NON-WIRES ALTERNATIVES AS A PATH TO LOCAL CLEAN ENERGY: APPENDIX B

Community Based Social Marketing Lessons from Energy Efficiency Case Studies

Center for Energy and Environment

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BACKGROUND

Energy efficiency in homes or businesses, including demand management, is usually behavior based — the business or homeowner must make the choice to adopt efficient behaviors or install efficient equipment. This means increasing energy efficiency participation requires approaches rooted in behavior-change science. Community-based social marketing is one such approach that is based in social psychology and data, and it provides a framework for motivating behavior change in people, especially on a local scale.

In this appendix, several energy efficiency and demand management projects are examined from across the country that employed community-based social marketing steps and behavior-change tools. These provide some valuable insights into successes, challenges, and effectiveness in local behavior campaigns for energy efficiency and demand management.

What Is Community-Based Social Marketing?

Community-based social marketing is a framework for engaging target audiences that leverages social interaction and principles to enhance motivations and eliminate barriers (McKenzie-Mohr 2011). It relies on the idea that behavior change — specifically sustainable behavior change — is more impactful when it leverages contact with people and is carried out on the local level. This data-driven approach is rooted in social science and centers around a five-step framework. It also relies heavily on a handful of behavior-change tools that have been proven to drive action. Community-based social marketing was popularized within the sustainability field by Doug McKenzie-Mohr in his book *Fostering Sustainable Behavior* (2011).

Because of its focus on interactions and social structures, community-based social marketing is most effective when implemented on the local level. This allows for implementers to capitalize on the "community" aspect to change behavior by engaging with existing social structures and community groups, rather than simple information campaigns (Better Buildings 2017, McKenzie-Mohr 2011). The framework relies heavily on "behavior-change tools" that leverage social tendencies to motivate change or action.

The Five Steps

Community-based social marketing consists of a framework of five key steps to design behavior-change campaigns that drive action (McKenzie-Mohr 2011, 8–11). These steps are as follows:

- **Step 1:** Carefully selecting behavior(s) to be targeted
- **Step 2:** Identifying the barriers and benefits associated with the selected behavior(s)
- **Step 3:** Designing a strategy that uses behavior-change tools to address these barriers and benefits
- **Step 4:** Piloting the strategy with a small segment of a community
- **Step 5:** Evaluating the impact of the program and implementing it broadly

These steps are a vital part of designing a community-scale campaign that addresses barriers to motivate action. The case studies highlighted in this appendix typically followed the steps, at least in part, and this analysis will be much more heavily focused on the "behavior-change tools" called out in step three above. Behavior-change tools, when properly selected, have been demonstrated to be effective in breaking down the barriers to motivate behavior change. These tools are ultimately the drivers of success in a campaign and will be examined more thoroughly.

Each of these steps tie into the case studies in important ways and will be addressed.

Step 1: Select behaviors. Project implementers and planners for projects outlines in the case studies selected energy-related behavior changes based on the needs of the community and the existing program infrastructure of the implementers.

In the Case Studies section, this step is addressed with the subhead "Target Actions."

Step 2: Identify behaviors and benefits. Community-based social marketing is centered around the idea that to effectively develop and implement behavior-change strategies, the implementer must know and address the barriers and benefits that motivate people to act and ensure that the tools selected properly address those barriers (McKenzie-Mohr 2011, 21). There are several methods of identifying these barriers and benefits, including drawing from literature research, observation, focus groups, and surveys (Better Buildings 2017). Some of the case studies identified how they used these research methods to survey their communities and select tools.

In the Case Studies section, this step is addressed with the subhead "Identifying Barriers and Benefits."

Step 3: Develop strategies that use behavior-change tools. There are several behavior-change tools that can help motivate people to action. Community-based social marketing is based on the theory that these tools should be tailored to properly address the barriers and benefits identified in Step 2. As mentioned earlier, these behavior-change tools, and how they were used on the local level to drive action, will be the main focus of the appendix.

In the Case Studies section, this step is addressed with the subhead "Behavior-Change Tools."

Step 4: Pilot the strategies. Once the proper tools have been selected, they should be put into action through a pilot project. Piloting a project allows for ideas to be tested and then evaluated and reassessed as needed. Some of the case studies in this appendix are themselves pilots, testing out ideas and strategies for broader-scale implementation.

Step 5: Evaluate the impact. It is important to take the lessons learned from a pilot project and to use those to both improve the project and to take it to broader-scale implementation as needed.

In the Case Studies section, this step is addressed with the subheads "Costs and Funding" and "Results."

Behavior-Change Tools

To run a successful behavior-change campaign, it is essential to select the right behavior-change tools. The best tools address the target community's barriers and benefits is an essential part of successful community-based social marketing. The following tools were identified because of their ability to meet these objectives, in large part by leveraging social interaction and social psychology.

The list below is not an exhaustive list of behavior-change tools that can be used in community-based social marketing. Instead, a few select tools were chosen that have shown to be effective in one or more of the case studies.

Commitment

A commitment usually takes the form of a spoken or written statement of intent to act. Commitments can be a successful way to encourage people who are already motivated to move them to action by capitalizing on "people's innate desire to appear trustworthy to their peers and consistent with their own internal commitments" (Penn Sustainability, 2). Research has shown that people who commit to taking an action are more likely to follow through on that action, most likely due to a desire to appear trustworthy to their peers or to feel consistent within their own actions (Penn Sustainability, 2).

Competition

Competition is a behavior-change tool that can be leveraged to overcome a lack of interest in a program or idea. It uses gamification, goals, and prizes to generate excitement and drive interest (Better Buildings 2017).

Convenience

If a behavior change or action has any level of difficulty associated with it, addressing and reducing that level of difficulty through convenience is a vital component of successful social marketing (McKenzie-Mohr 2011, 121). While a wide range of tactics can help increase convenience depending on the specific barriers that exist, some convenience tactics include developing a more streamlined process and meeting the audience where they are (Better Buildings 2017).

Incentives

Incentives can take many forms, but always make the desired action more valuable (McKenzie-Mohr 2011). This may mean making something free and/or providing benefit — financial or otherwise — for doing it or increasing the costs of not doing it. Offering or increasing incentives has been shown to be an especially effective way to motivate change in instances where cost is a barrier to action.

Social diffusion

Social diffusion uses existing networks and trusted community leaders to spread messages about an action. This can happen informally (word of mouth or peer-to-peer interaction), or more

formally (hosting house parties of peers to promote a program or asking community leaders to use their networks to spread a message). Social diffusion is often most powerfully leveraged when using community leaders, who are already trusted messengers, help spread the messages.

Social norms

People tend to compare their activities and expectations to those of their peers and community members. Social norms are leveraged as a behavior-change tool by making clear that others in your community are taking the action. This can be done through tactics like creating public displays of action like yard signs or leaderboards or through messaging that emphasizes that many others in the community have already done the desired action (e.g., "Join over 100 of your neighbors who have already taken action") (Allcott 2011, 95).

Tailored Communication

Tailored communication is a broad tool that can reduce barriers, especially if the desired behavior is not well known or understood (Better Buildings 2017). Tailored communication should be "vivid, memorable, [or] culturally appropriate messaging targeted to your audience." As the name suggests, tailored communication should be adjusted based on the specific concerns or views of your target audience. This may include messaging that addresses concerns from your target audience or language that capitalizes on a shared interest or identity.

Case Studies

The case studies shown in Table 1 were examined for this appendix because of their use of community-based social marketing on the local level with energy. The earliest case study examined was launched in 1983, while the most recent is still being implemented as of 2021. Projects ranged geographically from the scenic Hood River Valley in Oregon to the coastal marshes of Eastern Massachusetts. Each used community-based social marketing to target energy efficiency, demand response, or renewable energy.

All but one of the case studies were driven by non-wires alternative motivations — meaning that they were designed to reduce electric use or demand in a target area to reduce stress on the electric grid, either piloting an idea or implementing it to meet a grid need.

Non-Wires Alternatives Defined

Non-wires alternatives describe a set of solutions to reduce customer load in targeted locations using distributed energy resources such as energy efficiency, demand response, solar photovoltaic generation, energy storage, or other nontraditional techniques. These resources manage peak load at a substation or circuit level to defer or eliminate the need for traditional "wires" investments in the transmission or distribution system.

To see the full case study reviews, see "Case Study Details" section.

Table 1: An overview of case studies included in this appendix

Case Study Name	Location	Timeline	Primary Driver
Hood River Conservation Project *May also be referred to as "Hood River" in this appendix.* *Full review begins page 21.*	Hood River, Oregon	1983–1985	Piloting a non-wires alternative project
Marshfield Energy Challenge *May also be referred to as "Marshfield" in this appendix.* *Full review begins page 26.*	Marshfield, Massachusetts	2008–2010	Piloting a non-wires alternative project
Way to Save, Burlington! *May also be referred to as "Burlington" in this appendix.* *Full review begins page 30.*	Burlington, Wisconsin	2010–2013	Piloting a program to reach rural customers
Tiverton Non-Wires Alternative Pilot *May also be referred to as "Tiverton" in this appendix.* *Full review begins page 35.*	Tiverton, Rhode Island	2012–2016	Piloting a non-wires alternative project
Central Hudson Gas & Electric Peak Perks Program *May also be referred to as "Central Hudson" in this appendix.* *Full review begins page 39.*	Hudson River Valley, New York	2012–present	Non-wires alternative project

KEY FINDINGS

Overview

An examination of community-based social marketing techniques and tools across the case studies resulted in several takeaways. In this section, key findings are examined regarding the use and effectiveness of community-based social marketing techniques in each of the case studies, as well as other relevant lessons.

