CCPA

CANADIAN CENTRE FOR POLICY ALTERNATIVES
MANITOBA

Creating opportunities with green jobs:

the story of BUILD and BEEP

By Kirsten Bernas and Blair Hamilton

JANUARY
2013

Creating opportunities with green jobs: the story of BUILD and BEEP

By Kirsten Bernas and Blair Hamilton

ISBN 978-1-77125-050-4

JANUARY 2013

This report is available free of charge from the CCPA website at **www.policyalternatives.ca**. Printed copies may be ordered through the Manitoba Office for a $10 fee.

Please make a donation... Help us continue to offer our publications free online.

We make most of our publications available free on our website. Making a donation or taking out a membership will help us continue to provide people with access to our ideas and research free of charge. You can make a donation or become a member on-line at www.policyalternatives.ca. Or you can contact the Manitoba office at 927-3200 for more information. Suggested donation for this publication: $10 or what you can afford.

CCPA
CANADIAN CENTRE
for POLICY ALTERNATIVES
MANITOBA OFFICE

309-323 Portage Avenue, Winnipeg, MB R3B 2C1
TEL 204-927-3200 FAX 204-927-3201
EMAIL ccpamb@policyalternatives.ca

CAW 567 OTTAWA

Manitoba Research Alliance
Transforming Inner-city and Aboriginal Communities

About the authors

Kirsten Bernas is currently on staff with the Canadian Community Economic Development Network (CCEDNet) as a Policy Advisor and Researcher. She holds an MA from the Norman Paterson School of International Affairs at Carleton University and a BA in Economics from the University of Manitoba. She represents CCEDNet on the Canadian Centre for Policy Alternatives' Alternative Federal Budget Steering Committee, Make Poverty History Canada's Steering Committee, and Make Poverty History Manitoba's Executive Committee. She also sits on the Board of Inner City Renovations.

Blair Hamilton is a community economic development practitioner currently on staff at SEED Winnipeg. He holds a Bachelor of Social Work degree from the University of Manitoba, and has been working in and with the community-based non-profit sector for over 25 years in a variety of capacities. He is a member of the Canadian CED Network.

Acknowledgements

We would like to acknowledge with gratitude the contributions made to this project by all the community, Manitoba Hydro, and Province of Manitoba representatives who participated in interviews and provided the information that made this report possible. We would also like to acknowledge an intellectual debt to Jerrold Oppenheim and Theo MacGregor of Democracy & Regulation, whose work in this area was a significant influence on the approach to parts of this research. We are pleased to acknowledge the generous financial support of the Community-University Research Alliances (CURA) program of the Social Sciences and Humanities Research Council through the Manitoba Research Alliance for Transforming Aboriginal and Inner-city Communities.

Manitoba

Social Sciences and Humanities Research Council of Canada
Conseil de recherches en sciences humaines du Canada

Canada

Introduction

Social enterprises have emerged as viable business models that create a blended return on investment as a result of the multiple economic, social, and environmental benefits they bring to local communities. They contribute to more inclusive and stronger local economies, more jobs for people with barriers to employment, the provision of important community services, reduced poverty, renewed communities, and more sustainable environments.

In Manitoba, Building Urban Industries for Local Development (BUILD) and the Brandon Energy Efficiency Program (BEEP) conduct energy efficiency retrofits on low-income homes while providing jobs for people with barriers to employment. These social enterprises have adopted a Community Economic Development approach to their business model and their training model which strengthens their capacity to achieve multiple economic, social, and environmental benefits. In addition to providing comprehensive training and employment opportunities to individuals who otherwise wouldn't be in the labour force, BUILD and BEEP contribute to reduced energy usage and consumption, fewer greenhouse gas emissions, lower utility bills for low-income families, a stronger local economy by supporting other local businesses, and reductions in government expenditures associated with social assistance and crime.

This study was undertaken to begin to document the quantitative and qualitative value associated with the multiple benefits produced by BUILD and BEEP. Practitioners, funders, and policy-makers are increasingly interested in demonstrating and understanding the value of outcomes that are not captured in traditional financial return models. This study includes a social return on investment calculation to begin to quantify some of the benefits of BUILD and BEEP's training program. It also calculates the dollar savings, resource savings, and greenhouse gas emission reductions associated with the energy efficiency upgrades that have been performed by these social enterprises. An estimate of the economic multiplier effect from investment in low-income energy efficiency in Manitoba is also included. Beyond demonstrating the value of BUILD and BEEP, this study explores the potential for the expansion and replication of their model in other communities.

1. Background Information

1.1 Methodology

This study begins to analyse the quantitative and qualitative aspects of BUILD and BEEP's training components. It also examines BUILD and BEEP's non-training components. The study begins with a broad overview and comparison of BUILD and BEEP which presents their main accomplishments and challenges. Quantitative and qualitative data for this section (1.2 and 2) were collected through documentation provided by BUILD; BEEP; Manitoba Hydro; and Entrepreneurship, Training and Trade (ETT). This section was also informed by interviews with key individuals from these organizations as well as from Westbran Training Centre; Manitoba Housing Authority; Innovation, Energy and Mines; and Green Manitoba. Quantitative data on training-related outcomes (i.e. number employed, enrolled in further education/training, or turning over) was provided by ETT and is based on information the department receives through reporting from BUILD and BEEP. The latter have repeatedly pointed to challenges they face regarding following-up with graduates and tracking their outcomes. Staff do not often have access to current phone numbers or addresses. Furthermore, they report having little or no time to engage in follow-up activities given their existing responsibilities with trainees who are still participating in the programs.

