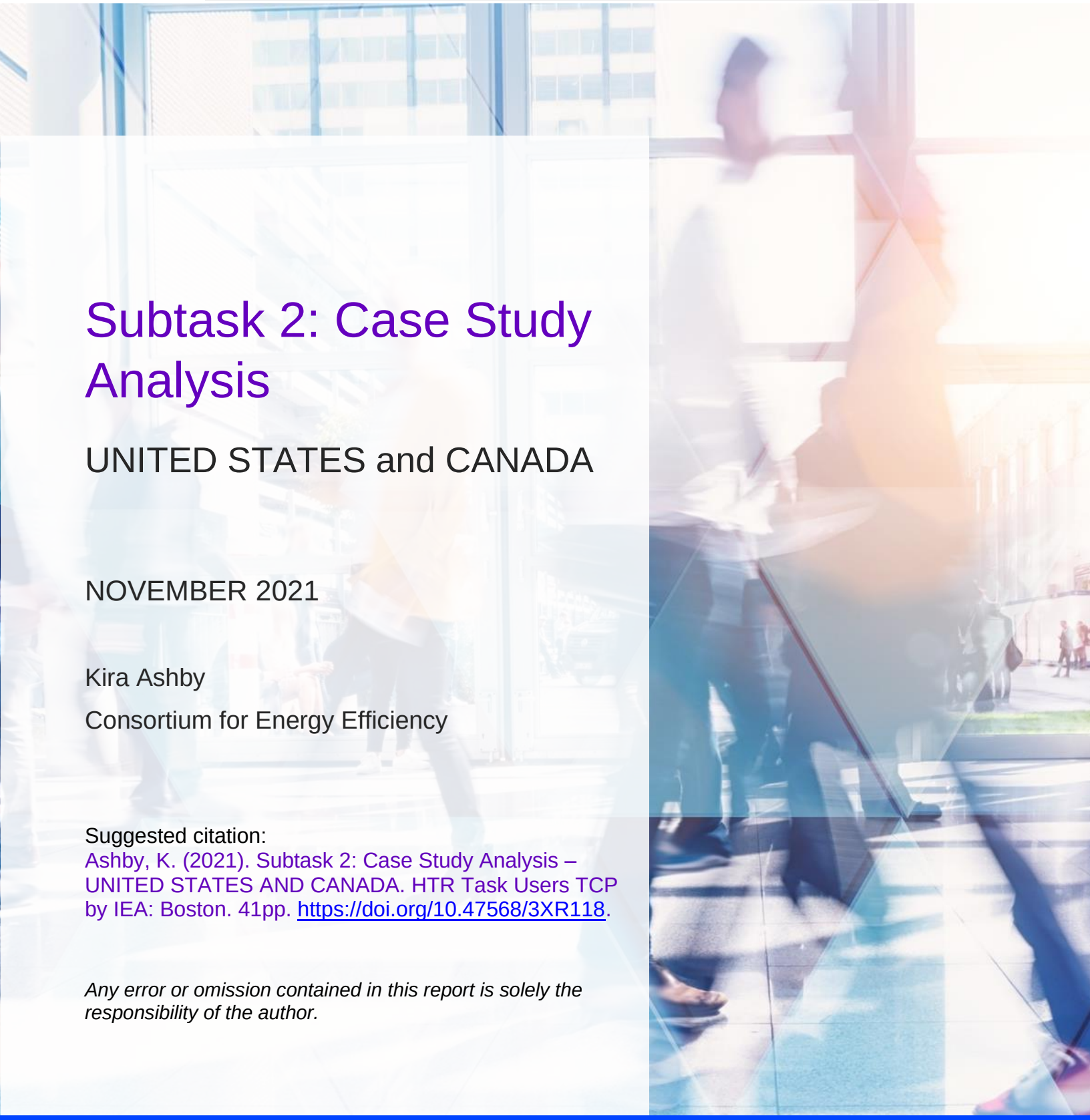
UsersTCP | Hard-to-Reach Energy Users



Subtask 2: Case Study Analysis

UNITED STATES and CANADA

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Preface

This report was developed under the 'Users Technology Collaboration Programme (TCP) by the International Energy Agency (IEA) Task on Hard-to-Reach (HTR) Energy Users'. The Task aims to provide country participants with the opportunity to share and exchange successful approaches identifying and better engaging HTR energy users. Under the Task, HTR energy users are broadly defined as *'any energy user from the residential and non-residential sectors, who uses any type of energy or fuel, and who is typically either hard-to-reach physically, underserved, or hard to engage or motivate in behaviour change, energy efficiency and demand-side interventions*'.

Outcomes from the Task indicate that HTR energy users involve, for example, renters and landlords; low- and high-income households; the MUSH (municipalities, universities, schools, and hospitals) sector; small to medium enterprises / businesses (SMEs / SMBs); and people exposed to intersecting and compounding vulnerabilities based on factors such as age, race, gender, minority status, geographic, linguistic, technological or social isolation.

The case studies presented in this report aim to offer insights into programmes that aim to better engage HTR energy users in the USA and Canada. Particular attention is given to design, implementation and behaviour change aspects. Other country case studies developed under the Task also include: Aotearoa New Zealand, Italy, the Netherlands, Portugal, Sweden, and the UK.

We would like to thank all participating countries, their authors, and the interviewees who provided insights into their programmes targeting the HTR. I would like to particularly like to thank our National Experts and any national experts who undertook peer reviews.

All case studies can be found on the project's website.

Dr Sea Rotmann

Task Leader

Users TCP by IEA Task on HTR Energy Users

Wellington, September 2021

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- CEE member sponsors of US and Canadian participation in the Hard-to-Reach Task by the UsersTCP of IEA

- Hard-to-Reach Task National Experts and Operating Agent Dr. Sea Rotmann and Prof. Luis Mundaca for their extensive review

- CEE member organization staff who shared their programme work for these case studies, including:
    - Amit Singh and Clint Stewart, Puget Sound Energy
    - Lynne Williams and Alicia Thomson-Hearn, FortisBC
    - Arien Korteland, BC Hydro
    - Amy Seabrooke, BC Hydro
    - Jeremy Morrison, Duke Energy

- CEE staff for their review and assistance with this document: Arlene Lanciani, Jayne Piepenburg, and Sidra Pierson.

Glossary

A/B Testing: a comparison of two programme interventions to identify which performs better.

Demand Side Management (DSM): consists of the planning, implementing, and monitoring activities of electric utilities which are designed to encourage consumers to modify their level and pattern of electricity usage (U.S. EIA, 2001).

Direct Installs: programs that provide for the direct installation of energy measures such as energy efficient light bulbs or other new equipment, often in low income households.

Home Energy Assessment (HEA): also known as a home energy audit, HEAs are designed to provide information on a home's energy usage for the purposes of identifying potential energy efficiency improvements.

Home Energy Report (HER): a quarterly or monthly report provided to a household that details how their energy usage compares to that of similar households.

Non-Energy Impacts/Non-Energy Benefits (NEIs/NEBs): an additional benefit (positive or negative) for participants in energy efficiency beyond the energy savings gained from installing energy efficient measures (NEEP, 2017).

Executive Summary

This case study collection includes two examples each from the United States and Canada detailing efforts to better engage underserved audiences in energy efficiency programmes.

U.S. participation in the Hard-to-Reach (HTR) Task was made possible by a collaboration between the U.S. *Department of Energy* (DOE) and the *Consortium for Energy Efficiency* (CEE). CEE is the binational non-profit consortium of energy efficiency programme administrators. Its members include electric, natural gas, and dual-fuel companies, who collectively direct nearly 80 percent of the $9.3 billion USD spent on energy efficiency annually in the U.S. and $950 million CAD spent annually in Canada (CEE 2020).

Surveys and interviews deployed as part of the earliest data collection phase of this HTR Task revealed that energy users who were low income, low-English proficiency, and renters, as well as small enterprises/businesses (SMEs/SMBs), were high priority HTR audiences in the U.S. and Canada (Ashby, Rotmann et al., 2020; Ashby, Smith et al., 2020). As a result, the case studies included in this document cover the following HTR audiences:

- Rebates for manufactured homes (which includes low income, low-English proficiency, and renters)
- Indigenous communities, and
- Small businesses.

In developing the case studies, the National Experts from each participating country adopted the framework developed by the See Change Institute, called 'The ABCDE Building Blocks of Behaviour Change' (for details, see Karlin et al., 2021 and Rotmann et al., 2021). This framework focuses on the analysis and systematisation of the design, implementation and assessment of interventions addressing behaviour change that, in our case, target energy efficiency (EE) and energy conservation. The framework focuses on data collection across specific blocks, namely: Audience, Behaviour, Content, Design and Evaluation.