For further detail on any of the case studies mentioned in this high-level summary, see each write-up under Case Study Details.

Community-Based Social Marketing Framework

The following section discusses key finding of how the different case studies fall under the community-based social marketing framework described above.

Heading used in this section correspond with steps in the community-based social marketing framework or pertain to other important information about the projects.

Table 2: Description of the subheads used in the "Key Findings" and "Case Study Details" sections and corresponding steps in the community-based social marketing framework

Subheading	Corresponding steps in community-based social marketing
Target Actions	*Step 1* of the community-based social marketing framework — carefully selecting behavior(s) to be targeted
Identifying Barriers and Benefits	*Step 2* of the community-based social marketing framework — Identifying the barriers and benefits associated with the selected behavior(s)
Behavior-Change Tools	*Step 3* of the community-based social marketing framework — designing a strategy that uses behavior-change tools to address these barriers and benefits
Costs and Funding	Does not directly correspond to a step of the community-based social marketing framework but provides information to help evaluate the projects
Results	*Steps 4 & 5* of the community-based social marketing framework — piloting the strategy with a small segment of a community & evaluating the impact of the program and implementing it broadly

Target Actions

While all the case studies examined for this appendix involved energy and bore some similarities, there were some differences as well — in the specific target actions chosen as central elements of each behavior-change campaign. The following section discusses trends within the target actions focused on within each of the case studies — both in terms of the specific actions chosen as well as common elements of those actions.

A Focus on Simplicity

Despite the range of actions, each typically focused on simplicity and convenience for the customer. This was commonly accomplished by offering one central starting point, therefore streamlining processes. In some instances, that was an energy assessment (Hood River, Marshfield, Tiverton) and in another, this included one pledge card to take action (Burlington).

Energy Assessments

Along with focusing on simplicity, most of the projects used existing utility energy assessments as the base of their outreach to community members. Three of the five case studies chosen began both their commercial and residential inroads with a centralized energy assessment.[1] These assessments typically involved direct installation of simple, cost-effective measures, as well as recommendations for follow-ups to pursue deeper efficiency or demand-response actions (and, in the case of Marshfield, solar photovoltaic as well).

While the Way to Save, Burlington! project focused on pledges to take action as a first step, energy assessments were still a central part of the offering. The hope was that residents and businesses that made other energy efficiency pledges would be more likely to participate in an energy assessment. The pledge card that residents and businesses filled out also contained information about free energy assessments from the efficiency utility.

Demand Response

As previously stated, most of these case studies were driven by a non-wires alternative need on the electric grid. Therefore, many of the target actions were electric demand response measures. Demand response is a load management strategy that reduces energy use during specific time intervals. These can be controlled assets, such as thermostats that a utility can cycle off in a peak demand event, or incentives, such as a utility charging higher feed for electricity used during peak times of the day. Much of the focus of the non-wires–related case studies was on the controllable technologies. In the Tiverton, Marshfield, and Central Hudson examples, each offered subsidized or free demand response measures to customers, including controllable thermostats, backup generators, and even controllable pool pumps.

In the Hood River case study, the goal was to reduce electricity demand in electric-heated homes for a winter-peaking electric grid. The solutions chosen for the project were energy

[1] Hood River Conservation Project, Marshfield Energy Challenge, and Tiverton Non-Wires Alternative Pilot relied on energy assessments.

efficiency as a demand response resource. The starting point for the project was an energy assessment, and the follow-up target actions were cost-effective measures to reduce heating load, offered for free to homes that used electric heating (Fuller 2010). This follow-up included door sealing, insulation, heating equipment replacement, and even storm window installs.

Solar

Only one of the programs examined in this appendix used solar as a target action: the Marshfield Energy Challenge. Program planners added a solar suitability assessment to the offerings of an energy assessment for homes. As identified in its detailed case study on page 26, Marshfield is a relatively affluent community, which may have influences project implementers' decision to include solar.

Pledges to Act

The Burlington example centered around pledges to act for residents and businesses — in fact, all customers were asked to fill out the same pledge card. The pledge card asked residents to take one or more of five target actions, including unplugging electrics, turning lights off, and using natural lighting (Kassirer 2014).

Identifying Barriers and Benefits

Each of the case studies had some method of identifying barriers and benefits within their target communities, sometimes bringing in outside research and experts in the field, other times drawing on the expertise of local leaders through specially formed groups. Either way, each conducted research to identify effective marketing strategies, behavior-change tools, and tailored communication to reach target audiences.

Local Leaders and Feedback

In a few of the case studies, the planning phase involved assembling a group of local leaders to help inform the strategies or act as ambassadors. Burlington had its "Energy Task Force," while Marshfield used "Energy Ambassadors" (We Energies 2013, Fuller 2010). In Hood River, as part of the planning process, 60 residents were interviewed to gain community insight and study social structures (Fuller 2010, 90). In all these instances, the local leaders and feedback helped to identify barriers and benefits to plan initial outreach and to shift the program as needed after implementation was underway if project implementers realized that the initial planned outreach was not as successful as desired. In some cases, these initial local participants formally or informally promoted the offerings once implementation began.

Bringing in Expertise

A few of these case studies also brought in regional or national experts to plan outreach and identify barriers and benefits. Hood River's planning team consisted of representatives from local utilities, government organizations, and a national nonprofit (Fuller 2010, 87). A national energy efficiency program implementer was brought on to the planning process in the Tiverton case to help guide the strategies (National Grid 2011).

Surveying the Community

Three of the case studies examined surveys of their community to inform outreach plans and target actions. Central Hudson relied heavily on surveying the target communities to inform outreach and analyzed utility data to determine air conditioning loads and other insights (Chew 2018, 49). In Hood River, project planners were able to identify the number of homes that heated with electric to know how much load they could target (Fuller 2010). Tiverton used data on market penetration of central air conditioning to determine load reduction opportunities from controllable AC (Anthony 2014).

Behavior-Change Tools

Behavior-change tools were essential to each of the examined case studies. Project implementers used these tools to drive target audiences to complete target actions. This section examines how each tool was used in the case studies and the estimates each tool's impact. For more information on these tools, see Behavior- on page 5.

Commitment

The only case study that used commitment as a behavior-change tool was Burlington. Pledge cards with behavior-change actions were a central component of the campaign, and one of the two main goals of the entire project was around number of pledges collected (We Energies 2013).

Impact

One of the central findings of this project was that the pledge cards, while successful in garnering support for the program, were less correlated with greater participation in existing utility programs. They were, however, linked to greater deemed savings from those who participated, indicating that those who pledged to make behavior changes were more likely to implement measures after a subsequent energy assessment (We Energies 2013, 3:15).[2]

Competition

Just as with commitment, the only one of these case studies to use competition as a behavior-change tool was Burlington. In this case, project implementers led challenges for residents and businesses where they could submit videos to be entered for a prize to complete further energy efficiency upgrades.

Original project plans for the Marshfield Energy Challenge also included a type of competition in the form of a community-focused prize for achieving community-wide goals. However, subsequent discussions with community members determined that this was not going to be a motivator for the community, and final plans abandoned the idea (DeVito 2009).

[2] The assessments were a follow-up action that the pledge cards advertised but didn't specifically request.

Impact

In both cases, Burlington and Marshfield, the competition prize was set to be another action that would contribute to the community's goals. In Burlington, it was money that could be used to complete efficiency upgrades for the home or business of the winners. In Marshfield, the planned prize was to be a solar array on a public building. Burlington saw increased savings and likely encouraged greater participation and gained attention. Winners were profiled in the local newspapers, which provided free media and social diffusion. It is unclear if the competitive aspect of the project drove greater participation in target actions (We Energies 2013). In Marshfield, the competition aspect was dropped after community members determined it would not have the intended impacts.

Convenience

Convenience was a central theme in each case study. One common tactic was streamlining interactions by using energy assessments as a single point of contact with the target audiences. In Hood River, Marshfield, and Tiverton, initial energy assessments served as the point from which all other aspects of the program were assessed and offered for both residents and businesses. In each, customers would be directed to sign up for an energy assessment that would include the installation of a handful of measures. After, they would receive recommendations for next steps that fit with the programs target actions and goals — including weatherization measures, controllable thermostats, and other measures.

The Central Hudson program, on the other hand, used convivence as a behavior-change tool by making it simple for customers to bring their own devices to the program. This meant that customers only had to sign up to enroll (rather than purchase and install something *and* sign up), which reduced the effort to participate.

While it was not a central aspect of the program, Burlington did rely on convenience in some key ways — by using one pledge card to simplify the "ask" (with five target actions) and by meeting people were they are, at already established events, schools, etc. — to improve convenience for the audience.

Impact

Those programs that used one central energy assessment as a tool to increase convenience identified is as a key aspect and cause for success. In each case, the streamlined process was noted as important to the project and drawing more to take the desired actions.

Incentives

Each case study except Burlington used incentives beyond those that were already being offered to standard customers by the utilities.

The most substantial incentives of the case studies were offered in Hood River, where the utility provided extensive weatherization measures for free to thousands of households. All measures were free to homes that used electric heat and went far beyond typical utility incentives, testing the limits of cost-effectiveness calculations of the time (Fuller 2010).

Of the non-wires alternatives projects, Marshfield relied the least on incentives. Program evaluators noted that Marshfield was a relatively affluent town and that financing was not a barrier (Fuller 2010).

