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Tenant Engagement on Sustainability
GUIDE

FOR SOCIAL HOUSING PROVIDERS

Focus on Energy Conservation
Version 1 | March 2012

BRITISH
COLUMBIA

BC Housing

PROJECT PARTNERS

The livegreen Tenant Engagement on Sustainability Pilot Project was conducted by BC Housing in conjunction with the following partners:

Project co-development, facilitation and tool-kit development

Partnering on-site

Financial support

DESCRIPTION OF THE TOOLKIT

This toolkit provides practical steps for the development and implementation of a tenant engagement initiative that results in meaningful reductions in energy use and related utility costs. It has been created for social housing providers who are interested in engaging their tenants on issues related to sustainability. This toolkit focuses specifically on supporting behaviour change for energy conservation.

The livegreen **Tenant Engagement on Sustainability – Focus on Energy Conservation** toolkit consists of the following components:

A. GUIDE FOR SOCIAL HOUSING PROVIDERS (THIS DOCUMENT): The purpose of this guide is to share practical information and a tested approach for engaging social housing tenants on issues of sustainability, and more specifically on energy conservation. It provides practical steps on how to start a meaningful tenant engagement initiative that results in energy savings while strengthening community development.

B. FACILITATORS' HANDBOOK FOR SOCIAL HOUSING PROVIDERS: The handbook is designed for facilitators who will be directly designing and facilitating livegreen engagement strategies with tenants of social housing. It is a hands-on resource that includes education and social marketing materials plus activity modules.

C. COMMUNICATIONS MATERIALS: These have been designed to support the livegreen behaviour change objectives for energy conservation.

D. A LIST OF ADDITIONAL RESOURCES: A list of supplementary resources for energy conservation behaviour change and engagement strategies.

The focus of the livegreen tenant engagement strategy (and this toolkit) is the potential for **energy conservation through behaviour change**. While energy conservation can also include a wide range of retrofits and technical building upgrades, this initiative concentrates on developing the conditions that can support personal behaviour change along with the development of a culture of energy conservation in the community. Energy reductions from tenant behaviour can enhance the savings resulting from retrofits while also reducing energy use when no retrofits have been completed.

All of the materials in the toolkit flow from a pilot project conducted at three BC Housing sites in the Lower Mainland. The characteristics of each site and its tenant population are described in the Energy Conservation Guide. The entire toolkit is designed so that housing providers targeting similar tenant populations on sites with similar characteristics can apply the steps and strategies to their own sites. Housing providers serving a very different tenant profile may need to develop their own approach, but our hope is that this toolkit will serve as a useful reference.

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THE TOOLKIT CONSISTS OF

- Guide for Social Housing Providers (this document)

- Facilitators' Handbook for Social Housing Providers

- Communications Materials

- A List of Additional Resources

LIVEGREEN TENANT ENGAGEMENT ON SUSTAINABILITY—FOCUS ON ENERGY CONSERVATION

GUIDE FOR SOCIAL HOUSING PROVIDERS

This guide consists of two main sections. We recommend that these sections be reviewed in their entirety before beginning a livegreen TES initiative:

PART I: Overview of livegreen Tenant Engagement on Sustainability (TES): This section answers the questions of why this initiative is important, what the initiative aims to achieve, and what key points might be considered. It introduces the background and goals of livegreen TES and describes the pilot project on which this guide is based. It also discusses key aspects to consider before starting this project, the engagement and behaviour change approach that is recommended, and how to set the project up to evaluate success from the very beginning.

PART II: Management and Resources: This section describes how to begin this initiative, including what capacities and resources are required. It describes how to assess conservation behaviours for potential barriers and stronger benefits, ways to begin engaging staff and tenants in the initiative, and a high level map of engagement strategies to use.

Supporting the two main sections of the guide are:

APPENDICES: A number of appendices provide more details about the research, energy data, and evaluation process that were conducted when developing the livegreen TES pilot initiative. This information is included here in case you would like to repeat this research, or for your reference if you would like to develop research specific to your own housing site.

GLOSSARY: A glossary of terms can be found at the end of this guide.

A livegreen TES Facilitators' Handbook for Social Housing Providers has been developed to accompany this guide. It is targeted to site staff who will be directly engaging the tenants. The purpose of the Facilitators' Handbook is to provide staff with tangible methods and resources for supporting behaviour change and designing livegreen TES engagement activities.

Workshop facilitation

TES Facilitators Handbook

Workshop facilitation

PART I: OVERVIEW OF LIVEGREEN TENANT ENGAGEMENT ON SUSTAINABILITY

1. INTRODUCTION

This guide is based on a pilot study conducted on three BC Housing sites, referred to as the livegreen TES — Tenant Engagement on Sustainability initiative. This pilot demonstrated that tenants, when provided with the support and opportunity to make a difference, can contribute to significant energy savings through behaviour changes at home and in their community.

Studies on energy savings through behavioural changes focusing on low income populations document potential for a two to ten per cent reduction of utility costs through energy savings.[1] For a social housing agency, this can mean:

- cost and energy savings at sites where there's been no or minimal upgrade/retrofit work done; as well as

- increased probability of realising full projected savings either at sites that have undergone major structural and technological improvements, and at new sites.

Results from the livegreen Tenant Engagement on Sustainability (TES) pilot demonstrate savings of 3.5% overall for the pilot sites during the door-to-door energy pledge drive from October to December 2011. The average savings at these sites[2] was 5% for the month of December (which was the overall energy reduction target for the pilot project).

This livegreen TES engagement approach can also result in increased confidence and self-determination for tenants when they take action with others towards building a healthier community and environment. This pilot project demonstrated that the sustainability message resonated with tenants, with participation in the initiative resulting in improved relationships, new knowledge, and strengthened community development.

Figure 1 shows the benefits of the livegreen TES initiative, even at housing sites where tenants face multiple barriers (e.g. language, physical ability, mental health, food insecurity, poverty, and/or trauma). It also underlines how difficult it is to achieve energy savings at social housing sites, and the need for significant on-site support if energy reductions are to be achieved. For information on how savings were tracked for the project, see Appendix E.

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[1] For example: D. Carroll & J. Berger, (2008) Transforming Energy Behavior of Households: Evidence from Low-Income Energy Education Programs

[2] While there are three separate sites for this pilot project, in terms of energy savings, pilot sites #2 and #3 (see chart below) are on the same energy bill, so no distinction can be drawn between these two in terms of discrete energy reductions.

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Fig 1. Benefits of the TES **livegreen** Initiative

- IMPROVE HEALTH OF TENANTS
- BUILD COMMUNITY ENGAGEMENT
- SAVE MONEY AND CONSERVE ENERGY
- REDUCE GREENHOUSE GAS EMISSIONS

1.1 Objectives of livegreen TES

This initiative has three main objectives (as presented in Table 1 below), along with activities and outcomes related to each objective.

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OBJECTIVES	ACTIVITY	OUTCOMES
Reduce utility costs, energy consumption and greenhouse gas emissions.	Conserve heat, hot water & electricity.	• Save money on building heating and cooling (utility) costs. • Increase energy efficiency in the building. • Reduce greenhouse gas emissions.
Increase community capacity.	Enhance tenant activities that build individual and community capacity through education, mentorship, and skills building.	• Engagement opportunities resonate with the tenants' values. • Tenants learn new knowledge and skills. • Increase in the ability of tenants to take care of their own needs (e.g. willingness to connect with neighbours, participate in community activities and ability to replace a light bulb).
Increase tenant well-being and satisfaction.	Enhance engagement opportunities that meet tenants' needs through relationship and trust building, a sense of belonging, and social inclusion.	• Tenants tangibly contribute to community building projects. • Tenants feel empowered to make a difference for the environment and future generations. • Tenants strengthen relationships with neighbours. • Tenants save money on their energy bills (if they are responsible for their own bills).

Table 1. Objectives of livegreen TES Initiative

1.2 What is Sustainability?

'Sustainability' has become a buzz word that encompasses everything from energy conservation to local food initiatives. But what does sustainability mean for social housing?

Sustainability integrates environmental, economic, social, and health considerations into how we live and make decisions. Working towards sustainability means maximizing outcomes in all of these areas, rather than addressing each one in isolation from the other.

PERSONAL HEALTH AND WELL-BEING

ENERGY CONSERVATION

HEALTHY ENVIRONMENT

COMMUNITY DEVELOPMENT

Fig 2. Benefits of the TES **livegreen** Initiative

This guide is focused specifically on how sustainability relates to **energy conservation**. There may be other aspects of sustainability that you are interested in engaging tenants on in the future, such as food security or waste reduction. While these areas are beyond the scope of this guide, we encourage you to consider how the skills, relationships, and knowledge gleaned from this pilot can support sustainability initiatives relating to other issues as well.

Because the livegreen TES initiative aims to affect environmental, economic, and social outcomes, it is necessary for different departments or functions of a social housing organization to collaborate closely. However, the work of building the capacity of operations staff and tenant engagement staff often takes place separately, often in the same building. In order to create effective tenant engagement resulting in energy conservation, the operations and tenant staff need to work together. This initiative is about 'making the links' between opportunities to engage tenants, positively develop the community, and reduce utility costs by saving energy. When done well this initiative can have positive results in terms of lower utility costs, increased tenant engagement, overall satisfaction, and higher sense of community.

A pilot site

1.3 Background of the livegreen TES Pilot

This guide was developed from the lessons learned in a pilot project. The **livegreen** TES pilot initiative took place between November 2010 and March 2012, with three social housing sites managed by BC Housing, located in the Lower Mainland. The purpose of this pilot was to design, implement, and evaluate a strategy that engages the tenant population on sustainability, focusing on building energy conservation behaviours.

The pilot sites were chosen alongside various criteria, including whether the buildings had: i) a recent energy retrofit; ii) a common space; iii) on-site staff support; and iv) the potential to save greenhouse gas emissions. The characteristics of the pilot sites are provided here so that housing providers can compare the building and tenant characteristics with their own.

Some important characteristics of the pilot sites are:

- None of the sites had undergone any recent major energy retrofits, **thus energy savings in the pilot can clearly be attributed to tenant and staff behaviour change**.

- Two out of the three sites have a common space where the tenants can meet. One site does not have a common meeting area for tenants, so engagement activities took place off-site or on the site's outdoor grounds.

- The level of staff support provided varied across the three sites, from non-existent to part-time and full-time staff support.

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The livegreen 'community storytelling' tree

CHARACTERISTICS	PILOT SITE #1	PILOT SITE #2	PILOT SITE #3
Year built	1977	1969	1969
# of Units	118	100	54 townhouses
Adult / Family	Adult only	Adult only	Family
On-site tenant support	Full-time	Part-time	None
Common space for activities	Yes	Yes	Outdoor space only
Percentage of tenants that regularly participate in existing programming	~ 10-15%	~ 10-30%	~ 10-30%
Tenant population characteristics	Multicultural; physical and mental health barriers; ESL; interest and skills in the arts.	Multicultural; physical and mental health barriers; ESL; poverty; interest and skills in the arts.	Families (mainly single parent families); multicultural; young children; physical and mental health barriers; interest in activities for children.
Pre-pilot energy saving strategies	Installation of low-flow shower heads, CFL bulbs, boiler upgrade	Installation of low-flow shower heads, CFL bulbs, boiler upgrade	Installation of low-flow shower heads, CFL bulbs, boiler upgrade

Table 2. Characteristics of Pilot Sites

This guide shares the practical steps, strategies, outcomes, and lessons learned from the pilot project. We recognize that the time, resources, and capacity for each housing site is unique. This is why we hope that the research, design, and strategies of the pilot can be **adapted to the distinct context of your community**

and building. For example, some organizations may not have the time or resources to undertake site-specific research on barriers to energy conservation. Rather than skipping this step, we encourage you to consider the findings for this pilot project and the transferability of this information to your own building and tenant population.

2. KEY CONSIDERATIONS FOR LIVEGREEN TES

How do you know if you are ready to begin a livegreen TES initiative on your site? We have identified six main areas that are important to consider at the outset:

1. COMMITMENT TO SUSTAINABILITY;

2. CRITERIA FOR SITE SELECTION;

3. THE POTENTIAL TO BUILD ON EXISTING INITIATIVES;

4. THE CAPACITY OF THE TENANTS;

5. THE CAPACITY OF THE STAFF; AND

6. THE POTENTIAL FOR ENERGY SAVINGS AND MONITORING IN THE BUILDING.

Each of these areas is discussed below.

2.1 Commitment to Sustainability

Every organization and community manifests its own internal culture and set of rules—the 'way things are done around here'. The norms of an organization reflect what's important and the values that guide decision making. A commitment to sustainability means being explicit about the values that guide 'what we do and how we do it'. **In this sense, sustainability is more of a process than an outcome**. While the process of developing a livegreen tenant engagement initiative may 'look' different in each organization, evidence shows that a **strong commitment to sustainability from senior management** is critical for setting the tone.
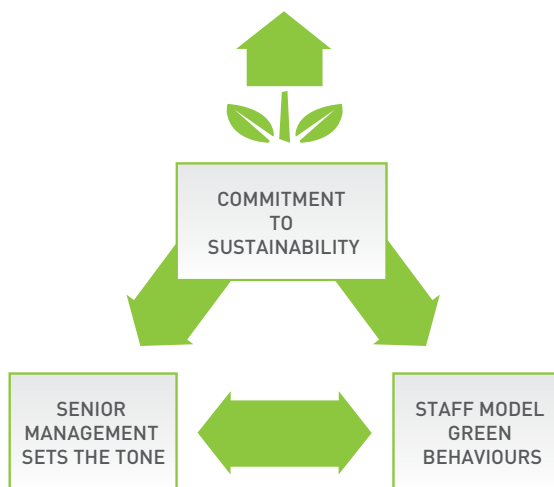

Banner from livegreen community workshop

Fig 3. Organizational Commitment to Sustainability

Commitment shown by tenant

2.2 Criteria for Site Selection

Social housing providers and their staff will have varying levels of capacity, resources, and time to begin a livegreen TES initiative. We suggest that the following criteria be considered in determining if livegreen TES is a good fit for your site:

1. The site should offer some kind of **tenant support** (i.e. internal or external). This could be provided by a partner organization, a community developer, or a recreation programmer. Most importantly, an individual 'champion' holds responsibility for outreach and engagement with tenants.