Section 3 begins to examine the social return on ETT's investment in BUILD and BEEP's training component and is based on data provided by BUILD and BEEP from their 2009/2010 operating year, unless otherwise indicated. Conclusions drawn in this section of the study are based, in part, on assumptions that were informed by BUILD and BEEP staff around the number of trainees that would be on Employment and Income Assistance (EIA) or involved in the justice system were it not for their participation in BUILD and BEEP.

Section 4 looks at savings associated with energy and water retrofits completed by BUILD and BEEP since inception until March 31st, 2011. It reveals resources saved as well as greenhouse gas reductions generated. It also reveals total dollars expected to be saved through reduced utility bills along with the beneficiary of these savings. Data was provided by Manitoba Hydro, Green Manitoba, BUILD, and BEEP. See Appendix A for details.

Section 5 looks at the economic multiplier effect of energy efficiency. Conclusions are based

on a 2008 publication by Oppenheim and MacGregor which looks in detail at programs that promoted energy efficiency and financial assistance for utility costs in four low-income states in order to generate a multiplier effect based on a true cost accounting approach. The multiplier effect was then adjusted based on factors that are unique to the Manitoba context in order to generate a multiplier effect from investment in low-income energy efficiency in Manitoba.

Section 6 looks at the potential for expansion and replication of the CED model employed by BUILD and BEEP. Quantitative data on the number and type of existing units that could be accessed by expansion and/or replication were provided by documentation from Manitoba Housing Authority and the Public Utilities Board. Key informants were interviewed to identity criteria that would need to be met to expand BUILD and BEEP's operations outside of their current geographic area of focus as well as to identify criteria that would need to be met to replicate their CED model in another community.

Section 7 provides a broad analysis of the financial sustainability of BUILD and BEEP based on interviews with key informants as well as an analysis of revenues and both training-related and contractor-related expenses in the 09/10 operating year.

1.2 Subject Organizations

Building Urban Industries for Local Development (BUILD) and Brandon Energy Efficiency Program (BEEP) are social enterprises that hire and train local individuals with multiple barriers to employment to perform energy and water efficiency retrofits on private and public housing units occupied by low-income people in Manitoba. BUILD was incorporated in 2006 as a non-profit organization based in the Centennial neighbourhood of Winnipeg. It currently operates throughout Winnipeg. BEEP was introduced in 2007 and is administered by the non-profit Brandon Neighbourhood Renewal Corporation. It currently operates in Brandon and in communities throughout Southwest Manitoba.

BUILD and BEEP partner with the Province of Manitoba, Manitoba Housing Authority (MHA), and Manitoba Hydro[1]. BEEP also partners with Westbran Training Centre and the City of Brandon. Through these partnerships, MHA can offer tenants more energy efficient housing. ETT can support training for local individuals with barriers to employment. Westbran can further assist its clients toward sustainable employment. IEM and Hydro can work toward their energy efficiency objectives. Finally, BUILD and BEEP can fulfil their mandates. BUILD and BEEP's mandates are similar and two-fold:

1. To lower water and energy bills for low-income families and their housing service providers.
2. To train local individuals who have limited experience in the formal labour market.

In fulfilling their mandates, BUILD and BEEP demonstrate a commitment to Community Economic Development, poverty reduction, and environmental stewardship, which contributes to many desirable outcomes:

1. Reduced energy usage and water consumption
2. Lower energy and water bills for organizations that support low-income families, and for low-income earners who may otherwise be unable to afford the upfront costs of energy and water efficiency upgrades
3. Fewer green house gas emissions
4. More efficient use of natural resources
5. Heightened awareness of energy and water conservation within the community
6. More comfortable living environment for low-income earners
7. Enhanced community housing stock
8. Strengthened local economy from local purchasing and hiring

TABLE 1 **Overall outcomes since inception**

Outcomes	BUILD	BEEP	Total
Number trained *(Currently training)**	128 *(20)*	56 *(3)*	184 *(23)*
Number of trainees employed*	37	25	62
Number of trainees enrolled in education/training*	17	1	18
Number of houses retrofitted**	4167	801	4,968
Water/energy savings ($)**	901,151	213,085	1,114,236
Greenhouse gas reductions (tonnes of CO_2e)**	1,751.10	944.83	2695.93

SOURCE: *ETT, June 2011; **Hydro, BUILD, and BEEP March 2011; in addition, there were homes upgraded through LIEEP contractors but these were outside of the scope of this study and therefore not included in the data provided.

9. Strengthened local labour pool as a result of preparing individuals with multiple barriers to employment for sustainable attachment to the formal labour market, particularly to the trades-based labour market, or for further education/training.

10 Increased savings to government from avoided crime-related costs.

Since inception, BUILD and BEEP have together trained 184[2] local individuals with multiple barriers to employment to complete energy and water efficiency retrofits on over 4,900[3] private and public housing units where low-income people live. In doing so it has lowered energy and water use, reduced utility bills by $1,114,236 and lowered greenhouse gas emissions by 2,205 tonnes of CO_2e. Furthermore, it has helped prepare 62 trainees to move into sustainable employment and 18 trainees to move into further education/training.