Burlington was the only project that relied only on existing utility incentives from We Energies and Focus on Energy, rather than offering additional financial incentives.[3]

Beyond direct incentives provided to ratepayers, most energy efficiency programs feature some incentives in the form of dollar savings from energy saved or demand reduced. Even the one case study that did not offer additional incentives (Way to Save, Burlington!) relied heavily on messaging around the savings that one could get from saving. This example offered a financial prize to the winners of a contest, discussed below.

Impact

While it is difficult to isolate the impacts that incentives had on each of the case studies, it is likely they were substantial. In every case where incentives were offered, participation in those programs was substantially higher than in peer communities.

In Burlington's case, an evaluation survey revealed that community members would have responded positively to additional financial incentives. In fact, it was the most stated opportunity for program improvement that respondents identified (We Energies 2013).

Social Diffusion

Social diffusion was used as a powerful tool in each case study except for Central Hudson. Burlington and Marshfield each found a second use for the team of local leaders who helped to plan their projects by asking them to distribute key messages to their peer networks (We Energies 2013, 2:71, DeVito 2009). Tiverton also used leaders to distribute information but relied heavily on City staff to use City communications channels rather than relying on more informal networks (Chew 2018).

While being implemented, the Hood River Conservation Project became an example of just how quickly word of mouth can amplify a message when the perceptions of a program are largely positive. In this case, word of mouth proved so effective that only a fraction of the original marketing budget was needed for traditional marketing to reach project targets. To plan this project, program leaders studied social networks in the town. Sixty homes were recruited for the initial round of assessments. Word of the free offering spread quickly through the small community (Fuller 2010, 90).

Burlington centered its program around a single "energy ambassador" in the local community as a source of trusted information, in addition to relying some on the Energy Task Force members. A survey after the program found that most respondents found out about the program through this ambassador (We Energies 2013, 3:15).

[3] We Energies is the utility that serves Burlington, Wisconsin, and Focus on Energy is Wisconsin's statewide energy efficiency utility.

Impact

The impacts that social diffusion had on these case studies cannot be understated. In fact, it was so central to the Hood River and Burlington projects that their entire outreach plan relied on it.

While social diffusion was central to the Burlington case study, it was the role of the Energy Ambassador that more successfully worked to spread messages of energy savings. In this instance, the Energy Task Force of local leaders did not speak to their peers as much as program managers had hoped they would (We Energies 2013). Surveys conducted after the campaign showed the Energy Ambassador was successful in serving as a trusted messenger for the community after serving as the face and centerpiece of the campaign. The challenge this presented was that, by relying so heavily on the Energy Ambassador, the success of the campaign depended on funding for this person and the amount of time they had.

A challenge of social diffusion is its ability to also amplify negative experiences. Despite the overwhelmingly successful use of this tool in the Hood River example, a few negative experiences in the early days of the program proved to be a setback. In this instance, it was also harder to control the specifics of what was communicated, like program eligibility. In Hood River's case, only households that used electric heating were eligible for all the measures.

Social Norms

While social norming was not a central aspect of any of these campaigns, it was used indirectly in two of them: Burlington and Marshfield. Burlington capitalized on social norms by displaying a goal thermometer in the center of the community's downtown main street area (Kassirer 2014). This tracked and announced the number of residents and businesses who were participating in the challenge. Marshfield used a more individual approach: Residents and businesses that received energy assessments were given a window cling that announced their participation (Fuller 2010). Tiverton also capitalized on this tool by including messaging that encouraged residents to join their neighbors (National Grid 2017).

Impact

Because social norms were not a central aspect of any of these campaigns it is difficult to isolate the direct impacts. However, the Marshfield project indicated that it was at least perceived to be an important motivator for the community: Program managers decided to go this route after a focus group determined that this would have an impact in the community (Fuller 2010).

Tailored Communication

Tailored communication is perhaps the broadest of the behavior-change tools examined and was also the most widely adopted in the case studies we used. Each of these projects relied on tailored communications — using information gathered in planning phases and feedback gathered in implementation to create and modify messages directed at the target audiences.

Burlington, a more conservative community, emphasized cost savings as a benefit of energy efficiency (as in the tagline "Way to Save, Burlington!"). Marshfield, Tiverton, and Central

Hudson on the other hand, centered communications around the community. In Marshfield, this meant talking about “empowering” and “benefiting” the whole community (Cowell 2010). Tiverton took a more technical approach and spoke more directly to the grid benefits of the non-wires pilot on reliability and possibly on rates for the area (Anthony 2014). Central Hudson emphasized both the savings and local benefits with a central tag line on marketing materials “Good for you. Good for the Hudson Valley (Central Hudson 2021). While much of Hood River’s outreach was done through social networks and word of mouth, the outreach materials they created featured orchard imagery, tying into the community’s agrarian roots (Fuller 2010).

Impact

Because tailored communication was so central so these campaigns, it is difficult to isolate the direct impact of this tool. However, there were a few instances where one of the projects pivoted their tailored messaging to better address barriers and benefits partway through the campaign. In these cases, the impacts of those changes could be seen in responses to campaigns and other measures. In Tiverton, this occurred when, after conducting interviews, the program implementers realized that their original messages of “save energy, save money” were not being received well by the community. After learning this, they pivoted to put more emphasis on the benefits to the electric grid and the community in communications — which was better received (Anthony 2014).

Costs and Funding

While costs and funding are not central tenants to community-based social marketing, they are extremely important pieces of analyzing the successes of projects. The following outlines some key findings related to costs, funding, and cost-effectiveness as available for the case studies.

Funding Sources

Each of these were funded, in all or in part, by the utility with one exception: In Hood River, funding came from the Bonneville Power Administration, a federal agency that provides power to the region.

Costs and Cost-Effectiveness

Disclosed budgets for these project ranged from $350,000 per year to $4 million over the course of the project. The non-wires projects all had higher disclosed budgets than Burlington, which was not targeting any infrastructure needs.

Cost-effectiveness results, as available from project reporting, are largely inconclusive for these projects. In some cases, projects exceeded costs outlined. One identified justification for exceeding project costs was that some were pilot projects and therefore required greater amounts of research and development than non-pilot projects. This is explored more below.

As a note, these projects were primarily implemented by or for utilities, and therefore were held to cost-effectiveness standards. Regulated utilities are typically required to provide programs that are cost-effective. The calculations and implications of cost-effectiveness can be wide-ranging but generally require that the benefits of a program outweigh the costs. The benefits

can extend to include cash and non-cash benefits in some instances (National Action Plan for Energy Efficiency 2008, 6:1).

For details on costs and funding for each project, see Case Study Details.

Pilot Projects

The only of these case studies that was not labeled a pilot project by project implementers is Central Hudson. Evaluations of these projects noted that pilots may spend more than is cost-effective from a typical utility measurement, but the lessons learned and infrastructure that these pilots work through should be used and adapted for future uses, effectively distributing the costs for the pilot across multiple projects. Utility filings evaluating the Tiverton project explicitly called this out: The projected savings from their project were less than the total cost — but the filings stated that the whole project was still valuable because of the insight it provided into future projects, especially non-wires alternatives projects (National Grid 2016, 2). Similarly, the Hood River project is now known as a project that pushed and occasionally crossed the limits of cost-effectiveness.[4] It was, however, an extremely valuable leader in non-wires alternatives and deep energy retrofit projects, setting the stage for so many other projects.

Results

Delaying Infrastructure Investments

Four of the five case studies examined in this appendix are also examples of non-wires alternatives projects or precursors to such projects (as is the example in Hood River). Non-wires alternatives describe a set of solutions to reduce customer load in targeted locations using distributed energy resources such as energy efficiency, demand response, solar photovoltaic generation, energy storage, or other nontraditional techniques. These resources manage peak load at a substation or circuit level to defer or eliminate the need for traditional “wires” investments in the transmission or distribution system. These solutions often require enhanced customer incentives within the target region and are cost-effective when they require lower investment than the capital cost of a traditional project.

In each of the completed non-wires studies examined, the projects were successful enough to delay infrastructure investment for at least as long as the project duration.[5] In fact, a 2018 report identified uncertainty of utility load projections acting as a strength for non-wires alternatives: These types of projects allow utilities to defer costs and avoid stranded assets if load does not manifest as expected. Additionally, non-wires projects provide an opportunity to further analyze infrastructure need and perhaps create more accurate load forecasts (Chew 2018, 29–30). By investing in non-wires alternatives, the utilities and partners were able to delay infrastructure long enough to likely gain a better understanding of future load growth to better tailor future utility planning.

[4] Program evaluators cited faulty and new or unfamiliar measurement tools and technology for inflating estimates savings from measures.
[5] Hood River, Marshfield, Tiverton.

Benefits and Challenges of a Community-Wide Approach

In each one of these case studies, program implementers deliberately targeted messaging and communications to the entire community. While this allowed each campaign to use the successful, targeted, community-focused messaging highlighted in the “Tailored ” section above, it also led to some challenges, especially in the non-wires alternatives projects.

Spillover

Utility grid boundaries do not often follow community borders. In the non-wires alternatives projects examined in this appendix, this led to an issue referred to as “spillover.” In each of these cases (Hood River, Marshfield, Tiverton, and Central Hudson), the targeted area did not encompass the entirety of the geographic area of the city or community. In these cases, only a certain substation of the electricity grid in that community was actually overburdened and needed investment.