Applying this Building Blocks framework to these case studies collectively uncovered several main takeaways likely applicable to other efforts to better engage underserved energy users. These learnings included:

- ***Trust is a key barrier to HTR audience engagement***; while trust may be a challenge with a variety of underserved audiences, it is particularly salient within indigenous communities. Trust hurdles may be best overcome by hiring and training members of the community intended for engagement to deliver the program directly themselves.
- ***High touch approaches are necessary, but expensive***; a common theme across multiple case studies was that a "boots on the ground" approach was vital, and door-to-door outreach was typically far more effective that more indirect interaction methods. This reality can present cost-effectiveness challenges.
- ***Some cost-effectiveness hurdles may be addressed by starting with a subset of the intended audience***; one utility noted that it is practically most cost-effective to aim to engage their manufactured homes customers who are in manufactured homes parks, as opposed to as one-offs distributed throughout a community.
- ***Deferring energy efficiency goals as primary metric has programme benefit;*** pilots that do not have specific energy savings targets themselves at the outset allow for

extensive exploration of the approaches that may be likely to spur future energy savings. This was the experience of BC Hydro in their pilot with indigenous communities.

- ***Targeting communications and messaging to the channels through which target audiences already seek information can be both efficient and effective****;* one utility noted that certain channels (such as radio) were unexpectedly highly used already by their intended audiences, whereas another utility observed that an outreach channel they expected to be commonly effective (postal mail) was barely used by their intended indigenous community participants.

With the recognition that each underserved audience faces unique barriers and potential opportunities, these initial learnings can serve as a starting point in the development of future engagement efforts for HTR energy users.

Case Study Methodology

The methodology to develop the case studies is composed of the following elements (from Mundaca, 2021):

The case studies were chosen based on the outcomes of previous activities undertaken by the HTR Task. As indicated in the previous section, these activities aimed to identify and characterise HTR audiences in participating countries. To that end, a variety of data sources were used, including an international survey, interviews with experts and practitioners, and a literature review (for details, see Ashby, Rotmann et al., 2020; Ashby, Smith et al., 2020). In the U.S. and Canada, these activities revealed that energy users who were low income, low-English proficiency, and renters, as well as SMBs/SMEs, were important HTR audiences.

Data gathering was guided by an interview protocol that addresses each of the Building Blocks of Behaviour Change, and the set of questions can be found in Rotmann et al. (2021). Interviews (~60 minutes) supported data collection and provided a deeper understanding of the chosen cases. These were conducted by the author of this report and the following people were interviewed:

- Amit Singh and Clint Stewart, *Puget Sound Energy* (February 23, 2021)
- Lynne Williams and Alicia Thomson-Hearn, *FortisBC* (March 23, 2021)
- Arien Korteland and Amy Seabrooke, *BC Hydro* (April 27, 2021)
- Jeremy Morrison, *Duke Energy* (July 19, 2021)

Finally, the case studies were supported by a review of official documentation, including multiple (ex-post) evaluation reports and papers. With the exception of the discussion and concluding thoughts sections, any assertions without citation are drawn from the interviews. Any error or omission contained in this report is solely the responsibility of the author.

The Building Blocks of Behaviour Change

To assess these four U.S. and Canadian case studies, the authors aimed to apply the *ABCDE Building Blocks of Behaviour Change Framework* (Karlin et al, 2021). The ABCDE Building Blocks framework serves as a systemised and data-driven approach to designing, implementing, and evaluating behaviour change interventions, including for those aimed at HTR audiences. These Building Blocks include (Karlin et al, 2021):

- **A**udience: the pilot or programme's intended participants
- **B**ehaviour: the specific behaviour the programme intends participants to change
- **C**ontent: the programme strategy and approach
- **D**elivery: the mechanism and timing of the intervention (e.g. delivery may happen through door-to-door interactions or social media, etc.)
- **E**valuation: the way in which programme success is measured or otherwise assessed

Throughout the development of these case studies, it became clear that some of the building blocks applied more readily to these programme examples than others, as discussed in more detail in the *General Discussion* section of this document. As will become apparent in each case study, Content and Delivery are closely linked. Given that certain content lends itself more

readily to specific delivery channels, it can be a bit tricky to untangle which was content and which was delivery. The other building blocks, for the most part, proved more straightforward to apply to these concrete programme examples.

Country Context and Background

United States and Canada

U.S. participation in the Hard-to-Reach (HTR) Task was made possible by a collaboration between the U.S. *Department of Energy* (DOE) and the *Consortium for Energy Efficiency* (CEE). CEE is the binational non-profit consortium of energy efficiency programme administrators; its members include electric, natural gas, and dual-fuel companies, who collectively direct nearly 80 percent of the annual expenditures on energy efficiency in the U.S. and Canada. Although only the U.S. is an official Task participant, these case studies will draw from Canadian examples as well, given that CEE participation has been made possible in part by Canadian sponsors.

The scale of energy efficiency efforts in North America is vast. In 2019 in the U.S. and Canada spending on demand side management programs included more than $9.3 billion USD in the U.S. and $950 million CAD in Canada, which far outpaces most other countries (CEE 2020). In the U.S., energy efficiency programmes are typically funded by ratepayers, or those who pay bills for electricity and natural gas usage. In Canada, energy efficiency programmes are more commonly funded by taxpayer contributions (e.g. information campaigns, technology subsidies, etc.).

In the U.S., these programmes are often, although not exclusively, run by investor-owned utilities (IOUs), as opposed to Europe's mostly government-run policy programmes. In Canada, utilities are typically owned by the government and are often considered crown corporations. In both cases, the entities running energy efficiency programmes (typically referred to as programme administrators) are often heavily regulated as monopolies. As a result, many utilities are mandated to meet specific energy efficiency targets, and programmes that count towards these targets must meet cost-effectiveness and other evaluation requirements.

There are several key implications of this regulatory environment on these binational energy efficiency programmes. First, regulator acceptance of any new programmes or approaches is crucial; quantitative evidence of achieved savings is required and specific evaluation methodologies are often prescribed. There is typically a high bar for new evaluation methods. Consequently, it can be challenging to get new programmes and approaches approved — change happens gradually. Finally, because at least in the U.S. it is not a government entity running programmes, the focus is on programme approaches over policy approaches, which will be evident throughout these case studies.

In the U.S. and Canada, many programme administrators have goals specific to reaching low-income or income-eligible customers. In some cases, this goal takes the form of a spending minimum for low-income customers. In others, demonstrating increased programme participation from low-income customers is a key goal.

Case Study Background

The purpose of these case studies is to shed light on examples of and experience from pilots and programmes through which U.S. and Canadian programme administrators are successfully (or not) engaging specific HTR audiences. Overall, U.S. and Canadian utilities have a variety of efforts underway aimed at better engaging specific HTR audiences, and these programme administrators are seeking further insights into the specific barriers that may be preventing

energy efficiency programme participation, and how to address them. The focus of these case studies is on HTR audiences that are of high priority from both an equity and energy savings perspective.

HTR Audiences in the U.S. and Canada

A wide variety of HTR audiences were identified in the U.S. and Canada (Ashby, Smith et al., 2020), including low income, renters, low-English proficiency communities, rural energy users, senior citizens, and BIPOC (which includes all people of colour and Indigenous peoples) on the residential side, and SMEs/SMBs on the commercial side. The case studies included in this document cover the following HTR audiences:

- Rebates for manufactured homes (which includes low income, low-English proficiency, and renters)
- Indigenous communities, and
- Small businesses.

These HTR audiences are among the priority audiences identified in the emerging literature (Rotmann, Mundaca et al., 2021); these HTR audiences are also either relatively prevalent or contribute substantially to energy usage and energy losses in the United States. For instance, according to the 2019 U.S. Census, there are approximately 34 million Americans living in poverty. The U.S. Census (2000) also reports that more than 21 million Americans over age five would qualify as low-English proficiency. It is estimated that one in every five Americans lives in a rural area (Shoemaker et al., 2018). Approximately 37 percent of Americans were renters in 2015 (Fredman et al., 2018), and renters consume about a quarter of total energy (Kneebone and Murray, 2020). Additionally, the U.S. Census (2010) indicates that 5.2 million Americans are of Indigenous heritage and 39.9 percent of the U.S. population is people of colour or of Hispanic heritage. In terms of commercial HTR audiences, of the nearly eight million business establishments in the United States, nearly 6.7 million (almost 84 percent) had fewer than 20 employees (County Business Patterns, U.S. Census, 2018). SMEs/SMBs make up approximately 17 percent of U.S. national electric usage and 13 percent of global energy usage (Meyers and Guthrie, 2006).

In Canada, low income, low-English (or French) proficiency, Indigenous and small businesses are also key HTR audiences. In 2019, Canada's poverty rate was 10.1 percent, suggesting that nearly four million people are living in poverty (Dimensions of Poverty Hub, 2021). Approximately 4.5 percent of Canadians self-identify as Indigenous and 28.4 percent as BIPOC or of Hispanic heritage (Canadian Census, 2016.) In addition, 11 percent of Canadians are considered low-English or low-French proficiency (Canadian Census, 2016). In terms of housing, 32 percent of Canadian households rent their homes (Canadian Rental Housing Index, 2018.) It should also be noted that 18.5 percent of the Canadian population lives in a rural area (MacroTrends Canada, 2020.) On the commercial side, approximately one million, or 86.3 percent of Canadian businesses are small businesses that employ fewer than 20 people (Canadian Census, 2016).