BUILD employs up to approximately fifty individuals at any given time including, apprentices, trainers, crew members, and up to twenty trainees[4]. Remaining staff provide trainee support and undertake project administration and management. Most trainees are recruited by word of mouth via friends and family who have worked or trained at BUILD. BEEP employs up to approximately twenty individuals at any given time including, project supervisors, tier II employees (trainee graduates), and up to twelve trainees. Remaining staff undertake project administration and management. BEEP has recently introduced an apprenticeship tier to its program, which allows it to employ up to four apprentices. Trainees are recruited through Westbran in Brandon, and more recently through word of mouth and local advertising. BUILD and BEEP trainees are trained for six months at minimum wage with an increase after a three month evaluation.

Most trainees are local individuals with varying and multiple barriers that prevent success in traditional education/training programs and/or sustainable employment. BUILD and BEEP provide trainees, either directly or through partner organizations, with the training, experience, and resources they need to overcome these barriers. The goal is to prepare trainees for further education/training that can lead to sustainable employment, or for direct entry into sustainable employment, particularly in the trades sector where there is a high demand for skilled workers.

According to BUILD and BEEP staff, trainees are primarily male, Aboriginal individuals living in the inner-city with the exception of a few females and newcomers. Few have received a grade twelve diploma. Many lack a stable housing situation and home support system. Most have had contact with the justice system, and either do not have a driver's license or have fines on their license. Some are low-skilled workers who have worked in the formal labour market and want an opportunity to improve their skills. However, very few have been able to find sustainable employment in the formal labour market despite some having completed more traditional train-

ing programs. Generally, trainees are eager to achieve positive changes in their lives but often don't know how, don't believe they can, or don't believe they deserve to.

Most BUILD applicants lack the basic skills, knowledge, experience, and assets that typical employers seek. BUILD hires these applicants precisely *because* this is lacking, given the organization's mandate to hire and train local individuals with multiple barriers to employment, as long as they demonstrate a readiness to actively participate in all aspects of the program. BEEP applicants are primarily recruited out of Westbran Training Centre where they have developed basic employment-ready skills. In both cases, these individuals need someone to provide them with an employment opportunity. BUILD and BEEP recognize that this opportunity alone will not be enough to help these individuals overcome their barriers and become successful and sustainable employees.

BUILD and BEEP provide trainees with access to a comprehensive and integrated package of resources and supports so they can develop hard skills, soft skills, and life skills while addressing the multi-faceted and inter-connected barriers related to poverty and social exclusion that they face. Hard skills are the technical skills and knowledge needed to succeed in a job. Soft skills are basic employability skills including responsibility, good attendance, motivation, time management, and productive co-worker relations. Examples of life skills required to succeed in a job include money management, healthy lifestyle choices, and basic literacy and numeracy.

BUILD and BEEP have adopted a Community Economic Development approach to employment development that aims to integrate both economic and social objectives. Research suggests this is an improvement over existing practices in traditional training programs which focus on hard skills training, particularly when working with individuals with multiple barriers to employment. BUILD and BEEP staff indicate that this holistic approach is critical to helping their trainees successfully prepare for further education/training or sustainable employment and that without it, many trainees would be at risk of falling back into unemployment, poverty, and destructive patterns.

2. Training Component

2.1 Hard skills, soft skills, and life skills development

BUILD and BEEP staff have noted that each trainee has different training and developmental needs that demand a unique training plan and access to a variety of resources and supports. BEEP and Westbran Training Centre staff work one-on-one with new trainees to identify their needs and establish goals with respect to training and development, to create a customized training plan for each trainee. BEEP then offers access to resources and supports so trainees can meet their training and development goals. Progress is documented, tracked, and assessed in a Skills Passport. BUILD is working towards formalizing the above process. Skills Passports aim to help trainees understand what they can expect to achieve in the program, which can appear overwhelming and unattainable for some. By mapping out a plan and timeframe for reaching each goal, Skills Passports can make it more manageable for the trainee. Skills passports are also a tool to articulate achievements which can be transferred to resumes.

As of June 2011, 128 BUILD trainees, 56 BEEP trainees, and their families have had access to: skill development and knowledge in basic energy and water efficiency, new employment income, a driver's license, personal identification, a bank account, financial management and parenting courses, a basic breakfast and lunch program, training in basic literacy and numeracy, counselling, cultural programming, and a significant improvement in their overall level of employability.

Trainees develop basic skills that enable them to perform water and energy retrofits including increasing attic and basement insulation levels and installing water saving fixtures such as low-flush toilets, low-flow showerheads, and faucet aerators. Other energy saving devices installed include, pipe wrapping, compact fluorescent light bulbs, and electrical gaskets. Trainees also develop knowledge around energy and water efficiency practices. This can lead to changes in their own behaviour around energy and water usage, and increase their capacity to educate their family and community about the importance of energy and water efficient practices.

Journeymen carpenters and plumbers provide on-the-job training and supervision so trainees can gain skills and experience in carpentry, plumbing, working with power tools, framing, dry walling, and project management. Trainees can access other trades-related skills train-

ing through courses in Workplace Hazardous Materials Information System, First Aid, and Health and Safety. In addition, BEEP trainees are offered access to Fall Protection, Confined Space, Lockout, Hazard Recognition, Skid Steer/ Telehandler Overview, Aerial Work Platforms, and Fork Lift courses. These courses are certifiable and transferable to other places of work which increases the scope of potential employment opportunities.