Spillover occurred when community members accessed the resources of the project that were intended to address the need of those substations, but whose electricity service lines did not feed into these substations. In the Hood River case, because the program was only addressing electric heating customers, spillover also applied to cases in which customers with other heating sources accessed the program.[6] In almost all these cases, the utilities made a decision to not exclude customers from the program, even if they were not on the affected substations, to simplify messaging and outreach. Hood River and Marshfield did come up with some specific ways to address this spillover issue. Central Hudson is the only exception, as described below, because it used a technology-based solution to filter out ineligible customers.

Early interviews with members of the Hood River community alerted project planners to an issue: that the project would be considered unfair if it was offered to some residents but not to others. Because of this, the utility decided to offer the initial, free energy assessment to all residents, regardless of heating source. These residents would even also receive recommendations of next steps. They were not, however, offered the subsidized rates (free) for completing all recommendations (Fuller 2010, 90). This was a compromise that maintained positive perception of the program while still using funds primarily for target customers.

Early in the planning process for the Marshfield Energy Challenge, the utility decided to not exclude any in the town from participating, despite a portion of the community residing off the affected feeders. They reasoned that bringing the entire community into the challenge would “foster a team spirit approach that involved citizenry and business owners” (DeVito 2009). As a compromise, project implementers messaged to the whole town but conducted a targeted campaign through mail and email to homes and businesses on the affected feeders to demonstrated success. While response rates for emails sent to most community members was 1.2%, response rates for the targeted customers jumped to 13%–16% (Fuller 2010, 107).

[6] Other heating sources included biomass, propane, and heating oil. Of the non-wires alternatives projects, Hood River was unique in that it was addressing a winter peaking load and is the only project that targeted heating efficiency.

Central Hudson's Peak Perks Program took a different approach than the other non-wires projects. Customers were filtered based on eligibility from a web portal that anyone can access or referred by contractors (Chew 2018, 50). This prevented spillover but also required a technology-based solution. Central Hudson's project is the most recently launched and presumably had access to the most reasonable technology solutions of the projects examined.[7] It is also important to note that the Central Hudson project did not rely on the same community-specific messaging of the other projects here. It targeted two geographically separate areas of the same region in the Hudson Valley and used broader language about the benefits to the region.

Interest from Outside Areas

Two cases did specifically identify that the campaigns were successful enough to gain recognition from areas outside of the target community. Other communities neighboring Burlington requested similar projects after the pilot was launched. NSTAR, the utility that ran the Marshfield Energy Project, received similar requests from their neighboring communities (Fuller 2010). Interest from outside communities can be a good thing when it drives up awareness of utility programs or energy efficiency in neighboring communities. However, it could prove harmful to a program's perception if the utility or entity running it is not able to offer the same incentives to those outside of the community.

Other Observations

Utility-Driven

Every program examined in this appendix was primarily led and funded by an energy utility or power provider. A few explanations for this may be the existing efficiency program infrastructure that could be used for campaigns, utilities' existing local presence, and regulatory requirements. These explanations are examined briefly below.

Existing Program Infrastructure

Every program that this appendix examined was driven by a utility. The first, and probably the largest driving factor behind this is that most North American utilities have existing, often robust arrays of energy efficiency programs, usually driven by state policy.[8] Once those existing programs are in place, they can be easily mobilized to meet demand reduction, cost savings, or environmental goals.

As mentioned in the "Target Actions" section, most of these projects built off already established energy assessment programs to offer deeper savings to residents. These existing programs lent themselves well to community-based marketing techniques that only need to amplify or simplify

[7] This is assumed because programming ability and prices are constantly going down.
[8] It may be important to note that the case studies came mostly from states with strong state energy efficiency landscapes (Massachusetts, New York, Oregon, and Rhode Island). See ACEEE State Scorecards 2019: https://www.aceee.org/state-policy/scorecard. Wisconsin is the only state with a case study in the appendix that is not ranked in the top 10 states by ACEEE's State Scorecards 2019. This does not, however, account for a state's Scorecard ranking at the time the projects launched.

what is already in place. It also reduces costs if a program or pilot can rely on existing program infrastructure, rather than needing to develop entirely new programs.

Existing Local Presence

Some other factors that may explain why these case studies are largely utility driven: Because of their infrastructure or program need, utilities may have locally based community relations liaisons who can help with aspects of a local project such as identifying leaders. This was the case in at least Burlington and Marshfield, where local utility staff provided valuable connections and insight into community needs and motivations.[9]

Regulation and Regulatory Requirements

Two of the five case studies hail from states that have a regulatory requirement that utilities examine non-wires alternatives to infrastructure development: the Tiverton Non-Wires Alternative Pilot in Rhode Island and Central Hudson Gas & Electric's Peak Perks Program in New York (RI PUC 2017, NY PSC 2015). Policies and regulations related to non-wires alternatives are examined in the main body of the report.

Role of Local Leaders

Because community-based social marketing relies so heavily on local action and social networks, local leaders and city staff can play a very powerful roll in strategies that rely on this type of marketing. Local leaders played a role helping to both plan and promote the offerings, whether through advisory groups (identifying barriers and benefits) or acting as early public adaptors (social diffusion). Leaders included town mayors, local business leaders, and clergy, among others. In the Swartz Creek project, "A City manager's social media posts always show a blip of request for the free energy kits that were promoted" (Chew 2018, 24). Campaigns that recognized the community's trust of these public figures were able to use it to work toward their goals.

[9] Marshfield: "An NSTAR employee had already served as the community liaison for Marshfield and has a pre-existing relationship with the town's leaders that was critical to the program's success."; Burlington (We Energies 2010, ES-7).

CASE STUDY DETAILS

The following section examines the projects that were chosen for this appendix. Each relied on community-based social marketing to increase energy-related behavior change in target communities.

Case studies are organized by their timeline of launch, with the oldest case study listed first.

How Case Studies were Chosen

Case studies were chosen for this appendix to showcase ways community-based social marketing can be carried out and to examine successes and lessons learned. This is not a comprehensive case study review, but rather an examination of a handful examples over the past few decades from across the country that matched the criteria listed. While an attempt was made to be geographically diverse, all the projects included were from northern states. Additionally, all but one of the case studies is directly or indirectly related to a non-wires project.

- **Smaller population size**: Because the intent was for this case study review to lend insight into community-scale action, a focus was paid on communities with populations under 100,000. All case studies are from rural or suburban communities.
- **Use of community-based social marketing**: To focus this case study on the impacts of community-based social marketing, the following projects are ones that more centrally relied on the community-based social marketing framework and tools, rather than just incorporating small elements.
- **Focus on energy efficiency and demand response resources**: While community-based social marketing has been applied across a wide range of environmental issues, the case studies in this appendix are all ones that primarily focused on energy efficiency or demand response.

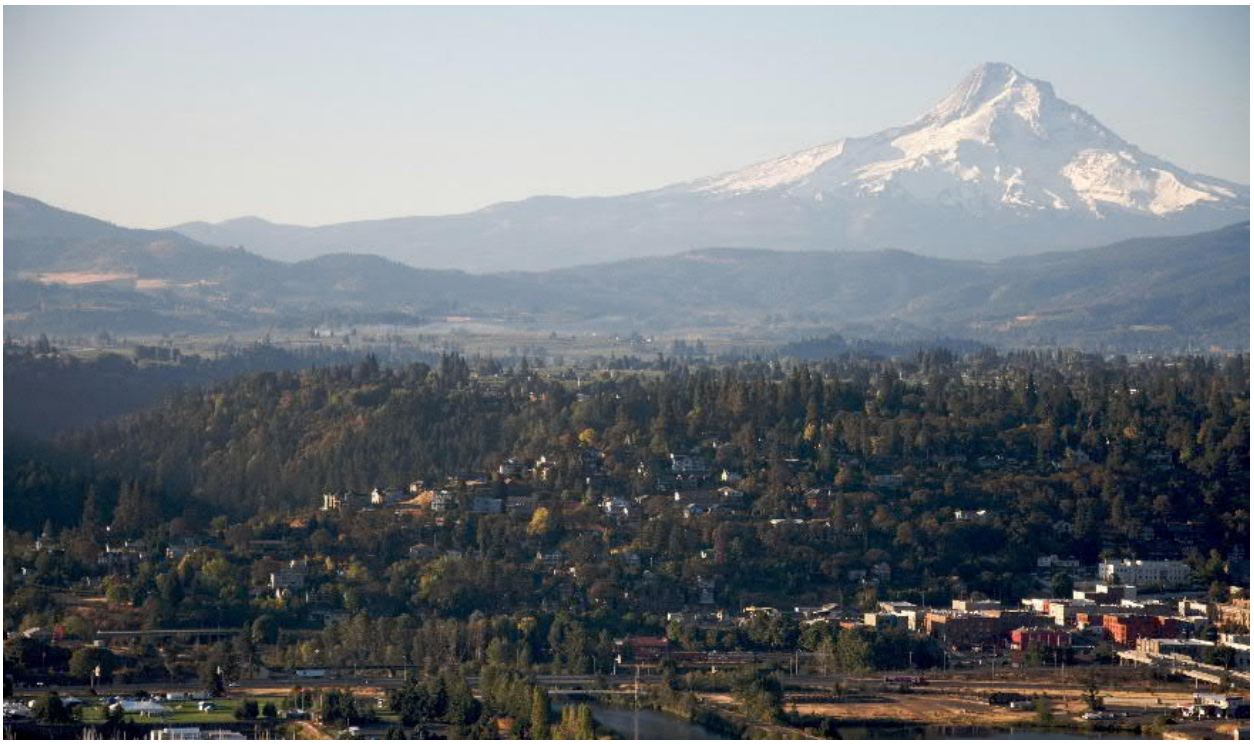

Figure 1: The town of Hood River and Mount Hood under a hazy sky.[i]

Hood River Conservation Project

Location	Hood River, Oregon.
Estimated Population (1980)	4,329 (U.S. Census, 1980)
Utilities and Key Partners	Bonneville Power Administration;[10] Pacific Power & Light[11]
Timeline	1983–1985
Prime motivation	Pilot non-wires alternatives.[12] Demonstrate that energy efficiency could be used to avoid construction of new generating capacity (Hirst 1987, 97, EcoMotion 1992).