2. You will need access to indoor **common space** (on-site) or nearby community space for tenant engagement activities (onsite is preferred). Engagement will be most successful when there is a shared space such as a building lounge or common room where tenants feel comfortable and welcomed.

3. There should be a way to **maintain the** livegreen **TES initiative** and sustain it in the long term (through staff or onsite supports). For many people, sustaining behaviour changes requires community support, ongoing encouragement, and leadership to help troubleshoot challenges that may arise. In other words, supporting individual and community change takes commitment over time.

2.3 Building on Existing Initiatives

Start from strengths: When thinking about how livegreen TES could be implemented on your site, begin by assessing the existing tenant engagement strategies that already exist. This ensures that the initiative builds on the existing strengths, relationships, and interests amongst staff and tenants. For example, in pilot site #2, a successful weekly lunch program was already in place with participation from about 30% of the tenant population each week. Once every six weeks, the lunch featured a livegreen theme, integrating messages, education, and activities supporting energy conservation behaviours.

Acknowledge and build on existing green behaviours: There are likely activities already being undertaken to conserve resources and reduce your site's impact on the environment (e.g. hosting recycling initiatives, turning off lights / appliances when not in use, sourcing and preparing healthy local foods, cultivating community gardens, etc.). These existing efforts contribute to a culture of conservation and an environmental ethic amongst tenants and staff on site.

Lead by example: One the most important engagement strategies is for **staff and mentors to model green behaviours and values on site and beyond**. In other words, livegreen becomes 'the way we do business' rather than a separate program that is removed from day-to-day operations. Practically, this means finding ways to weave the message and practice of sustainability throughout tenant engagement and operations of the building.

MAIN POINTS TO CONSIDER: BUILDING ON EXISTING INITIATIVES

- Start by assessing what tenant engagement strategies already exist, and build on 'what works'.

- Look for examples of existing green behaviours.

- Lead by example by modelling energy conservation behaviours in all building operations and activities.

2.4 Tenant Capacity

How tenants receive the livegreen message, their motivation to engage in tenant activities, and their ability to change their behaviour will depend on a number of personal and community factors. Supporting the development of **tenant capacity and self-determination** is a critical component of creating change. Equally as important is the capacity of the staff in terms of time, personal commitment to energy conservation, and relationships with the tenant population.

The livegreen TES initiative acknowledges the unique assets and challenges of tenants living in social housing. For example, in the pilot project, we discovered a spectrum of tenant capacities that revealed the most appropriate engagement strategies to use.
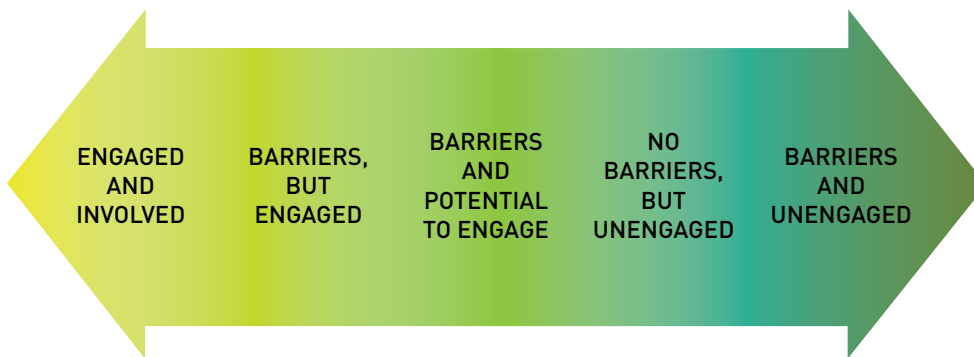

Fig 4. Spectrum of Tenant Capacity

a. **Engaged and involved**: A core group of tenants tend to participate fully in the livegreen activities. They may take on more of a leadership role if adequate support is provided. This group shares a common commitment to be involved in the community and are often already engaged in many different types of activities at the housing site.

b. **Barriers, but engaged**: This group of tenants face multiple barriers (e.g. language, physical ability, mental health, food insecurity, poverty, and/or trauma) yet still engage in livegreen activities and other initiatives at the housing site. It is likely that the initiative meets critical social, physical, or emotional needs for these tenants. Their barriers may be impediments for this group to serve in leadership roles in the initiative. Moreover, barriers such as mental health issues may also affect their capacity to change personal behaviours.

c. **Barriers and potential to engage**: These tenants face barriers to participation and will likely need extra support or encouragement to connect. Engagement of these tenants can be increased through enhanced relationships and outreach such as extending personal invitations to participate, having conversations at their door, and reminding them about upcoming events. Design events to ensure that tenants experiencing barriers can fully participate.

d. **No barriers, but unengaged**: This group enjoys higher capacity, but has not been participating in tenant programming for a variety of reasons. They could make up approximately 30% of tenants.[1] Many may hold employment outside

MAIN POINTS TO CONSIDER: TENANT CAPACITY

- The social, physical, and emotional needs of tenants will impact the type and level of engagement that is appropriate.

- For livegreen TES to be meaningful, a variety of strategies and activities should be employed to ensure that tenants across the spectrum are given the opportunity to engage.

- Evaluate the existing levels of engagement for tenants at the housing site.

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[1] Interviews with site staff from the **livegreen** pilot study indicated that as much as 30% of the tenant population that face little to no barriers do not participate in any programming or engagement activities on site.
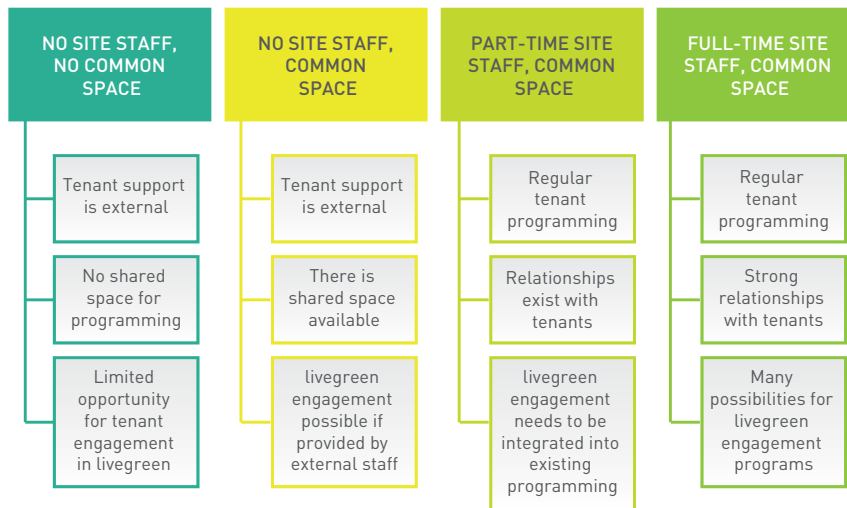
of the building or be otherwise engaged in activities in the community. Finding creative ways to connect with this group is essential in having the housing community on board with energy conservation goals.

e. **Barriers and unengaged**: This group faces multiple barriers, are not participating in any programming, and may not have desire to participate. These folks may never attend programming and may be resistant to the ideas presented here. While it is important to develop relationships with everyone, the 'return on investment' on outreach to this group may not be significant in terms of community or energy reduction outcomes.

2.5 Staff Capacity

Differing staff capacities and configurations (part-time versus full-time) contribute to the success of a livegreen initiative, as does the staff's pre-existing knowledge of and support for sustainability and energy conservation behaviours. Staff focus, pre-existing interest, and time spent on-site are factors to be considered alongside tenant capacity. For example, below are a variety of ways that the livegreen TES initiative could be offered on-site:

NO SITE STAFF, NO COMMON SPACE	NO SITE STAFF, COMMON SPACE	PART-TIME SITE STAFF, COMMON SPACE	FULL-TIME SITE STAFF, COMMON SPACE
Tenant support is external	Tenant support is external	Regular tenant programming	Regular tenant programming
No shared space for programming	There is shared space available	Relationships exist with tenants	Strong relationships with tenants
Limited opportunity for tenant engagement in livegreen	livegreen engagement possible if provided by external staff	livegreen engagement needs to be integrated into existing programming	Many possibilities for livegreen engagement programs

Fig 5. Spectrum of Staff Capacity

Engaging staff is critical to the success of the initiative. It is highly recommended that organizational leadership meet with staff early in the process, to discuss how livegreen TES can be offered on-site.[1] This will also generate an opportunity to assemble staff's knowledge of the tenants and the building. For example, the maintenance staff hold knowledge about how the controls of the heating system work, while the support staff (e.g. tenant activity co-ordinator) would understand tenants' needs, interests, and capacities.

The time invested in developing this collaboration with staff is critical, reaping significant dividends for the project, and time saved down the road. Collaboration between the various staff on-site minimizes duplication of efforts, enhances probability of meeting tenant needs, and makes it easier to quickly identify opportunities and challenges in the building.

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[1] See Part II of this guide, section 3.1 "Meeting with Building Staff"

MAIN POINTS: STAFF CAPACITY

- Engage site staff early and utilize their knowledge of the tenants and the building(s).

- Assess the roles of current staff in the building, including on-site tenant support and operations building staff, in order to build a strong team that enjoys shared ownership of the livegreen objectives.

- Evaluate opportunities for staff to communicate regularly about the livegreen TES initiative (e.g. regular staff meetings.)

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2.6 The Potential for Energy Savings and Monitoring in the Building

One of the main objectives of the livegreen TES initiative is the reduction of utility costs, energy use, and greenhouse gas emissions. In order to assess the effectiveness of the initiative, utility data is required, for comparison between before and after tenant engagement takes place. This data can be obtained from the utility bills (e.g. BC Hydro electricity bills and FortisBC gas bills). See Part II of this guide for more information about assessing energy, plus Appendix C.

- In order to measure energy savings, you will need to be able to identify energy-saving opportunities and monitor energy performance for each site.[1]

- If your building has been recently upgraded (e.g. installation of a new boiler or new windows), it will be impossible to separate changes in energy consumption due to the technical upgrades versus behavioural changes. However, the combination of an upgrade or energy retrofit with a behavioural program will have the highest energy savings potential (compared to just an energy retrofit or just a behavioural program).

3. THE LIVEGREEN TES TENANT ENGAGEMENT APPROACH

Energy savings from the livegreen initiative result from tenants changing their personal behaviours to conserve energy, such as turning off lights and turning down heat. While these actions may seem relatively modest, energy conservation in the home nonetheless remains a challenge for all Canadians.

Decades of behaviour change initiatives show that people's behaviour is influenced by tangible variables such as cost of utilities and availability of technical solutions (i.e. CFL light bulbs) in addition to intangible variables such as knowledge, commitment, and values. Moreover, **we know that information alone is unlikely to change behaviour**. In order for behaviour change initiatives to be successful, we need to design strategies that acknowledge and address the real barriers faced, and the benefits that can be experienced by individuals and communities.

The barriers and benefits to energy conservation behaviours are particularly unique in a social housing context. To adequately address the complexity of personal and community issues such as mental and physical health, poverty, and social isolation, we suggest using an integrated strategy that draws on capacity building and community development as well as Community-Based Social Marketing (CBSM).

3.1 Capacity Building & Community Development

While energy conserving behaviours are a desired outcome of the livegreen TES initiative, the journey to achieve these results is focused on supporting personal and community development that builds respectful relationships, community cohesion, and a sense that 'you can make a difference'.

Taking a **capacity building approach** means starting where the tenants 'are at' to identify existing strengths, skills, and potentials that can be built upon. In other words, tapping into the best of what individuals and the community can offer!

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[1] See Section 2 of this guide for more information about how to calculate a baseline, and measure energy savings.

This approach stands in contrast to a 'needs-based' approach that focuses on deficiencies and what is 'broken' in the community.

In the context of livegreen TES, community development means paying attention to 'the whole person in the whole community'— individual tenants (their emotions and experiences as well as their behaviours), the systems and structures in the building, and the culture of each community.

The livegreen TES pilot utilized the Integral Capacity Building Framework[1] from BC Healthy Communities (see Figure 6 below) to build awareness of the personal and collective capacities that are needed to support behaviour change and community development overall.

When we place energy conservation in the middle of the four quadrants in Figure 6, we can get a sense of the multiple influences, both the internal and external, on behaviour change and tenant engagement. In practice, this diagram helps us to bring personal, cultural, and structural influences to the surface, ensuring that we are paying attention to all critical factors that will influence the success of the initiative.

