ICEC Climate Change Cohort using CBSM Case Studies

Acknowledgements

The Iowa Conservation Education Coalition applied for and received funding for this project through the Iowa Resource Enhancement and Protection Conservation Education Program (REAP-CEP) in November 2021. Project participants were selected from a pool of applicants and ICEC hired E Resources Group, LLC, to provide frequent guidance and ideas, and to shepherd the timeline for the participating organizations. Participating partner organizations contributed funds, staff time, and in-kind support to complete the projects.

Key Take-aways

This small-scale project with a short timeline is a test of how and whether practitioners could change their own program development and delivery behaviors. Participant groups quickly learned:

• Their assumptions and understandings about their audiences could be adjusted by even a small number of conversations with audience members – in some cases not hearing from them led to program revisions and a deeper dive into the audiences who could be moved and how. Most programs refined the audiences who could be reached.
• Benefits and barriers to behavior adoption is research that is worth the time and effort to do – challenging program assumptions.
• It was too late to shift many of the program commitments already made by others prior to using the CBSM methods. Equipment was ordered and planned for distribution; campaigns were advertised prior to any CBSM input.
• Future projects by the agencies will be changed as a result of participation in this project, and practitioners will carry the learning with them to other organizations they join.

Participants selected for the project offered programmatic topics that reflect the understanding that climate change is impacted by many factors. Their program selections reflect increasing plant diversity to support life into an uncertain future, increasing composting and recycling can change landfill gasses, and learning to turn off electricity when not needed.
Overview

Conservation educators have helped people change behaviors to benefit and improve communities and the environment through educational activities and campaigns for decades - with success in some areas and less so in others. This project aimed to provide five organizations an opportunity to learn and apply some of the best social science and research that has been adapted to help conservation causes throughout the world. These methods are offered through a real-time virtual course led by Dr. Doug McKenzie-Mohr who developed Community Based Social Marketing (CBSM). Participants from the organizations took the course in January 2022 to learn CBSM methods and try them on projects that could spark action and behavior change.

The specific process used in CBSM throws a different timeline and procedures at project leaders who completely rethink what they will do and when and how. Although CBSM methods are not overly complex, the process involves taking more time to research the barriers and benefits that community members perceive to the adoption of new behaviors. Many conservation educators are creative and confident of their abilities to motivate and inspire their audiences. The timelines they create for themselves are short and move quickly to project implementation. We typically map out projects, anticipate materials needs and promotional timelines based on our known history of how to accomplish conservation projects. We also rarely have the time to evaluate whether our efforts are moving the needle for the causes we care about. The case studies provided show areas where educators had to take more time - sometimes more than expected - to apply the methods. The CBSM process is described later and a link to an overview of CBSM is provided at the end of this report.

We are eager for you to see how these project leaders approached this new process and timeline. They have honestly written about their thought processes and we are grateful to them for sharing their vulnerabilities as they tried and applied the CBSM process.

Intro to CBSM

“Community-based social marketing borrows from social marketing an emphasis on understanding what impedes and motivates a target audience to act as well as the importance of piloting programs prior to their broad scale implementation.” (Taken directly from CBSM overview that is included at the end of this document.)

Community-based social marketing involves five steps:
1. Selecting what audience and which behavior to target;
2. Identifying the barriers and benefits to the selected behavior;
3. Developing a strategy that reduces barriers to the behavior to be promoted, while simultaneously increasing the behavior’s perceived benefits;
4. Piloting the strategy; and
5. Broad scale implementation and ongoing evaluation once the strategy has been broadly implemented.

In this overview of community-based social marketing, each of these steps will be described.

In Step 1, you select the specific audience you will address and the behavior or behaviors that you will attempt to change.

Selecting an **audience** entails determining who you will market the selected behavior change to. This may entail some background research to determine the rates of the behavior currently among different audience segments or sectors. Such research can help you identify the audience with whom you may have the greatest chance of success in changing the behavior and/or where you might get the biggest impact.

Selecting a **behavior or behaviors** to change takes a lot of careful thought. It is important that the behavior being targeted is non-divisible and an end-state behavior. **Divisible behaviors** are behaviors that can be further divided into more specific behaviors. For example, you might encourage people to seal leaks in their homes to reduce energy use. A person could apply weatherstrip, door sweeps, or get a blower door test to find other areas with leaks. Each of these behaviors will have its own set of barriers and benefits to people. **End-state behaviors** are the ultimate behaviors that you wish people to engage in. A good question to ask yourself in selecting a behavior is: “Am I hoping that a person will engage in this action prior to my target behavior?” If the answer is “yes,” then you don’t have an end-state behavior. An example of a behavior that is not end-state is to promote the purchase of monthly bus passes. The end-state behavior is actually using the bus system regularly.

In Step 2, you identify the barriers and benefits that people perceive in engaging in the target behavior. Each targeted behavior will be seen as having a variety of barriers and benefits. For example, you may want to increase recycling rates among city residents. The barriers and benefits they name may differ based on residents’ age, gender identity, socio-economic status, race, family size, etc. Identifying the barriers and benefits for specific segments of your target audience will help to guide your behavior change campaign. The steps involved in identifying barriers and benefits includes:

1. Review the relevant literature to see what others have found. A fine place to start is at Doug Mackenzie-Mohr’s Community-Based Social Marketing site (https://cbsm.com/feed). There is a searchable database to find articles particularly relevant to you and your project.
2. Conduct a few interviews or a focus group with your target audience, or observe the behavior in a public setting.
3. Conduct a survey with a small random sample of your audience.

In Step 3, you develop a strategy for your behavior change campaign. Encourage people to do the target behavior, and discourage them from engaging in unwanted behavior. To do this, you aim to increase the benefits and decrease the barriers of the target behavior. At the same time,
you want to decrease the benefit and increase the barriers to the unwanted behavior. Some techniques used to accomplish these aims include:

1. Seek commitment, preferably public, from individuals to engage in the behavior.
2. Provide prompts to remind people to engage in the behavior.
3. Consider the use of social norms as a way to encourage the behavior.
4. You can get more people to engage in the behavior - social diffusion - if people are asked to make a visible and durable commitment, e.g., putting a sticker on the side of their recycling bin that states that they have installed a low-flow showerhead. Another way to get more people onboard is to recruit well-known and/or well-respected people in the community to participate.
5. Carefully consider the use of incentives when motivation and/or participation in the targeted behavior is low.

In Step 4, it’s time to try a small pilot project to see if your ideas are going to get the results you expect. The pilot project can test an idea with a control group and maybe a variation or two of the idea to see what works best. If none of the ideas work, it’s better to have tried it before investing a lot of time and money in something that won’t change behaviors. You can repeat Steps 1-3 and try again. This is a big departure from most environmental education programs that are driven by short timelines to deliver campaigns. It’s not that CBSM can’t be done fairly quickly, but that it requires a different thinking process that needs to be practiced and anticipated.

In Step 5 it’s time for full implementation of the best piloted idea that moves the needle for behavior change. Evaluation plays an important role in monitoring the changes in behavior. Evidence of reduced electric use within a neighborhood or more carpooling as measured by cars with multiple occupants can help secure funding and support for continued meaningful changes - as well as an understanding of the need for a different timeline to deliver campaigns.

**Intro to the case studies themselves**

**Story County Conservation**

Originally, the group had thought about targeting local businesses but eventually moved to county employees (within county offices). The county has a number of large buildings and the group is focusing on **reducing energy consumption**. They began looking at several behaviors including turning lights off, turning computer monitors off, turning computers off, using power strips, using SMART power strips, as behavior changes to reduce energy consumption.

**Green AmeriCorps**

Green Iowa AmeriCorps’ original project idea was to increase recycling efforts in Dubuque, Iowa. Initially, a number of ideas on who to target as the audience for this effort were
considered; people who already do some recycling, people who live on a street where little recycling occurs, etc. There was also an interest in getting recycling bins distributed in the area and increasing recycling amounts and rates.

**Northeast Iowa Peace and Justice Center**

The Northeast Iowa Peace and Justice Center was part of a team of organizations who led a CBSM project, in conjunction with Winneshiek County Conservation, Green Iowa AmeriCorps, and Winneshiek County Landfill & Recycling. The team decided on an ultimate goal to get Winneshiek County to establish a municipal composting facility. The means by which to accomplish this goal included an increase in composting by local residents and particularly, restaurants.

**Prairie Rivers**

Initially, Prairie Rivers thought about targeting two related behaviors, planting native species rather than turf and reducing chemical use. A couple of audiences were initially considered, including people living along US-30 byway across Iowa and restricting the audience to a more local area, such as Ames. Prairie Rivers’ aim was to increase pollinator plantings.

**Blank Park Zoo**

Initially in talking with the Blank Park Zoo, it was apparent that a project was already decided upon, and that the Zoo planned to apply CBSM to that project. The initial project consisted of taking an existing curriculum, Plant, Grow, Fly which was originally intended for adults and revise it to use with a middle school audience. The CBSM project was to help with a larger project consisting of a pollinator planting. The target audience, middle school students, had already been decided upon. The intended target behavior considered was having each child participant take home a plug at the end of the school year and then return that plug to school at the beginning of the fall.
Case Study Reports

Story County Conservation

Step 1. Audience identification and selecting targeted behavior change:

Audience Identification: We chose to work with Story County employees. We made this choice after throwing around several possibilities. We thought about working with the Smart City Ames to target business owners, but that seemed hard to do in the time frame we had. We also considered college students, but they leave town for the summer, and are sometimes hard to track down and get to participate. The conservation department has already done some education with county staff about environmental issues, so we felt this would be a good audience that was used to hearing these types of messages from us.

