has been based on the number of weeks households will be asked to collect data as part of taking the FTGTW Challenge but additional time should be allotted for outreach and recruitment of Challenge participants. Previous pilots have found that recruiting households has taken more time than initially assumed. The suggested time length for the Challenge has been discussed above in Section 2.1.

It is also recommended that pilot implementations not be scheduled to coincide with major holiday periods as this tends to obstruct consistent participation.

4.2 Tools Preparation

Time should be allotted for adapting and preparing the behavior change and outreach tools to the organization’s specific needs.

4.3 Outreach, Recruitment and Retention

The first major task of the pilot implementation is outreach and recruitment. Outreach plans should address appropriate communication channels, venues and community partners for reaching the intended target audience. Two CBSM principles that govern successful outreach and challenge recruitment plans are delivering at the community level and emphasizing personal contact. A good rule of thumb in household recruitment and retention is to engage early and often.

The value of personal contact in influencing people to attempt new behaviors is well established in the CBSM literature. The likelihood of a commitment to adopt new behaviors is much greater in the case of personal contact. This is even more strongly reinforced when the contact is made by someone with influence in a target’s social network. For example, in Minneapolis, involvement of the African-American community in their food waste pilot largely rested on the enthusiastic participation of a key community member. Personal recruitment can be reinforced through additional forms of communication, such as mail and email.

Implementing organizations are encouraged to think about outreach through social networks (or webs of relationships) in addition to media outreach to target audiences.

Past implementers have had considerable success in engaging households through participant gatherings/workshops, often with free food and beverages. In addition to providing an excellent opportunity to present food waste strategies and distribute behavior change tools, these gatherings reinforce the social nature of the pilot, thus encouraging behavior change through membership and network commitment. Workshop participants are encouraged to share personal experiences around food waste which is a form of social learning.
Suggested settings for recruiting challenge participants are outlined in the following diagram which also outlines key engagement steps in completing the challenge.

Clear objectives for the tabling efforts will help in preparation, especially anticipating the number of people reached. Possible handout materials include the storage guide, shopping list template and/or the awareness/measurement tool, as well as a more general informational piece on your program or on the food waste issue. Tabling also presents an opportunity to recruit challenge participants in which case you will need to collect contact information.

Another key to retention is to reduce barriers to participation. How the implementing organization decides to do this depends on available resources. Besides providing printed behavior change tools, organizations may consider distributing scales to measure food waste, and/or bins in which to place the measurement bags. It is possible that incentives may also play a role in increased retention rates. Past implementers have offered grocery coupons and raffle prizes to encourage participation. Discounts on garbage bills have also been mentioned as a possible incentive.

4.4 Data Collection and Analysis

Data collected by implementing organizations for early pilots included:
- Household measurements of food waste amounts for calculating impact.
- Observational and demographics data from household participants for calculating effectiveness.
- Event data for calculating reach.
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The principle data collection tool has been the FTGTW Challenge described above in Section 2.1. In addition, implementing organizations are asked to track data on outreach efforts and pilot costs which will be used to evaluate the effectiveness of the CBSM approach.

Specific data to be collected are described below.

- **Outreach:** Record your observations about the effectiveness of any outreach method used.
- **Tabling:** Record how many people attended the event and the number of table engagements by type (e.g. how many took handouts; how many people had a conversation with table staff/volunteers; how many signed up for challenge). You may also want to contact the event organizers to learn about expected event traffic.
- **Workshop:** Record, as possible, how many people were invited to the workshop, what you know about their demographics, and how many actually attended the workshop.

The diagram below illustrates the calculation used to calculate impact.

![Calculating Impact Diagram](image)

The Consumer Expenditure Survey (CES) tables referred to in the diagram provide source data on how much households spend on food and are published by the Bureau of Labor Statistics. This data will be used to analyze percentage reduction of household food waste.