Residential HTR audiences in the U.S. and Canada often face overlapping vulnerabilities; it is common for any given individual to fall into more than one of these HTR categories. For instance, in the U.S., over 25 million seniors are economically insecure (Pew Research Center 2019), and 370,000 seniors are economically insecure in Canada (Statistics Canada, 2019). About 41 percent of U.S. households in rural communities have incomes below 200 percent of

the federal poverty level (Shoemaker et al., 2018). Additionally, renters tend to be lower income than those who own their own home (Kneebone and Murray, 2020). While Hispanic and African American residents make up 18 percent and 12 percent of the U.S. population respectively, they represent 28 percent and 18 percent of renters (Bell et al., 2013). In Canada, one in five BIPOC families live in poverty, in comparison to one in 20 white families (Canadian Observatory on Homelessness, 2021). In Canada, over half (54 percent) of households including people of colour living in poverty said that a language other than English or French was the primary language spoken at home, whereas only eight percent of households not including people of colour living in poverty speak a primary language other than English or French. However, in general, most people living in poverty have knowledge of English or French and only 11 percent of individuals have limited knowledge of either official language (National Council for Welfare Reports, n.d.). Further, according to the 2016 Canadian Census, 23.6 percent of the Indigenous population is considered low income (Canada Census, 2016).

	Percent of population living in poverty	Percent of population self-identifying as Indigenous	Percent of population with low-English or low-French proficiency	Percent of businesses that are SMBs/SMEs (< 20 employees)
United States (2019 Census)	10.5 percent	1.5 percent	6.2 percent	83.8 percent
Canada (2016 Census)	10.1 percent	4.5 percent	11 percent	86.3 percent

United States' Residential Case Study (Manufactured Homes)

Background

Puget Sound Energy (PSE) is a combined electric and natural gas utility in the state of Washington in the U.S. PSE serves a total of approximately 1.1 million electric and 840,000 natural gas customers.

The need for the manufactured homes programme described here was identified through a regional process. The utility commission had a vested interest in providing additional services to what they deemed as vulnerable customer segments. For manufactured homes, housing is somewhat evenly split between rural and urban areas and is often occupied by low-to-moderate-income (LMI) residents, many of whom are native Spanish speakers. These residents are also often renters of the land on which they live. Given that residents may own the structure, but lease the land, it can be more challenging to obtain loans for home improvements. To overcome the split incentive, PSE previously offered a free manufactured home duct sealing programme that was ultimately retired in 2015 due to saturation of mobile home parks. More recently, PSE had offered rebates to manufactured homes through existing single-family homes efforts but did not provide comprehensive offerings that were focused on upgrading inefficient measures in manufactured homes.

Audience

Definition and characterisation of the target audience

Manufactured home residents are considered HTR given that most residents fall into the LMI category (Smart Energy, 2020). Some of the barriers that PSE hypothesised might be preventing programme participation by manufactured home residents included: lack of access to technology, limited customer attention (i.e. competing life priorities), and low trust of utilities (Smart Energy, 2020).

The entire population in the PSE manufactured homes programme was 65,000 manufactured home customers, including around 35,000 customers for which PSE had email addresses (and thus could also communicate digitally). Overall, manufactured homes represent approximately five percent of PSE's residential customer base.

All participants in this effort were required to be a PSE natural gas or electric customer. Participants also had to reside in housing that met the U.S. *Department of Housing and Urban Development* definition of a manufactured home, which is a "*factory built dwelling that includes: (a) plumbing, heating, air conditioning, and electrical systems, normally contained within the belly of the structure and within a rodent barrier; (b) is built on a permanent chassis; (c) can be transported in one or more sections; (d) may or may not be permanently affixed to a concrete foundation*" (Smart Energy, 2020). Residents were eligible for the programme regardless of whether they owned or rented their manufactured home and/or its land. In order to ensure that the programme was tailored to its target participants, PSE conducted a statistically significant survey of its intended energy users prior to programme development and implementation.

Results of the Audience definition work

In 2019, PSE engaged with interested stakeholders to develop a research study to better understand the manufactured home market in its service area and determine additional opportunities to provide cost-effective energy efficiency services. The study grew out of joint interest expressed by PSE and its *Conservation Resource Advisory Group* (CRAG) and was an important step in formulating a plan of action. In developing this effort, PSE convened a diverse stakeholder group that included installation contractors, advocacy groups, regulators, the attorney general's office, and manufactured home associations. Together, this group helped set the research objectives for the manufactured homes work.

They helped determine the research questions, baselining, and the main opportunities and barriers. These stakeholders were less involved in the programme goal setting, which was primarily determined by PSE, although members of CRAG weighed in periodically throughout.

PSE planned for increasing incentives, targeting outreach efforts with *Home Energy Assessments (HEAs)*, putting together a dedicated set of trade allies who were familiar with how to work with the intended audiences. PSE did A/B testing for different marketing messages with their target audience aimed at raising awareness of the programme and encouraging participation. Internally, PSE aimed to double both total savings and the number of manufactured homes customers served.

Early in 2019, PSE convened a committee of internal stakeholders to design and manage these programmes. The objectives were to:

1) design an ideal customer journey,
2) take inventory of the communication tools and resources that could be used to funnel customers into an appropriate programme or service, and
3) set specific metrics for each programme and overarching goals for the initiative (Smart Energy, 2020).

AUDIENCE DEMOGRAPHICS

Of PSE's manufactured home residents, over half live in an urban setting, and 41 percent are low income. Here, low income is defined as 200% or below the federal poverty level. Unsurprisingly, financial barriers play a vital role, as manufactured homes residents are more likely to live on a fixed income or have gig-based (short-term or freelance) income sources, and thus are unlikely to have the means to cover the upfront costs of energy efficiency upgrades.

AUDIENCE PSYCHOGRAPHICS, BARRIERS AND NEEDS

Barriers for this particular audience include:

- **Lower levels of labour force participation**: Residents of manufactured homes are less likely to be in the labour force, overall. Even for those who are employed, taking time off in order to be present for new energy efficiency measures to be installed may be an insurmountable hurdle.
- **Rental challenges and the split incentive**: It can be difficult to initiate energy efficiency repairs when one rents as opposed to owns the manufactured home.

- **Language barriers**: The language barrier was addressed in part by beginning to translate programme materials into Spanish. PSE also worked with a contractor to create Spanish messaging and talking points based on focus groups with Spanish-speaking manufactured homes residents to help inform future messaging to Spanish-speaking customers.
- **Trust barriers**: The trust barrier was particularly challenging because there is an inherent - and understandable - scepticism of door-to-door salespeople. This distrust is such an overarching challenge at some manufactured home parks that the park manager will often run interference to try to prevent door-to-door engagement from happening, and this scepticism can carry over to other people on-site.

Behaviours

The first key behaviour targeted for this effort was to accept a free HEA. Customers were able to contact and schedule an appointment with an Energy Advisor over the phone or online. Once the HEA was complete, the intent was that the participant then connected with a contractor in order to complete recommended actions such as installation of weatherisation or a smart thermostat(s). To encourage follow-through after the HEA, PSE allowed contractors to follow up with the customers directly regarding efficiency upgrade referrals. PSE first sought verbal consent from customers to allow contractors to reach out directly. This practice removed the obligation to reach out from the customer. PSE was able to track referrals to find out when each project had been completed and to facilitate any additional follow-ups as necessary.

Content

Engagement strategy

PSE aimed to streamline and simplify the rebate and grant processing with simple applications and/or instant rebates and provided online tools to help customers manage their energy use (Smart Energy, 2020). Door-to-door staff were incentivised per energy assessment completed. Programme staff used limited time offers to create scarcity, and some partners offered additional discounts to encourage urgency (e.g., if measures were installed within a certain time window), both of which social science indicates can help spur behaviour change.

Messaging

In terms of content, various messages were A/B tested ahead of time to ascertain how to best promote programme participation. All communications and staff were PSE-branded. Based on PSE research ahead of time, ductless heat pumps were the most cost-effective and the most attractive measures to residents of manufactured homes. Thus, the focus of content was on ductless heat pumps, and programme materials emphasised comfort benefits in particular. The appeal of ductless heat pumps may also be in part based on the added cooling benefit, which is a huge selling point for manufactured home residents in general.

Delivery

Delivery mechanism

Delivery mechanisms included the PSE website, social media posts, in-person interactions (prior to the pandemic), and a one-time postcard campaign. Only about half of manufactured homes customers in PSE's service territory have email access, yet this approach appeared to yield results throughout. That said, it was also important to go beyond digital-only communications to reach the half of manufactured homes customers who did not have email access.