Behavior Change: Shutting off lights when you leave your office/room and shutting off your computer monitors when you leave for the day. When researching this, we realized that as far as monetary savings go, it wasn’t going to be huge. However, our hope for this was that the staff who participated in this would go through the process of self-perception that McKenzie-Mohr describes in his book. They will hopefully perceive themselves as somebody who cares about the environment, and when the opportunity arises in other parts of their lives to do something environmentally conscious, they will do so. We understand that we will be unable to assess behavior changes outside of the workplace because of time constraints.

Step 2. Identification of barriers and benefits to engaging in the targeted behavior:

We sent out a survey to ask our targeted audience what they consider to be the barriers and benefits to shutting off the lights and/or their computer monitors before they leave the office.

Barriers:

- Don’t think it’s important
- Forget
- Don’t care
- Mistrust- have tried this before and it didn’t work then
- Don’t think they’ll be out of their office for long
- Buy in/Office culture
- Shared spaces- i.e. break room- Who is responsible for shutting lights off

Benefits

- Makes them feel good
- Minimal energy savings, but it might trickle over into other areas of their lives
Step 3. Develop a strategy:

The steps below outline our strategy to make this project a success.

1. We framed it as a “team” effort.
2. We identified key players in each department to set the example and create a “social norm” regarding the behavior.
3. We spoke to our facilities department to make sure that what we were planning was okay with them as far as cleaning, painting, and maintaining the areas. We obtained their input on how they preferred the signs to be attached to the wall, and their placement.
   a. We decided on a 3” round hard plastic disc attached to the wall with command strips so that our facilities department could easily remove them for painting.
4. We also spoke to our IT department about putting stickers on computer monitors to remind people to shut their monitors off. We wanted their approval, as they are the department that maintains that equipment. They had no issues with us moving forward with this part of the project.
5. We listened to what people had to say. We did this by asking key players in each department to ask their coworkers what would work.
   a. Each office had a spokesperson who agreed to report back to us from time to time on how the project was working in their department.
   b. We visited each office/building where we decided to pilot the program with different sign designs for the staff members to vote on. We went with the design that received the most votes.

Step 4. Pilot test the behavior change campaign:

Prior to installing the signs, we made attempts to check what behaviors were in departments prior to installation of the signs. This was hard to do because we couldn’t just walk around and peek in. The one time a member of our team tried to do that, she was asked if she was lost (the conservation department is not housed in the administration building).

We installed the signs on May 9, 2022. Our three team members went to each department in the pilot program and put signs above their light switches. We also printed out stickers for monitors and handed them to the people who were there to place on their monitors. If nobody was sitting at the computer, we put the stickers on their keyboard and asked the spokesperson to talk to them about it when they returned.
We purchased chocolate coins as a “celebration” of the people participating and had printed out an explanation of what we were doing, with a “Thank you for being part of the change” to go along with the gold coins (change).

We also have an internal newsletter for county employees. Each newsletter includes a “Green” tip that one of the naturalist staff provides. The month after we installed the signs, the “Tip” included a shout out and thank you to the departments who were participating in the pilot round, and also let other departments know what the stickers and plaques were all about.

We followed up with our contacts in each department via email but received few replies. These included positive things like: “It is really helping! Jon turns off his light even if just leaving for a few minutes 😊,” and “We do good with the lights down here, but struggle a little harder with the monitors. Working on making that a habit yet.” We did receive one report of it not changing anything for the folks in one department who were the most likely to leave their lights and monitors on.

**Step 5. Broad scale implementation and ongoing evaluation:**

We completed full implementation on October 31, 2022. This included putting up 68 more light switch plaques, including our whole administration building, as well as Story County’s Animal Shelter, the Secondary Roads Building, and the Hickory Grove Shop within the conservation department. The last three are not located at the administration building or at the main conservation office.

We had been in contact with the offices that we included in our full implementation, so were well received when we showed up to put the stickers and plaques everywhere. It was heartening to hear a few of the people tell us they always shut lights off, just like at home.

We will continue to touch base with these departments at all staff gatherings, and a member of this grant committee is also on our county’s newly formed Green Committee. She will check in with members of the committee from other departments from time to time.
Thank you,
Environmental Health
Emergency Management
Facilities
Information Technology
Planning and Development
McFarland Park Shop
Conservation Center

Changemakers!

These departments and buildings have committed to energy conservation in their office spaces as part of a grant pilot project. They will work together during the pilot period to keep lights and computer monitors off when not in use. You may notice reminder signs installed over light switches and on computer monitors in these offices in the next month—with an opportunity to expand to additional departments in future months.

Contact Beth Waage, Bekah Beall, or Bobbi Donovan with questions or feedback.

Thank you,
Changemakers!

We appreciate you efforts to take energy conservation in your office one step further! We hope your office will work as a team to keep computer monitors and lights shut off when not in use. We would love to hear any additional thoughts about how to improve this project or other conservation efforts we can implement in our workplace.

Contact Beth Waage, Bekah Beall, or Bobbi Donovan with questions or feedback.
Green AmeriCorps

Step 1. Audience identification and selecting targeted behavior change:

Audience Identification: I initially considered working with Dubuque city residents who lived on streets where there was already some recycling taking place. However, upon reflection, it seemed that it might be more informative and have a greater impact if I worked on streets or in a neighborhood where recycling rates were low. My target audience was City of Dubuque residents who recycle at low rates.

Behavior Change: The behavior changes I decided to focus on were two-fold. I aimed to increase the number of recycling bins used on a weekly basis and reduce the contamination rate.

Step 2. Identification of barriers and benefits to engaging in the targeted behavior:

I talked with 17 people at a neighborhood Family Nature Day to distribute recycling literature, determine recycling knowledge, and collect data regarding barriers and benefits to recycle and to do so correctly. Of those, 15 stated that they recycle regularly.

Barriers:

- Don’t know all of what gets recycled
- Made mistakes in the recycling game
- Unaware that plastic bags could not be recycled curbside
- Many people (including myself) did not know that plastic #6 cannot be recycled

Benefits:

- feel good and feel that they are good stewards of the environment
- doesn’t go to the landfill and take up space
- makes people feel less guilty

Step 3. Develop a strategy:

1. I worked with the City of Dubuque Public Works officials about using their newly created recycling card for my pilot campaign.
2. I incentivized recycling for city of Dubuque residents by offering opportunities to win a $50 Visa gift card by recycling and doing so correctly.
3. I spot-checked people’s recycling bins and if they were filled with the correct items for recycling (with a contamination rate below 5% - this is the threshold of contamination that will be tolerated before the recycler refuses to pick up), a resident had the chance to be chosen to receive a gift card.
4. I observed recycling in my targeted area on Tuesday mornings at 8 a.m. (recycling collection day) in July to collect baseline data of how many recycling bins were curbside.
**Step 4. Pilot test the behavior change campaign:**

My initial pilot testing was done on Jackson Street, the bluff side of the street from 26th to 32nd. I talked to more than half of the residents, and for those I couldn’t reach, I left the recycling card at their door, with full instructions for how to win the raffle. There were two main steps. Firstly, residents had to keep track of their recycling card for the duration of the project. If they presented to me that they kept the card, they were eligible to win. The second step was agreeing to a recycling audit. This was conducted through an unannounced visit on the morning of recycling pickup. In order to win the raffle (if chosen), you had to have 95% of items in the recycling correctly sorted.

In mid-August, after I had fully implemented my project on Jackson Street (aside from actually awarding winners), I took another crucial recycling observation on Tuesday morning, August 23. I found that the number of recycling bins curbside at 8:00 a.m. between 26th and 32nd on Jackson had increased from an average of 27.5 to 35. This was an increase of 21.5%. My control group, White Street, between 26th and 32nd, didn’t experience any meaningful change between the July and August observations. Therefore, I determined that my project was effective and I could implement it in a broader scale fashion.

**Step 5. Broad scale implementation and ongoing evaluation:**

Broad-scale implementation will be done by City of Dubuque Public Works, as I have been told by Public Works staff that the results of this project will be very important in determining the strategies the city takes to encourage recycling. My AmeriCorps position time was up and I have moved on to another position.

However, I was able to broaden my project to include White Street from 26th to 32nd on both sides and a section where I was only advertising $25 gift cards and no raffle incentive, to see what effect that had.
**Northeast Iowa Peace and Justice Center**

**Step 1. Audience identification and selecting targeted behavior change:**

**Audience Identification:** Our project focused on residents of Winneshiek County who use the county landfill. Food waste in the landfill was identified as a serious issue previously, and had initiated a pre-order backyard compost bin distribution that we assisted with in Spring 2022.

**Behavior Change:** The Winneshiek County Landfill operators informed us that food waste is taking up approximately 26-30% of the landfill capacity. They approached us with the idea to support their efforts to have home composting be a widely adopted practice in the county, as a way to reduce the amount of food waste in the landfill. In our project it seemed like we were “given” the behavior change for intervention and in some respects, we were working backwards. We were working with a group of people who had pre-ordered compost bins, and so were theoretically already “doing” or at least intending to perform the desired behavior.