[10] The Bonneville Power Administration is a nonprofit federal power marketing administration based in the Pacific Northwest and is a part of the U.S. Department of Energy. To learn more about the administration, visit bpa.gov/news/AboutUs/Pages/default.aspx.
[11] Pacific Power & Light now goes by "Pacific Power" and is a utility serving parts of Oregon, Washington, and northern California. To learn more about the utility, visit pacificpower.net.
[12] The concept of non-wires alternatives was still in its infancy when the Hood River Conservation Project was launched. While now we would refer to it as a precursor to modern non-wires alternatives, contemporary literature and studies did not use those terms.

Overview

The Hood River Conservation Project was an early pioneer of finding non-wires alternatives to wired utility infrastructure development. It was designed to assess the limits of using home energy efficiency programs to deliver cost-effective energy savings and help determine if such measures could prove more cost-effective than traditional infrastructure development (i.e., coal-fired power plants) to meet growing need (Fuller 2010, 87). Studies of the community's load noted that it peaked in the winter months, and so heating efficiency and weatherization measures were the prime focus of the efficiency programs, mostly focusing on residential. This program did not rely on modern demand-response resources such as controllable thermostats.

This program from the 1980s was successful in garnering a high participation rate for residential customers in the small rural Oregon community and is often cited as an example of a program testing the limits of cost-effectiveness for residential home energy efficiency improvements (Fuller 2010). This project was funded by Bonneville Power Administration, the American federal power marketing administration which operates and assists in maintain wholesale power markets and transmission in areas of the Pacific Northwest (BPA 2021). It was administered by Pacific Power & Light the electric utility serving the City of Hood River where this project took place.

Target Actions

This program focused energy assessments and weatherization for electric-heating residential buildings. Specific weatherization measures included ceiling insulation, storm windows, caulking, door weather-stripping, and outlet gaskets (Fuller 2010, 87).

Identifying Barriers and Benefits

To gather input for this program, the Hood River Conservation Project organized a Regional Advisory Group that consisted of several stakeholders, many of which "traditionally had been adversaries" (Fuller 2010, 87). The diverse representation in the advisory group is cited as one of the reasons for the thorough planning and cooperation through the project. Partners in this group included representatives from the utility; federal agencies; the Natural Resources Defense Council (a national environmental nonprofit); and other utility and power organizations (Fuller 2010, 87).

Marketing for this program was "based on social science that analyzed the social networks within the community" (Fuller 2010, 90). Program administrators hired experts to conduct 60 resident interviews assessing the local social structures and identifying barriers (such as distrust of utility programs) and community identity (such as an identity with the local apple orchard-based identity). The insights gained during this period influenced the program from start to finish.

Behavior-Change Tools

Convenience

This project centered around a streamlined process using the utility energy assessment as the starting point for recommending and following up on more impactful measures. In fact, one of the central findings of evaluation of the program was that "if you reduce the amount of effort required by participants, you can achieve high savings and high participation" (Fuller 2010, 92). The first step for any home recruited to participate was to receive an energy assessment that included direct installation of a handful of low-cost energy saving measures. The assessment included in-depth analysis of opportunities in the home and recommended cost-effective measures. Homeowners only had to provide written authorization to approve weatherization measures being installed by contractors. The costs of weatherizing homes with electric heating were entirely covered by the program (Fuller 2010, 88).[13]

Incentives

To increase adoption of the energy assessment and weatherization measures, the Hood River Conservation project made the assessment, as well as cost-effective weatherization measures, cost-free for all eligible households. The cost-free aspect was central program messaging and was unheard of at the time (Fuller 2010).

Social Diffusion

Marketing for this project was extremely reliant on social diffusion from the onset. To launch the program, implementers recruited about 10% of eligible households in Hood River to participate in programs through on-on-one contact. Not only did many of these households become early adopters, but they also served as enthusiastic "champions" to their networks. Assessments of the project determined that, by the end of the program, 80% of those who signed up heard about the offering through their social networks (Fuller 2010, 90). Early successes of social diffusion as a marketing tool for the program even eliminated the need for implementing more expensive marketing measures — and, in fact, the success of word-of-mouth communication meant that only about 6% of the original marketing budget was used (Fuller 2010, EcoMotion 1992). Even more traditional marketing methods used, such as newspaper ads, featured testimonials from residents (Fuller 2010, 90).

Tailored Communication

The Hood River Conservation Project used tailored communications throughout its outreach (outside of the word-of-mouth outreach which it could not control as simply), relying on research conducted through interviews and community studies prior to the program's launch. Even the logo and branding of the project tapped into the local apple orchard-based identity by featuring an artistic depiction of an apple orchard.

The initial studies of the local area also identified concerns that were likely to arise from residents, such as a dislike of orders from outsiders and perceived unfairness due to

[13] Homeowners were still responsible for any costs incurred to prepare the home for the weatherization services such as repairing broken windows.

weatherization resources only being offered to homes with electric heating (and excluding oil- or wood-heated homes). To address these concerns, the marketing plan devised tailored communication. Marketing materials emphasized the voluntary nature of the program to assuage concerns over orders from outsiders, and program implementers decided to make the initial assessment (but not the free weatherization assistance) available to all residents, regardless of heating source, to increase perceived fairness (Fuller 2010, 90).

Costs and Funding

The project's funding was based off the avoided costs of building a new coal-fired power plant (Hirst, 1987b). As mentioned earlier, this project was known for testing the limits on cost-effectiveness, and it was able to do so due to a substantial budget. The project's budget was $20 million, provided by Bonneville Power Administration (EcoMotion 1992). The project was budgeted to spend $1.15 per first-year estimated kWh savings, in accordance with cost-effectiveness calculations. By project completion, total expenditures were $22.5 million.[14]

In the end, $17.5 million were spent on fieldwork, including $113,000 for marketing efforts. The eventual marketing expenditures was substantially less than the originally $1.79 million advertising budget, due to successful use of social diffusion (Fuller 2010, 93).

Results

Assessments of the Hood River Conservation project showed that it was successful in achieving its primary goal: demonstrating that deep energy efficiency in an area could reduce energy use. Furthermore, the lessons learned from the project have been used to inform future projects, some of which are also included in this appendix.

Despite falling short of its 100% participation goal amongst eligible households, the Hood River Conservation project still captured some extremely impressive results. In total, 91% of the 3,500 eligible households received the energy assessment, and 85% implemented the conservation measures (Fuller 2010, 92).

The program also proved effective at reaching populations in the community that had been traditionally harder to serve, such as low-income households and renters. In fact, a survey of households that chose not to participate showed that many were higher income (Hirst 1987).

Load profile analysis before and after the project demonstrated that, despite highly successful adoption of deep energy retrofits, the project underperformed its peak electricity demand reduction goals. Further examination highlighted that the nature of the measures that were included may have contributed to this. Specifically, demand-response measures such as controllable resources (i.e., thermostat or water heater controls), would have more adequately addressed the peak demand concerns (Stovall 1987, 50). Instead, weatherization provided overall savings to the community, and some savings during peak times, but not as much as desired. The focus on weatherization, rather than demand-response resources, was likely due

[14] While the project spent less of its marketing budget than expected, spending on weatherization measures were higher than originally budgeted.

to the time this was implemented; demand response resources were just being pioneered by utilities at the time of this project (BPA 2021b).

Furthermore, demographic and behavioral changes that the community was experiencing during the examined period may have influenced the less-than-overwhelming peak load reduction results. During the years of the program, the economy in the area improved, meaning some households relied less on wood for heat (and likely turned to more expensive but less labor-intensive electric heat, the exact resource that this project was trying to reduce demand for). In addition, the program years saw an influx of wealthier households who may have been less frugal with wintertime heat (Fuller 2010, 92).

Figure 2: Marshfield, Massachusetts, is the coastal New England town where the Marshfield Energy Challenge began in 2008. The above image shows Green Harbor, an inlet on the coast in Marshfield.[ii]

Marshfield Energy Challenge

Location	Marshfield, Massachusetts
Estimated Population (2010)	25,125 (U.S. Census 2010)
Utilities and Key Partners	Utility: NSTAR;[15] Key Partner: Massachusetts Technology Collaborative; Conservation Services Group[16]
Timeline	2008–2010
Prime motivation	Pilot a non-wires alternative to reduce peak electricity demand.