Messengers and communication channels

PSE used multiple channels to engage their manufactured homes customers. These included digital communication via internet and email, postal mail, and (pre-pandemic) in-person engagement via door-to-door visits.

Timing

The *Market Study* started in Jan 2019 and was completed July 2019, and there were preliminary findings along the way that helped provide guidance in the interim. PSE launched a manufactured home website, targeted HEA campaign, and higher manufactured home rebates in late March 2019. The targeted manufactured home HEA campaign started winding down towards the end of 2019, as did the manufactured home marketing. The higher manufactured home rebates are still in place as of 2021.

Evaluation

Evaluation methodology, metrics and targets

PSE completed an outcome evaluation, but not a process evaluation. As PSE already tracked all measures installed in their service territory by housing type, staff were able to determine the measures that were installed in manufactured homes as a result of this approach. HEAs increased by 258 percent from 2018 to 2019, but it was harder to double participation for measures such as attic insulation due to the difficulty of actually installing it.

To assess marketing impacts, PSE measured click through rates, page visits to their unique manufactured homes URL, and email open rates. PSE printed unique URLs on postcards to determine which postcards resulted in a website visit (and, subsequently, how long that website visit lasted).

Results

For the PSE manufactured homes programme, performance was assessed on the following metrics that took place in 2019:

- Customers who had PSE knock on their door: 9,694
- Number of clicks from targeted email: 9,869
- Customers taking action towards completing a project: 6,474
- Customers who received a HEA: 2,831
- Customers who completed a rebate measure: 1,310
- Increase in kWh savings over 2018: 199 percent
- Manufactured home webpage engagement: of the 13,391 customers who accessed the site, 64 percent self-reported taking at least one action to save energy
- Home Energy Reports (HERs) were sent to 25,000 customers, driving participation in PSE's no-cost *Weatherization Assistance* and HEA programmes

- Number of contractor referrals: Over 1,500
- Amount invested in incentives across PSE programs: Over $4,594,000
- Changes in 2019 *Low Income Weatherization* (LIW) manufactured home customers served: increase of 54 percent (from 234 dwellings to 361)

Recommendations, current status, and next steps

Lessons and recommendations

PSE recently had to sunset the *Home Energy Assessment* (HEA) programme, which was the gateway into this manufactured homes rebate programme. Because the state of Washington has new lighting and appliance standards, which shifted the cost-effectiveness calculus for certain measures, PSE could no longer offer free LEDs and shower heads to residents. But PSE does still offer rebates to manufactured homes customers, and the contractor network remains. PSE also continues to track its *Home Energy Report* (HER) cohort who have been receiving HERs and are also manufactured homes customers. This manufactured homes campaign by PSE served as a launching pad for expanding into all moderate-income residences through a pilot called *Efficiency Boost*, which is where PSE aims to turn its attention next.

Looking ahead to future programme iterations, PSE aims to:

- Continue to build on the financing front to ensure financial hurdles are not preventing programme participation
- Bolster the translation of programme materials into Spanish and four other languages
- Balance an interest in engaging manufactured home outside of parks with the cost-effectiveness challenges presented by successfully engaging out-of-park homes

Although engagement of manufactured homes outside of parks presents ongoing challenges, manufactured homes within parks are also much more numerous in PSE's service territory. This is an area for continued strategising going forward.

United States' Commercial Case Study (Small Business Energy Saver Programme)

Background

Duke Energy (Duke), headquartered in Charlotte, North Carolina, is one of the largest electric companies in the United States. *Duke* provides electricity to 7.8 million customers in six states, has over 29,000 employees, and provides approximately 51,000 megawatts of electric generation capacity in the Carolinas, the Midwest, and Florida. The company also has a natural gas distribution system serving more than 1.6 million customers in Ohio, Kentucky, Tennessee, and the Carolinas. Duke owns and operates approximately 98,000 kilometres (61,000 miles) of natural gas pipelines and service lines and 500,500 kilometres (311,000 miles) of electric transmission and distribution power lines (Duke Energy, 2019).

After running energy efficiency programmes for about a year, *Duke* observed that larger commercial customers were participating at higher rates than SMBs. Duke recognised the need to determine how to better engage smaller customers. This led to the creation of the *Small Business Energy Saver* (SBES) programme for the Duke Energy Progress jurisdiction in 2012, providing direct installs for customers; the programme was expanded to Duke Energy Carolinas North and South Carolina in late 2014. Overall, the SBES programme experienced significant growth as evidenced by participation numbers, claimed energy savings, and peak demand reductions. Since its inception, the programme has expanded and is now available in Indiana and some parts of Kentucky. It is noteworthy that this programme is still underway eight years after its initial launch.

The primary objective of Duke's SBES programme is to improve the energy efficiency of small business customers. This is accomplished by bundling multiple energy saving measures together and promoting them as a single project to maximise energy savings while minimising customer effort, time, and transaction costs. Furthermore, given the limited number of employees available to support energy management activities, energy audits and installations from outside vendors can be particularly appealing.

Audience

Definition and characterisation of the target audience

The initial intended audience for this programme was small businesses, defined as businesses with annual average peak of fewer than 100-kilowatt (kW) of service. Over time, this threshold has been increased in order to maximise participation and increase programme cost effectiveness. Currently, in order to qualify for the SBES programme, a small business is defined as annual average peak of fewer than 180 kW.

AUDIENCE DEMOGRAPHICS

Although the programme defines the target audience based solely on energy thresholds, from a marketing standpoint, vendors focused on customer needs in smaller technology subsegments. For example, the SBES programme offers incentives for lighting, HVAC, and refrigeration. In practice, vendors prioritise customers in need of all three types of measures because this approach is most cost-effective. Customers who meet these criteria are typically small businesses, such as small grocery stores, convenience stores, or restaurants.

AUDIENCE PSYCHOGRAPHICS, BARRIERS AND NEEDS

This programme was established in response to *NC Senate Bill 3* in 2008, which provided utilities with the ability to run energy efficiency programmes and recover these programme costs from their customers. This legislation also afforded any industrial and commercial customers that use more than one million kWh per year the right to not participate in utility-funded energy efficiency programming. As a result, most of the remaining required non-residential customers left to potentially participate are small and medium businesses. The majority of the initial energy efficiency programmes rolled out were standard prescriptive and custom-type programmes and required customers to research and then purchase equipment, then submit documentation to the utility to obtain approval for the equipment before installation. Overall, this was a time-consuming process that many small businesses did not have the resources to complete.

Behaviours

The SBES programme offers performance-based financial incentives covering up to 80 percent of the total project cost, including both materials and installation, for the adoption of measures such as high-efficiency lighting, HVAC, and efficient refrigeration equipment.

This programme targets structural changes (i.e. installing more efficient technology) rather than behavioural changes such as turning off the lights when they are not in use. However, installation decisions are still made by human beings. Recently, the programme has been seeking customers interested in installing measures beyond just the lighting measures alone that most customers often prefer. Payback periods are typically shorter for lighting than for measures such as refrigeration and heating; consequently, the cost-effectiveness of the programme from the participant standpoint may suffer when HVAC and refrigeration are added as additional measures. To encourage customers to move beyond lighting measures only, the programme has been redesigned over time to create a new incentive structure. At the beginning, each customer received the same incentives; however, now customers receive higher incentives and rebates for HVAC and refrigeration measures.

Content

Engagement strategy

Duke has performed some research and customer outreach to determine what about the content of the door-to-door canvasing is so successful. Unsurprisingly, commercial customers are incredibly busy and do not have the time to initiate correspondence with Duke; it is easier for decision-makers at small businesses to make the time if presented with programme staff in

person. Customers also report benefiting from in-person programme touchpoints because of the opportunity for two-way interactions and the chance to feel heard by Duke's contractors. Active listening on the part of Duke staff and contractors appears to increase customers' engagement. Duke staff have also found that it is better to keep a single focus than attempt to sell multiple offerings as one-offs, which is the approach that the SBES programme has taken.

Messaging

The messaging that *Duke Energy* advertises has changed over the years in order to appeal to the most customers. In the past, Duke has emphasised that they will pay up to 80 percent of the cost to replace lighting and other measures. However, Duke has recently tested whether customers respond better to "incentives up to 80%" or "energy savings up to 20 percent." This research indicated that customers are more receptive to the "energy savings up to 20 percent" language. Therefore, Duke has shifted the language they use in emails and social media to use the 20 percent savings message and has encouraged door-to-door outreach staff to emphasise the 20 percent figure.

Delivery

Delivery mechanism, messengers, and communication channels

Duke Energy has leveraged direct mail, email campaigns, door-to-door canvassing, and social media to get the word out. *Duke Energy* primarily uses direct mailing and door-to-door outreach to encourage programme participation. Overall, the door-to-door approach has been the most effective way to reach customers, but this is more time- and cost-intensive than other approaches. Email campaigns have been successful because they can generate leads and interest and are inexpensive; however, email is not the best avenue to generate new participants. Duke only has email addresses for about 40 percent of their customers, so their capacity to reach customers through email is somewhat limited. Social media has not been a substantial contributor to programme uptake but can be used to generate awareness of the programme and its benefits.