	INTERIOR	EXTERIOR
I N D I V I D U A L	**PSYCHOLOGICAL CAPACITY** • Confidence • Agency • Awareness • Sense of belonging • Confidence • Trust • Environmental values • Identity	**BEHAVIOURAL CAPACITY** • Conserve heat • Conserve hot water • Conserve electricity • Recycle • Participate in programs • Healthy eating • Outreach to other tenants
C O L L E C T I V E	**CULTURAL CAPACITY** • Social norms • Social networks • Shared values • Shared identity • Relationships • Leadership • Modeling behaviours • Support from staff	**STRUCTURAL AND SYSTEMS CAPACITY** • Tenant recreational programs • Efficient heating /cooling systems • Availability of CFL bulbs • Monitoring and feedback of energy consumption

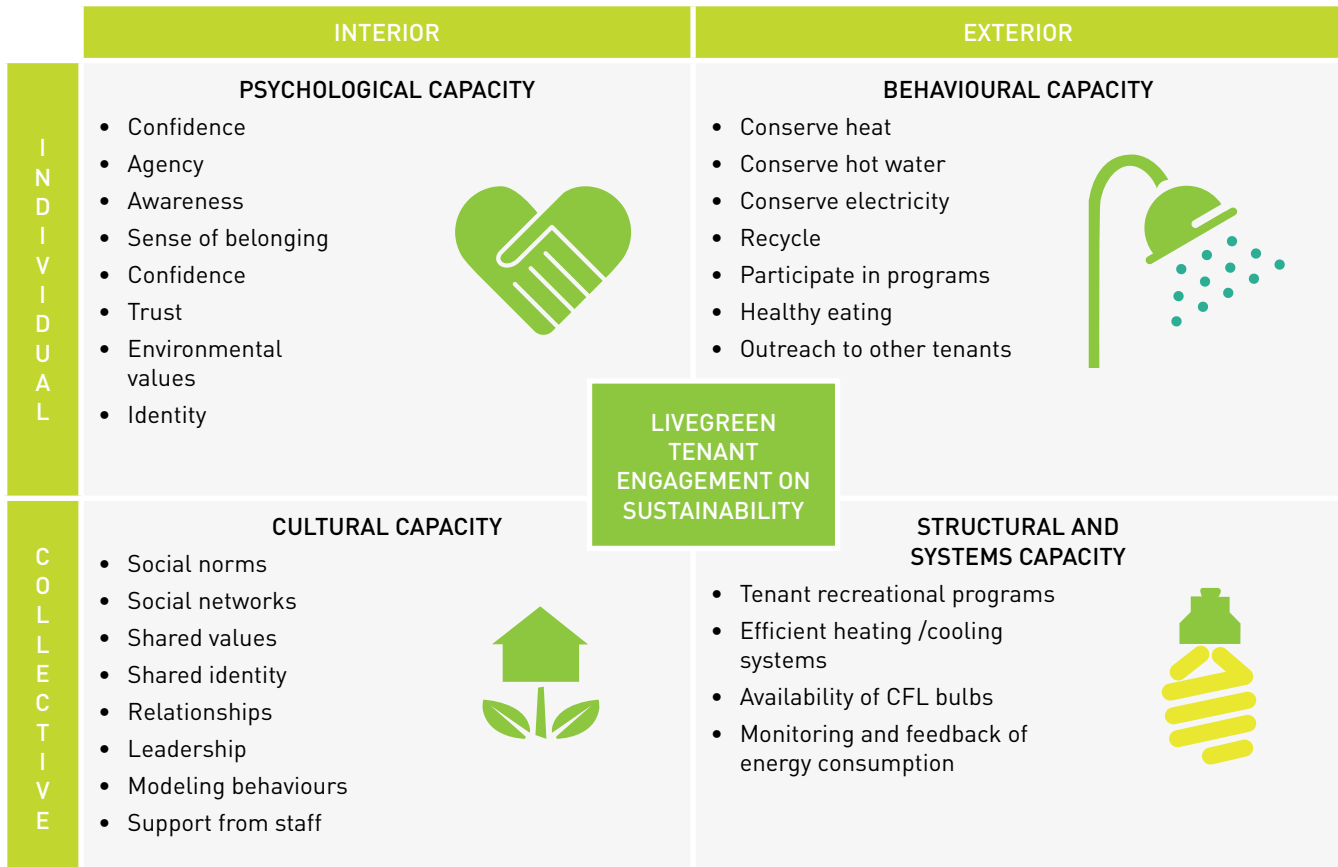LIVEGREEN TENANT ENGAGEMENT ON SUSTAINABILITY

Fig 6. Integral Capacity Building Framework for livegreen TES (BC Healthy Communities, 2012)

[1] BC Healthy Communities' Integral Capacity Building Framework is a comprehensive and integrated process of: community learning; community engagement; expanding community assets; and community collaboration. See more at http://bchealthycommunities.ca/healthycommunities

3.2 Community-Based Social Marketing

A growing body of research shows that community-based social marketing (CBSM) is highly effective in influencing behavioural change. CBSM is a branded approach to behaviour change for sustainability that applies principles of social marketing at the community level.[1] Changing individual behavior is central to achieving a sustainable future according to this approach. An effective CBSM strategy removes barriers to and increases benefits of the behavior being promoted. Any CBSM strategy outlines a five-step process for developing and delivering behaviour change initiatives based on the principles of social psychology.

1. **SELECTING BEHAVIOURS**: Every CBSM strategy targets a small number of specific behaviours. Consider the potential impacts of various energy saving behaviors.[2] For example, in the livegreen TES pilot, potential impacts were evaluated for a number of different behaviours. Only four specific behaviours were selected based on the highest level of impact, and greatest probability that tenants would / could change these behaviours.

2. **IDENTIFYING BARRIERS AND BENEFITS TO A SPECIFIC BEHAVIOUR**: What barriers and benefits exist to engaging in these activities? In deciding which behaviours to promote, it is important to know what the real barriers are to broad public uptake of the actions. Several research methods can be used to uncover these barriers including focus groups, observation and survey research. An important consideration is whether the behaviour requires a one-time change (e.g. installing a low-flow showerhead) or a repetitive, habitual one (e.g. turning the heat down each night before going to bed). In general, it is more difficult to alter and maintain repetitive behaviour changes than it is to bring about one-time changes in behaviour.

   It is also essential to consider personal, cultural, and structural barriers to energy conservation and behaviour change. For example, in the livegreen TES pilot, bed bugs were identified as a significant barrier to energy conservation. When tenants were experiencing significant personal stress from bed bugs, energy conservation became less relevant for them personally. Moreover, bed bug infestations directly resulted in increased energy use, as tenants opened the windows after their units had been fumigated.

3. **DEVELOPING AND PILOTING AN INITIATIVE TO OVERCOME BARRIERS**: An effective CBSM strategy attempts to remove barriers to the behaviour being promoted. An engagement strategy is designed to address the personal and community barriers that tenants may be experiencing.[3] The engagement strategy should be piloted, evaluated, and then refined prior to being broadly promoted across the community. For example, the pilot livegreen engagement strategy was piloted with a small group of 15-20 tenants who regularly participated in livegreen activities. Communication and educational materials were tested with a small group, evaluated for effectiveness, and then adjusted before promoting the initiative to the tenant population at large.

Outing to Van Dusen gardens

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[1] For more information on CBSM, see www.cbsm.com

[2] See Part II for more information on selecting behaviours.

[3] See Part II for more information on developing an engagement strategy.

4. **SCALING UP THE INITIATIVE ACROSS THE COMMUNITY**: In order for energy savings to be realized, a significant portion of the community must be engaged in changing behaviours. For example, in the livegreen pilot, a door-to-door energy challenge was used as a strategy to engage as many tenants as possible in energy conservation. While a core group of highly involved tenants will remain important, specific engagement strategies need to be used to promote the initiative beyond the core group. As the initiative is scaled up across the community, ensure that sound procedures are put into place in order to monitor effectiveness over time.

5. **EVALUATING THE EFFECTIVENESS OF THE INITIATIVE**: Community-based social marketing stresses evaluation of implemented initiatives. Further, it emphasizes the direct measurement of behaviours, barriers/benefits, and outcomes (in this case, energy reduction). For example, if energy is being saved, it's important to understand why, and how changes in behaviour can be maintained. For example, the livegreen pilot used various evaluation methods (observation, interviews, focus groups, energy data) mid-way through the initiative, and again at the end, to assess the effectiveness of the engagement strategy.

Beyond the five steps, CBSM recommends a number of tools that are successful in supporting behaviour change. The livegreen pilot used five main CBSM tools (Figure 7). These tools are described in more detail in Part II of this guide, and also in the Facilitators' Handbook.

BRANDING	EDUCATION / AWARENESS	PROMPTS	SOCIAL NORMS	PERSONAL COMMITMENT

Fig 7. CBSM Tools Used in the livegreen TES Pilot

The livegreen pilot **has completed CBSM steps 1 through 5**, and the results are described in detail in Part II of this guide. If the building and tenant profile for your site is similar to one of the pilot sites, it is likely that the barriers, benefits, and probability of energy conservation behaviours **will be similar to the pilot**. While we encourage you to utilize the research provided in this guide, we also recommend that you explore these behaviours and strategies further through a discussion with all site staff and by hosting a focus group with tenants.

If you find that your tenant and site profile is very different from any of the pilot then we recommend conducting your own research to identify barriers, benefits, impacts, and outcome probability specific to your site. The appendices provide examples of survey and energy data analysis that will serve as a useful guide for conducting this research.

3.3 Spectrum of Tenant Engagement

Tenant engagement allows residents to be involved in decisions that affect them, creates opportunities for people to meet their own needs, and contributes to higher levels of satisfaction and well-being. A variety of engagement strategies can be used in the livegreen TES initiative, depending on the capacities of the tenants and the staff.

'Engagement' can mean many things, so it is important to be as clear as possible about the intention of your livegreen engagement strategy. The '**Spectrum of Tenant Engagement**' below (Figure 8) denotes engagement as a fluid process that can be used to achieve a variety of purposes over the course of a livegreen TES initiative. The spectrum also suggests that the level of engagement increases as strategies move away from one-way communication, and towards opportunities for collaboration, leadership, and empowerment.
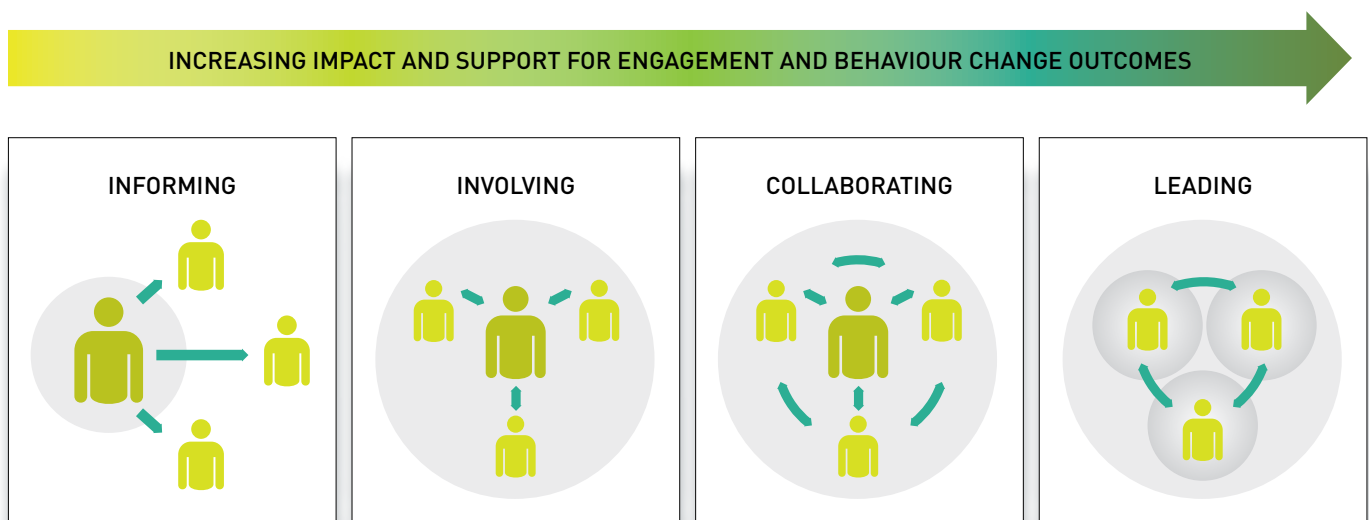
INCREASING IMPACT AND SUPPORT FOR ENGAGEMENT AND BEHAVIOUR CHANGE OUTCOMES

| INFORMING | INVOLVING | COLLABORATING | LEADING |

Fig 8. Spectrum of Tenant Engagement[1]

Informing: Providing meaningful and factual information is a part of every behaviour change initiative. Take time to think about how you will create awareness about the livegreen initiative and communicate information about the specific behaviours targeted. Common ways of informing include: posters, notices, newsletters, or calendars that are regularly distributed to people in the building. NOTE: Usually, information alone is not sufficient to change behaviour.

Involving: A more active way to engage tenants is to invite them to become involved in activities on-site. Information flow between tenants and staff is two-way, as tenants participate by showing up to events, engaging in discussion and activities, and/or providing input that shapes future engagement. Site staff will still take on the majority of the planning, organizing, and inviting of tenants to engagement activities.

Collaborating: Collaboration invites input from the tenants into how the livegreen initiative is designed and conducted on the ground. Tenants work together with staff to develop, plan, and organize activities in a collaborative manner. The tenants hold some ownership over activities, and have a role in making activities

livegreen community workshop

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[1] The Spectrum of Tenant Engagement has been adapted from the International Association of Public Participation (www.iap2.org). For a full description of the Spectrum, see Appendix A

happen. This level of engagement requires higher capacity and often sustained involvement, if the collaboration is to be effective.

Leading: Given that energy conservation behaviours are both individual and community-based, it makes sense to encourage community action that is not reliant on one person (i.e. a facilitator) to guide the efforts, but is initiated by the community members themselves. This requires high tenant capacity: the ability to and interest in playing a leadership role in organizing and maintaining livegreen activities in the community.

While this diagram presents engagement as having discrete stages, it is our experience that the reality is much more fluid, with every learning opportunity providing an opportunity to move towards empowering people given their individual and collective potential. For example, some people may not be interested or engaged in thinking about the initiative as a whole, but could be very interested in playing a decision making role in what kinds of activities they would like to carry out.