In addition to hard skills training, BUILD and BEEP provide trainees with access to a comprehensive and integrated package of resources and supports within a much needed positive and understanding working environment where trainees can also develop soft skills and life skills. BEEP trainees are required to develop many of these skills at Westbran before entering BEEP. Westbran and BEEP staff communicate regularly regarding trainee progress. Westbran staff also meet regularly with BEEP trainees to further develop their employment-ready skills, address any setbacks, update their resumes, and discuss mid and long-term career goals.

BUILD trainees are not required to have developed soft skills and life skills before being hired. They are expected to develop these skills at BUILD with the assistance of an on-site Life Skills Coach. In addition to providing trainees with access to courses in financial management, basic literacy and numeracy, and parenting, the Life Skills Coach meets with trainees individually to uncover personal challenges that contribute to poor attendance, punctuality, or work performance. In cases such as those related to serious addictions, family, and housing challenges, the Life Skills Coach will refer trainees to other community agencies with relevant expertise.

BUILD also offers trainees cultural programming. This includes a day-long cultural awareness workshop; quarterly Sweat Lodge Ceremonies where trainees can meet with Elders and participate in a healing ceremony. It is increasingly being recognized that the history of colonial policies in Canada has significantly impacted social and economic outcomes for Aboriginal people, and has resulted in deep and damaging intergenerational effects[5]. According to BUILD staff, many trainees come from dysfunctional family environments and have experienced significant trauma. Success in the workplace will be short-lived unless trainees can learn how to use cultural awareness methods to promote healing and confirmation of self-identify, and begin to reverse the damaging effects of colonization.[6] The experience of an Aboriginal participant at Urban Circle Training Centre in Winnipeg's inner-city supports this: "learning about my culture and colonization was as important to me as the technical training I received…it helped me to understand why I had so much difficulty in the past…I needed to do that before I could move forward.[7]" BUILD hopes to acquire additional resources so it can build upon what it currently offers to provide trainees with access to adequate cultural programming.

BUILD and BEEP have indicated that despite the above supports and resources, it can remain physically, mentally, and emotionally challenging for some trainees to actively and successfully participate in BUILD and BEEP's training and development opportunities. Trainees must have a certain level of motivation and commitment. Staff indicate that this can be difficult, particularly for trainees who have a hard time believing it's possible to achieve the goals they set out for themselves. Some have never had a figure in their lives to demonstrate what it's like to go to work every day and earn a paycheque. As a result, it's hard to even picture how to live that kind of life, making it very difficult to end the cycle of family poverty.

BUILD and BEEP aim to introduce those important figures into the lives of trainees. Some BUILD graduates are re-hired as apprentices after completing high school and Level 1 carpentry theory. Trainees work alongside these apprentices who offer peer-to-peer support and

positive influencing. Apprentices who are past participants of the program demonstrate that, within a year, it is possible to successfully complete the program, receive additional training, and earn a higher wage. While trainees earn between $9.50 and $11.00 per hour[8], apprentices earn approximately $18.00 per hour. This enables trainees to believe that they can achieve the same thing, and motivates them to actively participate in the training and development opportunities required to make that happen.

BEEP has recently introduced an apprenticeship tier now that two supervisors are going to be qualified as designated trainers. It currently has one Tier II employee who has applied to be an apprentice and who is being paid an apprentice's wage. According to BEEP staff, trainees also benefit from the positive influencing of Tier II employees who demonstrate that trainees can acquire greater responsibilities and higher earnings within a short period of time. While trainees earn between $9.50 and $10.00[9] per hour, Tier II employees earn approximately $14.00 per hour. Trainees can become Tier II employees by demonstrating good attendance standards, quality work on the job site, and leadership ability within their crew.

BUILD and BEEP staff have observed that successful trainees are often proud to become positive figures in their children's lives who can demonstrate what it's like to go to work every day and earn a paycheque. They suggest that this can help break the cycle of family poverty as children observe the example set by their parents. BUILD helps contribute to this outcome through 'take your kids to work' days where trainees can bring their children into the workplace.

BUILD partners with the Manitoba Metis Federation to offer an eight-week parenting program, which helps trainees become more actively involved in their children's lives. It teaches trainees how to provide positive emotional support to their children to enable their healthy development. It also connects trainees with other community resources that can support them as parents. This helps create a more functional home life for trainees, which enables them to become better employees. BEEP does not currently offer a parenting program, but is considering adding it to its training program in the future.

BUILD and BEEP staff indicate that many trainees have never had a bank account due to poor credit history and/or lack of personal identification. BUILD and Westbran help trainees obtain personal identification such as status cards, Manitoba Health cards, social insurance numbers, and birth certificates. BUILD has made arrangements with financial agencies to provide free bank accounts and cards to trainees. Westbran and BEEP staff assist trainees in setting up a bank account. Access to a bank account provides trainees with a secure place to deposit their paycheque or to cash it in without having to pay fees that eat away at their disposable income.

Staff also indicate that many trainees require assistance managing their finances. BUILD and Westbran have made arrangements with financial agencies to provide financial management workshops. Trainees learn budgeting and other skills to help them better manage their finances and avoid practices that lead to the accumulation of bad debt. According to BUILD staff, these workshops have proven to be a catalyst in reducing drug, alcohol, and tobacco use by some trainees after discovering how much of their budget is taken up by purchasing these substances.