Timing

This programme was first launched *by Duke Energy Progress* North Carolina and South Carolina in 2012. In 2014, it expanded to Duke Energy Carolinas North and South Carolina, followed by Kentucky in 2015 and Indiana in 2016.

Evaluation

Evaluation methodology, metrics, and targets

The SBES programme has completed both impact/outcome and process evaluations. In conducting these evaluations, third-party evaluation contractors assessed three main domains for effectiveness. Primarily, they assessed data on installed measures to estimate kilowatt hour reductions. Additionally, they measured customer satisfaction. Contractors surveyed the customers to understand both the positive and negative aspects of their experience and how smoothly the programme was run, with the goal of helping Duke improve their programme in the

future. Lastly, Duke also asked contractors to evaluate the operation of the programme to identify potential tweaks to improve future functioning.

Results

Overall, the SBES programme has been very successful on a number of metrics. During each evaluation cycle, the programme has attained nearly a 100 percent realisation rate. In other words, the programme has typically achieved nearly all of the predicted savings; only a very small proportion of customers are dissatisfied with the measures once installed and occasionally uninstall them.

Duke assesses energy savings that are attributable to the programme using a Net-to-Gross (NTG) ratio which accounts for free ridership (the amount of savings that can be attributed to actions that customers would have taken without the programme) and spillover (observed savings that go beyond the measures installed through the programme). For the SBES programme in Indiana in 2016, for example, survey findings estimated programme spillover at 11 percent and free ridership at three percent (Duke Energy, 2019). In combination, the estimated NTG ratio for this program is 1.08, implying that for every 100 megawatt-hours (MWh) of realised savings, 108 MWh is attributable to the programme, given that spillover surpassed free ridership (Duke Energy, 2019). This high ratio suggests that the programme is successful in reaching customers who would not have otherwise installed energy saving upgrades.

Like Duke's other SBES iterations, the programme run in North and South Carolina also enjoyed success. Estimates of free ridership were six percent, whereas spillover was estimated at four percent. Both of these numbers are down from 2015 but are consistent with evaluations from 2014. The estimated NTG ratio was 0.98, which suggests that for every 100 megawatt-hours (MWh) of realised savings, 98 MWh was attributable to the programme.

Recommendations and next steps

Lessons and Recommendations (Duke Energy, 2019)

These evaluation results indicate that participants are generally satisfied with the programme. Some specific aspects that participants reported being of value included overall service, pricing, installation, and the quality of the new, more efficient equipment. Moreover, the programme is successful in accurately characterising energy demand impacts, as demonstrated by the high realisation rates.

Another noteworthy aspect of the SBES programme was Duke's success in scaling it up to numerous states. In 2016, the *Duke Energy Progress* and *Duke Energy Carolinas* SBES programmes increased the eligibility limit. Duke reported that there were no issues adapting to the larger project, and no significant differences in the team's findings between different project sizes; however, there was admittedly not an outside evaluation of this particular programme aspect. The higher threshold for energy usage to be eligible for participation has increased the average project size, thus allowing the programme to generate increased energy savings.

In order to increase **programme participation**, one key recommendation from the evaluation findings was to recruit and train installers specifically for HVAC measures. Another

recommendation was to emphasise the non-energy impacts (NEIs) of participation. In the case of the SBES programme, these NEIs include including better lighting quality, more comfort, environmental benefits, and less maintenance.

In order to **increase customer satisfaction**, Duke was encouraged to enhance the training of installation contractors, increase follow-ups with any customers with unresolved issues, and more intensely advertise newly available energy-efficient technologies.

To **improve accuracy of reported savings**, evaluators recommended to improve lighting savings estimates by updating savings data and enhancing communication with installation contractors.

To **enhance evaluation efforts**, programme findings suggested tracking characteristics for each project via outreach to individual customers to proactively identify issues and potential barriers. An additional recommendation was to keep a more robust customer contact database to streamline the process of the evaluation team to getting in touch with programme participants.

Next steps / future research

This programme, which kicked off in 2013, is still being implemented eight years later in 2021. In future SBES programme iterations, *Duke Energy* may continue to make operational adjustments to ensure continued success. For instance, some additional areas of ongoing adjustment include communication methods, the programme information provided to customers, and how the programme is publicised. Duke has begun the introduction of additional measures and measure categories and hopes to expand the program to provide a more complete energy audit and energy efficiency equipment options for all end uses and end users.

Canadian Residential Case Study (Indigenous Communities Programme)

Background

BC Hydro is a Crown corporation, owned by the government and people of British Columbia, Canada. It serves approximately four million customers, or nearly 95 percent of those living in B.C. The energy mix provided to customers is nearly entirely hydroelectric.

BC Hydro's Conservation and Energy Management team ran the *Indigenous Communities Pilot* from fiscal year 2017 through fiscal year 2019. The pilot provided insight into how BC Hydro can effectively work with Indigenous communities to design and deliver demand side management (DSM) programmes in ways that better serve Indigenous customers.

Indigenous customers are eligible for many of BC Hydro's residential and commercial DSM programmes. But Indigenous customers – particularly those in remote communities – face unique barriers that may contribute to them being underserved by existing programmes. The purpose of the pilot was to work with Indigenous communities to explore the barriers and to test and develop approaches that might effectively reduce or eliminate those hurdles. Several potential barriers were identified, including:

- Low levels of awareness and understanding of household energy use and costs
- Poor quality of housing limiting the potential for energy upgrades
- Affordability challenges
- Mistrust of parties perceived as "outsiders"
- Limited access to energy efficient products and services
- Limited staff resources and capacity to plan and implement DSM projects.

Pilot activities were broadly defined and included:

- Community information sessions
- Education and training initiatives
- Alternative programme design and delivery models
- Energy-focused staff positions (hiring members of the participating Indigenous communities to provide energy education and upgrades)
- Community energy planning.

Pilot activities were purposely fluid to allow for tailored responses to the specific needs and characteristics of participating communities. In programme design and development, BC Hydro's *Conservation and Energy Management* team employs a *"*fail early and safely*"* mindset that frees the team to try new ideas and approaches at a smaller scale, and to learn from mistakes before scaling up programmes.

Audience

DEMOGRAPHICS

Participating communities varied greatly in size and situation. There are over 200 distinct Indigenous Nations in British Columbia, and a small number (13) participated in the BC Hydro *Indigenous Communities Pilot*. Participating communities included both those connected to the integrated grid, and those in the Non-Integrated Area (NIA) of *BC Hydro's* service territory (i.e., remote regions served by a mix of diesel-generated electricity and renewable energy.

Participating communities ranged in size from about 100 homes to those with more than 2,000 homes and were located in different regions and climate zones throughout B.C. (Northern, Southern Interior, Coastal). BC Hydro worked directly with the community leadership and administration to understand their specific community needs, design pilot activities, and to deliver them to community members.

AUDIENCE ATTITUDES, BARRIERS AND NEEDS

The issue of mistrust, and steps toward reconciliation

DSM programmes are not only about the more-commonly acknowledged benefits of energy and costs savings. NEIs and potential benefits include greenhouse gas emissions reductions, improved air quality, health improvements, greater home comfort, and local economic development opportunities. And there's evidence that these "secondary" benefits may be more highly valued by Indigenous customers.

BC Hydro recognised that working in partnership with community leadership and administration to co-design and deliver DSM activities could contribute more meaningfully to the realisation of some of these co-benefits. Working in partnership also helped strengthen relationships between BC Hydro and Indigenous communities.

In this way, pilot activities supported BC Hydro's commitment and responsibility to advance reconciliation[1] with Indigenous communities. These efforts have been recognised corporately in *BC Hydro's Statement of Indigenous Principles* and in the Government of British Columbia's mandate letters that give BC Hydro direction to implement the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) and the calls to action of the *Truth and Reconciliation Commission*.

As noted above, several barriers were identified at the outset of the pilot. One key behavioural barrier was the mistrust that many Indigenous people have of governments, utilities, and other outsiders. Mistrust is not unique to Indigenous communities – in fact, trust is one of the most common barriers for a variety of HTR audiences – but trust challenges are especially

[1] Reconciliation entails establishing a mutually respectful relationship between indigenous and non-indigenous communities, which includes acknowledging and making amends for injustices of the past. (Honouring the Truth, Reconciling for the Future Summary of the Final Report of the Truth and Reconciliation Commission of Canada, The Truth and Reconciliation Commission of Canada, 2015, p. 6)

pronounced in Indigenous communities with a long history of dispossession and marginalisation by settler governments, the impacts of which are still experienced to this day. Building relationships and gaining trust takes time, and there was confirmation throughout this pilot deployment that patience and cultural sensitivity are key to all work with Indigenous communities.