Collaboration on a sustainable community mapping workshop

3.4 Putting It All Together

In the livegreen pilot, we discovered that the level of potential engagement was heavily influenced by the levels of staff availability and tenant capacity. The matrix below (Figure 10) can be used to think about the implications of tenant and staff capacity on the level of engagement that you strive for.
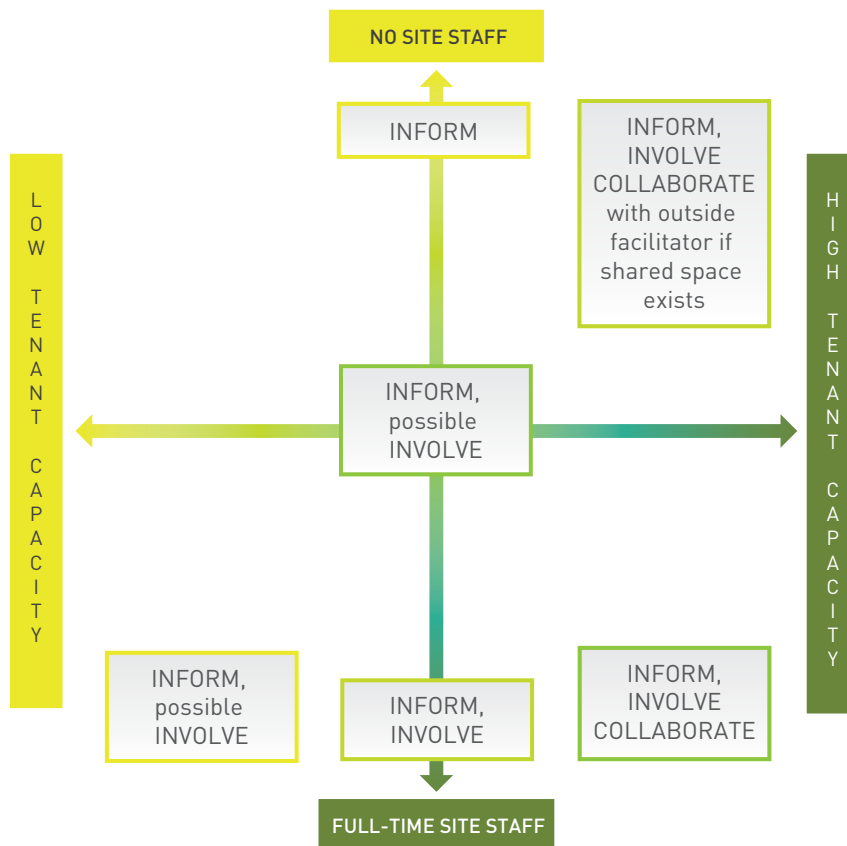

Fig 9. Capacity and Engagement Matrix

4. EVALUATION

It is essential that an evaluation strategy is developed to assess progress towards the specific objectives and outcomes of the livegreen TES. Evaluation of engagement and behaviour change initiatives is particularly important because there is no formula or 'cookie-cutter' approach that can be used across all communities. Thus, ongoing experimentation and evaluation are critical in order to learn what will work for the particular group of people with whom the engagement is taking place.

4.1 Building Evaluation into the Design

The design of the evaluation strategy happens at the same time as the development of the engagement strategy—they are part of the same planning process. For each **activity** that you plan to undertake in the livegreen engagement strategy, think through the **outputs** that this activity will produce (e.g. the tangible events, numbers of participants, and materials distributed), the **outcomes** that it will achieve (the results or changes in individuals, the community, or the system) and also, what lessons you are **learning** that can be fed back into the planning.

What you will measure to indicate success? **Process indicators** will measure what you are striving for in the process, for example how many tenants you hope to reach (e.g. 60%) or how many energy challenges you want to run over a year (e.g. three). **Outcome indicators** will measure the level and type of changes that you hope to see (e.g. a 5% reduction in energy use or an increase in tenant knowledge about energy conservation). For each performance indicator, decide on how it will be measured, by who, and when.
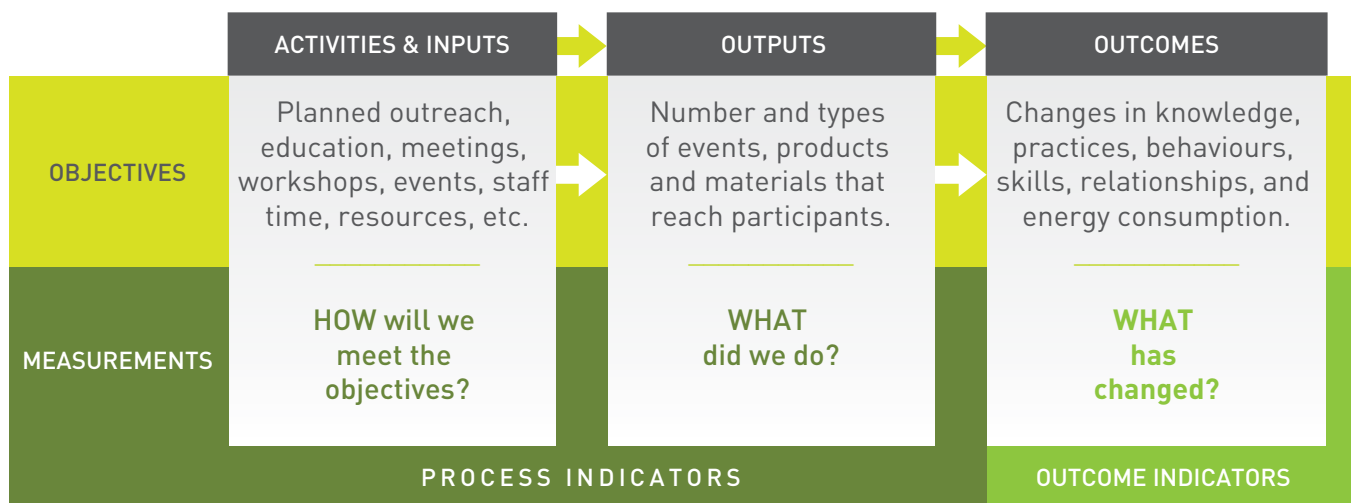
Information collected from evaluation will guide planning throughout the initiative, and ensure that you have the data required to measure success. We suggest setting up practices to collect and organize evaluation data **throughout the initiative**. Sometimes you will be able to collect data simply by observation (e.g. number of tenants that participated in an activity) and at other times, you would use methods such as interviewing, discussion, and reflection to evaluate outcomes.

It is easiest to integrate evaluation as you go, rather than having to go back and try to capture data later in the process. More information about how to set up evaluation systems can be found in the second part of this guide in Section 5; and an evaluation model from the livegreen pilot can be found in Appendix B.

KEY POINTS TO CONSIDER FOR EVALUATION:

- Develop an evaluation plan alongside your engagement strategy— these two documents work together!

- Set performance indicators for measuring outputs and outcomes at the outset. For example, the livegreen pilot aimed for a 5% decrease in energy consumption and an increase in tenant engagement as measured by BC Housing's annual tenant satisfaction survey.

- While you will collect data throughout the initiative (e.g. after each activity), develop an evaluation schedule that indicates when you will assess higher level progress towards desired objectives. This could mean undertaking an evaluation mid-way through your project timeline, so that you can use the information gathered to refine strategies as you proceed.

Fig 10. Example of an Evaluation Model adapted from McCawley, P. (2012). The Logic Model for Program Planning and Evaluation. University of Idaho Extension Division. Retrieved on March 2, 2012 at: www.uidaho.edu

	ACTIVITIES & INPUTS	OUTPUTS	OUTCOMES
OBJECTIVES	Planned outreach, education, meetings, workshops, events, staff time, resources, etc.	Number and types of events, products and materials that reach participants.	Changes in knowledge, practices, behaviours, skills, relationships, and energy consumption.
MEASUREMENTS	**HOW will we meet the objectives?**	**WHAT did we do?**	**WHAT has changed?**
	PROCESS INDICATORS		OUTCOME INDICATORS

PART II: LIVEGREEN TES INITIATIVE MANAGEMENT AND RESOURCES

livegreen 🏠

This section provides a description of how to proceed with initiating livegreen TES on your housing site, including what capacities and resources are required. It outlines how to identify barriers and determine benefits of the behaviour that is targeted, ways to begin engaging staff and tenants in the initiative, and a high level map of engagement strategies to use.

Note: the livegreen TES Toolkit also includes a Facilitators' Handbook for use by site staff who directly engage with tenants. The Handbook includes descriptions of activities and resources that can be most easily implemented once the overall engagement objectives and framework have been set.

1. GETTING STARTED

Before you begin a livegreen TES initiative at your housing site, take a moment to run through this quick checklist to ensure that you are setting yourself up for success:

- **Commitment and capacity of site staff:** Support from site staff and building managers is critical for the success of the initiative. Make livegreen an agenda item in regular staff meetings to continually build commitment and check in about related project activities.

- **Develop objectives, desired outcomes, and indicators of success:** From the outset, take the time to make sure that staff share an understanding of what this initiative aims to achieve, how you hope to achieve your objectives, and how/when you will measure success. See Appendix B for an example of the evaluation plan from the livegreen pilot initiative.

- **Timeline:** Tenant engagement will be ongoing for the duration that livegreen exists as an initiative at your site. However, to achieve energy conservation outcomes, we recommend setting distinct timelines for when you will i) measure energy consumption data; ii) run the community-based social marketing activities; and iii) evaluate savings.

- **Scan of existing tenant engagement initiatives:** Assess opportunities for how livegreen can be integrated into tenant initiatives and activities that already have success with tenants at the housing site.

- **Building spaces and systems:** Ensure that you can measure energy performance for each site, and identify related energy saving opportunities. You will also need access to indoor community space (onsite) or nearby community space for tenant engagement activities: onsite is preferable.

Facilitator and tenant

2. IDENTIFYING ENERGY SAVING BEHAVIOURS[1]

There are hundreds of behaviours that can lead to energy savings, from turning off lights to washing laundry in cold water. One of the first steps in designing a livegreen TES initiative for your housing site will be to target energy saving behaviours that will have a **high impact** in terms of energy savings and which are also **within the tenants' control.**

A small number of behaviours are chosen to avoid overwhelming tenants with a long list of actions to consider. Focusing on a short list of high-impact behaviours (which tenants are also likely to adopt), will increase the probability that tenants will remember the behaviours and make a personal plan to take action.

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[1] This is Step 1 in developing a Community Based Social Marketing strategy.

As part of the livegreen pilot, research was undertaken which:

- Created a baseline of energy data for each housing site;
- Developed a list of possible energy savings behaviours associated with each housing site; and
- Assessed each of these behaviours for relative impact and probability that tenants would/could change their behaviour.

Based on the research from the pilot site, the following behaviours were selected to have the highest impact for cost and energy saving, and the highest probability for change:

BEHAVIOUR	IMPACT ON GHG EMISSIONS	PROBABILITY OF BEHAVIOUR CHANGE
Behaviour #1: Conserve heat		
Turn down the heat: When not home	High	Medium
Turn down the heat: At night	High	Medium
Turn down the heat: When window is open	High	Medium
Behaviour #2 Conserve hot water		
Take quick cleansing showers (about 5 minutes)	High	Medium - High
Behaviour #3: Conserve electricity		
Turn off lights when not in use / not home	Low	High
Unplug appliances when not in use (or turn off power bar)	Low	High
Replace incandescent light bulbs with compact fluorescents	Low	High

Table 3. Impacts and probabilities of behaviours

The research from the pilot was undertaken with the purpose of sharing it with other organizations considering the livegreen initiative. Conducting a full energy audit for each housing site and researching the impact and probability of every behaviour can be resource intensive and time consuming. Nevertheless, this level of information is very helpful in designing a community-based social marketing strategy. Even though each housing site and community will feature its own unique qualities, we expect that buildings with similar characteristics as the pilot sites will prioritize similar behaviours for energy conservation. If your site shares similar characteristics with the pilot sites, **we invite you to focus on the same behaviours as the pilot, including the energy findings, research, and strategies** presented in this guide.

In other words, steps 1, 2, and 3 of the Community-Based Social Marketing approach (1 – Selecting Behaviours, 2 – Identifying Barriers and Benefits, 3 – Piloting an Initiative to Overcome Barriers) have already been completed and the outcomes are described in this toolkit. This learning can be applied to other social housing sites that share similar characteristics of the pilot sites described earlier.

If you choose to conduct you own research on energy impacts and probability of behaviour change, we have provided basic instructions on how to do this in Appendix C.

Behaviour change research demonstrates that the most successful engagement initiatives strategically focus on **reducing the barriers and increasing the benefits** of specific behaviours. Determining the real and perceived barriers and benefits for a particular community is best done by engaging staff and tenants directly. In the pilot, we researched barriers and benefits to energy saving behaviours using three methods: meeting with the building staff, convening a tenant focus group, and circulating a tenant survey. We recommend completing these steps in order to better understand how the initiative will be perceived on your housing site along with the unique barriers and benefits for your tenants, even if your housing sites share the same characteristics as the pilot sites.

The following section provides more information about the process for meeting with the building staff, convening tenant focus groups, and circulating a tenant survey.

Outing to Van Dusen gardens

2.1 Meeting with Building Staff

The building maintenance and tenant support staff all play distinct and important roles in the launch and continued success of the livegreen initiative. Each of these staff holds a unique perspective about how energy is used in the building, tenant behaviours, tenant capacities, and 'what works' for successful engagement. Each person has a different piece of the puzzle.

STAFF POSITION	RELEVANT KNOWLEDGE FOR THE **LIVEGREEN** INITIATIVE	ROLE IN THE IMPLEMENTATION OF THE INITIATIVE
Tenant Support Staff	• Tenant interests, challenges, barriers; • Engagement and communications strategies: 'what works'; • Identify community champions; • Identify opportunities for integration of livegreen into existing initiatives.	• Design and facilitate engagement strategies; • Demonstrate leadership of energy saving behaviours; • Support and mentorship of tenants.
Building Mainte-nance Staff	• Knowledge of energy use in building overall; • Knowledge of tenants' behaviour related to energy use; • Knowledge of building structures and operations (e.g. recycling programs, heating systems, etc.); • Interaction with tenants around operational issues in suites (e.g. replacing showerheads, light bulbs); • Overall perspective of the day-to-day operations on site.	• Support structural changes that are necessary for energy reduction (e.g. initiating a recycling program for CFL light bulbs on site); • Day-to-day operations related to modelling energy conservation behaviours (e.g. turning lights off in common areas when not in use).