BUILD and Westbran also provide trainees with access to numeracy and literacy tutoring. BUILD partners with a tutoring agency to provide trainees with apprenticeship-based tutoring three times a week in the afternoon. This service helps prepare trainees for acceptance into the apprenticeship system. Tutoring is provided onsite, which has been a critical factor contributing to good attendance.

When funding is available, BUILD offers very basic breakfast and lunch on a self-serve basis because many trainees come to work without

having eaten breakfast or prepared a lunch. Some trainees lack experience in food preparation while others lack resources to feed everyone at home. The expectation is that, by the end of the training period, trainees will eat breakfast and prepare a lunch at home so they can become healthier, more productive, and more independent employees.

Staff indicate that by the end of the six-month training period, many trainees have gained the hard skills, soft skills, and life skills needed for direct entry into sustainable employment or further education/training that can lead to sustainable employment.

2.2 Training Outcomes

BUILD's Training and Employment Coordinator meets with trainees after three months to discuss mid and long-term career goals and develop a plan to achieve them. The Coordinator helps trainees match their interests and skills with suitable education/training programs or employment sectors. Trainee graduates are connected with potential educational/training institutions or employers and receive assistance with application processes, including job references and interview preparation.

BUILD and BEEP staff indicate that trainees often need time to adapt to what is expected of them in a job and address their personal challenges before they can engage in long-term thinking and planning. According to BUILD staff, many trainees require approximately three months to become stabilized enough to start believing they are capable of holding down a job, completing high school, or receiving additional training with an objective to achieve sustainable employment. BEEP trainees become stabilized and identify mid and long-term career goals at Westbran. They then make a deliberate choice to apply at BEEP as a logical step toward achieving their career goals. Once hired, BEEP and Westbran staff help trainees prepare for what their next step will be upon graduation, including through ongoing career exploration and assistance with resume writing and job searching.

According to ETT, the most important indicator of success with respect to BUILD and BEEP's training mandate is whether or not trainees achieve employment, particularly in the trades sector. According to BUILD and BEEP staff, given the characteristics of trainees, some require more than six months to meet their training and developmental needs and obtain sustainable employment, particularly trainees who are working to overcome the effects of colonization. Approximately 37 BUILD trainees and 25 BEEP trainees have become employed. According to staff, most found trades-based employment at equal or higher wages but graduates may have a hard time sustaining employment without ongoing training and development resources and supports. Some BUILD graduates have found employment with second stage employers who can provide these resources and supports. BEEP staff are not aware of any second stage employers located in Brandon.

Another indicator of success with respect to BUILD and BEEP's training mandate, according to ETT, is whether or not trainees go on to pursue further education/training as another step toward sustainable employment. Some trainees may never have considered going back to complete high school and pursue a career of their choosing were it not for the confidence and motivation they developed at BUILD and BEEP. Furthermore, after only six months, graduates are often only qualified enough to enter into another minimum wage job, or at best, an entry-level position in the trades sector. Instead of a lateral employment move, trainees who go on to pursue further education/training can move upward along an employment path in the apprenticeship system where there are opportunities for greater earnings and employment stability. Approximately 17 BUILD trainees and 1 BEEP trainee have gone on to pursue further education/training.

TABLE 2 **Training outcomes, 2011**

Trainee Outcomes	BUILD	BEEP
Employment and education/training rate (ETT target)	**60%**	**60%**
Number employed or enrolled in education/training (out of all closed files)	54	26
Number of closed files	108	53
Employment and education/training rate (actual — for all with closed files)	**50%**	**49%**
Number employed or enrolled in education/training (out of all closed files that completed six months)	53	24
Number of closed files that completed six months	58	28
Employment and education/training rate (actual — for all with closed files that completed six months)	**91%**	**86%**

SOURCE: ETT, June 2011

Given the shortage of skilled trades labour in Manitoba, ETT prefers that further education/training be pursued in that sector, for example, by entering into the apprenticeship system. However, ETT understands that trainees will be more likely to succeed in achieving career goals they identify for themselves. Therefore, it is still a valued outcome when trainees pursue further education/training towards sustainable employment outside of the trades sector.

ETT's target combined employment and education/training rate is 60% of all BUILD and BEEP trainees within a given contract. This figure is based on the characteristics of trainees and the target success rates of other similar projects. BUILD and BEEP's actual average employment and education/training rates are 50% and 49% respectively. At BUILD, 54 out of 108 trainees who closed their file met the outcome of sustainable employment or enrolment in further education/training. At BEEP, 26 out of 53 trainees who closed their file met the outcome of sustainable employment of or enrolment in further education/training.

When considering only those trainees who completed the full six months training program, BUILD and BEEP's average employment and education/training rates are 91% and 86% respectively. At BUILD, 53 out of 58 trainees who completed the full six months training program met the outcome of sustainable employment or enrolment in further education/training. At BEEP 24 out of 28 trainees who completed the full six months training program met the outcome of sustainable employment or enrolment in further education/training.[10]

It is important to note that the data discussed above comes from ETT and is based on information it receives through reporting from BUILD and BEEP. The latter have repeatedly pointed to challenges they face regarding following-up with graduates and tracking their outcomes. Staff have indicated they do not often have access to current phone numbers or addresses. Furthermore, they report having little or no time to engage in follow-up activities given their existing responsibilities with trainees who are still participating in the programs.