**Step 2. Identification of barriers and benefits to engaging in the targeted behavior:**

We used the four planned bin distribution events to gather some data, surveying recipients about their prior history with composting; reasons for not choosing to do it previously and their willingness to weigh their food waste weekly for four weeks to get a snapshot of how much food waste could be diverted from the landfill.

Our focus on reducing the amount of food waste going to the landfill is something that others have focused on through CBSM. We did some brainstorming and reviewing of past efforts to identify potential barriers and benefits to composting food waste:

**Barriers:**

- Takes too much time
- Don’t like the idea of food waste hanging around on the kitchen counter.
- Don’t have an acceptable-looking countertop container for holding the food waste until it’s taken out to the bin in the yard.
- Too much trouble to walk to the bin
- Smell
- Don’t see the larger value of it
- Unsightly
- Varmints
- Don’t have a place to put it
- Do not know how to compost
- Do not know how to get it started or set up
- Do not have the material to start it
- Do not have a way to separate organic matter from trash (counter bin, bucket, etc.)
- Do not know what actually can go in a compost bin.
● Do not have anything to turn the compost with
● Do not have a way to keep compost bin warm/ don’t know what to do for Winter

Benefits:
● Doing something for community that is good
● Chance to go outside
● Reduce methane emissions
● Save space in the landfill
● Free fertilizer
● Garbage that goes to the dumpster is less gross
● It feels good to be joining with others in doing something that will address the need to reduce greenhouse gas emissions right here where we live when addressing the world-wide issue of “stopping climate change” can feel overwhelming
● FUN!
● New skill
● Save money on trash bags
● Save money on trash pick-up
● Potential family activity or education activity for kids

Step 3. Develop a strategy:

1. We administered a survey at the compost bin distribution events to gather data about residents’ experiences (or lack thereof) with composting, determine the barriers and benefits to residents regarding composting food waste, identify what residents felt would help them to compost food waste, and identify individuals interested in learning more about composting.

2. We used text, email, and phone calls to distribute weekly surveys about the progress of setting up their compost bins, how composting was going, and the amount of food waste diverted from the trash weekly.

3. We organized a big composting educational event, “Compostapalooza” at the largest bin distribution event. After completing a survey, bin purchasers were encouraged to park and go into the building where Compostapalooza was taking place. Individuals were told that the building had exhibits and learning stations, and that they could sign up for a door prize (a stainless-steel countertop collection container) and more. Folks who had not pre-purchased a bin but came just for the event saw the long row of people picking up bins as they entered the event. They were also encouraged to fill out a survey about their experience or lack thereof with composting.

4. To collect data regarding the amount of food waste being diverted from the landfill by folks getting the compost bins, the team designed a data form. The data form was made available online so that those folks who were able, entered their data directly into the computer. Folks without a computer or who preferred not to use one, were provided
with a hard copy form that they used, then either mailed to the team or got picked up by a team member at a future date.

5. To help new composters develop the composting habit, we provided a prompt to remind people to put their food scraps in the compost bin rather than the garbage. We provided a sticker that could be used in the vicinity of the garbage can to direct a person to put the food scrapings in the compost bin instead.

Greetings composting folks....
This little prompt is meant to help you remember to separate your food scraps from your “regular” trash.

It has some Velcro on the back so you can affix it to the place where you are most likely to see it as you are cleaning up after a meal or meal preparation.
Think, backsplash area by the sink or countertop, front of the cupboard under the sink where you may have a trash container or your compost bucket.
YOU WILL KNOW THE BEST SPOT!

Step 4. Pilot test the behavior change campaign:
The pilot test campaign began at the compost bin distribution events, particularly the Earth Day event featuring Compostapalooza. People were very excited about the low-cost compost bins and the ability to start composting. They were very receptive to weighing their food waste and having that data be used to try and bolster support for a county-wide municipal composting program. Several people commented that they were surprised at how much they generated in a week.

The willingness of individuals to submit data was quite surprising. Of the nearly 100 people surveyed, 70.1% agreed to submit food waste weights and 9.1% said maybe and asked that we please follow up with them. Almost all of the 88 people surveyed (> 96%), agreed for us to follow up with them to see how composting was going. Of that amount, 15 people submitted weights, which was a 20% response rate.

The pilot campaign ran from approximately May 1 until September 1, 2022. We developed a Composter of the Week campaign, whereby we worked with our local newspaper and a skilled volunteer photographer to run eight photos of people next to their bins with a statement from them about their composting process as well as a composting factoid. A QR code in the ad took them to a place for more “how to” information and an opportunity to express interest in another bin pre-order program planned for the spring of 2023. This will enable the Recycling & Waste Reduction Education Coordinator to follow on from our efforts and track how many people sign up after seeing their friends and neighbors in the ads. Our funds only allowed us to run the ads in B&W, but now the color versions are going out in other social media channels like Facebook and in other publications that will run them for free. We plan to stay in touch.
with the Education Coordinator over time and see what the response is after a few more months.

The regional “Inspired” magazine also wants to use them in an upcoming Driftless Area guide.

One thing that didn’t work so well in our pilot campaign was our effort to recruit Compost Crew (CC) members (see below) from bin buyers and Compostapalooza attendees. This was another diffusion of innovation and norms strategy for spreading composting interest. CC members could pick from four volunteer options: weigh your compost and report results; host friends and neighbors for a tour of your bin and process; agree to be featured in a “Composter of the Week” ad or offer names and contact info of others they know who are not currently composting and could be contacted about the next bulk bin pre-order opportunity. In exchange for volunteering, CC members would receive a stainless-steel countertop food waste collection container.

Response was mixed, with few volunteers (13), and most agreed to weigh their food waste or be featured in an ad (2). None volunteered to host or gave names of friends. Two of the eight people in the ads came from this group; the rest were recruited by phone call from the master list of bin buyers or were acquaintances of our cohort members.

Step 5. Broad scale implementation and ongoing evaluation:

Our group was unique because we were three different groups that applied for the grant and then ultimately became one group due to geographical location and had different visions for the climate change behavior we wanted to target. One major barrier for progress was the gap in time between the first
compost distribution event and follow up outreach to residents, which caused us to lose momentum. We sent out our first surveys more than a month after distributing compost bins, which made it hard to get a high response rate, despite support from the community for the weighing and reporting of food waste. Another obstacle to project success was the high number of stakeholders that were fully involved in the project throughout the process. This made it difficult to stay organized and focused around a common goal, as we became aware of competing desired outcomes for our project, and had different interpretations of what Community Based Social Marketing was. We think that this was due to a lack of relationship building and assessment amongst stakeholders prior to the project. In hindsight if more time was spent on establishing clear goals and visions before embarking on the project, it may have helped us be more effective.

Looking to the future and the County’s efforts to build householder’s commitment to food waste composting on site, it would be useful to be able to actually measure the effectiveness of the ads and the use of the prompts in homes in terms of inspiring new composters and the consistency of those already doing it over time, to see if investing in these things would be worth the spending of public monies and the organizing of more bulk buy pre-purchase bin distributions. An interesting project would be to see what could be done, using CBSM principles, to garner composting enthusiasm among apartment dwellers and landlords. It is worth mentioning that the Decorah Sustainability Commission initiated a major grant-funded effort to establish city-wide composting of food waste at the end of the summer. Who knows how much our efforts fed into that move? We shall see.
Prairie Rivers of Iowa

Step 1. Audience identification and selecting targeted behavior change:

My objective for this project was to use Community Based Social Marketing (CBSM) to encourage the residents of Ames, Iowa, to develop pollinator friendly yards. The audience and objective of the project evolved from the beginning based on two factors: 1) what I learned was feasible and 2) what I learned was a genuine need.

Audience Identification: An audience that appears to be less targeted for intervention by conservation organizations is the individual homeowner. I began this project intending to focus on Ames, Iowa, homeowners with yards. I broadened the audience to anyone in the Ames area with a yard or patio.

Behavior Change: Originally, the behavior I wanted to encourage was installing pollinator gardens but this morphed into encouraging participants to create a pollinator friendly yard (or patio!). The behavior could be as simple as placing native plants on the deck, or leaving some leaves in the backyard in the fall for overwintering butterflies and bees. While it would be great if everyone installed pollinator gardens, Tallamy helped me see that an intensive effort is good but even small changes such as planting a few native plants every year and eliminating use of pesticides can be helpful. Tallamy presented less of an all-or-nothing option that I thought would be more palatable and readily adopted by a greater number of residents. My focus then became promoting “Pollinator Friendly Yards” and behaviors residents could adopt to contribute to what Tallamy calls a “paradigm shift” in how we view the landscaping around us.

Step 2. Identification of barriers and benefits to engaging in the targeted behavior:

I was able to identify perceived barriers and benefits through observation, engaging in small group discussion, and surveys done in person and using the Prairie Rivers of Iowa newsletter. In the beginning, I wanted to encourage residents of an Ames neighborhood to install pollinator gardens. As I was developing the survey tool, I identified a neighborhood near me, attended a neighborhood association meeting, and tried out some “barriers and benefits” questions on participants. While there was some interest in a pollinator garden project in the neighborhood, it became apparent to me that I would have more success with people who demonstrated an active interest in caring for the environment, so I took a preliminary survey to an event hosted by the Outdoor Alliance at the Ames Public Library where Prairie Rivers of Iowa had a table. These responses helped me to create a survey tool which I included in Prairie Rivers of Iowa newsletters, offering native plant seeds as an incentive to participate. Nineteen people responded to the survey, and between those responses and my reading of Tallamy’s Bringing Nature Home: How You Can Sustain Wildlife with Native Plants, I began to recognize the need to redefine my audience and the behavior I would target (as outlined under Step 1 above).
Barriers
- Don’t know the right seeds or plants and don’t have access to them
- Don’t have time, skill, or desire to do the actual work
- Don’t see the connection between turf/lawn chemicals and the demise of pollinators
- Neighbors may disapprove of planting

Benefits
- Adding beauty to the environment
- Protecting butterflies, bees, etc.
- Sense of community and shared values

Step 3. Develop a strategy:

Two strategies I focused on were asking for a commitment to take specific actions and facilitating social norms and diffusion.