Table 4. Staff roles in TES **livegreen**

A purpose of this first meeting is to include staff early in the design of the initiative. The results of this meeting will be critical in terms of informing the engagement strategies that you choose, and ensuring that the messaging of the project addresses the specifics of the building while connecting to the tenants' interests and capacity levels.

Invite staff to think broadly about potential barriers and challenges for tenants (e.g. physical disabilities) and in the building (e.g. no place to recycle CFL bulbs), as well as benefits and opportunities (e.g. increased tenant comfort). Equally important is to discuss how building and tenant support staff will communicate with each other and collaborate throughout the initiative. It is recommended that regular meetings among staff departments take place throughout the initiative.

Finally, it is critical that senior management of the organization demonstrates strong commitment to sustainability and the livegreen energy conservation goals at this first meeting. Ensure that the staff know that they are supported to integrate energy conservation into their roles and that the whole organization stands firmly and enthusiastically behind the sustainability goals of this initiative.

2.2 Convening Tenant Focus Groups

A focus group allows for an in-depth exploration of how the message of livegreen resonates, openness to behaviour change, and potential engagement strategies. Focus groups tend to provide rich information in a short period of time. Invite a small group of tenants (10-15 people) to attend a one-hour focus group on sustainability and energy conservation. If possible, attempt to have a cross-section of tenants represented, not only the tenants who regularly participate in all programs. A healthy hot meal will also encourage involvement and honour the tenants' time.

The objectives of hosting a focus group include:

- Exploring the tenants' values, knowledge, and motivation with respect to environmental and energy issues.

- Identifying tenants' willingness to consider behaviour changes with respect to energy conservation.

- Identifying barriers and benefits to specific behaviour changes.

- Inviting ideas about what types of engagement approaches and activities would be desirable.

- Identifying potential community champions who would be interested in participating more deeply in the project.

A focus group is an important introduction to **directly involving the tenants** in the launch of the initiative at their housing site. Similar to meeting with the site staff, this invitation will help the tenants to feel included and validated.

Information from the focus group will give a sense of the motivations, values, and barriers of the tenants: critical information for designing a meaningful engagement strategy later on. Some of the tenant motivations and values articulated in the focus groups of the pilot project included:

- A desire to get to know other people in their community better;

- Seeing themselves as 'green champions': some are already undertaking many activities to promote energy conservation;

- A desire to have fun and focus on beautifying their surroundings;

- A desire to have access to healthy food;

- A desire to help make their community and the planet more environmentally conscious; and

- A desire to develop relationships with new people (those carrying out this initiative).

Consider the activities and ideas that will appeal to the values of the tenants. Use the TES livegreen initiative as an opportunity to learn about tenants while building on existing relationships or establishing new ones.

If possible, the focus group should engage a cross-section of the tenant population in order to gather as much non-biased information as possible about the existing knowledge, motivations, and openness to energy conservation and the livegreen message overall. Tenant support staff will have a good idea of who could be invited to a focus group.

The information gained through the focus group will inform the questions to be included in the tenant survey. The survey can lead to obtaining additional information and also potentially validating (i.e. with a high response rate) the information obtained through the focus group.

2.3 Circulating a Tenant Survey

A survey is a useful way to learn about a sample of the tenant population whom you will engage. The purpose of the TES livegreen survey is to learn more about the following:

a. What are the current behaviours of tenants?

b. What do tenants know about energy use?

c. What do tenants value / what is important to them?

d. What are the barriers to change for tenants?

e. What are some behaviours that tenants might be willing to change?

f. What are potential engagement strategies?

Figure 1 shows an example from the pilot tenant survey that examines tenant willingness to change different behaviours.

I WOULD BE WILLING TO DO THE FOLLOWING:	Never					Always
Take short (under 10 minute) showers instead of longer showers or baths	1	2	3	4	5	6
Keep my windows closed in the winter	1	2	3	4	5	6
Turn down the heat at night (2°C or 4°F)	1	2	3	4	5	6
Turn down the heat when I am out during the day (2°C or 4°F)	1	2	3	4	5	6
Turn the lights off when I am not in the room	1	2	3	4	5	6

Fig 1. 'Tenant willingness to change behaviour' section from pilot survey

The survey results from site #1 indicated that 90% of tenants reported willingness to turn lights off when they leave the room and 70% indicated that they are willing to turn the heat down at night.

Undertaking a building-wide survey that has a meaningful response rate can be time intensive. If you already administer an annual tenant satisfaction survey (or something similar), consider integrating some questions about energy conservation into that survey. If you do not have the capacity to conduct a survey of the tenant population, we still recommend hosting a staff discussion and tenant focus group. See Appendix D for the full tenant survey that was used in the pilot.

3. DEVELOPING AND IMPLEMENTING THE TENANT ENGAGEMENT STRATEGY

The staff discussions, tenant focus group, and tenant survey will provide you with useful information about how the initiative will resonate with the community on your housing site. This section describes the strategies that were designed and used in the livegreen pilot initiative. Use these strategies as a guiding framework for ideas, but feel free to **adapt and enhance these strategies** to meet the unique needs and capacities of your housing site. Here are some guidelines for developing your own livegreen tenant engagement strategy:

- Consider the **interests and values** of the tenants: what is important to them and what do they care about? Shape messaging and outreach to resonate with the tenants' values. The information from the staff meetings, tenant survey, and the focus group (as described in previous sections of this guide) will be useful to expose interests and values.

- Be intentional about what **level of engagement** you hope to achieve.[1]

- Thoughtfully consider the unique capacities of the tenants, and how you will design your engagement strategies to **overcome existing barriers** such as language, literacy, physical disabilities, etc.

- Identify a **core group of tenants** who have an interest in sustainability and would like an opportunity to be more involved.

The Facilitators' Handbook, which accompanies this guide, provides more details about implementing engagement strategies described below.

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[1] See the 'Spectrum of Tenant Engagement' in Appendix A.

3.1 livegreen TES Strategies

livegreen TES was designed on the premise that information alone is unlikely to change behaviour. However, information and communications will always play a critical role in any engagement strategy that aims to educate, raise awareness, and shift habits. The livegreen TES integrates multiple methods from community-based social marketing and community development approaches, to create strategies that encourage personal commitment, develop a supportive culture through social values and norms, and provide practical reminders when needed (behaviour prompts). These strategies are described below.

Strategy 1: Raise Awareness

The following activities can be used to create awareness of the initiative:

- Educational posters on topics such as hot water, heat, and electricity
- Presentation boards
- Information sessions
- Games such as Energy Bingo and Energy Trivia
- Advertising events and activities associated with the initiative
- Communicating with the staff team.

It's important to consider locations for posters and outreach materials that allow for the greatest visibility, such as near mailboxes and on the elevators. Also think about how you will 'brand' the initiative materials so that tenants can easily recognize the livegreen messages and invitations to participate. The pilot project used the livegreen brand and also a recognizable mascot.

Strategy 2: Utilize Energy Conservation Behaviour Prompts

Often, energy behaviours are habits that we have established over time. Tenants reported that one of the barriers to changing these habits was that they simply needed a reminder. Visual behaviour prompts can serve as useful reminders, especially when they are placed as close as possible to where the potentially energy conserving action is taking place.

In the livegreen pilot program, four different removable stickers were developed to act as behaviour prompts. We also distributed five-minute shower timers from FortisBC that adhere on the shower wall. Examples of the sticker templates appear below, along with the shower timer from FortisBC. The original sticker templates are available from BC Housing.
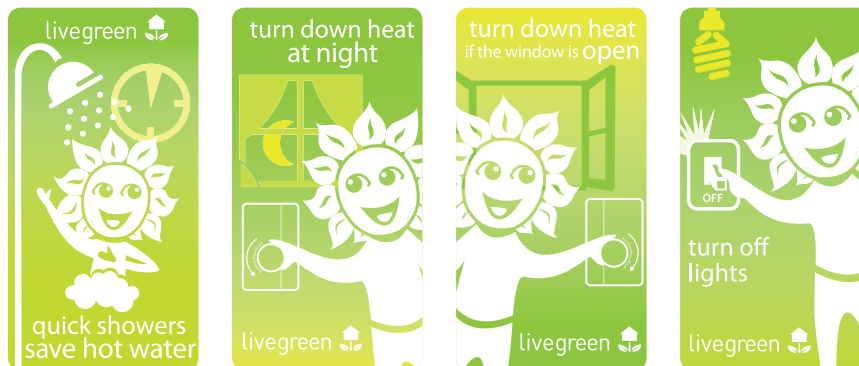

Fig 2. livegreen TES logo and mascot (BC Housing, 2012)

Fig 3. livegreen Behaviour Prompt Stickers

Fig 4. FortisBC Shower Timer

Strategy 3: Energy Challenges and Personal Pledges

One of the main strategies in Community-Based Social Marketing is supporting the perception that the desired green behaviour is the norm (rather than the exception) amongst community members. **Social norms** reflect the ways that tenants feel and think about which behaviours are desirable and acceptable within the community. For example, in some communities, leaving lights on when not home may be viewed as a sign of wastefulness. In other words, this behaviour would be undesirable or unacceptable. In other communities, this norm may not exist.

To enhance social norms with respect to energy conservation, and to increase the likelihood that people follow through with commitments to reduce energy, we suggest running a series of **energy conservation challenges.**[1] Energy challenges are a fun way to generate awareness of and enthusiasm for a specific behaviour for a distinct period of time. They are creative ways to approach energy conservation as a community action through which 'we all do our part'.

The sticker, right, was intended to be placed on tenants' front doors to create a 'buzz' about livegreen and generate a sense of shared commitment about the energy challenges. The "I livegreen" sticker was received well in the pilot with many tenants taking one to display prominently on their door. The stickers reflect a shared sense of identity and pride in taking an active role to save energy.

Strategy 4: Tenant Activity Modules

Throughout the livegreen pilot, we designed engaging activities that aimed to strengthen relationships, build confidence, and encourage having fun. Activities included livegreen meals and celebrations, film nights, arts and craft workshops, community mapping, nature walks, and games. The Facilitators' Handbook includes detailed descriptions of these modules, and instructions on how to implement them on any housing site.

Fig 5. livegreen Pledge Sticker

livegreen Pledge Sticker placed on a tenant's door

4. WHEN AND HOW TO CONDUCT AN EVALUATION

Throughout the livegreen TES initiative, learning will be ongoing. It is important to ensure an approach to evaluation that allows you to capture lessons learned and measure the outcomes of your efforts. Design the evaluation process at the front end of the project. This helps determine what to pay attention to, and measure success and challenges as you implement the initiative. Some areas to measure include:

AREA TO EVALUATE	EVALUATION DATA
Reduction in energy consumption	• Energy data • Utility cost data • Greenhouse gas emissions data
Increase in community development and capacity building	• Number of tenants participating in activities • Qualitative feedback from tenants • Qualitative feedback from site staff
Increase in tenant satisfaction	• Tenant satisfaction survey (if you administer one) • Feedback from tenants

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[1] Details on how to develop and operate energy challenges is included in the Facilitators' Handbook

A more detailed Evaluation Model from the livegreen pilot initiative shows sample indicators of success and how outcomes were evaluated. This can be found in Appendix B.

When to Evaluate: While tenant engagement for livegreen is ongoing, there will be distinct timelines for the engagement strategies for behaviour change. Set some target points throughout this timeline to gather evaluation data. For example, before you begin to scale up engagement strategies through the community, assess how the initiative is going and solicit feedback from the tenants about what is working and what they would change (if anything). It is also essential for staff to meet regularly to troubleshoot, and discuss opportunities that may emerge. And, of course, you will conduct a full evaluation at the end of your timeline for the initiative.

How to Evaluate: Quantitative and qualitative data will be used in evaluating your initiative. While quantitative (i.e. more scientific, measurable) data is useful to record numbers of tenants participating and the amount of energy saved, on its own, it is inadequate to measure the social and community outcomes that are also part of this initiative. Qualitative (or 'softer') data from interviews, focus groups, surveys, and staff observations should also be included.

Staff Reflections: Over the course of the initiative, staff can also engage in learning and reflection focused on how the activities are meeting objectives. Doing this regularly allows staff to plan for adjustment and corrections on an ongoing basis. It also helps identify the largest potential leverage points with tenants. Collecting the themes that emerge from these reflections is a helpful way of presenting this data.

Expect the Unexpected: Behaviour change is ultimately about creating the conditions that support change in people and communities. We have control over only some aspects of engagement initiatives. No matter how well thought out your engagement strategy is, you will need to be flexible and adapt your plans to respond to emerging needs and unexpected circumstances. Here are some tips on how to lead change when the unexpected arises:

- Do your best to maintain an open mind, and be prepared to adapt as needed.

- Lead by example and have faith in yourself and the tenants that you are working with—a positive attitude helps people to successfully navigate change.

- Remind yourself that changing behaviour is complex, and while there are many models and tools that exist, there is no 'silver bullet' for a quick fix. Building capacity for change takes patience and time.

4.1 Overview of Challenges and Opportunities from TES livegreen Pilot

Throughout the livegreen TES pilot, lessons learned were captured throughout the evaluation. The main lessons are shared here.

Benefits of the livegreen TES initiative:

- **Fun:** Tenants found group engagement activities enjoyable.

- **Pride:** Tenants authentically want to contribute to a healthy environment and a better future. When they felt like they were making a difference, they expressed individual and community pride.

- **Saving money on BC Hydro bills:** At all of the pilot housing sites, tenants

Facilitated games and activities

were responsible for paying their own electricity bill, but not their heating bill. Thus, all electricity savings resulted in financial savings for tenants.