2.3 Training-related Challenges

Turnover

BUILD's average annual turnover rate[11] is approximately 44%, meaning that just under half of all trainees who closed their file did not complete the full training program for negative reasons. Of the 48 trainees that turned over, nearly 50% withdrew as a result of either personal/family issues, having moved, or health issues, and nearly 30% withdrew with no reason given. The remainder failed to complete the program for various reasons classified as 'other.[12] BEEP's average annual turnover rate is approximately 32%, meaning that almost one third of all trainees who closed their

file did not complete the full training program for negative reasons. Of the 17 trainees that turned over, nearly 65% withdrew because of personal/family issues. Of the remainder, two requested to leave, one left the labour market, and three left with no reason given.[13]

BEEP's lower average turnover rate may be due, in part, to its assessment and intake process. Westbran undertakes this process and only refers clients to BEEP if their needs, skill sets, and career goals are suitable for the program. Clients must also have made progress on their personal challenges, such as an addiction, and have acquired basic employment-ready skills. This is appropriate given that BEEP does not have the capacity and expertise, relative to Westbran, to provide all the resources and supports to meet these clients' needs.

This differs from BUILD's assessment and intake process, which is mostly done in-house. BUILD has recently partnered with PATH Resource Centre to assist in the assessment and intake process. BUILD has developed a set of criteria to help PATH determine when an applicant's barriers are aligned with the type of client BUILD has the capacity and expertise to prepare for entry into further education/training or employment. This set of criteria includes lack of grade twelve diploma, lack of driver's license, history with the justice system, and little or no work experience. BUILD staff note that generally, applicants are not coming from an employment training centre, and are expected to make progress on their personal challenges and develop basic employment-ready skills after they are hired. When they enter the program, BEEP trainees are relatively more advanced in their employment-ready training and development, compared to BUILD trainees. Therefore, one might expect BEEP's turnover rate to be relatively low, compared to BUILD.

A high turnover rate can be expected in both programs given the socio-economic characteristics of the trainees who are targeted as a result of the mandates of BUILD and BEEP. As mentioned above, nearly half of all trainees at BUILD and two thirds of all trainees at BEEP failed to complete the program as a result of either personal/family issues, having moved, or health issues. In addition to being consistent with the well-documented evidence around the intergenerational effects of colonization, these results are consistent with evidence revealing that individuals and families living in poverty are likely to relocate frequently, have poor health outcomes, and struggle with personal and family issues related to violence, addictions, and gang attachment[14].

Turnover is generally considered a negative indicator, yet BUILD and BEEP staff indicate it can also be an appropriate outcome. BUILD and BEEP will help trainees who face obstacles and setbacks while in the program if the trainees are willing to accept that help and if staff have the required capacity and expertise to provide it. Otherwise, trainees are released and referred to another service provider that can meet their needs and prepare them for re-entry. This creates turnover and negatively impacts the success rate. However, staff note it is not an efficient or effective use of program resources to retain trainees who cannot meet program standards given the poor employment outcomes it would generate and the opportunity cost to other potentially successful applicants. BUILD staff also indicate that trainees are not always exiting for negative reasons as some go on to pursue further education/training or employment opportunities. Turnover doesn't necessarily mean that trainees are not making progress. Many trainees who exit early have developed a set of skills and a level of confidence that they can draw upon in the future.

ETT has encouraged BUILD to strengthen its assessment and intake process to help reduce turnover rates and improve success rates. However, a strengthened assessment and intake process can only reduce turnover to a certain extent, given the clientele BUILD targets. Accord-

ing to BUILD staff, not all potential barriers can be identified during the assessment and intake process. Some factors, such as health, family issues, and the need to relocate, will only develop after intake. Other factors, such as addictions, level of family dysfunction, learning abilities, and level of readiness are often only revealed over time as the trainee progresses through the program. Furthermore, success depends largely on the trainee's readiness to succeed and experience suggests it can be premature to determine whether or not applicants are ready to succeed before they are given an opportunity. There have been trainees previously involved in gangs who said they had to experience employment before knowing they really wanted it and were ready for it. There have also been trainees who have gone from engaging in criminal activity to working as an apprentice within a year and a half.

According to BUILD staff, many applicants come to BUILD because it has developed a reputation in the community as a trustworthy employer that is eager to hire and make employable the type of clientele that many other employers would not consider hiring. While their approach can result in a higher turnover rate, staff believe it is very important for applicants to be given an opportunity to succeed when they take that first step toward changing their life by applying at BUILD. If BUILD has the capacity to provide support and if the applicant demonstrates a readiness to actively participate, BUILD provides that opportunity and does what it can to ensure the trainee succeeds. BUILD staff emphasize that there are few other employers who are willing to do this.

Attempts to strengthen BUILD's assessment and intake process may risk undermining the program's commitment to hiring those least likely to succeed in traditional training programs. One of BUILD's objectives is to hire individuals with multiple barriers to employment and prepare them for further education/training or sustainable employment. BUILD can reduce turnover rates and improve success rates by simply designing an assessment and intake process that hired trainees with fewer barriers; however, this would compromise the integrity of the program's mandate. BUILD hopes to strengthen its intake and assessment process and minimize turnover in a way that allows it to continue to hire individuals with multiple barriers while filtering out those among them that are least likely to succeed given the resources and supports BUILD can offer. These individuals would instead be referred to a service provider that can effectively meet their needs. However, turnover rates are still likely to be higher compared to programs that target a clientele with fewer barriers. It is difficult to reduce turnover without changing who the program is designed to serve.