The first tools I created together with Sarah Nizzi, Xerces Society staff member. We made an educational flier titled “Pollinator Friendly Yards: A Seasonal Guide,” (see next page) a two-sided, full-color informational flier that breaks actions into seasons of the year. The actions range from setting your lawn mower to a higher cut length to installing a pollinator garden. To accompany the informational flier, I made a commitment form that people could sign for “which of these actions I commit to.” These tools were disseminated at three events, Butterflies, Bees & Brew -- PRI’s signature fundraiser at Alluvial Brewery in Ames -- Bees and Berries at Jennett Heritage Park and The Berry Patch in Nevada, and Ames EcoFair in Ames.

Many aspects of a Pollinator Friendly Yard are visible to neighbors, such as landscaping with native species, establishing pollinator gardens, and leaving some leaves in the back yard over winter. These homeowner choices create norms of behavior evident to neighbors and passersby. As a way of reinforcing the notion that pollinators need to be considered in the landscape, the Xerces Society has offered yard signs. Sarah Nizzi brought 17 yard signs to the Butterflies, Bees & Brew event in July, and they were quickly taken, demonstrating that this could be a good strategy. In selecting behaviors to identify for modification, McKenzie-Mohr advises they be end-state rather than divisible. End state behaviors are those that are not able to be broken down, whereas divisible behaviors can be. The Pollinator Friendly Yard information sheet provides a list of behaviors homeowners can choose from, according to their ability and comfort level.
The Pollinator Friendly Yard: A Seasonal Guide

Pollinators include insects such as bees, wasps, butterflies, moths, beetles, flies, and vertebrates like birds and bats. In Iowa, the ruby-throated hummingbird is our only vertebrate pollinator. Pollinators contribute to healthy ecosystems, as they are responsible for helping nearly 90% of the world’s flowering plants reproduce. Pollinators provide pollination services for wild plants and many of our crop species that benefit us humans, as well as other wildlife species. Many of the fruits, vegetables, minerals, vitamins, and even the coffee we drink are thanks to a pollinator. Pollination is important for maintaining genetic diversity in plants and ensuring adequate fruit and seed production for crops, wildflowers, shrubs, and trees.

Unfortunately, pollinators are at risk. Twenty-eight percent of North American bumble bees are at risk of extinction. Five out of the fourteen bumble bee species found in Iowa are at-risk species. Nearly a quarter of Iowa’s butterflies are also at risk. Below is a guide to help you figure out what you can do to help these important organisms.

See if you can find anything below to add to what you’re already doing for pollinators.

<table>
<thead>
<tr>
<th>Season</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>• Allow grass to grow taller than 3 inches. Set lawnmower to 3 inches or taller. · Avoid fertilizers and pesticides (herbicides, fungicides, and especially insecticides. This is a giant step in helping protect pollinators). Good Neighbor Iowa has good suggestions for maintaining a healthy lawn without these. · Put native plants in pots on your deck (or apartment balcony).</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>Fall</td>
<td>• If space is available (more than 1/10th of an acre), sow native seeds after the ground freezes in late fall. Follow up with establishment maintenance the next growing season with mowing. · Allow some space for messiness in out-of-the-way places in your yard: leave the leaves and do not cut back grasses or wildflowers until spring to provide overwintering sites for pollinators.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>• Winter is a great time to plan for the coming year. There is plenty of reading material to choose from. · Native plugs are in high demand. If using plugs, be sure to order early!</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td>• Wait to mow and rake until there have been 5 days with temperature above 50 degrees. · Welcome white clover and violets in your lawn. · Leave some bare soil for ground nesting bees. · Trim vegetation to 18-24&quot; high; leave the dead vegetation on the ground to decompose. · Install some native species plants in your yard. Spring is a good time for planting native plugs. Try to choose a variety to ensure blooms in each season. Maintain with hand weeding. · Put up a sign, homemade or purchased, to let your neighbors know your yard is pollinator friendly. · Register your pollinator garden with Blank Park Zoo’s Plant. Grow. Fly. initiative.</td>
</tr>
</tbody>
</table>
Step 4. Pilot test the behavior change campaign:

I wanted to identify an end-state behavior for modification, and as we were beginning the fall season, leaving leaves in yards over the winter seemed like a good choice. To emphasize the landscaping choice of leaving leaves for invertebrate habitat, I worked with local artist Naomi Friend to create a yard sign. A quick internet survey of existing yard signs showed that many are heavy-handed or commanding, e.g. No Mow May, and “Your Lawn Is A WASTELAND. Go Native and Create PARADISE!” McKenzie-Mohr cautions us not to use coercion and only ask for commitments when people appear interested. The sign we created is light-hearted and charming and encourages discussion while tacitly providing the information that leaf litter is used by butterflies, bees, and other invertebrates over the winter. We also created a kids coloring page to give away at events, like the EcoFair, where the sign will be available.

Step 5. Broad scale implementation and ongoing evaluation:

Focusing on the neighborhood associations, do a windshield survey of parks and plantings at the beginning and end of the project. It would be hard to do a survey of all neighborhoods, so survey the neighborhoods that show interest.

I am thinking that these activities in 2022 will be a pilot test to replicate in towns along the Lincoln Highway, which I manage for travel, tourism, and outdoor recreation activities.
Blank Park Zoo

Step 1. Audience identification and selecting targeted behavior change:

Audience Identification: My plan for this project was to adapt our current program Plant.Grow.Fly. into a program that is suitable for grade school aged children. Children would take plant plugs home to grow over the summer, and would be encouraged to take the information home, get their parents involved, and thus connect families to the environment, create a sense of belonging, an attachment to the earth and the pride that comes with growing plants.

Behavior Change: The behavior I was trying to change was the planting of pollinator plants at home through education about pollinators and by providing the plants to be planted.

Step 2. Identification of barriers and benefits to engaging in the targeted behavior:

Barriers
- Lack of information regarding the plants and how to take care of them
- Purchasing the plants
- Lack of knowledge of planting and caring for a pollinator plant
- Lacking motivation to plant and care for pollinator plant
- Space to create a garden
- Reminder to care for plant
- Time and financial constraint

Benefits
- A better connection to and understanding of nature
- The role plants play in climate change and habitat
- Learn how to plant something
- Empowered

Step 3. Develop a strategy:

For the original audience identified, the elementary school students, a strategy was developed with the Zoo’s Education Team. I met with our Education Team that works with various afterschool programs in the Des Moines metro area. Together we developed a curriculum that Blank Park Zoo educators would use to teach children currently enrolled in one of the afterschool programs that we support. At the end of their afterschool program, each child would take a plant home to be planted with support from their guardians. In preparation for
this I sent flyers, materials and consent forms to teachers to be distributed to students and signed by their parents.

I wasn’t having a lot of success getting the forms returned. I created a QR code and developed materials in Spanish in hopes that it would be more effective in reaching our audience. We also broadened the reach to include programs we were holding across the metro. I was able to get a few forms returned that helped me to determine the main barriers to planting pollinator plants.

Once plants were distributed, I wanted to follow-up throughout the summer to see how their plant was doing, provide pollinator information and resources and eventually free tickets to the Zoo upon completion of the project.

**Step 4. Pilot test the behavior change campaign:**

As spring turned into summer it was realized that I was not getting participation at the level necessary for this project to be effective and that the plants were not going to be ready for distribution by the time that school is out for the summer. After some feedback from the cohort, I decided that I needed to make a few changes. I decided to switch my audience to volunteers currently participating in our teen volunteer program, Zoo Crew. The participation form yielded much better results with 30 signing up.

Each participant was given 2-3 plants to be planted at home with their parents and a sticker promoting the program. The sticker was thought to be used as a prompt and a way to encourage them to discuss the program with others. They were emailed information about pollinators, why pollinators are important, and how to best care for their plant. Participants were sent reminders and surveyed two additional times throughout the summer/fall in order to gather information to see if their views on pollinator plants had changed. Participants were also encouraged to table at the Zoo handing out excess plants, stickers, and discussing pollinator plants with Zoo guests. They were given an incentive of two volunteer hours upon completion of the summer.

**Step 5. Broad scale implementation and ongoing evaluation:**

Upon completion of the project, I can see that the project fell into the trap of providing information to guests with the hopes that they will change their behavior. I didn’t have a way to measure public success outside of the participant pool. This is due to many factors but ultimately not having the time and resources available to dedicate to this project were the biggest. I did receive valuable information about barriers to planting pollinator plants and also feedback throughout the project about barriers to actually planting the plants once they had
been picked up (time was the biggest barrier once plants were received). Of the 30 participants that received plants, 14 reported planting them, with only two reporting that the plant died before they were able to get it planted. In the final evaluation eight participants reported looking forward to planting more pollinator plants next year, and eight reported learning more about pollinator plants. When asked about what they learned or enjoyed through the project many reported seeing what pollinators visited their plants and planting an actual plant as a highlight. One participant stated that they felt “good knowing plants have a purpose and we have a part in it.”