Behaviours

BC Hydro took a broad view of the behaviours targeted for change. Pilot activities not only aimed to develop and strengthen understanding of energy use and energy-saving behaviours in the community, but also to improve access to, and implementation of, energy-efficient products and technologies in homes. And a key goal was to support and develop staff resources and capacity to advance DSM in their communities.

Content

Engagement strategy and messaging

BC Hydro worked in partnership with Indigenous communities to understand their needs and interests and to define pilot activities that might address these needs. As a result, pilot activities varied among participating communities. A common approach was to position community leadership and administration staff as the messengers and delivery agents of pilot activities. This helped to address barriers around mistrust and helped to garner support and participation from community members.

Presenting energy efficiency information in-person at community events was overwhelmingly the preferred delivery option, with different communities using different tactics to increase attendance. Some communities offered prize draws for attendees, while other sessions were held around a community meal. And both proved effective for ensuring a good turnout at events.

Community events were always planned to include a member of the community such as the local *Energy Champion* as a presenter or co-presenter, who served to help bring energy issues front and centre. Participating communities preferred to have someone from the community presenting and involving a proactive Energy Champion could increase the number of community members attending an event. By contrast, standalone energy efficiency information sessions were not as popular.

Additionally, *BC Hydro* found that the best way to reach Elders and youth was to visit Elders centres and schools. Setting up pre-arranged meetings such as an Elders luncheon also worked well. In two communities, storytelling was used to share information with community members, building on the oral tradition in Indigenous cultures. The events were opened by Elders who offered a prayer and then reflected on energy in the community during their youth. This was followed by an engaging interactive exercise where community members performed a skit to illustrate how energy is generated and used in their community.

BC Hydro also used visual and practical illustrations to help create interest in energy efficiency. In one community, a kilowatt monitor was used to show real-time energy use information for different light bulbs and commonly used small appliances, such as coffee makers. In another, BC Hydro used infographics to illustrate electricity use in common appliances and equipment (e.g. TVs) and how dollar savings from small behavioural changes in the home compared to the likes of a tank of gas, a dinner at a restaurant, or a subscription to *Netflix*. Pilot participants found the energy monitor and illustrations were effective ways to improve understanding of their energy use and costs.

Delivery

Local installers trained in programme delivery

Tackling the question of which approaches might be best for the effective delivery of energy efficiency upgrades in homes was a key pilot activity. For example, while *BC Hydro*'s income-qualified programme, which provides free energy efficiency upgrades in homes, has had participation from Indigenous customers, its effectiveness was historically limited by several factors.

First, the income-qualified programme is delivered by BC Hydro contractors who visit homes to assess energy-saving opportunities and install energy-savings measures. As pilot participants pointed out, this delivery approach did not recognise the negative experiences of Indigenous peoples who felt outside visitors – at least historically – had not respected their traditions. Pilot participants said it was important to have local installers do the work so that community members felt they could trust the person coming into their home.

> *"We have a tendency to assume that an audience is "hard-to-reach" because of barriers that exist at their end. The pilot revealed that the systemic bias that exists in our utility structures and processes is perhaps an even bigger barrier to reaching Indigenous communities. Fortunately, this is something that is in our control and that we can work on."*
>
> - Amy Seabrooke, BC Hydro

BC Hydro worked with five communities to pilot a new approach to programme delivery, which provided energy-saving products, training, and salary support to hire local installers to conduct the upgrades for their fellow community members. This approach helped build the capacity of community members (developing knowledge and skills and providing employment opportunities) and received support from community members who were more willing to allow local installers into their homes to install energy-saving measures. This approach was promoted to community members during community events, which helped to increase interest and participation in home energy upgrades during the pilot.

Evaluation

Evaluation methodology, metrics and targets

A formative evaluation of this pilot (BC Hydro, 2021) was conducted by BC Hydro's *Conservation and Energy Management Evaluation* group, with support from a third-party contractor who conducted interviews with representatives of participating communities. Multiple lines of evidence were used – largely qualitative and experiential – to explore pilot programme implementation and delivery approaches.

The evaluation consisted of five main objectives:

1. Determine the effectiveness of delivery methods and tools meant to increase understanding of energy-related concepts and to build awareness of conservation and energy management.
2. Determine the extent to which support for human resources, educational and training activities helped to increase community capacity for conservation and energy management.
3. Examine the effectiveness of pilot activities in improving implementation of conservation and energy management opportunities within Indigenous communities.
4. Examine the extent to which Indigenous communities have been able to undertake and implement community energy-planning activities.
5. Identify ways in which pilot programme activities helped strengthen relationships between *BC Hydro* and Indigenous communities.

Recommendations and next steps

The pilot evaluation served to underscore the importance of relationship building and partnership. The collaboration between Indigenous community representatives and *BC Hydro* staff proved crucial to the successful delivery of pilot activities, and the flexible approach taken in the pilot allowed BC Hydro to adjust activities to the needs of the community.

The evaluation generated several recommendations for BC Hydro to consider for future DSM programmes (BC Hydro, 2021), some of which are outlined below:

- When working with the communities, recognise and be aware of the systemic bias against Indigenous peoples built into public sector structures and processes. Ensure community leaders and interested community members have the opportunity to contribute to the development of ideas, information sessions, communications/reporting and evaluation.
- Work with community representatives to develop a performance measurement plan to collect data and information on an ongoing basis for monitoring, reporting and assessing the success of programmes and initiatives. Include data on progress toward addressing barriers and achieving specific objectives.

- Take a strength-based approach[2] to the support of the development of conservation and energy management practices in Indigenous communities. Make it a priority to identify, recognise, and reinforce existing skills, interests, and capacity within the communities. This could include finding ways to communicate and celebrate the successes of a community as it hits milestones in conservation and energy management that are tangible and important to the community.
- Continue to adapt and incorporate alternative programme delivery options, such as community installers and bulk rebates, in consultation with Indigenous communities to help address barriers to their participation in *BC Hydro* programmes.
- Expand capacity building opportunities to develop greater competency and continuity in energy-related positions within the communities.

Challenges and opportunities

Of all the various aspects of the pilot, perhaps the most tangible and successful was the partnership between *BC Hydro* and Indigenous communities for both the communication and installation of home energy upgrades. It appears to be key to making the transition from pilot program to full programme status.

One particularly evident challenge is that much of the housing in Indigenous communities needs substantial repair. Energy efficiency investment should not be done in such homes until repairs have been completed. To that end, BC Hydro has introduced incentives for housing remediation – health and safety upgrades – that serve to support further energy efficiency upgrades. Measures include moisture and mould remediation, pest management, asbestos remediation, and ventilation.

Additionally, BC Hydro has increased incentives for building envelope upgrades as a way to align support with other housing renewal programmes from government and to encourage participation from Indigenous communities. This housing infrastructure challenge is ongoing and will always need to be considered as conservation and energy management programmes move forward.

Although this pilot has since spawned programmes with energy-savings targets, *BC Hydro* staff suspect that a key reason for success was that the pilot began without a need to attain immediate savings. There was a recognition that this work could go beyond to provide broader benefits to both BC Hydro and Indigenous communities.

There is no clear and defined path to gaining participation and increased energy savings in Indigenous and other HTR communities. The path is likely to be elastic and evolving, and it sometimes needs to be more of an indirect route if it is to achieve the true engagement required to make it effective.

[2] A strength-based approach does not focus on deficits, rather it builds on what is working well and the positive elements already in place (e.g., Foot & Hopkins (2010).

In a three-year pilot, it was a challenge to get the full picture of existing barriers and to design effective approaches to address them. *BC Hydro* intends to work with Indigenous communities to design additional programme offers moving forward.

Canadian Commercial Case Study (Small Business DSM Programme)

Background

Landscape and Stakeholder Analysis and agreeing on the WHY

FortisBC is a Canadian-owned, British Columbia-based company with more than 2,400 employees across the province. *FortisBC* delivers natural gas, electricity, and innovative energy solutions to approximately 1.2 million customers in 135 communities throughout BC. *FortisBC* believes in building stronger communities, offering renewable and alternative energy solutions for homes, businesses, and transportation in BC and beyond. *FortisBC* owns and operates approximately 49,000 km of natural gas transmission and distribution pipelines and 7,260 km of electric transmission and distribution power lines.

Overall, small business customer participation in energy efficiency programmes can be difficult to achieve. Small business owners tend to be incredibly busy, and it is challenging to get in touch with them even to set up a call or appointment.

The main objectives of *FortisBC* embarking on this small business effort were to:

- Increase general awareness of *FortisBC* energy efficiency programmes and initiatives
- Raise the visibility of both *FortisBC* and its small business offerings among small businesses in *FortisBC's* service territory
- Support small businesses with energy-saving advice and a free energy evaluation
- Promote energy-saving behaviour changes
- Refer small businesses to *Energy Solutions Technical Advisors* (TA's) or *Key Account Managers* or *GreenStep Business Energy Advisors* (BEA's) to assist in sourcing a contractor and applying for rebates
- Support small businesses in striving for an overall reduction in energy consumption and saving money on their bills.