BUILD has attempted to strengthen its assessment and intake process without compromising the integrity of the program's mandate by introducing a probationary period where trainees and staff assess trainee barriers and readiness over the course of a month before they formally enter the program. This approach could help improve BUILD's success rates since, according to program and partner staff, turnover occurrence is generally concentrated in the first month of training.

Ongoing Barriers to Employment

As mentioned above, 37 BUILD graduates and 25 BEEP graduates have moved directly into employment. BUILD and BEEP staff suggest it can be very difficult to find an employer willing to hire graduates even though they have become stable, skilled workers with a strong work ethic. BUILD staff suggest there can be a stigma associated with hiring Aboriginal employees, particularly in the trades sector. They also suggest that the trades sector can be characterized by nepotistic hiring practices which pose a further barrier to employment for their graduates.

BUILD has hired an Employer Liaison with federal funding to assist in developing relationships with potential and existing employers.

Existing employers include social enterprises such as Manitoba Green Retrofit and Inner City Renovations. BUILD hopes to develop more permanent partnerships with these employers and other potential employers as they share success stories. BEEP staff have contacts in the carpentry sector that can be drawn upon to find employment opportunities for their graduates. They have also connected with the Construction Association of Rural Manitoba which has taken in a few BEEP graduates.

Employers often require that employees have a high school diploma, a driver's license, and a clean criminal record, which can remain an ongoing barrier to employment. While BUILD and BEEP staff help put trainees on a path towards acquiring these qualifications, it is generally not possible for most trainees to acquire them within six months. Trainees can take night courses and access on-site tutoring toward earning a high school diploma while at BUILD and BEEP. However, staff suggest that most trainees are not prepared to succeed in a full high school training program while at BUILD and BEEP. As a result, there have not been any trainees who have received a high school diploma during the training period.

Trainees are offered access to a driver's licensing program. BUILD provides the program in-house and BEEP trainees have access to the program through a local driver training school. It provides trainees with a tutor to prepare for the beginner's and road tests. BUILD's program also offers trainees payroll deduction to cover administration and penalty fees charged by Manitoba Justice and/or Manitoba Public Insurance. Since inception, BUILD trainees have paid off approximately $20,000 in driver's licensing penalties through payroll deduction and arrangements with Manitoba Public Insurance. BEEP hopes to offer this to trainees in the future. Thirty-eight BUILD trainees (approximately 34% of all trainees) received their beginner's license during the six month training period. With graduated licensing, they have to wait nine months before they can try to get their intermediate license. Ten BUILD trainees received their intermediate license while at BUILD. No BEEP trainees have received their beginner's license while at BEEP.

According to BUILD and BEEP staff, over two thirds of trainees have a history with the justice system. It can take up to five years before someone with a criminal record can apply for a pardon. To address this barrier, BUILD staff suggest that rather than ruling out applicants with criminal records, employers conduct a risk assessment to determine which positions would be suitable for a graduate given their particular criminal offense. There have not been any BUILD or BEEP trainees who have received a pardon while in the program. BUILD is considering offering workshops to assist trainees in applying for pardons. Westbran staff assist clients with applying for pardons; however they suggest that many clients don't see the benefit as they tend not to engage in long-term thinking.

Even with the above qualifications, some graduates would still be unprepared for sustained employment without ongoing resources and supports. BUILD and BEEP staff suggest that six months is not enough time for some trainees with multiple barriers to overcome all their personal challenges, and that overcoming grief or addiction can require a lengthy process which cannot necessarily take place within a prescribed timeframe. BUILD staff emphasize the importance of time as a resource when individuals are healing and moving into different phases of their lives.

While six months is too short a timeframe for many trainees to overcome their barriers and acquire the above qualifications, BUILD and BEEP staff indicate that graduates can take the motivation, commitment, and self-discipline they have acquired and use it to get a high school diploma, driver's license, and clean criminal record after they graduate. BUILD and BEEP have had difficulty following-up with graduates. BUILD is aware of

ten graduates who have gone on to earn a high school diploma and six who have gone on to receive their intermediate driver's license. BEEP is aware of one graduate who has gone on to earn a high school diploma. It has been much more difficult for graduates to clear their criminal record. This remains a barrier to employment for most graduates, although less so in Brandon where Westbran staff indicate that employers are hiring graduates with criminal records.

BUILD staff report that many graduates return to BUILD for assistance in acquiring the above qualifications as well as for reference letters, assistance with resume writing, employment leads, and general advice. Staff often find it hard to manoeuvre through the various systems they encounter while assisting graduates. They suggest it would be very difficult to expect certain graduates to do it on their own after only six months. BUILD staff report being extremely occupied with trainees and have limited time to assist returning graduates. While BEEP staff are often called for references, they don't have the same experience of graduates returning for other assistance.

Some trainees can stay at BEEP beyond six months, either as trainees or as Tier II employees if they are ready for the added responsibility. This provides more time to overcome personal challenges, develop skills, and acquire qualifications within BEEP's supportive environment. This is not really an option for BUILD trainees. BUILD has used its contract-based revenues to pay the wages a few trainees who needed to remain at BUILD longer than six months while they waited to transition into employment or further education/training. Generally, after six months, trainees are encouraged to go complete their high school while earning Level 1 carpentry theory. This provides an opportunity to be re-hired as apprentices and accumulate Level 1 hours while accessing needed training and development opportunities. According to BUILD staff, while some graduates return, others fail to succeed in traditional education/training settings that do not provide ongoing access to a supportive environment. To limit the latter outcome, staff suggest some trainees could be given the opportunity to stay at BUILD beyond six months so they can continue to prepare to succeed independently in further education/training or in sustained employment. They also suggest that a longer training period may reduce the need for BUILD to provide trainees with follow-up supports and resources upon graduation.