- **Decrease in social isolation:** Tenants that had never participated in any engagement programs onsite began attending livegreen activities.

- **Increase in sense of belonging:** The initiative was intentionally designed to increase opportunities for peer interaction, relationship building, and opportunities to share meals together. For many tenants, a sense of camaraderie developed around the shared purpose of living green.

- **Increase in site beautification:** Many of the livegreen activities involved practical projects that encouraged tenants to get involved in making their community a better place. Projects included making community banners, community flags, flower pots, and colourful neighbourhood maps of green areas and services.

Challenges of the livegreen TES initiative:

- **Habits:** The behaviours that are targeted are often the result of deeply engrained habits. Changing habits takes a strong motivation and commitment accompanied with awareness and reminders.

- **Bed bugs:** Bed bugs were a serious problem in two of the three pilot sites. The link between bed bugs and energy use became apparent throughout the pilot. Fumigation for bed bugs results in more hot water used for bathing, and an increase in heat use from windows being opened to air out hallways and suites.

- **Low literacy / language barrier:** English was not the first language for many of the pilot site tenants, therefore simple language had to be used to explain the initiative and desired behaviours.

- **Mental health:** Behaviour change requires some core competencies to be present for success such as memory, understanding of basic concepts, and ability to plan.

- **Lack of awareness of utility costs:** Many tenants do not pay for the heating costs, thus have little to no awareness of the cost or consumption level of heat or hot water.

- **Inability to control temperature, other than opening the window:** For some tenants, the building felt stuffy or too hot, and opening windows was common practice.

5. POTENTIAL RESOURCES AVAILABLE

Glossary

Capacity Building: Capacity building describes processes and activities that maximize human potential. A comprehensive, integrated approach to capacity building nurtures expansion and positive change in all areas of human experience: social, environmental, economic, physical, psychological, and cultural.

Community-Based Social Marketing (CBSM): CBSM is an approach to behaviour change that applies the principles of social marketing at a community level. It is based on the assumption that behaviour change is more successful when it is supported by peer-to-peer interaction and social learning. CBSM offers a pragmatic approach to designing behaviour change interventions based on five main steps. More information can be found at www.cbsm.com

Community Development: Community development focuses on the empowerment of individuals and groups of people by providing them with the knowledge, skills, and resources that they need to effect change in their own communities.

Engagement: Engagement means people working collaboratively, through inspired action and learning, to create and realize bold visions for their common future.[1]

Greenhouse Gas Emissions: Greenhouse gases are gases in the earth's atmosphere that trap heat and contribute to global warming, or climate change. A prominent greenhouse gas is CO_2 which is emitted as a result of burning fossil fuels such as oil and natural gas. Because climate change poses serious risks, the BC Government committed to reducing emissions of CO_2 and other greenhouse gases by 80% by 2050.

Integral Capacity Building Framework: BC Healthy Communities' Integral Capacity Building Framework attempts to include the 'the whole person in the whole community' by paying attention to individuals (both interior and exterior experiences), to the systems and structures in which we carry out our activities, and to the culture within which we live our day-to-day lives.

livegreen TES: The livegreen Tenant Engagement on Sustainability (TES) is the name of the social housing tenant engagement program developed by BC Housing that focuses on sustainability issues, such as energy conservation.

Social Norms: Social norms are the explicit or implicit 'rules' specifying what behaviours are desirable and acceptable within a community.

Sustainability: Sustainability integrates environmental, economic, social, and health considerations into how we live and make decisions. 'Sustainability activities require the balanced use of resources within budget parameters, while making positive contributions to the lives of our tenants and employees, local communities, and the environment' (BC Housing, Housing Sustainability Plan, 2011 / 2012).
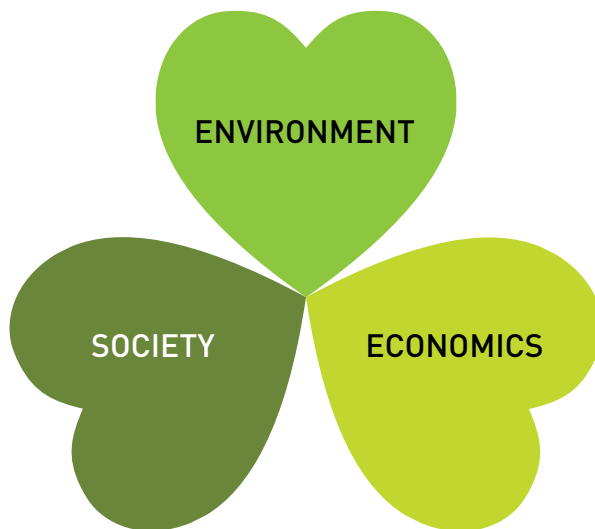
livegreen

ENVIRONMENT

SOCIETY   ECONOMICS

Fig 6. The environment, the economy and society are the three main considerations of sustainability

[1]   Tamarack Institute for Community Engagement.

SPECTRUM OF TENANT ENGAGEMENT FOR LIVEGREEN

INCREASING IMPACT AND SUPPORT FOR ENGAGEMENT AND BEHAVIOUR CHANGE OUTCOMES

	INFORMING	INVOLVING	COLLABORATING	LEADING
Tenant Engagement Goal	Provide meaningful and factual information to raise awareness, promote programs, and communicate ideas. • Information flow is one-way.	Tenants participate by showing up to events, engaging in discussion and activities and providing input that shapes future engagement. Site staff plan, organize and invite tenants to engagement activities. Tenants participate. • Two-way flow of information.	Tenants work together with the program staff to develop, plan, and organize activities in a collaborative way. The tenants have some ownership over activities and have a role in making the event happening. • Tenants communicate with each other and staff.	Tenants have the capacity and interest to play a leadership role in livegreen activities in the community. They are given responsibility to lead certain aspects of the program. • Tenants communicate with each other and staff.
Relationship to CBSM	Branding, awareness-raising, prompts.	Education, commitment, social norms.	Education, commitment, social norms, capacity development.	Education, commitment, social norms, capacity development.
Examples of Strategies	Educational posters, stickers, newsletters, mail-outs.	livegreen meals, film nights, pledges, prizes, games, surveys, focus groups, stickers on doors.	Arts-based activities, outings, celebration dinners, putting up posters, inviting other tenants.	Tenant advisory committee, community champions program, floor leaders, maintaining posters, mentoring other tenants.

Adapted from the International Association of Public Participation (2011) and Vancouver Coastal Health Community Engagement Framework (2006)

APPENDIX B

EVALUATION MODEL LIVEGREEN ACTIVITIES, OUTPUTS, AND OUTCOMES (FEBRUARY 2011 – MARCH 2012)						
GOAL	STRATEGY	PROGRAMMING ACTIVITY	OUTPUTS			OUTCOMES	DESCRIPTION / LESSONS LEARNED
			SITE #1	SITE #2	SITE #3		
Reduce utility costs, energy con-sump-tion, and green-house gas emissions.	Branding Educational Materials	livegreen mascot and logo were developed and adopted.	20 tenants consulted over 2 meet-ings.	19 tenants consulted over 3 meet-ings.	5 youth con-sulted at one meeting.	Tenants recognize the livegreen logo and mascot as symbols of the livegreen pro-gram.	An idea for future programming is to host a 'name the mascot' contest.
		A livegreen poster was de-veloped for each of the 4 identi-fied behaviours.	4 posters have been displayed in common spaces at dif-ferent times of the year.	4 posters have been displayed in common spaces at dif-ferent times of the year.	4 posters have been displayed on the bulletin board at dif-ferent times of the year.	Posters raise awareness of what the target behaviours are, why these are im-portant, and how tenants can take action to reduce energy consump-tion.	Language is a bar-rier for many ten-ants. Translating the posters into 3 or 4 other lan-guages may have reduced some barriers to tenant engagement.
		An educational presentation board was de-veloped to cap-ture number of pledges, energy facts, and tips for changing behaviours.	Board was used at 5 livegreen events.	Board was used at 5 livegreen events.	Board was used at 3 livegreen events.	Increased awareness of the conservation behaviours and in-formation related to energy use.	The presentation board allows con-tent to be updated to meet the topic of the activity. It also showed the levels of pledges from each site.
	Energy Challenges	Hot water en-ergy challenge launched at livegreen events in March / April.	8 pledges for conserving hot water. 8 shower tim-ers distrib-uted.	12 pledges for conserv-ing hot water. 12 shower timers dis-tributed.	8 pledges for conserving hot water. 8 shower timers dis-tributed.	Tenants make a personal commit-ment to conserve energy by taking action on a spe-cific behaviour. Build social norms around energy conservation as tenants make personal energy pledges together.	The challenges provide an added incentive for ten-ants to commit to try changing behaviour. For many, the prize was a domi-nant motivating factor. The winner of the prize also felt some recog-nition from their neighbours. For some tenants with disabilities, physical ailments, or mental health factors, the chal-lenges presented unforeseen exclu-sion (e.g. lack of safety with lights off, needing long hot showers to relieve pain).
		Electricity challenge was launched at livegreen events June through August 2011.	10 pledges for electricity challenge.	12 pledges for the electricity challenge.	8 pledges for the electric-ity challenge.		

EVALUATION MODEL LIVEGREEN ACTIVITIES, OUTPUTS, AND OUTCOMES (FEBRUARY 2011 – MARCH 2012)						
GOAL	STRATEGY	PROGRAMMING ACTIVITY	OUTPUTS			OUTCOMES	DESCRIPTION / LESSONS LEARNED
			SITE #1	SITE #2	SITE #3		
1) Reduce utility costs, energy con-sump-tion, and green-house gas emissions. (cont.)	Energy Challenges (cont.)	Door-to-door energy chal-lenge on con-serving heat in November and December 2011.	One-on-one conversation with 53 ten-ants (45% of population); 47 tenants took the energy pledge (40% of popu-lation). 2.3% average reduction in energy across the building.	One-on-one conversation with 34 ten-ants (34% of population); 28 tenants took energy pledge (28% of popula-tion); 4.5% average reduction in energy across build-ing.	One-on-one conversa-tion with 37 residences (67% of population); 26 families took energy pledge (48% of popula-tion); 4.5% average reduction in energy across build-ing.	Increase in trust and relationships with tenants. Increase in aware-ness about energy conservation be-haviours. Increase in individual com-mitment to reduce heat consumption.	Facilitators outreached to tenants by going to their homes, having a conversa-tion about energy conservation and livegreen and invited them to make a written pledge to reduce heat consumption by turning down temperature by 2 degrees. This took a signifi-cant investment of time, but also achieved mean-ingful community development out-comes and energy savings. Posters on each floor displayed the # of energy pledges in the community.
	Behaviour Prompts	A behaviour prompt sticker was designed for each of the 4 identified behav-iours. Shower timers were also provided.	47 heat stickers, 30 electric-ity stickers, 20 shower stickers, and 8 shower timers were distributed.	28 heat stickers, 35 electric-ity stickers, 24 shower stickers, and 12 shower timers were distributed.	26 heats stickers, 50 electric-ity stickers, 50 shower stickers, and 8 shower timers dis-tributed.	Tenants are reminded to conserve energy at the place where behaviours oc-cur (i.e. by light switch, thermo-stat, or shower).	Many tenants took the sticker prompts and indi-cated they would use them as a reminder. The colours of the sticker prompts are very similar and may be dif-ficult for tenants to distinguish differences.
	Social Norms and Shared Identity	An "I livegreen" sticker was offered to ten-ants to display on their door, indicating they support the livegreen goals and that they were taking part in the energy challenges.	44 tenants took an "I livegreen" sticker.	26 tenants took an "I livegreen" sticker.	31 tenants took an "I livegreen" sticker.	'I livegreen' stick-ers build a shared sense of identity and social norms about the liveg-reen message and initiative.	The stickers were popular with most tenants. Many of them liked to show that they are part of the initia-tive and 'doing their part'.

GOAL	STRATEGY	PROGRAMMING ACTIVITY	OUTPUTS			OUTCOMES	DESCRIPTION / LESSONS LEARNED
EVALUATION MODEL LIVEGREEN ACTIVITIES, OUTPUTS, AND OUTCOMES (FEBRUARY 2011 – MARCH 2012)							
			SITE #1	SITE #2	SITE #3		
1) Reduce utility costs, energy consump-tion, and green-house gas emissions. (cont.)	Light Bulbs	CFL light bulbs were distributed during the electricity challeng-es, at the fall harvest dinners, and the door-to-door energy challenge.	55 bulbs dis-tributed.	60 bulbs distributed.	35 bulbs distributed.	Increase in avail-ability for energy efficient bulbs. Increase in likeli-hood tenants will replace bulbs with CFL's.	The cost of pur-chasing CFL's is a barrier to most tenants. Ensur-ing that bulbs are available is important. Receiving free useful products is very much appre-ciated by tenants.
2) Increase community capacity.	Dialogue and Community Mapping	2 commu-nity mapping workshops took place: map-ping community strengths and sustainable neighbour-hood mapping. Dialogue was facilitated at all livegreen events.	1 commu-nity strengths map. 1 sustainable community wall map of the neigh-bour-hood. Facilitated dialogue at 10 events.	1 commu-nity strengths map. 1 sustainable community wall map of the neigh-bour-hood. Facilitated dialogue at 9 events.	1 sustainable community wall map of the neigh-bour-hood. Informal dialogue at 3 events.	Tenants learn about their neigh-bours, services, and strength of their community, and sustainability issues. Increase in social inclusion, sense of belonging, mutual trust.	Dialogue works best when inte-grated into games or other activities (e.g. arts-based). Storytelling has been a success-ful way to facili-tate relationship building between tenants. Mapping activities allows tenants to become the 'experts' of their community.
	Environmental Education	Facilitators cre-atively provide content about sustainability and energy is-sues.	Hosted livegreen bingo, trivia questions, Pictionary, environmen-tal film night, and presenta-tions.	Hosted livegreen bingo, trivia questions, Pictionary, environmen-tal film night, and presen-tations.	Hosted liveg-reen games, presenta-tions, Fortis BC table.	Tenants increase their knowledge about sustain-ability and energy conservation in the context of their community. Building shared understanding and social norms of environmental leadership.	Education works best when inte-grated into fun games or experi-ential activities. The environmental film night was well received by ten-ants and created opportunities to discuss how the film links to their community and their life.
	On-site Youth Programming	Elements Society[1] youth facilitators de-livered on-site programming throughout the summer called 'The Transform-ers'.	N/A	N/A	~ 10 youth participants for each of the 4 Trans-formers programs.	Youth who par-ticipated in the Transformers program received 2 programs on en-ergy conservation, 1 program on wa-ter conservation and 1 program to celebrate what they learned.	Offering program-ming on-site at a consistent time was successful. Many of the same youth participated in multiple pro-grams.