This pilot was initiated in its first phase from Dec 2017 to Sept 2018 in Southern Interior and Kootenay communities of BC (Rossland, Trail, Grand Forks, Keremeos, Princeton and Oliver), and was later expanded. Originally, *FortisBC* partnered with local fire departments for firemen to deliver business energy savings kits to local businesses when they performed their annual fire safety inspections. Eventually *FortisBC* revamped and expanded this effort.

Although this programme has been offered for several years, this case study will focus primarily on the most recent programme offerings through 2020.

Audience

Definition and characterisation of the target audience

The key programme participation criteria were that the small business had to be a *FortisBC* customer and on the Rate 2 Commercial Customer rate, which is energy users that use fewer than 2,000 GJ annually (typically restaurants, apartment buildings, etc.)

AUDIENCE FIRMOGRAPHICS

The focus was on businesses with a storefront, including retail, restaurants, grocery, office, medical, and other services. *FortisBC* aimed to target a broad range of participation from every business from retail chains to restaurants to automotive.

Behaviours

The primary behaviours targeted for this programme were the adoption of the low- and no-cost tips provided. Free energy-saving gifts included an energy efficiency item such as a power strip (power bar) and a pre-rinse spray valve for restaurant sinks. The intention was to encourage participants to take the free energy evaluation survey and to pledge to take one small action by installing one item. By using this approach, *FortisBC* was leveraging the power of commitment and helping customers avoid the single-action bias in which people may be less likely to take future action once they have already completed one initial step towards sustainability. At the same time, *FortisBC* was also leveraging the foot-in-the-door technique in which once customers take one initial action, that may alter their self-perception as being more energy efficient overall, in which case they may be more likely to make additional changes.

The specific behaviours targeted include:

- Setting thermostats to cooler temperatures in winter and when the establishment is closed
- Encouraging the purchase of sensors to turn off lighting automatically
- Closing doors and windows when running space heating/cooling
- Closing blinds on sun-exposed windows in the summer months to prevent solar heat gain
- Increasing employee awareness of energy usage and energy efficiency
- Installing draft-proofing around windows and doors
- Ensuring HVAC is regularly maintained
- Turning off equipment in kitchens when not in use
- Switching off lighting and electronics when not in use
- Insulating any water heater that is warm to the touch.

Content

The programme is offered in a few different intensity levels to both electric and natural gas customers. For the enhanced programme, *FortisBC* and *GreenStep* offered further support services, including a more in-depth energy assessment and follow-up assistance on locating a contractor, reviewing estimates, and helping obtain *FortisBC* rebates. BEAs sent follow up emails regarding the energy assessment. *FortisBC* has found that the enhanced programme has better uptake for electric than for gas programme/measures. Behaviour changes can also be more challenging to encourage for gas initiatives as these projects may require a greater upfront financial investment.

Engagement strategy

The small business programme includes a free energy assessment, free energy efficiency measures, and *FortisBC* staff or a FortisBC-contracted implementation company knocking on the businesses' door (pre-pandemic). This on-the-ground, in-person approach ensures that *FortisBC* representatives can speak to the right person, which is crucial given that a substantial barrier to small business programmes is identifying and accessing decision-makers.

There are two main routes for participation, including:

1. **Basic programme stream** is based on the needs of each business and is advice-based, including:

    - Technical help to turn down the building thermostats if the business is closed due to COVID-19 (e.g. how to programme the thermostat)
    - Low-cost/no-cost tips to reduce energy use and operating costs
    - A virtual or in-person basic energy assessment
    - Information about *FortisBC* rebates on high-efficiency equipment.

After the consultation, participants receive a follow-up email summarising the opportunities identified. If further support is needed the customer is referred to a *FortisBC* key account or energy solutions manager.

2. **Advanced stream** includes an extensive energy assessment in addition to rebate and energy-saving information, and support to source contractors, obtain quotes and guidance on the rebate application process. In practice, the advanced stream is primarily electric customers, given the benefits offered by quick wins such as lighting. *FortisBC* has observed stronger participation numbers and installation completion through the advanced stream as compared to the basic programme.

Given that few energy assessments were being completed during the initial phase, *FortisBC* decided to contract with a third party. In March 2019, it issued a *Request for Proposal* in order to find a third-party contractor to implement the community outreach and energy assessments. The contract was awarded to *GreenStep Solutions*, which then implemented the small business programme from 2019 through to 2021.

Messaging

Programme messaging focused on available rebates for equipment upgrades, opportunities for low-to-no-cost savings opportunities, and top tips for energy efficiency. The materials included rebate brochures, energy-saving tips brochures, mailings and follow up emails. Free energy-saving items were also provided. *GreenStep*'s BEAs set up meetings with local businesses and provided energy efficiency information, a free energy efficiency measure, and recommended an energy assessment. The content of the programme was delivered through one-on-one interactions. After the visit, the BEAs entered the customer's info on a tracking report with follow-up information and details about their energy assessment booking.

Delivery

Delivery mechanism

FortisBC's *Commercial Conservation and Energy Management* (C&EM) team developed training sessions to provide technical information and the *Energy Solutions* team provides assistance with rebate applications once energy-saving projects are completed. The process also includes links to other commercial programmes to ensure there is no overlap or double counting of energy savings. Staff also strengthen community relationships and additional promotional opportunities through outreach to municipalities and chambers of commerce. Marketing channels include paid media (print, digital and social), earned media, *FortisBC*'s small business webpage and collateral (brochures, stickers, ads). *FortisBC* staff also ensured there was communication between the customer service department and programme implementers; for instance, small business customers who contacted customer service about payment struggles during the COVID-19 shutdown were referred to the programme.

Overall, phone outreach can be generally ineffective with SMBs/SMEs because the owner or manager often is not on site. Additionally, it can be unclear whether to leave a message and hope it gets to the right person or to try again. To overcome this barrier, in-person visits are more effective. To help create interest and provide built-in energy savings, *FortisBC* offers free energy efficiency measures, such as spray valves or smart power bars (power strips).

Staff have also leveraged social media and reported greater success reaching intended audiences through *Twitter* and *Facebook*, rather than *LinkedIn*. Throughout, the focus has been on messaging through trusted sources, particularly in smaller communities that appreciate one-on-one outreach. It is recognised that the approach may need to be different in larger cities.

Programme timing was decided mutually between *FortisBC* and *GreenStep* and depended on BEAs' availability to travel. Due to the COVID-19 pandemic, all in-person assessments and travel were discontinued from March to mid-July 2020, after which point only limited in-person visits were permitted (5 per day per BEA until September, then 10 per day per BEA from October through December 2020). During the initial pandemic period, assessments were completed virtually or by phone instead. *FortisBC* focused on providing free energy efficiency measures, and low to no cost behaviours, de-emphasising rebates, and increasing sensitivity to customers dealing with COVID and possible shutdowns. To mitigate the programme impacts of the COVID-19 pandemic, *FortisBC* increased the scope of its target communities to include the full Okanagan area. It also extended the deadline for project completion from mid-November 2020 until mid-December 2020.

Messengers and communication channels

The messengers primarily include the BEAs. Throughout 2019 and 2020, communication channels included community newspaper ads, social media, emails, a website page with small business sign-up for a free energy evaluation, and both in-person on-site (pre-pandemic) and virtual/phone visits and assessments. Additionally, *FortisBC* provided a paid media campaign, while *GreenStep* conducted the in-person on-site and virtual/phone visits and assessments and did email follow-ups.

FortisBC has taken several steps to foster trust among participants. *GreenStep* BEAs wear *FortisBC* clothing and identification lanyards. This was not part of the initial approach, but participant scepticism declined once *FortisBC* branding was visible. Prior to implementation,

FortisBC generated community awareness via local newspapers, chambers of commerce newsletters, municipal website announcements, newspaper inserts, and community and civic newsletters.

Timing

This in-house programme began in its initial phase in the 2017-2018 year but carried through to 2019-2020 using *GreenStep Solutions* as a third-party contractor.

Evaluation

Evaluation methodology, metrics, and targets

In terms of evaluation, *FortisBC* has completed an outcome evaluation, but not a process evaluation. The high number of businesses that participated indicate significant interest in the programme. The 'boots on the ground' engagement resulted in the highest interaction as well as the highest percentage of completed energy assessments.

It is important to note that for those that participate in the rebate, *FortisBC* claims the savings through its *Commercial Programme* and not through its *Conservation, Education, and Outreach Programme*. At this point in time, it is unclear how to attribute specific behaviour changes to FortisBC's offerings, and the savings from the faucet aerator and power bar/strip are small.