The teens and families we were able to reach had a good experience. I really enjoyed seeing the excitement from the teens when picking up their plant and discussing with them how to plant the plant and the importance of pollinators. I think my aha moment came in the form of being able to witness the teens try something new. Many were interested in planting pollinator plants but had never been exposed to it before.

This project has lots of areas for improvement. I think working with a population under the age of 18 adds an unexpected level of difficulty. It was really challenging to connect with the after-school programs and then in turn their parents. Once I shifted the group that I was focusing on, I had a lot more success. I think upfront planning for changes would have prepared me better. Summer is a busy time at the Zoo and I was limited in how much additional planning I could do in June.

I really enjoyed the opportunity to take the CBSM training and learn about the process. The Zoo does a lot of passive educational programming but we have been shifting over the past few years to make sure that each program has a “take action” element. This empowers the public and gives them hope as opposed to just hearing about all the negative things that are happening. This training has given me the tools needed to make sure that we are focusing up front on the behavior change that we want to see and evaluating the program for success. This was a pretty intense training and that made it challenging to implement each step of the process in such a short time frame. I am currently using pieces of this training and as we move forward with larger projects, plan to continue to use it. I would definitely recommend the CBSM process to others. When creating programming on limited budgets, an in-depth planning process is often skipped due to time and budget constraints. By utilizing the CBSM process you will save both time and money by making sure that your proposed program is as effective as possible.
Closing Comments from ICEC ExCom

Any conservation educator will tell you that they do this work because they care about helping others connect with and care for Iowa’s natural resources. Unspoken in that statement is the hope that their work will “mean something” in the long run, that facilitating such connections to our natural world will lead to increased protection of that natural world. As this project has demonstrated, ensuring that environmental and conservation education efforts are effective at producing behavior change is more challenging than it seems. We hope that the experiences of our participants will encourage educators of all forms to reflect carefully before, during, and after their own programs, lessons, or events to find ways that ensure more concrete, lasting, and meaningful change in participant behavior.

While re-considering the purpose, structure, and nature of environmental education efforts can be daunting and overwhelming, we also find signs of great hope in the participant case studies: that significant understanding can come from clear, two-way communication with your audience; that reduction of barriers can result in measurable increases in behavior adoption; and that once you begin re-thinking how you “do” conservation education, it can be hard to go back.

We want to thank both our project participants and the REAP-CEP Board for supporting this project. We look forward to sharing the results of this project with Iowa’s network of environmental educators.

Learn more about Community-Based Social Marketing at https://cbsm.com/.
INTRODUCTION: FOSTERING SUSTAINABLE BEHAVIOR

The cornerstone of sustainability is behavior change. Sustainability requires that we tackle diverse goals, such as increasing water and energy efficiency, protecting water quality and biodiversity, reducing waste, and altering transportation choices. If we are to hasten the transition to a sustainable future we must encourage the adoption of a wide array of behaviors that support these goals. To date, most initiatives to foster sustainable behavior have relied primarily upon large-scale information campaigns that utilize education and/or advertising to encourage the adoption of sustainable actions. While education and advertising can be effective in creating awareness and in changing attitudes, numerous studies document that behavior change rarely occurs as a result of simply providing information as information alone cannot address the diversity of barriers that exist for most sustainable behaviors (Environment Canada, 2006; Geller, 1981; Geller, Erickson, & Buttram, 1983; Jordan, Hungerford & Tomena, 1986; Midden, 1983; Schultz, 2002; Tedeschi, Cann & Siegfried, 1982). In contrast, community-based social marketing has been demonstrated to be an attractive alternative to information-intensive campaigns for the design of programs to foster sustainable behavior (McKenzie-Mohr & Smith, 1999; McKenzie-Mohr, 2010). Thousands of programs are now utilizing this methodology and often with remarkable results. To learn more about community-based social marketing read Fostering sustainable behavior: An introduction to community-based social marketing (McKenzie-Mohr, 2011). Also visit the community-based social marketing website (cbsm.com) where you can find articles, case studies and discussion forums related to fostering sustainable behavior.

Community-based social marketing is based upon research in the social sciences that demonstrates that behavior change is often most effectively achieved through initiatives delivered at the community level that focus on removing barriers to an activity while simultaneously enhancing the activity’s benefits. Community-based social marketing merges knowledge from the social sciences with knowledge from the field of social marketing (see, for example, Andreasen, 2006; Kotler and Lee, 2008). Social marketing has been utilized for several decades primarily to promote behavioral changes that improve public health and prevent injuries. Community-based social marketing borrows from social marketing an emphasis on understanding what impedes and motivates a target audience to act as well as the importance of piloting programs prior to their broad scale implementation. From the social sciences, and particularly social and environmental psychology, community-based social marketing inherits a variety of behavior-change “tools” that can be utilized to foster changes in behavior.

1 This overview of community-based social marketing first appeared as a “Quick Reference” addendum in the second edition of Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing. A revised version appeared in the International Journal of Sustainability (McKenzie-Mohr, 2008). It was further updated for the book, Social Marketing to Protect the Environment (Sage, 2011). © Doug McKenzie-Mohr
Community-based social marketing involves five steps:

1. Selecting which behavior to target;

2. Identifying the barriers and benefits to the selected behavior;

3. Developing a strategy that reduces barriers to the behavior to be promoted, while simultaneously increasing the behavior’s perceived benefits;

4. Piloting the strategy; and

5. Broad scale implementation and ongoing evaluation once the strategy has been broadly implemented.

6. In this overview of community-based social marketing, each of these steps will be described.

STEP 1: SELECTING BEHAVIORS

Prior to selecting which behavior(s) to promote, consider first which audiences are relevant to target. For example, imagine that a program is being developed to promote energy efficiency in order to reduce CO2 emissions. To gauge which audience should be targeted, program development should begin by comparing energy use by sector. In Canada, energy use differs markedly by sector, with industrial, transportation and residential sectors responsible for the greatest energy use (Natural Resources Canada, 2006). Of these, further imagine that the residential sector has been selected as it provides the opportunity to address both residential energy use and transportation choices (in this example, however, we will focus only on residential energy use).

It is nearly always the case that organizations working to promote sustainability have a plethora of behaviors from which to choose, and residential energy use is no different. For example, in delivering a program to enhance the energy efficiency of residential homes, we could promote the installation of low-flow showerheads or programmable thermostats, the addition of insulation to an attic, or the turning off of lights. Indeed, in a program in Queensland, Australia over 200 actions were identified that a homeowner can take to increase residential energy efficiency (Hargroves, Desha, & McKenzie-Mohr, 2009). Other areas, such as waste reduction, watershed protection, biodiversity protection and water efficiency have similarly long lists of potential behaviors that could be fostered. Clearly, not all behaviors are of equal importance so how do we determine which to promote? Begin by assessing how your issue (e.g., landfill waste, water, biodiversity loss, air pollution) is affected by a particular sector. In the case of residential energy use, this would involve beginning by exploring how energy is utilized within a home.

As shown in the chart below, space heating makes up the majority of Canadian residential energy use (60%), while space cooling contributes only 2%. Clearly, far larger reductions in residential energy use, and associated CO2 emissions, can be gained by focusing on space heating rather than cooling. The chart also reveals that water heating contributes 18% of energy use, which is intriguing as numerous energy efficiency campaigns in Canada focus on space heating and the purchase of energy efficient appliances (the third most important category at 10%), while largely ignoring water heating.

This type of analysis provides useful guidance regarding which behaviors are potential candidates for programs you might deliver. Based on the above chart, we should gravitate toward behaviors related to reducing energy use for space heating, water heating and major appliances. How do we select behaviors within each of these areas? In creating our list of behaviors we should be guided by two criteria: no behavior should be divisible; and each behavior should be end-state. As the name suggests, divisible behaviors are those actions that can be divided further into more specific behaviors. For example, adding additional insulation to a home is a divisible behavior. A homeowner might add insulation to their attic, their basement or to the external shell of their dwelling. Each of these behaviors is distinct and will have their own set of barriers and benefits. Since the barriers to sustainable behaviors are often behavior specific, it is critical to begin by listing behaviors that are non-divisible. Failing to do so will leave a program planner with categories of behaviors that often differ dramatically in their associated barriers and benefits.

In addition to ensuring that a behavior is not divisible, we also want to ensure that it is end-state. For instance, our principal interest is not in having people purchase high efficiency showerheads, but rather in having them installed. In contrast, in the case of programmable thermostats, our principal interest is not in having homeowners install a setback thermostat, but rather in them programming it. Too frequently, initiatives to
promote sustainable behavior focus on prior behaviors and never achieve the end-state behavioral change that matters. In determining whether a behavior is end-state, simply ask: “Am I hoping that someone will engage in this action as precursor to the behavior I wish to promote?” If the answer is “yes,” you have not selected an end-state behavior. It is important to not list actions that precede end-state behaviors as there is no guarantee that if someone engages in the activity that they will actually engage in the end-state behavior you wish to promote. Finally, in creating a list of non-divisible end-state behaviors ensure that no item on the list is a strategy. For instance, having a household participate in an energy audit is not an end-state behavior, but rather a strategy that might lead to an end-state behavior, such as installing additional insulation in an attic. It is not until we have determined the barriers and benefits to a behavior that we should begin considering strategies to facilitate the adoption of that behavior.

