

Advancing Energy Efficiency in Calgary

Home Energy Reports

# Initial Program Design

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THE CITY OF  
**CALGARY**

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## Introduction

The Calgary Energy Efficiency Innovation Lab (CEEIL) is a project being undertaken by the Alberta Energy Efficiency Alliance (AEEA), in partnership with The City of Calgary's Environment and Safety Management department. The focus of the CEEIL project is to investigate different energy efficiency options that could be implemented in the city of Calgary, to assist with meeting the goals of The City's Community Greenhouse Gas Reduction Plan.

Based on initial research and a prioritization of potential energy efficiency programs, a home energy report program was selected to be investigated further to determine how such a program could be implemented in Calgary.

Home energy reports, also known as indirect feedback programs, provide consumers with information on their energy use along with tips and recommendations for saving energy. A report is developed by the utility provider (or third party administrator) that details a customer's energy usage and cost over a set period of time. A previous CEEIL report, titled *Energy Savings Through Consumer Feedback Programs*, provides a detailed overview of the variety of possible feedback programs, key design elements, and program effectiveness in other jurisdictions.

This report summarizes the stakeholder engagement that has been undertaken since that research was completed, and provides an initial draft design for a home energy report pilot program that could be implemented in Calgary.

## Program effectiveness

Home energy report programs are in widespread use throughout the United States and are beginning to be explored in various jurisdictions across Canada. They are considered effective energy efficiency programs due to their ability to reduce energy use while generating a net cost savings. In addition, unlike many other efficiency programs, including targeted rebates or incentives for new products, these programs are accessible to all households, including low- and fixed-income homes, renters and owners.

On average, home energy report programs result in sustained energy savings of approximately 2% across all household types.<sup>1</sup> Assuming a similar level of effectiveness for the city of Calgary, a home energy report pilot program may yield energy savings up to 45,900 MWh per year – equivalent to almost 40 kilotonnes of greenhouse gases.<sup>2</sup>

Previous research has shown that home energy report programs in jurisdictions in the United States have achieved energy savings at a rate of up to \$0.054 per kilowatt-hour saved consistently through the life of the program.<sup>3</sup> It is possible that the start-up and administrative costs for a program in the city of Calgary could be higher than those in municipalities in the

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<sup>1</sup> H. Allcott, "Social Norms and Energy Conservation," *Journal of Public Economics* 95 (2011).

<sup>2</sup> Assumed participation rate of 85% and an annual city-wide residential energy use of 2,700,000 MWh for Calgary, based on: City of Calgary, 2010 State of the Environment Report, 4<sup>th</sup> Edition (2010).

<sup>3</sup> H. Allcott, "Social Norms and Energy Conservation," *Journal of Public Economics* 95 (2011).

United States, as these programs are newer to Canada and would require additional effort to meet relevant laws related to data use and privacy.

It is estimated that a pilot program of up to 100,000 households in Calgary could cost between \$0.06 and \$0.08 per kilowatt-hour saved depending on the program design<sup>4</sup>, which is below the average cost of electricity in Calgary, with Enmax's regulated rate averaging \$0.10 per kilowatt-hour in 2012.<sup>5</sup>

## Engagement methodology

To better understand how a home energy report program could be implemented in Calgary, a workshop was held with staff of the AEEA, The City and representatives from Enmax Corporation. The purpose of the workshop was to present the results of the initial research into these types of programs (as contained in the *Energy Savings Through Consumer Feedback Programs* report), gather general feedback and discuss specific design elements and implementation strategies for a Calgary-specific program. This workshop took place on December 9, 2013.

The outputs from this workshop included a proposed initial model for a home energy report program in Calgary, as well as a list of outstanding questions and additional stakeholders to be consulted during the model formulation process.