Overview

This non-wires alternative project took place in the coastal town of Marshfield, Massachusetts, with a goal to reduce the town's peak demand by 2 MW. To determine best practices for reaching the community, the utility leveraged existing staff with community ties to act as liaisons and selected 12 local program ambassadors including politicians, clergy, school

[15] Now known as Eversource Energy.
[16] Conservation Services Group was bought by CLEAResult in 2015.

representatives, and business representatives. The program encompassed residential and business customers and incorporated photovoltaic solar as well as energy efficiency (DeVito 2009; Fuller 2010). Messaging was locally targeted and focused on grassroots support and local benefits. Over the two years of the project, they reduced the town's peak demand by over 1.2 MW, with most of the savings occurring on the residential side — a little shy of its 2 MW goal. Despite falling short of the goal, most literature designates the project a success because it demonstrated the utility's ability to substantially reduce load through targeted community outreach. In total, almost 1,300 homeowners received energy assessments (Fuller 2010, 108).

Target Actions

This project targeted energy efficiency, demand response, and renewable energy programs for both residents and commercial customers. Target programs were those offered by Mass Save, Massachusetts' statewide energy efficiency program (DeVito 2009).

Identifying Barriers and Benefits

To help plan marketing for this project, NSTAR brought on Conservation Services Group, a nonprofit energy efficiency and renewable energy company (DeVito 2009). Conservation Services Group worked with NSTAR, Massachusetts Technology Collaborative, and other program implementers to design a community-focused marketing campaign.

As part of planning for this effort, this group assembled a team of local community leaders for a "soft launch" to help shape the marketing and outreach efforts and recruit these leaders to act as "ambassadors" for the program. These ambassadors were also tasked with serving as the "eyes and ears" of the program, relaying feedback to the project managers (Fuller 2010).

Behavior-Change Tools

Competition

This challenge originally planned to use a prize to motivate the community to act. This would have been a reward for a communal competition, rather than a competition among parties. However, later focus groups determined that this would not be successful in motivating the community and the idea was dropped. Instead, the focus was on rewarding participants with window clings that stated, "I did my part" (DeVito 2009, Fuller 2010). These rewards, while not part of a competition, also served as social norms (see "Social Norms" section below).

Convenience

This project used a few strategies to increase convenience to businesses and homeowners. All community members, residents, and businesses were directed to one toll-free phone number that supported the program: scheduling assessments, acting as a question hotline, and providing follow-up assistance. The starting point for all customers was an existing Mass Save energy assessment, but the program also included enhanced incentives and integrated a solar assessment (DeVito 2009).

Incentives

While incentives were not a central part of marketing for this program, some financial incentives were offered to residents and businesses participating. Residents who received the full energy assessment package received about $750 worth of savings and were asked to pay a $600 cost-share on a total package value of $2200 (Haselhorst 2009). Because Marshfield was a relatively affluent town, financing was not identified as a barrier.

Social Diffusion

The Marshfield Energy project leveraged several local leaders as “ambassadors” to act as early adopters and spread the messages of the challenge and its benefits. These ambassadors, who included school representatives, clergy, local politicians, and business leaders, received some of the first retrofits of the program for their homes and businesses. This action from trusted community leaders created an example for others in the community to emulate. These leaders worked to explain the program to their neighbors and peers (DeVito 2009).

NSTAR also already had a staff person who served as a liaison to Marshfield. This employee was instrumental in recruiting community leaders and helping with the challenge’s presence at events.

Social Norms

Focus groups conducted during the challenge indicated that Marshfield residents and businesses were motivated by “doing the right thing.” Because of this feedback, the program handed out window clings that read “I did my part” to residents and businesses that participated in the program (Fuller 2010). These public displays of action served as social norms that helped demonstrate widespread adoption across the community.

Tailored Communication

The Marshfield Energy Challenge’s tailored and community-focused messaging was central to this project. Unlike for many other projects in this appendix, costs and financing were not an issue in Marshfield, a small and wealthy town. Messaging, therefore, did not focus on cost-savings. Instead, the project chose to emphasize the benefits to the community and to property values (Fuller 2010).

Marketing materials included calls for action to “empower the town of Marshfield,” and “contribute to a better Marshfield.” This identity-based outreach was central to the campaign. The tag line of the campaign was, “It’s about where we live, work, and play” (Cowell 2010).

Costs and Funding

This project’s costs totaled $4 million, and it was funded by NSTAR, the local utility, with additional support from the Massachusetts Technology Collaborative, and the state’s economic development agency (Fuller 2010). Of the $4 million, $125,000 was spent on marketing and outreach.

Results

The Marshfield Energy Challenge is viewed as a successful use of community-based tactics to target energy programs and reduce load. The challenge exceeded its participation goal for residents and managed to reduce the town's peak electricity demand by 1.2 MW, a little shy of its 2 MW goal. On the business side, they exceeded participation goals, but fell short of kW goals (Haselhorst 2009). While overall measures and savings fell short of the goal, this was still considered a successful pilot for leveraging community leaders and targeted messaging to achieve substantial savings on an affected electric feeder over a short period of time.

For outreach, direct mail proved a successful avenue for attracting interest in the program. Community-wide response rates were 1.2% for a direct mail campaign. Businesses and residents located in targeted areas (on the affected substations) had a much higher response rate of 13%–16% (Fuller 2010, 107). Overall, this project used a wide range of outreach tactics, centered around community leaders and messages of community-pride, to meet and exceed participation targets in a geographically constrained area.

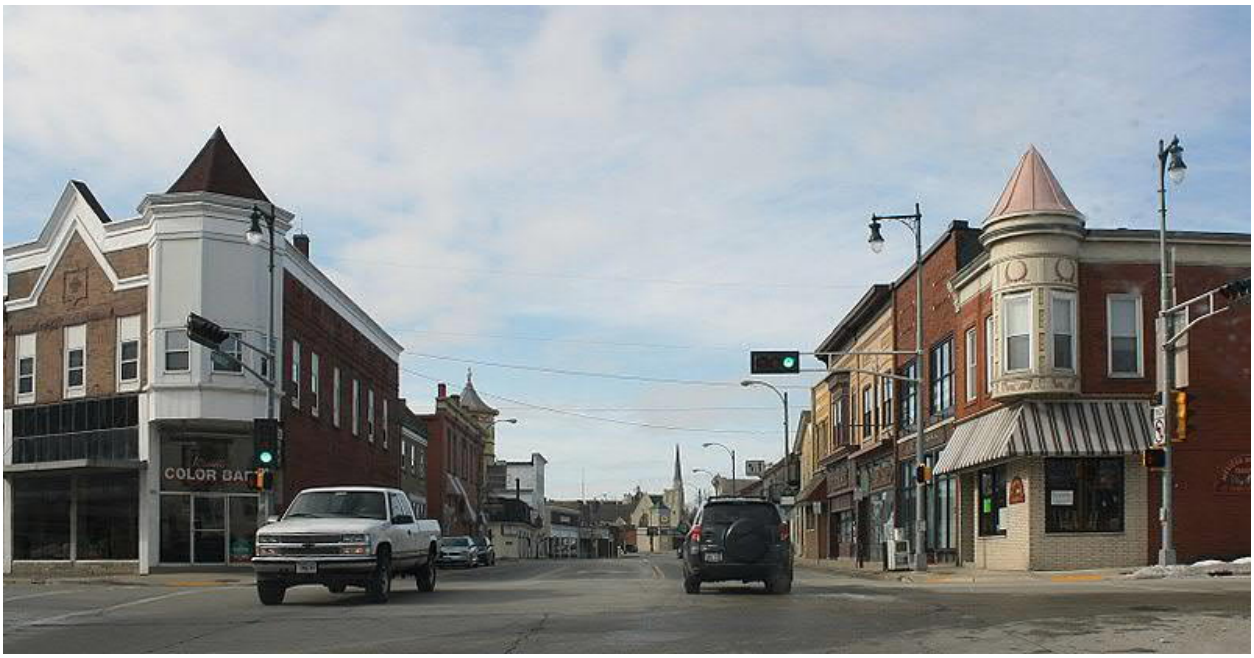

Figure 3: Downtown Burlington (pictured) hosted signs encouraging residents to save energy as part of Way to Save, Burlington![iii]

Way to Save, Burlington!

Location	Burlington, Wisconsin
Estimated Population (2010)	10,980 (U.S. Census 2010)
Utilities and Key Partners	Utility: We Energies; Energy Efficiency Utility: Focus on Energy
Timeline	2010–2013
Prime motivation	Increasing uptake of behavioral and program-based energy savings in rural communities in Wisconsin.

Overview

This pilot project in the small town of Burlington, Wisconsin, was launched to explore creative ways to advance energy efficiency — both behavior- and program-based — in rural communities in the state, which had historically low participation in utility programs. The pilot ran from 2010 to 2013 and promoted energy efficiency programs and behaviors to residents of the town using schools, events, and community leaders to help spread the word. Outreach was centered around a pledge card, where residents or businesses could commit to doing one or more behavior change such as turning off the lights. The project leveraged a task force of local

leaders to provide insight into community-specific outreach tactics and a single “Energy Ambassador” point person to be the face of communications around the program.

Ultimately, the goal was to determine if a similar program could be run in other communities across the state to drive participation in efficiency programs. While the pilot failed to demonstrate increased participation in energy efficiency programs on the residential side, deemed savings from programs did increase. Commercial results were even more promising: It demonstrated significant gains in savings and participation in the commercial area. Some tactics included tabling, soliciting pledge cards, and a video campaign on energy at businesses.

Target Actions

While outreach was largely centered around pledge cards, the goal of this program was to drive greater community-wide savings. Project implementers hoped that residents and businesses who pledged to save energy would increase their likelihood to practice efficient behaviors and purchase efficient equipment. The following goals were established (We Energies 2013):

- Achieve 1% annual savings through programs
- Collect 2,250 pledges to save energy

Identifying Barriers and Benefits

Way to Save, Burlington! established an “Energy Task Force” made up of local community leaders to help establish goals for the challenge and inform marketing and outreach decisions. The task force played an important role throughout the process in helping to shape outreach techniques and strategies (We Energies 2013).