Once we have created a list of non-divisible end-state behaviors we will want to compare these behaviors to determine which are worth promoting. To compare them we will need three types of information for each behavior: A) How impactful is the behavior; B) What level of penetration has the behavior already achieved (e.g., How many people are already doing the behavior); and C) How probable is that those who are not yet doing the behavior will adopt it?

Determining Impact: Two options exist for identifying the impact of various behaviors. The first, and preferable option, is to collect rigorous data on the impact that a variety of behaviors will have upon your issue. In the case of residential energy efficiency, we would want to scrutinize how various behaviors compare regarding energy use. That is, we would collect information on how behaviors, such as adding insulation to an attic, installing a high efficiency showerhead, and turning down the temperature on the hot water heater, compare to one another related to energy use. Frequently, this information is available from federal and state/provincial agencies. When such data does not exist, we will need to employ the second option, which involves surveying individuals who have technical expertise in the area of interest. It is suggested that these experts be asked to rate each behavior on a scale of 0 to 4, where “0” equals “no impact” and “4” equals “high impact.” Ratings from experts should be sought independently and then averaged. That is, do not bring together a group of experts, have them discuss residential energy use associated with the list of behaviors and then have them rate the actions. Independent ratings have superior psychometric properties and are less prone to errors that can occur with group-based ratings (McKenzie-Mohr, 2010).

Determining Penetration: Two options also exist for determining penetration. The first, and most reliable, is to unobtrusively observe the target audience to gauge their present level of engagement in various behaviors. This approach works well for such behaviors as curbside recycling, bicycling and carpooling, which are easily observed, but is not useful for behaviors that are not easily observed, such as the installation of high efficiency showerheads. When behaviors are not easily observed, utilize the second option which involves surveying the target audience and asking them how often, if at all, they engage in each of the behaviors on the list. If the behavior is a one-time action, such as installing a water efficient showerhead, simply ask if they have done the action. In contrast, if the behavior is repetitive, such as washing clothes in cold water, ask what percentage of the time they engage in the action. As with ratings of probability, these numbers are likely to be unreliable. As a consequence, it is not the absolute numbers that we should attend to, but rather the range of values. For example, if 50% of households indicate that they have installed high efficiency showerheads and 20% note that they have insulated their hot water heater, it is not the absolute numbers (50% versus 20%) but rather the range between these numbers that we should attend to. That is, we can’t say with confidence that 50% of households have installed high efficiency showerheads as there is a tendency for positive environmental behaviors to be over-reported, but we can say with confidence that high efficiency showerheads are more likely to have been installed than hot water heater insulation. Finally, remember that we are looking for behaviors that have low penetration associated with them. That is, we are looking for those behaviors that fewer people have engaged in as they provide more potential for change.

Determining Probability: Two options also exist for determining probability. The most rigorous and desirable option is to look for carefully evaluated programs that have been delivered to facilitate each of the behaviors that on your list. It is important to note several issues regarding such programs. First, the generalizability of the programs needs to be considered. Only those programs that closely match the circumstances and context under which we would be delivering a program should be considered. For instance, water shortages in Australia are a more pressing problem, and have received far more national attention, than water shortages have in Canada. Further, information regarding the per capita costs to deliver each program should be obtained so that return on investment (ROI) for each program can be calculated.

Collecting detailed case study information for a long list of behaviors is cost and time prohibitive. If the list of behaviors is large, we may wish to first survey the target audience regarding the probability of them engaging in each behavior (this survey would also include the penetration ratings described above). In the case of residential energy efficiency, householders
should be asked to rate the probability of engaging in each of the behaviors on a scale of 0 to 4, where “0” equals “no likelihood” and “4” equals “high likelihood.” You will need to provide some context in order for the responses to be meaningful (e.g., What is the likelihood that you would install a high efficiency showerhead if you had to purchase and install the showerhead yourself? versus What is the likelihood that you would install a high efficiency showerhead if we provided you with a showerhead and you had to install it yourself?). Note that as with ratings for penetrations, values obtained from this survey will not be representative of the actual likelihood of householders engaging in these behaviors, as there is a strong tendency for respondents to “inflate” the likelihood of engaging in a behavior. Nonetheless, the range of the values obtained is a good indicator of the relative likelihood of a target audience engaging in these behaviors. When the list of non-divisible end-state behaviors is large, it is worthwhile to begin with this survey in order to cull the list down to a more manageable number for which case study information (e.g., option 1) can be collected. Note that we can often also substantially reduce the length of the list by focusing on those categories that will lead to the greatest impacts. In the case of reducing residential energy use in Canada that would involve behaviors related to space heating, water heating and major appliances.

Use a table such as the one below to compare your list of behaviors. Ideally, we are looking for those behaviors that have high impact and probability, but low levels of penetration. We can compare various behaviors by multiplying the impact that a behavior has, by the current level of penetration, by the probability of a target audience engaging in the behavior to obtain a behavior’s weight (we are looking for those behaviors that have the largest weights). Since we are looking for behaviors that presently have low levels of adoption, we need to invert penetration values before multiplying the three numbers. To do this, simply subtract the present level of adoption from one (e.g., if 60% of households have installed high efficiency showerheads subtract .60 from 1 to obtain the number of people (40%) who we could realistically encourage to install high efficiency showerheads. The following table provides some fictitious values to demonstrate how two residential energy efficiency behaviors might compare to one another. As is shown in the table, even though the probability of installing compact fluorescent light bulbs (CFLs) is significantly higher than the probability of installing high efficiency showerheads, the higher impact and lower level of penetration for showerheads makes their promotion more worthwhile than that of CFLs.

In determining which behaviors to select for your program, you should gravitate toward two types of behaviors. If you are interested in encouraging only one action, then you will want to choose the behavior that has the largest weight as it represents the best interaction between impact, penetration and probability. In contrast, if you are interested in encouraging a variety of actions over time, you may wish to select a behavior that is less impactful, but has a very high probability of your target audience engaging in the action and for which there are currently low levels of adoption. In well-designed programs, such catalytic behaviors may be used as stepping-stones to more substantive actions being taken at a later time.

In summary, begin by determining the relative importance of various sectors for the issue of concern (e.g., watershed contamination, airshed pollutants, water use, etc.). Second, for the most important sectors determine how they contribute to your issue (e.g., What percentage of residential water use is for toilets, 

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**Formula:** Weight = Impact \( \times (1 – \text{Penetration}) \times \text{Probability} \)

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>IMPACT (KG/PER HOUSEHOLD/YEAR)</th>
<th>PROBABILITY (0 TO 4)</th>
<th>PENETRATION (1 - VALUE)</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Green Power</td>
<td>8700</td>
<td>2.15</td>
<td>v.85</td>
<td>15,899</td>
</tr>
<tr>
<td>Install 3 High Efficiency Shower heads</td>
<td>650</td>
<td>2.5</td>
<td>.35</td>
<td>569</td>
</tr>
<tr>
<td>Wash Clothes in Cold Water</td>
<td>450</td>
<td>3.09</td>
<td>.63</td>
<td>876</td>
</tr>
</tbody>
</table>

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showering, washing dishes, washing clothes, watering lawns and gardens?). Third, determine the behaviors that are associated with each of these areas (e.g., reducing water used for showering could involve taking shorter showers or installing high efficiency showerheads). Fourth, compare these behaviors regarding impacts, penetration and probability to determine the most important behaviors to target in your program. This process can be used for a wide diversity of environmental issues and will significantly enhance your confidence that you have selected the most appropriate behaviors to target.

STEP 2: IDENTIFYING BARRIERS AND BENEFITS

Research indicates that each form of sustainable behavior has its own set of perceived barriers and benefits (Oskamp et al., 1991; McKenzie-Mohr et al., 1995; Tracy, 1983-84). For example, the factors that impede individuals from composting are quite different from those that preclude more sustainable forms of transportation. Even with apparently closely associated behaviors such as recycling, composting and source reduction, different sets of barriers and benefits have been found to be important. Further, barriers and benefits also differ by groupings of individuals or “segments.” Identifying these segments occurs during both the first and second steps of community-based social marketing. When selecting behaviors, determining which sectors are most important (e.g. residential, commercial, etc.) broadly defines target audiences. During the second step, uncovering how barriers and benefits differ for different segments within a sector will allow you to more effectively target different audiences. For instance, low-income households will be less able to afford the purchase of a high efficiency showerhead than households that are more affluent. Consequently, a strategy to encourage the installation of high-efficiency showerheads for low-income households would differ from a strategy that was promoting the same behavior for more affluent households.

Barriers to a sustainable behavior may be internal to an individual, such as one’s lack of knowledge, non-supportive attitudes or an absence of motivation (Stern & Oskamp, 1987). On the other hand, barriers may reside outside the individual, as in changes that need to be made in order for the behavior to be more convenient (e.g., providing curbside organic collection) or affordable (e.g., subsidizing public transit or compost units). Multiple barriers may exist for any form of sustainable behavior. As a result, once we have selected which behavior has the best combination of impact, penetration and probability, we next need to identify its barriers and benefits.

Uncovering barriers and benefits involves four steps. Begin by reviewing relevant articles and reports. Next, obtain qualitative information through observations and focus groups; methodologies that are intended to help you identify “a list” of potential barriers and benefits. Finally, conduct a survey with a random sample of your target audience. The use of several different methodologies to uncover and rank barriers and benefits is called triangulation. Triangulation allows the weaknesses of one approach (e.g., focus groups have poor generalizability due to the small number of participants and low participation rates) to be addressed by the strength of another approach (e.g., survey results can be more easily generalized to your target audience, but don’t often provide the rich detail that focus groups do).