To date, pilots have collected data on how much food is wasted in individual households and the impact of the behavior change strategies on how much was wasted. In some cases, only preventable food waste measurements were taken.
A major research gap is how much food is wasted as a percentage of food purchased by individual households (refer to Appendix C for related research questions). Estimates of how much food goes to waste are based on consumer expenditure survey data and the U.S.D.A’s food availability data series.

As noted above, data collection methods will depend on the organization’s objectives, in particular, whether the organization is emphasizing a depth or a breadth approach. This issue is discussed in greater detail below in Section 5.0 in the context of scaling up from pilot to program.

In addition to collecting quantitative data on how much food is being wasted, early pilots have collected participant observational data on tool effectiveness along with demographic data. Participant observations are a rich source of qualitative data that can be used to convey the significance of food waste awareness to a wider audience and thereby creating new social norms around food waste behaviors.

Also, consideration should be given to whether data collection and analysis can be integrated into existing programs. Presently, the Forum is supporting data analysis of FTGTW pilots. However, in order to pool data, it is important for implementing organizations to coordinate data collection content and methods.

### 4.5 Network Participation

Implementing organizations have the opportunity to become active participants in the FTGTW Forum.

The network functions to:
- Grow the number of pilots
- Coordinate pilot objectives and develop network priorities and targets
- Pool data
- Launch a national awareness campaign
- Implement community partnerships to do outreach
- Make the new social norm visible
- Implement a community-level measurement program

For more information on becoming a part of this network, please contact WestCoastForum@epa.gov.
5.0 Considerations on Scaling-Up from Pilot to Program

In general, in designing a full-scale campaign, the organization will want to consider how the pilot results inform the direction and specific content of the campaign.

Scaling pilots up to broad-scale campaigns also involves moving from a depth approach to one that emphasizes both breadth and depth. This necessarily entails raising the visibility of the food waste issue at the community level, usually involving some type of media/messaging component in the program.

To gauge the overall effectiveness of a full-scale CBSM campaign, it will be necessary to track the community’s awareness of food waste as an issue and how concerned they are with the food waste issue. King County will do this by introducing questions regarding food waste awareness into their environmental behaviors survey.

In a broad scale campaign, the organization’s long term objectives also come into play. How food waste prevention complements and integrates with existing programs and helps to meet the organization’s goals will be considered.

Message fit is an important element in successful integration. Some implementing organizations may be combining FTGTW tools and strategies with existing programs. In integrating food waste prevention with compost collection programs, indications are that food waste prevention should be discussed first, before composting, in order to give waste prevention the proper emphasis.
6.0 Pilot Acknowledgements

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Appendix A: Pilot Implementation Descriptions

**King County, Washington**

**Objectives:** Reducing wasted food is a priority for King County in its effort to achieve Zero Waste and climate action goals, since food accounts for 14% of the County’s consumption-based Greenhouse Gas emissions. The specific aim of the King County pilot was to test the effectiveness of the pilot messaging and tools in reducing food waste and to gauge the impact of a CBSM campaign based on these results.

**Target Population and Sample Size:** The target audience for the King County implementation was families with small children. The pilot was introduced to 110 families with a child enrolled in the 4th grade at the public elementary school in Fall City, a peri-urban town with a population of approximately 2,000.

**Targeted Behaviors:** During the pilot, all five waste prevention behaviors were introduced to the families.

**Tools Used in Pilot:** This pilot used both the Shopping List Template and the Fruit and Storage Guide tools. They also structured the pilot around a modified Challenge as described below under the subheading “Implementation Choices”. In addition, King County developed several other tools including: a Top Five Ways to Waste Less Food information sheet; Packing a Waste Free Lunch tip sheet; a blog to keep families informed and motivated; a Food: Too Good to Waste daily tip PowerPoint presentation by the teacher; and a Learn More resource list.

**Community Partners:** King County partnered with a local elementary school through their Green Schools Program. They were assisted by the marketing firm of Colehour and Cohen who have special expertise in CBSM campaigns in developing and implementing their pilot.