In order to refine the initial program model from the workshop, meetings were held during January 2014 with key stakeholders to discuss the program in more detail, specifically with respect to data issues, how utility retailers might be engaged in the program, and the role of different stakeholders in a possible pilot program. These additional meetings were held with staff from Enmax Corporation in the following departments: Operations and Analytics, Regulated Rate, Regulated Revenue Services, and Residential Markets. Due to time constraints, it was not possible to meet with other utility retailers; however this will be prioritized during the next stage of the project.

## Recommended program elements

The list of recommended program elements was developed in the research report *Energy Savings Through Consumer Feedback Programs*. Each of the program elements were presented at the initial engagement workshop to identify stakeholder questions and/or concerns for implementation in Calgary, and to identify additional questions that would need to be addressed as part of the detailed program design. The results of the workshop consultation are summarized below.

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<sup>4</sup> Personal correspondence with representatives from Opower. Actual program costs may differ and will depend on the overall scope of the program (number of participants, type and frequency of reports, etc.).

<sup>5</sup> 2012 rates provided by the Alberta Utilities Consumer Advocate:  
<http://www.ucahelps.alberta.ca/historic-rates-2012.aspx>

## Participation choice

Program participation rates tend to be greater than 85% for opt-out programs but less than 10% for opt-in based programs. For a program intended to operate city-wide, it was recognized that an opt-out program would likely be more effective in generating widespread energy savings. However, some questions and challenges remain if this option is chosen:

- How will utility retailers be involved in the program? If retailers are not involved in the data collection or analysis, there is still a need for their involvement as their customers will likely contact them for information on the program.
- If the program is designed to be an opt-out program, how will consumers know who to contact if they choose to opt out? This will most likely depend on who is administering the program. Consumers are most likely only receiving correspondence from their energy retailer, but for this program, the reports may be coming from another party. In this case, there may be some confusion as to who is operating the program, which could be challenging for consumers to understand and could affect participation rates.

## Frequency of reports and information medium

Physical reports that are provided monthly or bi-monthly have typically shown greater average savings over those that are provided over longer time frames. Web or mobile-based reports can be provided on a more frequent basis for consumers who are interested in receiving their reports in this manner. A combination of both physical (paper) reports along with online access would likely be most appropriate for Calgary to ensure consumers have access to their information in the format they choose. The exact specifications of the report format would depend on the overall cost of the different types of reporting.

## Granularity of data

It is difficult to provide source or appliance-level data with home energy report programs unless they are paired with some sort of metering device. It was recommended that a home energy report program in Calgary should provide information at the household level. Providing seasonal or historic information should be considered as well.

## Social norms

Providing consumers with an understanding of how their energy use compares to similar households as well as how others might approve or disapprove of their energy use has been shown to be effective at driving energy savings. For a pilot program in the city of Calgary, it recommended that further engagement (e.g. a focus group) could be conducted to assess the effectiveness and applicability of different messaging types and how these could be incorporated into the home energy reports themselves.

## Recommended actions

Although unable to provide specific house-by-house recommendations for potential energy savings due to the lack of advanced metering technology, home energy report programs can provide targeted actions to different household groups (such as renters or homeowners), based on previous studies and historical information. For a possible program in Calgary, further interviews and discussions with energy efficiency experts and utility professionals should take place during the design of the program to ensure a relevant set of recommended