The evaluation metrics from the 2019 small business programme in the communities of Kelowna, Penticton, Rossland included (GreenStep, 2020):

- Business visits: 1,030 (Goal: 960)
- Energy Assessments: 491 (Goal: 480)
- Enhanced Energy Assessments: 188
- Power Bars/Strips given away: 358
- Pre-Rinse spray valves given away: 25

The evaluation metrics from the 2020 small business programme originally intended for Kelowna, Penticton and Nelson included (due to COVID a change order was submitted to increase the target communities to also include South Okanagan and the Kootenay areas):

- Business visits: 1,196 (Goal: 1,160)
- Energy Assessments: 593, including 565 in-person and 28 virtual (Goal: 580 total)
- Enhanced Energy Assessments: 111
- Power Bars/Strips given away: 500
- Pre-Rinse spray valves given away: 35

Results

Based on the outcome evaluation (GreenStep, 2020), the recommendations post-pilot include:

1. Transition this initiative out of the pilot phase and include an electric and gas small business assessment as a yearly offering (BEAs would be required to follow-up on all requests gained through the small business landing page).
2. Continue to increase the *FortisBC* presence in smaller communities and increase awareness of the utility's energy efficiency programmes and initiatives; continue with a targeted blitz in five to six electric and gas communities each year via drop-ins. Continue

to provide virtual assessments for businesses province-wide that are referred to the programme by *FortisBC*'s customer service team, and for those that sign up for the programme on the website but are not within the regions targeted for drop-ins.

3. Target businesses in chosen communities to grow the programme; increase the timeframe in market to an annual programme, and have a team actively working in communities full-time. (This would require hiring a third-party to implement, train, manage, and evaluate this initiative.)
4. Continue to run advertising campaigns for the targeted regions in the weeks prior to the start of engagement in each region to increase interest and potentially book appointments ahead of time.
5. Consider options for providing implementation support to small and medium enterprises when the basic energy assessment has been completed and consider opportunities to move the customer into the *Enhanced Small Business Program* which provides additional support sourcing contractors for energy efficiency projects and assistance applying for rebates.

Discussion

Lessons and recommendations

FortisBC uncovered several lessons learned throughout the implementation during the COVID-19 pandemic. On a most basic level, *FortisBC* staff recognised the need to be sensitive to businesses during this difficult time. Staff and contractors acknowledged that small business owners and managers might not be receptive to new energy-efficiency programmes given everything else they are facing. They adhered to rigorous COVID-19 safety protocols to protect themselves and programme participants (for instance, limited number of visits per day, only one BEA per car, mandatory mask-wearing, frequent hand washing).

Overall, *FortisBC* exceeded its goals and pivoted quickly to a virtual model on short notice. This approach made customers safer and more comfortable, and ultimately increased participation. Going forward, *FortisBC* will likely continue this varied outreach approach (including both in-person and virtual components), even after the pandemic is over.

Next steps / future research

Looking ahead, *FortisBC* and *GreenStep* began basic energy assessments for this next phase in February of 2021. In 2021, *FortisBC* is targeting Vancouver Island (in addition to the Okanagan and Kootenay communities), which is within its natural gas service territory. The intent is to provide extra support for low-cost and no-cost measures, and to provide an additional natural gas energy efficiency gift that includes weather proofing measures and faucet aerators. Throughout 2021, there will continue to be an ongoing option for participants to complete their small business energy assessment in-person, over video, or via phone call.

General Discussion

The application of the *ABCDE Building Blocks of Behaviour Change Framework* (Karlin et al, 2021) to these four U.S. and Canadian case studies revealed that some elements of the framework applied more readily than others. In terms of **Audience**, in some cases the target audience for the programme was well-defined and touched on several overlapping HTR vulnerabilities. For instance, the *Puget Sound Energy Manufactured Homes Program* was intuitively and straightforwardly targeted to residents of manufactured homes, which included many energy users who were also low-English proficiency, low income, and renters. Similarly with the *BC Hydro Indigenous Communities Pilot*, the target audience included Indigenous communities within British Columbia, Canada. That said, there was some discretion involved in terms of which specific First Nations were the focus, given the large number within BC Hydro's service territory and the practical realities of staff bandwidth. In the small business examples from *FortisBC* and *Duke Energy*, the intended audience was more generally businesses below a certain energy usage threshold or on a specific commercial customer energy rate. In the future, obtaining additional firmographic details on the intended audience, when possible, could help target new interventions more directly to priority subsegments.

One of the most considerable challenges in assessing these case studies using the *Building Blocks Framework* was the wide variability in the degree to which the specific target **Behaviours** were defined. In the *Puget Sound Energy*, *Duke Energy*, and *FortisBC* programmes, there were specific target measures participants were intended to install or allow programme staff to install. On the other hand, in the *BC Hydro* effort with Indigenous communities, the initial pilot was primarily intended to raise awareness of energy efficiency and gauge community needs (to inform future programme development); in this case, there were few, if any, specific behavioural goals.

In reporting on the **Content** and **Delivery** of each of these programmes, it became clear that these two programme elements are closely linked. Given that certain content lends itself more readily to specific delivery channels, it eventually became a bit tricky to untangle which was content and which was delivery. This was particularly true in cases in which the delivery channel to a certain extent prescribed or limited the content that could be included. For instance, radio ads are inherently audio messages, whereas billboards rely only on visual content, although the messaging can be common across mediums.

Last but not least, **Evaluation** more clearly mapped from the *Building Blocks Framework* onto the actual programme delivery than did some other framework aspects. There were differences in terms of how the programmes were evaluated, the metrics used to determine success, and whether the final product(s) were process or impact evaluations. That said, evaluations had been completed for all four efforts, in one form or another. Additionally, some of the evaluations were conducted informally and/or in-house, whereas others were completed more formally through a third-party evaluator, as is often stipulated by the utility's regulators. Going forward, it could be beneficial to consider assessing not just the overarching performance of these pilots and programmes, but also the persistence of their effects, if any.

Concluding Thoughts

Several themes emerged through a closer examination of these pilots and programmes in the United States and Canada. Firstly, these energy efficiency efforts benefited from **training members of the target community** to deliver the programme themselves rather than having

programme delivery accomplished by utility staff. For instance, *BC Hydro* successfully accomplished this with its pilot in Indigenous communities. Additionally, it is worth considering how third-party evaluation can be practically accomplished, ideally without re-introducing 'outsiders' (it is practically more difficult to train community members in evaluation than in programme delivery).

One common theme throughout these case studies was the importance of **'high touch' approaches** to better engage HTR audiences. Throughout the interviews held during the case study development process, programme staff emphasised the importance of door-to-door engagement for small businesses and manufactured homes, and frequent on-the-ground engagement in the Indigenous communities. While effective, these approaches are also staff, time, and resource intensive.

Cost-effectiveness is a nearly universal consideration—and challenge—for energy efficiency programmes in the U.S. and Canada, and perhaps particularly so for HTR programmes, for the reasons described above. These cases illustrate that cost-effectiveness hurdles can sometimes be overcome in unexpected ways. For example, *Puget Sound Energy* found that cost-effectiveness can be achieved in reaching the many low income, non-native English speakers, and renters residing in manufactured homes when these audiences are **engaged directly** in their manufactured homes parks. The higher density of these various priority audiences in this setting allowed the programme to achieve cost-effectiveness whereas it would have been unable to do so in aiming to engage manufactured home residents outside of parks.

In terms of communication with intended programme participants, several of these programmes found success in targeting messaging to the **channels through which target audiences already seek information**. *FortisBC* uncovered which of their customers regularly use or are responsive to which channels (e.g. radio vs. print media vs. billboards), allowing them to disseminate specific messages to targeted HTR audiences. *BC Hydro* found that, in many Indigenous communities, postal mail arrives to a community centre and may be picked up as infrequently as every few months, thus it is imperative to rely on other communication channels instead. *BC Hydro* also discovered that many members of Indigenous communities get their information from community events, a model BC Hydro was able to mimic with events as part of their own pilot, including energy-focused opening remarks from a respected community Elder.

Finally, the fact that most energy efficiency programmes in the U.S. and Canada are run by utilities as opposed to government agencies has several key implications. Typically, these utilities are tasked with achieving energy savings but, unlike the government entities running energy programmes elsewhere, utilities are not commonly incentivized to achieve **NEBs**. Energy efficiency programmes often benefit other social impact areas – such as health – but typically these goals are not practically valued as highly as energy reduction successes.

Moreover, the vast majority of energy efficiency programming in the U.S. and Canada includes specific energy-savings targets that must be both achieved and also attributed to the specific programme. Uniquely, the initial *BC Hydro* work with Indigenous communities did not need to meet these thresholds. This **freedom in programme approach** allowed for extensive exploration of the approaches that may be likely to spur future energy savings, which then benefitted energy-efficiency targets down the road. In other words, the lack of energy-savings requirements afforded an excellent opportunity to collect substantial information about relevant frames of reference, more effective channels for outreach, and other factors with implications for

subsequent energy-efficiency programmes. Ultimately, this pilot led to the development of several programmes that *did* increase both programme participation and also energy savings. To the extent possible in the regulatory reality in which U.S. and Canadian programme managers operate, the freedom to explore potentially beneficial approaches before energy-savings requirements must be achieved may open the door to more substantial energy savings – and NEIs and NEBs – in the longer term.

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