**Length of Pilot:** The participant engagement period lasted approximately two months, including time to recruit and assess and acknowledge the families’ participation. The length of the Challenge was five weeks. As King County developed their materials in parallel with the Forum, the overall length of their pilot was eight months.

**Implementation Choices:** The invitation to participate in the Food: Too Good to Waste Challenge was sent via email to the families of the 4th grade children. A King County representative then visited the classroom to explain to the students why wasted food is bad for the environment and household economics and distributed the measurement tools (bag and weekly worksheets). The teachers incorporated new messages into curricula each week with daily tips/facts. The first week waste collection served to establish a baseline for the volume of food going to waste. Both preventable and non-edible food waste items were collected in the same measurement bag to simplify the process. At the start of the second week of the pilot, all five pilot strategies were
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introduced. Thereafter, tools were introduced one at a time at one week intervals. Students were also presented a daily food waste reduction tip. All families who completed the challenge were given recognition certificates and entered in a drawing for grocery store gift cards.

Observations: The tools were well received and gave King County confidence in the overall messaging. Students and parents were especially influenced and surprised by how much food (and money) could be saved as a result of simple strategies. As a result of this finding, the county will emphasize potential savings in their broad-scale campaign. On average families that participated all five weeks reduced their food waste by 28%. However, a “challenge” where people have to measure waste and report is great for raising awareness but is onerous. Incentives may help to reduce this barrier to participation. In King County teachers assigned homework and the county offered a prize for participation, but still many families did not follow through. During the pilot, King County didn’t have a lot of local resources to give people, so in the full-scale campaign they are putting emphasis on improving the website for King County and including more info about why it’s important.

Honolulu, Hawaii

Objectives: The City and County of Honolulu (CCH) are interested in food waste management solutions that would both lower the costs of landfiling as well as offset the cost of importing food to the island. The Honolulu pilot sought to test CBM food waste reduction strategies and tools including a cookbook with local chef-contributed recipes and food waste prevention tips. It also aimed to see if there was a connection between preventable food waste and the number of meals outside the home.

Target Population and Sample Size: Out of approximately 210 emails sent, 17 households were recruited to participate in a four week challenge. The principal audience was young adults although two households were in their fifties and two households had children. The average age of participants was 34.

Targeted Behaviors: All five behaviors were tested but the “Buy What You Need” strategy was combined with the “Make a Shopping List with Meals in Mind” strategy and relabeled “Smart Shopping”. In addition, households were encouraged to test recipes for using up leftover ingredients.

Tools Used in Pilot: The Workshop Presentation was used to introduce the Food: Too Good to Waste Challenge to the household participants. Behavior support tools included: a food storage guide developed by Eureka Recycling; a menu planner used in the Australian campaign; an “Eat Me First” prompt; and a cookbook containing recipes for using up leftover ingredients developed by local chefs.
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**Community Partners:** Alexander Lavers researched, directed and managed the pilot in fulfillment of a Master degree in Environmental Sciences from the University of Gothenburg, Sweden.

**Length of Pilot:** The total elapsed time of the pilot was four months. Recruitment took approximately three weeks, while the length of the Challenge was four weeks. Adapting, preparing and purchasing materials for the challenge took three weeks as did the data analysis. In addition, the project organizer spent several months coordinating the cookbook’s development with the contributing restaurants, the graphic designer, and the county.

**Implementation Choices:** Recruitment was made by email using personal contacts in two social networks, the Recycling Branch of the Refuse Division of CCH and a Honolulu running club. Challenge participants were asked to measure preventable and non-edible food waste for two weeks after which they measured both types of waste for an additional two weeks while trying food waste reduction strategies. Non-pilot study cookbook recipients will receive an option to fill out a survey on their experience with the cookbook/toolkit; in return for their responses they will receive a coupon to a restaurant featured in the cookbook.