LITERATURE REVIEW: In conducting the literature review consult four sources: 1) Trade magazines and newsletters; 2) Reports, 3) Academic articles, and 4) Authors of reports and articles that you found particularly useful.

OBSERVATIONS: Observational studies of specific behaviors are another valuable tool. By directly observing people we can more easily identify skill deficits, and sequences and incentives that are already at work to reward existing behaviors. Observational studies help reduce the problems of self-report data and get the researcher much closer to the community and the behavior. Observation is also useful in evaluating behavioral compliance, particularly for behaviors where people are being asked to learn and maintain new skills.

FOCUS GROUPS: The literature review and observations will assist you in identifying issues to further explore with your target audience through focus groups and a survey. Limit the size of each focus groups to 6 to 8 people and divide participants into different groups based on whether they have previously engaged in the behavior (e.g., installed a programmable thermostat) or not. Further, make it easy for people to participate by providing services such as childcare and transportation. Come to the focus groups with a set of clearly defined questions that have been informed by the literature review and observations. The facilitator of the focus groups must clearly steer the discussion and ensure that all participants feel comfortable in participating. Have an assistant who takes notes during the group. Don’t provide information about your program prior to the focus groups, as this information will influence the information received from participants. When the focus groups are completed, tabulate the responses and identify barriers and benefits that are mentioned by significant numbers of participants (see the Focus Group Kit by Morgan and Krueger, 1998, for further information).

Focus groups are useful in obtaining in-depth information but are limited by the small number of

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participants and the influence that the group itself has upon what each member feels comfortable saying. Surveys overcome these two limitations.

**SURVEYS:** Conducting a survey consists of seven steps. First, begin by clarifying the objective of the survey. Do this by creating a survey objective statement, which indicates the purpose of the survey. A good question to help facilitate this is to ask “What decisions am I trying to make that I need this research to help answer?” This statement can be used to ensure the support of colleagues before proceeding. This statement can also act as a reference when later deciding upon the relevance of potential survey items. Second, list the items that are to be measured. Note that at this point that we are not concerned with writing the questions, but rather with identifying the “themes” or “topics” that will be covered in the questionnaire. Third, have someone skilled in survey development write the survey. Fourth, when the survey is completed, take the time to pilot it with 10 to 15 people. Piloting the survey allows you to scrutinize the wording of the questions and the length of the survey. Don’t include the data obtained from the pilot with the data obtained from the actual survey. Fifth, select the sample. Surveys are most useful when the respondents are randomly selected from the target audience. A sample has been randomly selected when each adult in the target audience has an equal chance of being asked to participate. When this criterion is met, we can generalize results back to the whole community with greater confidence. As with the focus groups, survey samples should be comprised of two sub-groups. Those who have engaged in the behavior already and those who have not yet done so, sometimes referred to as a “doer versus nondoer” analysis. Sixth, conduct the survey. Strive to conduct the survey as quickly as possible to reduce the likelihood of an event in the real world impacting upon your survey results (e.g. BP and the Gulf of Mexico). Seventh, analyze the data. Unless you have someone on staff with a statistical background, you will want to have the survey data analyzed for you. In having the data analyzed, ask for a thorough description of those individuals who are engaging in the activity, as well as for those that are not (descriptive statistics). Also, ask for the factors that distinguish people who are doing the behavior, such as composting, from those who are not, and the relative importance of these factors (multivariate statistics).

Significant pressures, such as time and staffing constraints, and increased project costs, often result in this second step, the identification of barriers and benefits, being skipped. While these pressures are real and important, failure to identify barriers will often result in a program that either has a diminished impact or no impact at all. The identification of barriers and benefits is an essential step in the development of a sound community-based social marketing strategy. By conducting a literature review, focus groups, observations and a survey, you will be well positioned to develop an effective strategy.

**STEP 3: DEVELOPING A STRATEGY**

Community-based social marketing involves developing a strategy that addresses both the behavior we wish to promote and the behavior we wish to discourage. For the behavior we wish to promote, we want to reduce its barriers while simultaneously increasing its benefits. In contrast, we wish to do the opposite for the behavior we wish to discourage – we wish to increase its barriers while also reducing its benefits (the introduction of car pooling lanes both increases barriers to single occupant driving and reduces its benefits). A variety of behavior change “tools” can assist with this task. Additional information on these tools can be found in, *Fostering sustainable behavior: An introduction to community-based social marketing* 5th Edition (McKenzie-Mohr, 2011).

**COMMITMENT:** In a wide variety of settings, people who have initially agreed to a small request, such as to wear a button saying they support the purchase of products with recycled-content, have subsequently been found to be far more likely to agree to a larger request, such as actually purchasing these products (McKenzie-Mohr, 2010).

Why does seeking commitment to an initial small request work? There are likely two reasons (Cialdini, 1993). First, when people go along with an initial request, it often alters the way they perceive themselves. That is, they come to see themselves, for example, as the type of person who believes it is important to purchase products that have recycled content. Second, we have a strong desire to be seen as consistent by others. Indeed, our society emphasizes consistency and people who are inconsistent are often viewed negatively. As a result, if we agree to wear a button supporting the purchase of recycled-content products, it would be inconsistent not to purchase these products when we shop.

Commitment has been utilized as a behavior change tool in a variety of studies with often-dramatic results. In considering using commitment, follow these guidelines:

- Emphasize public over written or verbal commitments. Public commitments (e.g., having a signs placed on lawns indicating that the lawn is pesticide free) have been found to be more effective in bringing about long-term behavioral changes (Pallak, Cook & Sullivan, 1980).
- Seek commitments in groups. If possible, seek commitments from groups of people that are highly cohesive, such as a church group. The close ties of these individuals, coupled with the importance of being consistent, make it more likely that people will follow through with their commitment (Wang & Katzev, 1990).
- Actively involve the person. When people are actively

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involved, such as being asked to peer into an attic to view the amount of insulation or hold a container to measure the flow-rate of a shower, they are more likely to see themselves as committed to the activity (Gonzales, Aronson, & Costanzo, 1988).

Use existing points of contact to obtain commitments. Wherever natural contact occurs, look for opportunities to seek a commitment. For example, when people purchase paint ask them to sign a commitment that they will dispose of any leftover paint properly, or, better yet, take it to a paint exchange if one exists.

Help people to view themselves as environmentally concerned. We can help people to see themselves as environmentally concerned, and therefore more committed to other sustainable activities, by commenting on their past actions (McKenzie-Mohr, 2010). For example, when someone comes to pick up a composter, ask if they recycle. If they do, note that their recycling is evidence of their concern for the environment and that beginning composting is a natural way to reduce waste even more.

Don’t use coercion. In order for this behavior change tool to be effective, the commitment has to be freely volunteered. That is, only ask for commitments when people appear to be interested in an activity (McKenzie-Mohr, 2011).

PROMPTS: Numerous behaviors that support sustainability are susceptible to the most human of traits: forgetting. People have to remember to turn off lights, check the air pressure in car tires, turn off the engine when waiting to pick someone up, turn down the thermostat, select items that have recycled-content, etc. Fortunately, prompts can be very effective in reminding us to perform these activities. Prompts are visual or auditory aids that remind us to carry out an activity that we might otherwise forget. In using prompts you will want to ensure that you follow these guidelines (McKenzie-Mohr, 2010):

Make the prompt noticeable. In order for a prompt to be effective it has to first be noticed. Make sure that your prompt is vivid (a bright color) and eye-catching.

Make the prompt self-explanatory. All the information that is needed for someone to take the appropriate action should be conveyed in the prompt. For example, if we were using a prompt to increase the likelihood that people with odd numbered street addresses would only water their lawns on odd numbered calendar days (and vice versa), the prompt that we attach to an outside faucet could read (water your lawn only on odd numbered calendar days).

Present the prompt in as close proximity as is possible to where the action is to be taken. If we wanted to encourage people to turn off lights upon leaving a room, for example, we would affix the prompt beside or directly on the light switch plate.

Use prompts to encourage people to engage in positive behaviors. It is important, when possible, to encourage positive behaviors. If you want people to purchase environmentally friendly products when shopping, place prompts throughout a store that bring attention to those items rather than bringing attention to items that should be avoided. Not only is the encouragement of positive behaviors more likely to be supported by retail outlets (few would let negative prompts be posted), but positive behaviors also make people feel good about their actions, which increases the likelihood that the actions will be carried out in the future.

NORMS: To date, few programs have emphasized the development of community norms, which support people engaging in sustainable behavior. This lack of attention to norms is unfortunate given the impact they can have upon behavior. Norms guide how we should behave (McKenzie-Mohr, 2011). If we observe others acting unsustainably, such as using water inefficiently, we are more likely to act similarly. In contrast, if we observe members of our community acting sustainably we are more likely to do the same. When considering including norms in programs you develop, keep the following guidelines in mind (McKenzie-Mohr, 2010):

Make the Norm Visible. For norms to influence the behavior of others they have to be aware of the norm. The very act of taking recyclables to the curbside, for instance, communicates a community norm about the importance of recycling. Most sustainable activities, however, do not have the community visibility that recycling has, and norms that support the activity, therefore, have to be promoted more actively. Find ways to publicize involvement in sustainable activities, such as providing ongoing community feedback on the amount of water that has been saved by homes using water efficiently.