[1] Elements Society is a non-profit organization based in Vancouver that delivers environmental education to youth. You can learn more at: www.elementsociety.ca.

GOAL	STRATEGY	PROGRAMMING ACTIVITY	OUTPUTS			OUTCOMES	DESCRIPTION / LESSONS LEARNED
			SITE #1	SITE #2	SITE #3		
2) Increase community capacity. (cont.)	Skills-building	Livegreen facilitators hosted activities such as planting flowers, painting pots, making community flags, creating community banners, designing livegreen place-mats, and making livegreen t-shirts.	6 skills-building activities offered.	6 skills-building activities offered.	5 skills-building activities offered.	Tenants learned a craft or skill while engaging with others and learning about energy conservation. Increase in cohesion amongst livegreen participants. Tenants feel proud of what they have made together.	Hands-on activities were planned to allow skill and leadership development. Arts-based activities were very successful in evoking expression of beliefs and values with respect to the environment. These activities nurtured leadership and mentorship between tenants.
		Tenants were introduced to BC Hydro PowerSmart program and instructed on how to register.	3 tenants expressed interest.	4 tenants expressed interest.	3 tenants expressed interest.	Tenants are becoming aware of other supports and incentives to reduce electricity consumption.	While tenants are interested in registering, they need support in going online to do this.
	Off-site Programming	livegreen outing to Van Dusen Gardens.	5 tenants participated.	N/A	2 families participated.	Tenants were exposed to experiential learning and environmental education in an inspiring setting.	Tenants were very appreciative of this opportunity. It also creates space for relationship building among tenants.
		Partnership with Van Dusen Gardens for youth participation at the 5-day Eco-City Camp.	N/A	N/A	4 youth participated in the camp (August 22-26).	Youth built relationships with each other and gained knowledge and skills about the environment, conservation behaviours, and citizenship. Parents of the participating youth developed relationships.	Family feedback was extremely positive for Van Dusen programming. This is a fruitful partnership that we can possibly extend to other sites.
		livegreen Halloween Pumpkin Carving at Brittania Community Centre.	N/A	N/A	9 people participated (2 adults, 5 children, 2 youth).	Children from 3 families built relationships while having conversations about energy conservation.	We had 1 more family register, but they did not show up. Families indicated they would like something planned for the Christmas season.

GOAL	STRATEGY	PROGRAMMING ACTIVITY	OUTPUTS			OUTCOMES	DESCRIPTION / LESSONS LEARNED
			SITE #1	SITE #2	SITE #3		
2) Increase community capacity. (cont.)	Leadership Development	A core group of tenants took a leadership role in planning, tenant outreach, and hosting of the Harvest Dinner in September 2011.	8 tenants took leadership roles in set-up, clean-up, and invitations.	4 tenants took leadership roles in set-up, clean-up, and invitations.	N/A	Tenants developed a sense of ownership and pride in this event and the livegreen initiative.	The tenants were given invitations to distribute to others in the building. This was successful and also made them feel like the event was special.
		Tenants are increasingly encouraged to take a leadership role to conserve energy in their home and the community at large.	Tenants put up stickers in common rooms, turn off lights / TV when not in use, and report open windows in hallways.	Tenants put up stickers in common rooms, turn off lights / TV when not in use, and report open windows in hallways.	1 family will be asked to take a leadership role by holding the key for the bulletin board.	Tenants are developing a sense of ownership and pride over the livegreen initiative.	Tenants need an invitation and support to take on more leadership. Small, easy to accomplish tasks work best. It has been difficult for tenants to take on leadership for outreach to other tenants.
Increase tenant satisfaction.	Healthy Food	All livegreen activities provide healthy snacks, meals, and nourishment.	7 meals + snacks provided.	7 meals + snacks provided.	5 meals + snacks provided.	Tenants increase overall well-being and satisfaction by eating healthy food.	Food is a critical part of programming for livegreen participants. It meets their needs and acts as a motivation for engagement.
	Prizes	Prizes were integrated into livegreen programming. Prizes reflected needs of the tenants and the program.	Grocery gift certificates, power cords, water bottles, coffee mugs, Fortis BC bags, livegreen pens.	Grocery gift certificates, power cords, water bottles, coffee mugs, Fortis BC bags, livegreen pens.	Grocery gift certificates, power cords, water bottles, coffee mugs, Fortis BC bags, livegreen pens.	Tenants' needs are being met while also learning about livegreen.	Grocery gift certificates have been very popular.
	Sense of Belonging	livegreen 'teams' are naturally forming on each site due to the consistent participation of tenants.	~ 12 tenants identify as part of livegreen program.	~10 tenants identify as part of livegreen program.	~4 families have consistently been part of livegreen programming.	livegreen teams increase awareness of the program on-site, and build social norms around energy conservation.	

APPENDIX C
ENERGY CONSUMPTION AND CONSERVATION BEHAVIOURS

Creating a baseline of energy data

It is important to establish a baseline from which you can measure your energy conservation savings over time. Moreover, setting a baseline allows you to analyze the source of energy use in the building. This information will prove to be essential when considering which behaviours will have the highest impact and which are under the tenants' control.

There are three main categories of energy consumption to consider: heat, hot water, and electricity. Figure 1 shows the baseline energy consumption data that was used for pilot site #1.

Electricity in British Columbia is provided from hydroelectric sources, thus emitting far less greenhouse gas emissions (GHG's) than the natural gas used for water and space heating. Since natural gas makes up such a significant proportion of total energy used, we examined how total natural gas usage was distributed in each of the sites (see Figure 2 right).

Relative impacts of different energy behaviours

Given the baseline energy data for a housing site, the next step is to develop a list of potential behaviours that could result in energy saving. Here is a list of energy saving behaviours from the livegreen pilot, the associated reduction in greenhouse gas emissions (GHG's), and the impact that each behaviour would have on overall energy consumption in the building.[1]

PILOT SITE #1 2009 ENERGY USE

Figure 1. Distribution of Energy at pilot site #1

PILOT SITE #1 2009 GAS USE

Figure 2. Gas usage for pilot site #1

BEHAVIOUR	% GHG SAVINGS	IMPACT
Behaviour	% GHG Savings	Impact
Close windows in winter	5%	High
Turn down the thermostat (day)	4%	High
Turn down the thermostat (night)	4%	High
Seal drafts	2%	High
Take shorter showers (5 minutes)	2%	High
Take a shower instead of a bath	2%	High
Wash clothes in cold water	1%	Medium
Wash only full loads of laundry	1%	Medium
Identify leaks and report them	1%	Medium
Turn off lights and appliances	Negligible	Low
Replace light bulbs	Negligible	Low

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[1] Not all organizations will have the resources to conduct a full energy audit. You can expect the relative impact of these behaviours to be similar at most sites that share similar characteristics as the pilot housing sites.
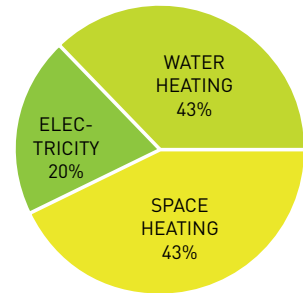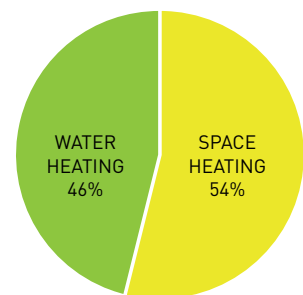
Impact vs. Probability

When selecting behaviours, there are at least two critical types of information to consider: a) the relative <u>impact</u> of changes in behaviour on reducing energy and GHG emissions, and b) the likelihood and <u>probability</u> that tenants can and will change these behaviours.

Figure 3 demonstrates that the behaviours that have the highest impact in terms of energy savings are also the most difficult behaviours for tenants to change. On the other hand, relatively simple behaviours, such as turning out lights when not home, are more probable, but offer lower reductions in GHG emissions.
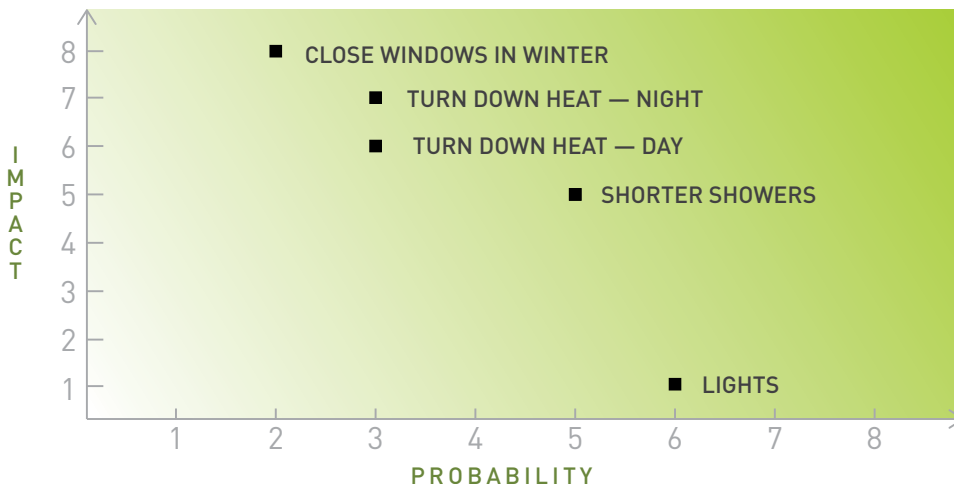
SITE #1 BEHAVIOUR IMPACT VS PROBABILITY

Fig 3. Behaviour impact vs. probability for behaviours from pilot site #1

What does this information mean? In the pilot, we wanted to ensure that we focused on changing behaviours that resulted in tangible reductions in energy, but also allowed the tenants to succeed. For example, because turning off the lights is a relatively simple behaviour that many tenants are already doing, it was helpful to use this success as a 'stepping stone' to more challenging changes, such as turning down the heat.

Focus Behaviours from the Pilot

Behaviour change research shows that the most successful engagement initiatives strategically focus on **reducing the barriers and increasing the benefits** of specific behaviours. This requires a selection of the 'top' three or four behaviours on which to focus your **livegreen** engagement strategy. From this list of possible behaviours, the following were chosen as a focus for the pilot project:

BEHAVIOUR	IMPACT ON GHG EMISSIONS	REPORTED PROBABILITY OF BEHAVIOUR CHANGE
Behaviour #1: Conserve heat		
Turn down the heat when not home	High	Medium
Turn down the heat at night	High	Medium
Turn down the heat when window is open	High	Medium
Behaviour #2 Conserve hot water		
• Take quick cleansing showers (about 5 minutes)	High	Medium - High
Behaviour #3: Conserve electricity		
• Turn off lights when not in use / not home	Low	High
• Unplug appliances when not in use (or turn off power bar)	Low	High
• Replace incandescent light bulbs with compact fluorescents	Low	High

Behaviour #1: Conserve heat

- Turning down the thermostat 2 degrees Celsius during the day: According to BC Hydro, turning the thermostat down 2 degrees for 8 hours reaps up to a 4% reduction in energy.

- Turning down thermostats 2 degrees Celsius at night: This could save up to 2% in GHG's. According to BC Hydro, turning the thermostat down 2 degrees for 8 reaps up to a 4% reduction in energy.

- Turning down the thermostat when windows are open: It is difficult to predict the savings potential of this action, but it was identified as an issue at all three of the pilot sites. Particularly in buildings with multiple floors, opening windows on the upper floors was unlikely to cool the units due to the 'stack effect' bringing heat up from the lower levels, and was likely to cause tenants on lower floors to turn up the heat due to increased air infiltration, thereby exacerbating the problem. In the survey and focus group, we discovered that tenants were resistant to 'closing windows' altogether due to poor air circulation in buildings and smells from bed bug fumigation. Hence, we recommended turning heat down or off if windows are open.

Behaviour #2: Conserve hot water:

- **Taking quick, cleansing showers:** The energy audit from one of the pilot sites showed that 68% of hot water is used in showers and bathing. This represents about 25% of end gas use that can be influenced by changes in behaviours to take quick showers that are approximately 5 minutes in duration. This behaviour has the potential to reduce approximately 2% of the building's GHG emissions. NOTE: engagement around 'quick showers' must be done with care so as to ensure that messaging promoting personal hygiene, and messaging to conserve hot water are not in conflict with each other.

Although we had originally identified decreasing hot water usage for laundry as a fourth target behaviour, we abandoned this messaging as we became aware that the tenants needed to launder their clothing in hot water to eradicate bed bugs. This demonstrates the importance of understanding the group that you will be working with.

Behaviour #3: Conserve electricity:

- **Turning off lights when not in use / not home:** This behaviour results in significant electrical savings, but negligible savings on GHG emissions. Nevertheless, this behaviour has the potential to result in financial savings for tenants on their BC Hydro bill, conserves electricity, and is a relatively easy way for tenants to take tangible action.

- **Unplugging appliances when not in use (or turn off power bar):** Same as above.