Behavior-Change Tools

Commitment

Community pledges, a form of a commitment, were a central goal of this engagement. Pledges asked residents to take up to five simple behavioral energy actions in their own homes or businesses such as “unplug electronic devices when not in use,” and “turn my thermostat down a few degrees in winter and up a few degrees in summer” (Kassirer 2014).

A survey evaluation of the community showed that those who recalled pledging to take action were on average likely to implement more energy efficiency measures in their home than those that did not (We Energies 2013, 3:15).

Competition

This pilot leveraged several competitions to engage residents and businesses. Residents were asked to submit entries for the “Home Energy Makeover” contest, businesses could enter the “Business Energy Makeover” contest, and students could compete in the “School Energy Rewards” competition. To compete, homes and businesses submitted videos about why they needed to take more efficient action to be considered for a monetary prize that could be used

for energy efficiency upgrades. These contests were also picked up by local media, providing more coverage of the contest and initiatives (Nadolski 2013).

Social Diffusion

The Way to Save, Burlington! project was, from the beginning, centered around social diffusion. To begin planning outreach for this pilot, an Energy Task Force was established, made up of several local leaders including the mayor, representatives of the chamber of commerce, and other businesses and social leaders. While this task force mainly served in an advisory role, one of the identified hopes of the program was that these members of the task force would also reach out to their own networks about the program (We Energies 2013, 2:71). While this didn't happen to the extent that project implementers had hoped, program evaluation showed that the task force did have conversations with community groups and others in their local networks about the program (We Energies 2013, 2:73).

By design, Way to Save, Burlington! relied on the work of an Energy Ambassador to conduct most outreach. While this person was not an established leader within the community at the start of the program, his outreach and networking were central to the success of this pilot (We Energies 2013, 2:73). By acting as the public face of the pilot and embedding himself in many community events, the Ambassador acted in the role of a traditional community leader. Survey responses from participating community members evaluating the program emphasized that the Energy Ambassador served as a vital communication channels and provided useful information about the program to target audiences throughout the community (We Energies 2013, 2:77). Throughout the outreach period, the Energy Ambassador and volunteers embedded themselves into community events, including the Burlington Home and Garden Show and the local farmers market.

Finally, one of the co-benefits of the project's competitions, was the development of peer stories to help spread the word about energy efficiency. Contest winners and their stories were picked up and shared by local media outlets (Nadolski 2013). While this was not central to the outreach, the highly visible and publicized nature of the contests likely had an effect in spreading the messages of saving energy.

Social Norms

This project used social norms as a behavior-change tool by displaying campaign goals with billboards in public areas. A downtown Burlington billboard read "Hey Burlington! Have you taken the pledge for your Way to Save energy? Pledge now at waytosaveburlington.com" (Kassirer 2014). The poster displayed a light bulb that was partially filled and listed the number of pledges that had been received. These visual cues applied social pressure to community members by very visibly indicating the number of people who already were participating.

Tailored Communication

The Way to Save, Burlington! pilot relied heavily on tailored, community-specific messaging throughout the duration of the program. The campaign website drew traffic and served as the most successful communication tool, according to the evaluation. There was one website for businesses and residents, and it was heavily relied on throughout the project.

Many of the various communications used language that sought to evoke community pride. One such message was, “Let’s make Burlington a community where energy efficiency is a way of life! Come save with us!” (Way to Save, Burlington! 2013).

Incentives

While this program did not offer additional incentives for taking action, it did focus on low-cost actions and measures and communications centered around the cost-saving impacts of actions. Even the name of the project “Way to Save,” emphasized energy and financial savings (Kassirer 2014).

Costs and Funding

This project was funded by We Energies to find ways to increase savings in rural communities across their territory and had a budget of $350,000 annually for the duration of the project from utility ratepayer funds (Drehoble 2018, 24). This project did not include many financial incentives that went beyond those already offered by the utility.

In program evaluations, Energy Task Force member noted that funding for marketing and outreach activities was insufficient, making it necessary for the Energy Advisor to rely on community donations and volunteer time to implement outreach activities (We Energies 2013, 2:77). Evaluation of the program also noted that, as a pilot program, Way to Save, Burlington! would have substantially more costs than a program that uses the pilot to form another similar project.

Results

Results from this program were overall mixed. In total, community members — businesses and residents — submitted 1,500 pledges, including 14,449 from residents. The 1,500 pledges fell short of the 2,500 goal the task force established in the planning phase.

On the residential side, deemed savings from programs went down slightly over the program period. During this time, We Energies was phasing out programs that were being adopted by Focus on Energy, which may have impacted savings. This also could show that Way to Save, Burlington! had little effect on residential savings (We Energies 2013, 3:6–7). When compared to the control community, the numbers looked a little better. Overall, the program years corresponded with “a net increase of 18% in deemed therm savings, and 22% in deemed kWh savings, but a net decrease of 3% in deemed kW impacts,” on the residential side (We Energies 2013, 3:12). Energy saving for the project reached 337,000 kWh and 29,600 therms for residents (Drehoble 2018, 61).

On the commercial side, the program looked more impactful, at least for electricity savings. Total business savings increased by 1.4 GWhs combined over the baseline, across the three years (We Energies 2013, 3:6). This also represented a significant increase over the savings in the control community, demonstrating that the project did have an impact. On the commercial side, the impacts were, “a net increase of 5% in deemed Therm savings, 122% in deemed kWh savings, and 86% in deemed kW impacts for commercial programs” (We Energies 2013, 3:12).

To measure impact, Burlington was compared to a similar-sized rural community in Wisconsin that did not participate in the program. Burlington did show larger deemed savings from utility efficiency programs compared to the control community, in a large part due to the business savings.

In program evaluations, the metrics that the program was evaluated on were largely based on energy savings and use, whereas much of the promotion for both residents and businesses was around behavior-based pledge cards. This likely impacted the underwhelming deemed savings results, especially on the residential side.

Figure 4: Tiverton is pictured at the right of the above image. Image also includes Portsmouth and the Sakonnet River.[iv]

Tiverton Non-Wires Alternative Pilot

Location	Tiverton, Rhode Island
Estimated Population (2010)	15,780 (U.S. Census 2010)
Utilities and Key Partners	Utility: National Grid
Timeline	2012–2017
Prime motivation	Pilot a non-wires alternative project

Overview

This Rhode Island project was launched as a pilot in 2012 to test utilities' ability to respond to system procurement (infrastructure) needs with demand response resources. This project

aimed to reduce load in the Tiverton and Little Compton area by 1 MW. It is also known as "DemandLink."

The goal of the project was to increase customer participation in efficiency and demand response programs to meet demand reductions. The targeted area was 80% residential with the remainder of customers being primarily small businesses. Local leaders were leveraged to help with outreach for this pilot, including City managers who "were instrumental in assisting with community outreach" (Chew 2018, 66). The project ultimately achieved only 75% of its stated goal of 1 MW of total deferment. Despite falling short of the original goal, it was successful in deferring the need for the feeder project until after the duration of the pilot project (National Grid 2016). As a pilot project, it also lent important findings for the utility to take to future non-wires projects.

Target Actions

The target actions revolved around an initial energy assessment with demand response measures and other follow-up recommendations. Measures included energy efficiency and demand response for residents and businesses, including controllable smart thermostats and lighting.

Identifying Barriers and Benefits

To prepare for implementation, National Grid relied on studies of the area, such as ones that demonstrated that there was a high penetration of air conditioning units in homes (Anthony 2014). The utility also hired an advertising firm to plan the outreach campaign and structured some of the outreach off lessons learned in a pilot project in another city (National Grid 2011, 11–12).[17] After the program launch, program implementers did continue to assess and evaluate barriers and benefits and adjusted the program accordingly. Through the beginning stages of the program, program implementers uncovered barriers by finding that messaging that fell short of expectations. They then pivoted the messaging for the program based on learning from their in the field work. New messaging was centered around the community benefits of taking such action (Anthony 2014).

Behavior-Change Tools

Convenience

Convenience, through creating simplified processes for customers, was central to this project. Customers in the targeted areas received streamlined services as part of this pilot program. Those who signed up for the program's home energy assessment would also receive free installs of targeted demand-response equipment during the assessment, meaning customers had a single point of contact. Both those who signed up through the targeted outreach for the pilot program as well as those who signed up through more traditional avenues for an energy assessment had simplified access to targeted efficiency materials (Anthony 2014).

[17] The utility referred to this as the "Aquidneck Island Pilot."

Incentives

This project used financial incentives to reduce cost barriers. In the first year of implementation, customers who agreed to allow the utility to manage their central air condition units on peak load days received a bill credit of $40 for residential customers or $160 for commercial. When the program expanded its offerings to controllable window air conditioning units, it offered financial incentives and free recycling for customers who installed load-controllable units that were the target of this program.

Social Diffusion

City leaders in the targeted areas for this project played a central role in building trust and spreading messages to the community. City managers for Tiverton and Little Compton used social media and community meetings to engage local citizens and convey the importance and community benefits of the project (Chew 2018). Their social media posts corresponded with an uptick in activity. Additionally, local contractors played an essential role in door-to-door outreach (Chew 2018).