Use Personal Contact to Reinforce Norms. Research suggests that internalization of norms is more likely to occur as a result of personal contact. As a consequence, use personal contact as an opportunity to reinforce norms that support sustainable behavior.

SOCIAL DIFFUSION: New behaviors are frequently adopted because friends, colleagues or family members have adopted the behavior – a process known as social diffusion (Rogers, 2003). Social diffusion has been found to be relevant to the adoption of a wide variety of sustainable actions, including, for instance, the installation or programmable thermostats and solar hot water heaters (Darley & Beniger, 1981). There are two ways to facilitate the adoption of new behaviors through social diffusion:

Make Commitments Public and Durable: Many of the sustainable actions that we would like people to adopt have no visibility in the community (McKenzie-Mohr, 2010).
Mohr, 2010). For example, if a household installs a high efficiency showerhead no one in the community is aware that this behavior has taken place. Contrast the installation of high efficiency showerheads with curbside recycling, in which the placement of a container at the curbside clearly communicates engagement in the behavior. An effective way to increase the visibility of invisible behaviors is to ask for public commitments, such as the placement of a sticker on the side of recycling container indicating that a household has installed a high efficiency showerhead. Whenever possible, these public commitments should be durable. That is, favor attaching a sticker to the side of a recycling container versus asking someone to put up a sign on their lawn. The sign is likely to last only a few weeks while the sticker might last for several years. Public and durable commitments enhance social diffusion by encourage conversations regarding the behavior.

Recruit Well Known and Well Respected People. Individuals who are well known and well respected have an inordinate impact upon the adoption of new behaviors. For example, well known and well-respected farmers are more likely to affect the practices of other farmers than those who are less well known and less respected (Rogers, 2003). To identify these individuals, simple ask a number of members of your target audience who is well known and well respected.

SERVICES OR PRODUCTS: Effective programs often involve providing our target audience with a service (household energy audit) or a new product (high efficiency showerhead). Note that barriers exist to the provision of services (e.g., cost of an audit, when they are available) and products (e.g., cost to purchase the product, knowledge of product, availability of product) that a program needs to address if it is to be effective. The delivery of a new service (curbside collection of recyclables) and the provision of a new product (curbside recycling cart) can often dramatically affect the barriers to a behavior and encourage its rapid adoption.

COMMUNICATION: Most programs to foster sustainable behavior include a communication component. The impact of communications upon behavior can vary dramatically based upon how the communications are developed. To develop effective communications, consider the following elements:

Use captivating information. All persuasion depends upon capturing attention (Stern & Aronson, 1984). Without attention, persuasion is impossible. Communications can be made more effective by ensuring that they are vivid, personal and concrete (Gonzales, Aronson, & Costanzo, 1988).

Know your audience. All communications should be developed with your audience in mind. Before developing communications, you should have a firm sense of the attitudes, beliefs and behavior of your intended audience(s).

Use a credible source. The individual or organization that presents your message can have a dramatic impact upon how it is received and subsequent behavior (Eagly & Chaiken,1975). Ensure that whoever delivers your message is seen as credible. Individuals or organizations tend to be viewed as credible when they have expertise, or are seen as trustworthy.

Frame your message. How you present or “frame” your activity can impact upon the likelihood that people will engage in it (Davis, 1995). In general, you should emphasize the losses that occur as a result of inaction (e.g., from not insulating) rather than the savings that occur from action (e.g. insulating).

Carefully consider threatening messages. While environmental issues lend themselves easily to the use of threatening messages, do so with caution. While the public needs to understand the implications of such serious issues as global warming, toxic waste, or ozone depletion, they also need to be told what positive action they can take if threatening information is to be useful. In short, whenever you contemplate using a threatening message consider whether you can at the same time present concrete actions that individuals can take to reduce the threat (Lazarus & Folkman, 1984).

Make your message easy to remember. All sustainable activities depend upon memory. People have to remember what to do, when to do it, and how to do it (Heckler, 1994). Use prompts to assist people in remembering. Also develop messages that are clear and specific.

Provide personal or community goals. Providing targets for a household or community to achieve can help to provide motivation for sustainable behavior (Folz, 1991).

Emphasize personal contact. Research on persuasion documents that the major influence upon our attitudes and behavior is the people we interact with rather than the media (Aronson & Gonzales, 1990). Create opportunities for people to talk to one another through programs such as block leaders, in which individuals from a neighborhood who already have experience in a sustainable activity, such as composting, speak to others who live close by. Through personal contact, provide opportunities for people to model sustainable behavior for one another, such as installing weather-stripping, and facilitate ongoing discussions in your community to allow social diffusion of new behaviors to occur.

Provide feedback. Remember to provide members of your community with feedback about the effectiveness of their actions. Feedback has been found to have a positive impact upon the adoption and maintenance of sustainable behaviors.
**INCENTIVES/DISINCENTIVES:** Incentives have been shown to have a substantial impact on a variety of sustainable activities including waste reduction, energy efficiency and transportation. They are particularly useful when motivation to engage in action is low or people are not doing the activity as effectively as they could. Gardner and Stern (1996) suggest the following guidelines in using incentives/disincentives:

- Closely pair the incentive and the behavior. The closer in time the incentive is presented to the behavior it is meant to affect, the more likely that it will be effective.
- Use incentives to reward positive behavior. Where possible, use incentives to reward people for taking positive actions, such as returning beverage containers, rather than fine them for engaging in negative actions, such as littering.
- Make the incentive visible. For incentives to be effective, you need to draw people’s attention to them. Consider using vivid techniques to make incentives noticeable. Also, incentives can be made more visible by closely associating them with the behavior they are meant to affect, such as having people attach tags to their garbage bags in order to have them picked up in a user pay garbage disposal program.
- Be cautious about removing incentives. Incentives can be powerful levers to motivate behavior, but they can also undermine internal motivations that people have for engaging in an activity. If you plan to use an incentive to encourage a sustainable behavior, remember that if you elect to remove the incentive at a later time the level of motivation that existed prior to the introduction of the incentive may no longer exist.
- Prepare for people’s attempts to avoid the incentive. Incentives such as separate laneways for multiple occupant vehicles can have a significant impact upon behavior. However, because these incentives powerfully reward one behavior (car pooling) and strongly punish another (single occupant driving), there is strong motivation to try to “beat” the incentive and not engage in the desired sustainable behavior (e.g., Having a mannequin as a passenger rather than a real person in order to drive in carpooling lanes). In preparing incentives, give careful consideration to how people may try to avoid the incentive and plan accordingly.
- Carefully consider the size of the incentive. In arriving at what size of incentive to use, study the experience of other communities in applying incentives to motivate the same behavior.
- Use non-monetary incentives. While most incentives are monetary, nonmonetary incentives, such as social approval, can also exert a strong influence upon behavior. Consider ways that social approval and other non-monetary incentives can be integrated into your program.

**CONVENIENCE:** The behavior change strategies presented above can have a significant influence upon the adoption and maintenance of sustainable behaviors. However, they will be ineffectual if significant external barriers exist to the behavior you wish to promote (McKenzie-Mohr, 2011). It is important to identify these external barriers and plan for how you will overcome them. Study other communities to see how they have managed to overcome similar obstacles. For example, some communities now provide curbside pickup of used motor oil, dramatically enhancing the convenience of proper disposal. Assess whether you have the resources to overcome the external barriers you identify. If you do not, carefully consider whether you wish to implement a program until you are able to address these barriers effectively.

**STEP 4: CONDUCTING A PILOT**

As noted previously, the design of a community-based social marketing strategy begins with carefully selecting a behavior, identifying a target audience, and then identifying the perceived barriers and benefits to the activity you wish to promote. Knowledge of these barriers and benefits is particularly important. Without this information it is impossible to design an effective program. In identifying barriers, be sure to conduct statistical analysis that allows you to prioritize the barriers and benefits. Knowing their relative importance allows limited resources to be used to their greatest benefit. Once you have identified and prioritized the barriers and benefits of your target audience, select behavior change tools that match the barriers you are trying to overcome and create or highlight perceived benefits. When you have arrived at a design for your program, obtain feedback on your plans from several focus groups. Look for recurring themes in their comments as they may indicate areas in which your planned program needs to be redesigned.

Once you are confident that you have a program that should affect behavior, pilot the program. The most common pilot involves collecting baseline measurements, implementing a strategy, and then collecting follow-up measurements. While this is the most common form of pilot, avoid using this method. Imagine that we are developing a program to encourage bus ridership. We collect data on the number of people riding the bus prior to implementing our strategy and then again afterward and notice a marked increase. However, at the very same time that we implemented our strategy the cost of gasoline rose sharply. As a consequence, we do not know whether it was our strategy, the cost of gasoline, or a combination of the
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CREATING A BROAD SCALE IMPLEMENTATION

When a pilot is effective at changing behavior we are ready to implement the strategy across the community. Evaluate community-wide implementation by obtaining information on baseline involvement in the activity prior to implementation, and at several points afterward. This information can be used to retool a strategy as well as to provide a basis for continued funding and provision of important feedback to the community.

CONCLUSION

The process of community-based social marketing (carefully selecting behaviors, identifying the barriers and benefits for the selected activity, developing strategies to target these barriers and benefits, pilot testing the strategy, and finally broadly implementing it once it has been shown to be effective) is transforming the way that environmental behavioral change programs are delivered.

REFERENCES


REFERENCES (cont.)