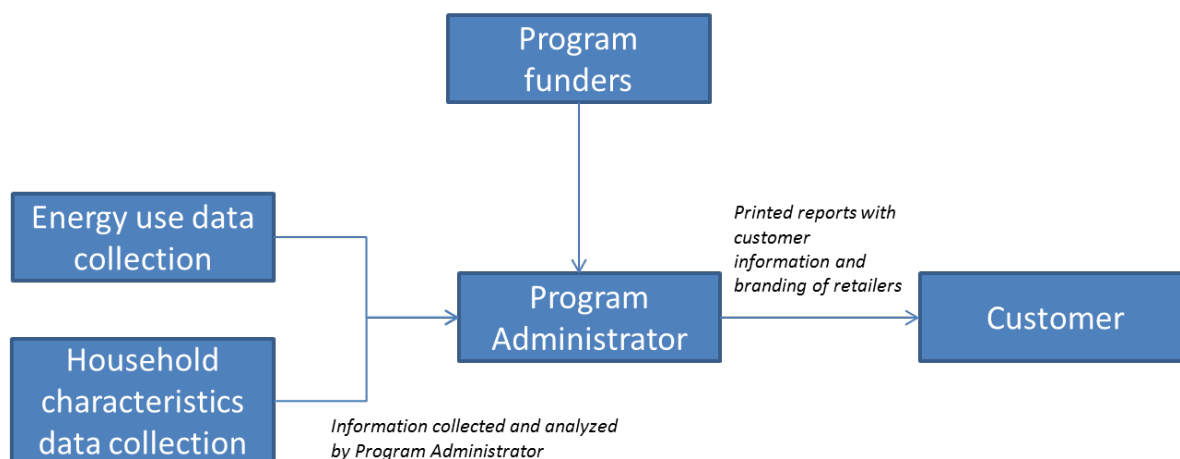
actions has been developed. In addition, an assessment should be completed to determine if there are any other relevant provincial or municipal initiatives (i.e. incentive programs or other environmental programs) that could be highlighted on the home energy report. In order to ensure relevant messages to a variety of consumers in Calgary, it is understood that the program will need to include seasonally-adjusted information on how to reduce energy consumption, including no-cost (e.g. behaviour change), low-cost (e.g. replacing incandescent bulbs with CFLs) and home investment (e.g. major appliance replacement) options.

## Motivational elements

Goal setting can be done on either a household basis or as part of a community initiative towards energy reductions. Similarly, competitions can be used at the community or neighbourhood level to encourage energy savings. These elements can be incorporated into a web-based portal so that consumers can better understand the overall program impact and their place within it. Responses from stakeholders to the competitive element of the program were positive, and further investigation into which communities might be interested in participating in a potential pilot program should be completed.

## Initial program implementation model

Based on research into similar home energy report programs across North America, as well as discussions with the main utility provider in Calgary, the following initial design for a potential pilot program has been developed. This model will be further revised through additional stakeholder consultation, including with other utility operators in the city.



## Data collection

The consumer-level energy use data required to operate a home energy report program in the city of Calgary is collected by Enmax Power Corporation, as they are the company that operates and maintains the distribution system across the city that delivers electricity to residents and businesses. As such, the program administrator of a home energy report program will need to work closely with Enmax Power Corporation to successfully implement the program.

Through the initial conversations with staff from Enmax Corporation, it was recommended that a city-wide program would likely be easier to implement if the consumer-level energy use data

was obtained through Enmax Power Corporation (the utility distributor for the city) as opposed to individual retailers. While it might be possible to obtain the same data from the retailers themselves, this would likely involve separate agreements, data handling processes and project management procedures between the chosen program administrator and each retailer. Some additional questions that are being considered with respect to the type of data required for the program include:

- Who will be providing the data for the program? As it stands, both utility retailers as well as the main distributor for the city (Enmax Power) have access to the required data, with Enmax Power having ownership of it.
- What types of agreements need to be in place in order to share, access and analyze the required energy use data?
- Where will the additional required household characteristics data to develop a home energy report come from (e.g. square footage of houses, household type, etc.)?
- Are there any specific agreements or privacy concerns that need to be considered when accessing or analyzing this type of household specific data?
- How will the different types of data be managed to maintain customer privacy at all times?

## Program administrator

If a home energy report pilot program were implemented within the city of Calgary, there are different possible options for who might administer the program, including City staff, the utility retailers, the utility distributor, or a third-party operator (e.g. Opower or C3 Energy).