- **Replacing incandescent light bulbs with compact fluorescents:** This reaps an electrical savings potential of approximately 5%, but less than 1% GHG savings potential in BC due to low-carbon electricity.

Building Retrofits

Retrofits to buildings are an important way to reduce greenhouse gases, and whenever possible, should be completed. However, there exist some implications regarding retrofits and the implementation of this initiative. If you undertake retrofits and a TES project simultaneously, be aware that you may not be able to differentiate savings attributed to the retrofits versus tenant engagement. Completing the tenant engagement process without retrofits allows you to measure the benefit of the TES initiative alone. That said, it is well-known that building retrofits are a significant means of decreasing greenhouse gases: therefore they should not be unnecessarily delayed.

TENANT ENERGY USE SURVEY

The purpose of this brief 10- to 15-minute survey is to help plan activities related to saving energy. Thank you for taking the time to complete it: your input is highly valued. Everything you share here is confidential and anonymous.

Please remember to enter the prize draw on the last page after completing the survey.

SECTION 1

Please circle the gender and fill in the ages of the people who live in your household.

Person 1	M / F	Age ___		Person 4	M / F	Age ___
Person 2	M / F	Age ___		Person 5	M / F	Age ___
Person 3	M / F	Age ___		Person 6	M / F	Age ___

What languages are spoken in your home?_____

SECTION 2

HOW OFTEN DO YOU:	Never					Always
Open your windows in the winter?	1	2	3	4	5	6
Wash small or partial loads of laundry?	1	2	3	4	5	6
Turn down your heat at night?	1	2	3	4	5	6
Turn down the heat when you are not at home?	1	2	3	4	5	6
Turn off lights when you leave the room?	1	2	3	4	5	6
Take showers greater that 10 minutes, or baths?	1	2	3	4	5	6

SECTION 3

Check one of the following:

My unit is heated by: ___Gas   ___Hydro   ___Other / I don't know

Check one of the following:

My hot water is heated by: ___Gas   ___Hydro   ___Other / I don't know

RATE THE FOLLOWING:	Strongly Agree				Strongly Disagree	
Using gas creates pollution	1	2	3	4	5	6
Using gas causes climate change	1	2	3	4	5	6
Using electricity causes pollution	1	2	3	4	5	6
Using electricity causes climate change	1	2	3	4	5	6
It costs me money when I use extra electricity	1	2	3	4	5	6
It costs me money when I use extra hot water	1	2	3	4	5	6
It costs me money when I turn up the heat	1	2	3	4	5	6

![livegreen logo]

SECTION 4

RATE THE FOLLOWING:	Strongly Agree				Strongly Disagree	
Saving energy helps stop climate change	1	2	3	4	5	6
Saving energy saves me money	1	2	3	4	5	6
Saving energy is important because others say it is	1	2	3	4	5	6
I want to leave a better world for my children and future generations by saving energy	1	2	3	4	5	6

SECTION 5

RATE THE FOLLOWING:	Never					Always
I open windows in the winter because my home is too hot	1	2	3	4	5	6
I open my windows in the winter because I smoke / my guests smoke	1	2	3	4	5	6
I open my windows in the winter because I like fresh air	1	2	3	4	5	6
I take longer showers / baths due to physical problems or illness	1	2	3	4	5	6
I like to take longer showers / baths because it feels good	1	2	3	4	5	6
I like to sleep in a warm / hot room	1	2	3	4	5	6

SECTION 6

I WOULD BE WILLING TO DO THE FOLLOWING:	Never					Always
Take short (under 10 minute) showers instead of longer showers or baths	1	2	3	4	5	6
Keep my windows closed in the winter	1	2	3	4	5	6
Turn down the heat at night (2°C or 4°F)	1	2	3	4	5	6
Turn down the heat when I am out during the day (2°C or 4°F)	1	2	3	4	5	6
Turn the lights off when I am not in the room	1	2	3	4	5	6

SECTION 7

OF THE TENANT ACTIVITIES / EVENTS IN YOUR BUILDING, WHICH ONES DO YOU CURRENTLY PARTICIPATE IN?

WHY DO YOU PARTICIPATE?

Thank you for completing the survey!

Please detach this page and return with your survey by Thursday, December 30th 2010 to be entered into the prize draw.

Enter to win a $100 gift certificate for Safeway!

Please fill in this entry form and deposit it with your survey in the box in the 3rd floor in the apartment tower lounge.

Name:_____

Unit #: _____

Phone #:_____

Would you be interested in getting involved in training and education programs about environmental issues such as: climate change, recycling, social change?

___YES   ___NO

ANALYSIS OF ENERGY SAVINGS FOR LIVEGREEN TES PILOT

livegreen

ENERGY SAVINGS METHODOLOGY

Energy savings results for the livegreen TES Pilot were derived using the regression analysis function of Microsoft Excel. BC Housing was in the enviable position of having already hired an engineering firm to analyze all of the directly managed housing sites for the purposes of tracking greenhouse gas (GHG) emissions. As a result, we were able to compare our formulas from Microsoft Excel with the formulas using more specialized energy software.

Natural Resources Canada has recently released RETScreen Plus energy analysis software, which facilitates the examination of results using different baseline periods and temperatures. Though the results vary between the sites when baseline assumptions are changed, the overall savings during the three-month period still average around 3.5%: essentially the same results as those produced using Microsoft Excel.

We chose to use Microsoft Excel to create our own formulas rather than using the formulas already created for GHG analysis. We felt that this was important because we expect that many organizations participating in livegreen TES may not have the resources to hire someone else to analyze data. The formulas created using Excel, and the results derived from them were substantially similar to those created using more specialized software in the cases that we examined: so we were able to use them as a comparison to confirm the accuracy of our results.

The baseline data used for both analyses was gas usage on the sites for the year 2005, to be consistent with our GHG analysis baseline. Electrical data for 2011 was not available at the time of this report, but will be examined once it is.

Since the baseline year of 2005, energy retrofits have taken place on both pilot properties as a part of the 2006 Energy Retrofit Pilot Program. On site #1, windows, boilers, lighting, shower heads, and faucet aerators were replaced; and on site #2, boilers, lighting, shower heads, and faucet aerators were replaced. No significant retrofit work has been undertaken on the sites since these retrofits were completed. Since these retrofits have taken place, there has been a steady rate of energy savings at the housing sites.

The savings attributable to the livegreen Tenant Engagement on Sustainability Pilot were derived by subtracting savings during the months of October, November, and December 2010 from savings during those same three months in 2011. The following three graphs show the savings for each site, and overall savings for both sites during the three-month period. October through December 2011 is the same period during which BC Healthy Communities undertook a door-to-door campaign to reach as many tenants as possible and thereby obtain as many pledges as possible.
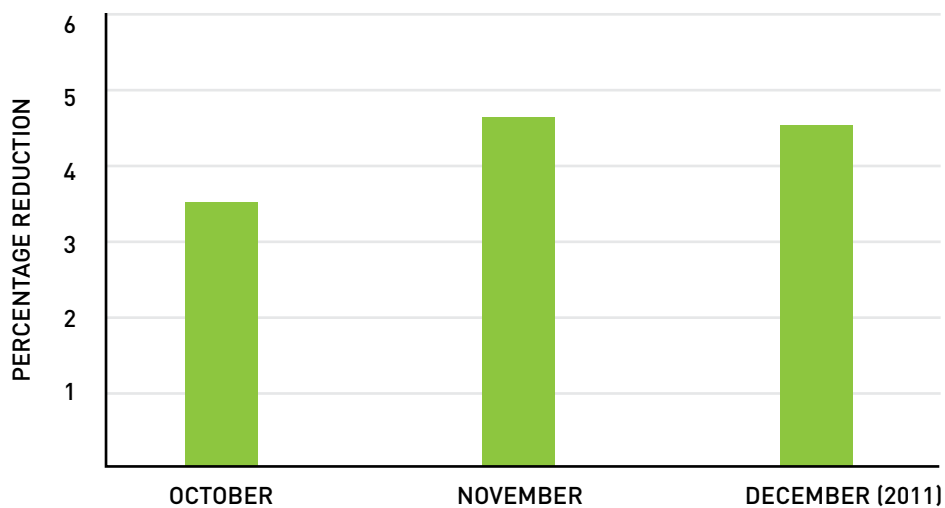
SITE #1 TES ENERGY SAVINGS
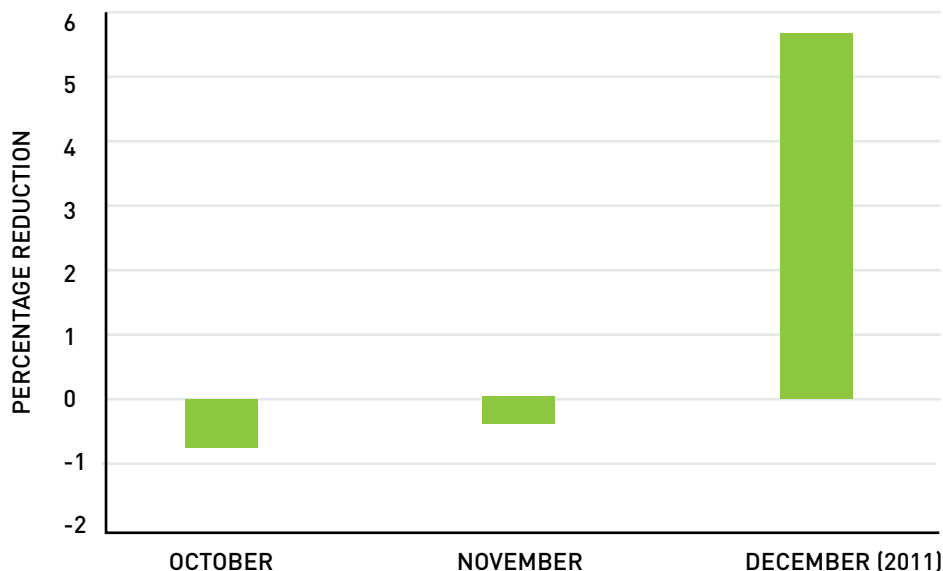
MONTH	2011 SAVINGS	2010 SAVINGS	SAVINGS ATTRIBUTABLE TO TES (GJ)	EQUIVALENT TONNES OF CO_2	CONSUMPTION (GJ)	PERCENTAGE REDUCTION
October	164	168	-4	-0.20	487.5	-0.8%
November	218	221	-3	-0.16	597.7	-0.5%
December	234	196	38	1.89	648.4	5.9%
Total	615	585	31	1.53	1734	1.8%

For housing site #1, we reaped slightly negative savings during the first two months, but we achieved the goal of 5% during the month of December. One possible reason that the site performed poorly for the first two months may be due to more bed bug treatments than usual during the latter part of 2011. Bed bug treatments involve greatly increased use of laundry facilities and more open windows, compared with typical operations.

SITE #2 TES ENERGY SAVINGS

MONTH	2011 SAVINGS	2010 SAVINGS	SAVINGS ATTRIBUTABLE TO TES (GJ)	EQUIVALENT TONNES OF CO_2	CONSUMPTION (GJ)	PERCENTAGE REDUCTION
October	244	219	24	1.21	683	3.6%
November	289	247	42	2.10	908	4.6%
December	276	230	47	2.33	1031	4.5%
Total	809	696	113	5.64	2622	4.3%

For housing site #2, we achieved steady positive results throughout the three-month period. Though bedbugs are also an on-going issue at this site, the treatments were much less frequent and intense than at the other site.

OVERALL TES ENERGY SAVINGS
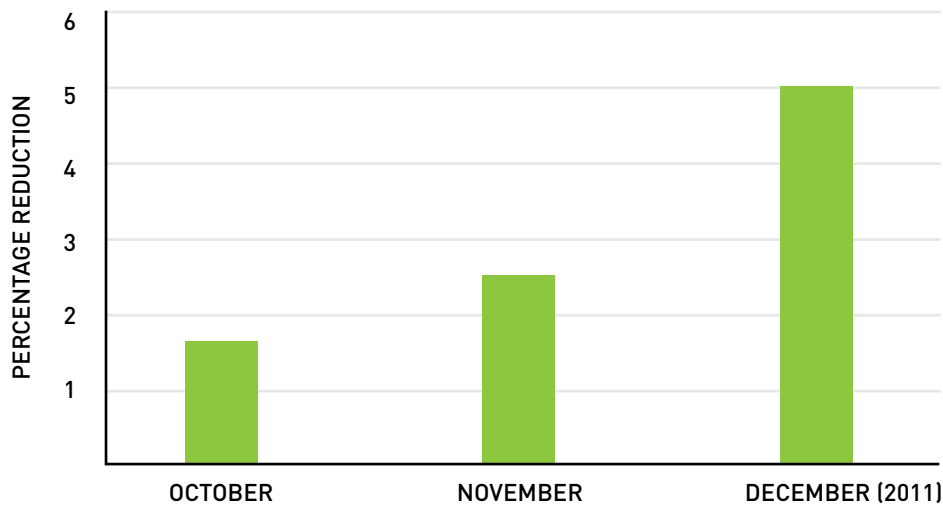
MONTH	SAVINGS ATTRIBUTABLE TO TES (GJ)	EQUIVALENT TONNES OF CO_2	PERCENTAGE REDUCTION	COST SAVINGS (AT $5/GJ)
October	20	1	1.7%	$ 100.00
November	39	2	2.6%	$ 195.00
December	85	4	5.0%	$ 425.00
Total	144	7	3.3%	$ 720.00

Overall, results were positive, but not quite as high as the project target of 5%. Positive results are possible even on sites where tenants face multiple barriers. Our results also underline how difficult it is to achieve savings on social housing sites, and the attendant need for significant on-site support if savings are to be achieved. We will continue to monitor energy data at these sites to assess the persistence of the savings over time, now that our contractors have left the site and tenants are responsible for keeping their pledges over the long-term.