Social Norms

Especially later in the pilot project's tenure, marketing materials shared among various channels used messages highlighting the number of neighbors who had implemented the recommended programs (National Grid 2017). This social norming encouraged residents or businesses to follow the example of their peers.

Tailored Communication

This project provides valuable insights into the benefits of tailored communications because of a pivot that program implementers made during implementation. After disappointing uptake of target behaviors following the program's 2013 launch, implementers pivoted from more passive outreach to direct marketing tactics. Perhaps more importantly, they also revised the messaging: from a focus on "save energy, save money," to the importance of working together to keep the community efficient and defer expensive upgrades.

This shift happened after studies showed that the "save energy, save money" message was met with distrust in the community over the perceived "Big Brother" aspect of demand response and the utility's control over energy-using items like air conditioning (Anthony 2014). In 2016, the pilot further tailored its communications to customers to focus on the reasons behind the project and benefits to the grid. Program marketers made this switch after the discovering, through focus groups, that customers were more open to participating when they were aware of the reasons behind the pilot project and the benefits to the grid. Targeted messaging was disseminated through direct mail, newsletters, post cards, and emails (National Grid 2017).

Costs and Funding

This project was funded by the utility, National Grid, and approved by the Rhode Island Public Utilities Commission as a load curtailment pilot project in 2012 (National Grid 2011). Original

plans proposed a budget of $989,000, amounting to $0.0000268 per customer. The estimated savings from deferment was about $653,000 (National Grid 2016, 2).

In evaluations at the project's conclusion, the utility acknowledged that costs of the pilot were moving beyond the cost of investing in infrastructure. However, they emphasized that it would still be vital to continue with the pilot to gain more insight into future projects, highlighting the importance of using evaluation to better inform future projects (National Grid 2016, 2).

Results

This project did not achieve its stated goal of 1 MW of reduction in the targeted area. They did manage to reach 735 kW of deferral, or about 74% of the goal (National Grid 2018). It did prove successful in the more qualitative goal of deferring the wired infrastructure project for the duration of the pilot, despite costing more than the cost savings of the deferral. Perhaps most importantly, the utility gained insight from this that they could apply to future deferment projects (National Grid 2016, 2).

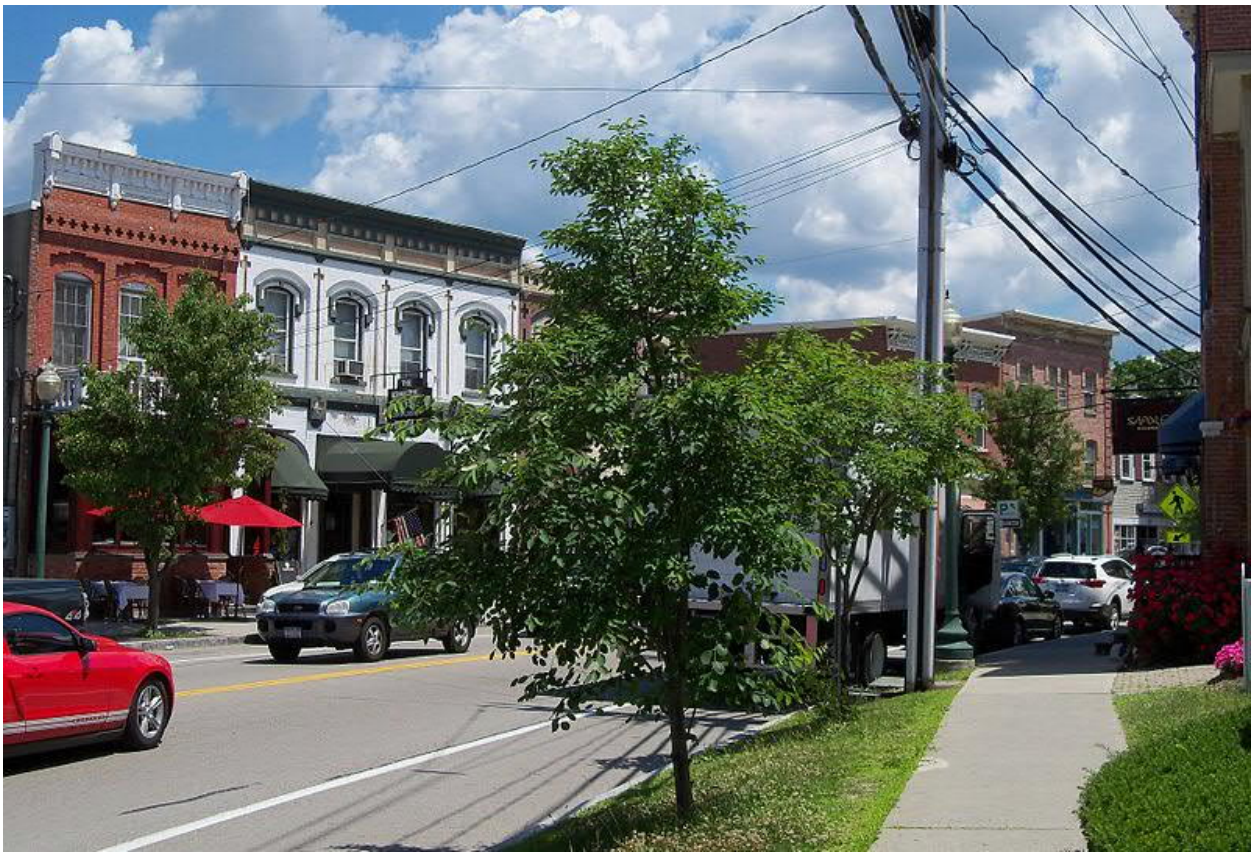

Figure 5: Fishkill, New York, (pictured) was one of the targeted locations of this project.[v]

Central Hudson Gas & Electric Peak Perks Program

Location	Mid-Hudson River Valley, New York
Utilities and Key Partners	Utility: Central Hudson Gas & Electric; Key Partners: Itron, and CPower
Timeline	2012–2013 (planning); 2016–present (implementation)
Prime motivation	A non-wires alternatives project. This was aimed at meeting a 16 MW load objective across three zones.

Overview

This ongoing non-wires alternative utility project launched in 2006 to address load concerns in three specific areas of the central Hudson Valley in New York state. This program was created in response to the regulatory requirements of the New York Public Service Commission's Reforming the Energy Vision initiative, which incentivizes New York utilities to examine demand response resources to address issues that would often be addressed with wired (generation,

transmission, or distribution) infrastructure (NY PSC 2015). The goal was to delay infrastructure development in the targeted area for at least 10 years.

Note: Although this case study is written in the past tense, the project is ongoing as of the publication of this appendix.

Target Actions

This project focused on demand response measures for peak summer electricity. This included deployment and enrollment of new, controllable Wi-Fi thermostats, as well customer enrollment of existing equipment and infrastructure — to be controlled by the utility during peak times. Equipment and infrastructure included existing Wi-Fi thermostats, pool pumps, and standby electric generators. Especially earlier in the implementation period, project implementers focused heavily on getting those who already owned the target equipment like standby generators to sign up for the program to allow the utility to control those devices.

Identifying Barriers and Benefits

To properly target behaviors, this program studied the area they were working in, with some key discoveries. For example, this program was aimed at reducing peak summer demand, which is often achieved through air conditioning cycling. After surveying the community, project implementers discovered that some target areas had significantly fewer homes with central air conditioning than expected (Chew 2018, 49).

Behavior-Change Tools

Convenience

By relying heavily on enrolling customers' existing equipment into demand management programs, rather than widespread deployment of new equipment, this program was centered around convenience. After a study revealed many existing home generators with the potential to be deployed to meet peak demand needs, the utility decided to incorporate these into the program (Chew 2018, 49).

The program also relied on a centralized website where customers were able to manage their devices or enroll (Chew 2018). This helped to streamline processes. By using the website as a central resource, project implementers were also able to sort out customers who were not in the affected areas, simplifying the process of determining who is eligible with a project that has a more dispersed geographic reach.[18]

Incentives

Increased incentives were a key component of this program. Implementers offered and advertised the free nature of the available materials (like Wi-Fi thermostats) as well as the financial incentives for installing and enrolling equipment. Customers enrolling Wi-Fi thermostats

[18] As of 2021, the website is live at cenhubpeakperks.com.

in the control programs received up to an $85 incentive, and between $50 and $100 for each year they remained in the program (Chew 2018, 49).

Tailored Communication

Throughout their promotions, Peak Perks used targeted communication focusing on the benefits to the Hudson Valley. “Good for you, good for the Hudson Valley,” was the campaign’s tagline. Website language emphasized a call to action for customers, stating: “You can help minimize the need for costly upgrades to our power grid and enjoy substantial rewards for your help” (Central Hudson 2021).

Costs and Funding

Central Hudson Gas & Electric and state utility regulators determined a unique funding model for this project because it is aimed to eliminate the need for an infrastructure development that would have brought in revenue to the utility. This means that 70% of the financial benefits of the Peak Perks program go to customers through regulated rates, and the utility receives 30% of the financial benefits (Chew 2018, 51).

Many specifics of cost and spending information of this project are not yet available. Central Hudson filed a motion to withhold financial information related to its non-wires alterative projects, citing that the data would be trade secret protected information (Colbert 2017).

Results

Because this project is still ongoing, results here are preliminary. Initial results for the program were extremely promising, with very high participation and savings in the geographic area with the most need for savings, with over 30% of eligible customers participating. They also successfully recruited a few large industrial customers in the first push who were able to deliver substantial savings (Chew 2018).

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NOTES

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