Due to the complex nature of these types of programs in terms of logistics and administration (including the need to ensure data privacy when analyzing data for thousands of households), it was recommended the program be administered by an organization that has experience in these types of programs. While individual retailers do have experience in analyzing customer information and could likely provide this service, there may be some logistical challenges in ensuring all retailers are consistent in terms of design and reporting (if the intention would be to have the program run city-wide).

City of Calgary staff may also be involved in administering the program; however, they may lack the experience in energy data management that the utility companies and third-party operators possess. If this program was implemented by The City, some additional challenges would need to be considered:

- How would City staff interact with either the utility distributor or retailer to access and analyze the information?
- What types of storage protocols would need to be implemented by The City for the consumer data needed for the program?

A far simpler strategy would be to have a third party administer the program — there are multiple companies who provide this type of service across North America who would likely be interested in administering a home energy report program in the city of Calgary.

If it is decided to use a third-party operator for the program, they will need to develop various aspects of the program, likely through a Request for Proposal:

- Develop a market research strategy to determine how the administrator will understand the consumer base, define the target participants for the program and tailor any messaging.
- Determine the data sources required to provide an adequate analysis for the program. While the energy usage information can be obtained through Enmax Power Corporation, information related to household size or square footage will need to be obtained from other sources.
- Determine how to incorporate any other current or planned energy efficiency programs in the city or province into this program (if applicable).
- Determine how they will track and integrate data from different sources.
- Determine how customer information will be treated to ensure compliance with all applicable privacy legislation and other potential privacy-related concerns and standards, and what types of data confidentiality and usage agreements need to be put into place.
- Determine how the home energy reports will be delivered to customers (e.g., mail, email, web-based portal, etc.), and if information can be provided through multiple channels depending on consumer preferences.

If retailers are not involved in the program as administrators or providers of data, their level of involvement must still be clearly defined. The number of retailers involved in the program would need to be determined as well as how they would actually be involved. As there are larger retailers in Calgary (Enmax and Direct Energy) as well as smaller retailers that all operate differently, involvement may be different for each one.

## Program funders

In other jurisdictions, funding has come from the regional utility or from another governing stakeholder group (e.g. province/state, interest groups). This can be motivated by legislative actions (such as the Minnesota Next Generation Energy Act) or by the existence of sufficient political will to promote energy and cost savings (such as the Citizens Utility Board in Illinois). For Calgary, funding for a home energy report pilot program could come from a variety of sources, including:

- City of Calgary
- Provincial government
- Electricity distributor (Enmax Power Corporation)
- Electricity retailers
- Utilities Consumer Advocate Office
- Foundations, corporations or other organizations with an interest in energy conservation

The overall design of the program will depend to a large extent on how it will be funded; the exact mechanism of this funding will need to be determined before a finalized model for the program can be developed. Potential funding mechanisms continue to be explored through discussions with relevant stakeholders.

## Next steps

In order to refine the initial implementation model described above, further consultation is necessary with stakeholders from The City of Calgary, utility retailers (including Enmax



Corporation, Direct Energy and others as necessary), and Enmax Power as Calgary's utility distributor.

Based on the outstanding questions regarding how a home energy report program might work in Calgary, as described previously in this document, it is proposed that the following activities be completed:

- Expand the list of stakeholders consulted on the initial program design, in particular, consultation of stakeholders from multiple utility retailers in Calgary.
- Formalize support for the model, and stakeholders involved (i.e. who will be the program administrator, who will be the key contacts at various organizations, etc.)
- Investigate the potential agreements that need to be in place between stakeholders for the program.
- Identify possible funding sources for a pilot program.
- Provide an outline of the elements to incorporate into a possible Request for Proposal (if it is determined that a third party will administer the program administrator).
- Provide an initial assessment of other data sources required for the program (e.g. household data).
- Provide an initial assessment of communities that might be involved (if the program pilot is community based).
- Provide an initial assessment to determine if a regulatory review would be required for the program, depending on the drafted program design. If a regulatory review was required, an assessment of how it might be conducted would be completed.