**Observations:** Participation and retention was facilitated by early and frequent engagement. Pilot participants saw a 19.6% reduction in preventable food waste in weeks using food waste prevention strategies compared to baseline weeks. Households that did not see a reduction in food waste had irregular events that affected their success. There was significant variability in the food waste collection data possibly related to age. Older participants started with less food waste. Households with members aged 28 to 34 achieved the largest reduction but started with more waste.
Appendix B: Food Too Good to Waste Pilot Planning Guide

The following questions are intended to be used as a checklist for pilot planning. Please refer to the referenced sections in the Implementation Guide for insights on implementation choices from earlier pilots.

Objectives (Section 4.1.1)
1. How is this pilot relevant to your community/government organization’s goals and objectives?
2. What are your pilot goals and objectives?
3. What is your experience with CBSM?
4. Who within your organization needs to give approval to the pilot?

Target Population and Sample Size (Section 4.1.2)
1. Who is your target audience and why?
2. How large is your sample size?
3. Does the sample size reflect an acceptable trade-off between depth and breadth relative to your organization’s objectives?
4. Do the sample demographics reflect your target audience in the larger population?

Targeted Strategies and Tools (Section 4.1.3):
1. What strategies and tools are you choosing to target?

Resources (Section 4.1.4):
1. What is the proposed budget for the pilot?
2. How much staff time is allocated for the pilot?
3. What additional tools and resources do you have to support implementation?
4. Who are your community partners, if any?

Time Frame and Pilot Implementation Length (Section 4.1.5):
1. What is your timeline/timeframe for implementing this pilot?
2. How long is your pilot implementation (period in which you engage households)?

Outreach and Community Partners (Section 4.3):
1. What is your outreach and recruitment strategy?
2. How will you keep participants engaged in the pilot?
3. How often do you plan to engage directly with participants?
4. Will the pilot be implemented as part of an existing program(s)? How will this affect outreach?
5. Have you identified community partners who can help with this effort?
6. How will they help?
7. Are you offering incentives as part of your outreach or engagement strategy?
Data Collection (Section 4.4):
1. How much data will you collect?
2. What types of data will you collect?
3. How does this data serve your pilot objectives?
4. What systems do you need to put in place to collect this data?
Appendix C: Pilot Research Questions and Research Possibilities

**Pilot Reach**

Did the pilot strategies engage households?
- Test effectiveness of awareness strategy in sustaining behaviors
- Test length of time needed to create and sustain behaviors
- Identify motivators (e.g., health, cost) related to reducing waste by demographics
- Determine how awareness is related to likelihood to adopt different behaviors. Does awareness coincide with use of different strategies?

**Behavior Change Tool Effectiveness**

Do different strategies have a greater impact?
- Test whether greatest impact results from focusing on one strategy versus the suite of strategies
- Quantify impact by strategy for different demographics (e.g., families with young children, young adults)

What is the effectiveness of different behavior change tools?
- Compare the effectiveness of collecting only preventable waste versus collecting non-edibles and preventable waste in raising awareness
- Compare and test preferences for and effectiveness of different fruit and vegetable storage guides
- Test effectiveness of produce shelf life guide
- Test effectiveness of recipes for 1 to 2 people
- Test differences in tool effectiveness between rural and urban areas

**Outreach Tool Effectiveness**

What is the potential reach and effectiveness of different outreach tools?
- Test effectiveness of different outreach venues and different messengers in engaging participation
- Test effectiveness of using small grants to community groups to spur community engagement (social diffusion)

What are the best tools for creating and driving social norms?
- Test different stories about food waste in media
- Test the use of goals at individual and community level (Eureka)
- Visibility of commitment in motivating behavior – how to create visible social norm
- Measure awareness of food waste as an issue over time

**Impact**

- Quantify how much food is wasted as a percentage of amount purchased

**Pilot Network**

- Identify barriers and benefits to different government organizations for promoting food waste reduction.