ETT acknowledges that there is no one-size-fits all in terms of what trainees need to succeed. They suggest that while general policies won't work for every individual, policies cannot be targeted to meet individual needs. From ETT's perspective, building in the flexibility to meet individual needs is a big challenge. However, some flexibility has been introduced in BEEP's model, with some trainees able to extend their training period to eight or nine months. BUILD and BEEP staff suggest that graduates would be much better prepared to succeed independently in further training/education or employment if the training period was extended for up to twelve months, as needed. As already mentioned, trainees would be more likely to acquire the qualifications that employers in the trades are looking for. For example, with a twelve month training period, trainees who receive their beginner's license in the first few months can benefit from the assistance of BUILD staff when they go to acquire they intermediate license nine months later. Moreover, staff suggest that employers would be more likely to hire an applicant with twelve months of work experience as opposed to six.

Another option for graduates who require ongoing support after six months is to apply with second stage employers. These are employers who can continue to provide a supportive work environment to employees who are overcoming multiple barriers. There are a few second stage employers in Winnipeg who have hired BUILD graduates including Manitoba Green Retro-

fit, Inner-city Renovations, and the North End Community Renewal Corporation. There are no second stage employers in Brandon that BEEP staff are aware of. An increase in the number, strength, stability, and growth of social enterprises in Winnipeg and Brandon would increase the viability of relying on second stage employers.

As an alternative to applying with second stage employers, graduates who require ongoing support could be provided with access to individualized case-workers as they transition into further education/training or employment. One model that has been proposed in previous research is the Labour Market Intermediary (LMI) model. LMIs link low-skilled workers with semi-skilled and skilled employment in targeted sectors to create job opportunities for marginalized workers by brokering relationships with employers, education and training institutions, government and funding agencies and CBOs to help clients find and keep good jobs.[15] In this framework, a case-worker employed by the LMI could be deployed to BUILD and BEEP to develop a relationship with trainees and work with them to ease the transition out of the training program and into further education/training or employment. Staff indicate that it can be a difficult adjustment for graduates when they leave BUILD and BEEP's supportive environment and enter mainstream education/training or employment. Case-workers could provide continuity and create a sense of stability for graduates when they transition into these settings while providing on-going supports and resources as needed. Employers may feel more comfortable hiring graduates without qualifications such as a high school diploma or driver's license if they knew the employee would be working with a case-worker to acquire them. Furthermore, ETT requires BUILD staff (and will begin to require BEEP staff) to follow-up with graduates after three months to track and record their outcomes, which can be difficult and time consuming. Case-workers in the LMI model could be responsible for these activities, which would enable program staff to concentrate efforts on existing trainees instead of on returning graduates.

3. Training and Employment Value to Government[16]

3.1 Training Costs

The annual cost to the Province of Manitoba per BUILD trainee slot is $18,503 based on a total ETT contribution of $740,121 and forty trainee slots. Its annual cost per BEEP trainee slot is $17,777 based on a total ETT contribution of $284,433 and sixteen trainee slots.[17]

3.2 Training Value

Taxes and Employment and Income Assistance (EIA)[18]

The Province recovers a portion of its cost per trainee slot through tax revenues. Each trainee slot works approximately 910 hours at $9.50 per hour and receives a total income of approximately $8,645. After deducting half the provincial and federal basic personal tax exemption[19], each trainee slot has approximately $4,453 in income that is taxed provincially and $3,381 in income that is taxed federally. Based on a provincial tax rate of 10.8% and a federal tax rate of 15%, each trainee slot generates approximately $481 and $507 of provincial and federal income tax revenue respectively, for a total of $988 per trainee slot.

After tax income per trainee slot is approximately $7,657. According to BUILD and BEEP staff, trainees spend, on average, approximately one third of after-tax income on taxable goods. Based on a provincial sales tax rate of 7% and a federal sales tax rate of 5%, each trainee slot generates approximately $179 and $128 of provincial and federal sales tax revenue respectively, for a total of $307 per trainee slot.

Total costs recovered through tax revenues equal approximately $1,295 per trainee slot.

The Province also recovers a portion of its costs per trainee slot through avoided EIA payments. Assuming that approximately one third of trainee slots at BUILD would have been eligible for basic EIA at $195 and shelter assistance at $285 per month had they not participated in the program, each trainee slot at BUILD would generate approximately $960 in avoided EIA payments on average. Assuming that approximately one quarter of trainee slots at BEEP would have been eligible for basic EIA at $195 and shelter assistance at $285 per month had they not participated in the program, each trainee slot at BEEP would generate approximately $720 in avoided EIA payments on average.[20]

3.3 Net Costs

After accounting for tax revenues and avoided EIA payments, the annual net cost per trainee

slot is $16,248 for BUILD and $15,522 for BEEP. Approximately 44% of BUILD participants and 32% of BEEP participants do not graduate/complete the training program for negative reasons. Therefore, the annual net cost per graduate is $29,014 for BUILD and $22,826 for BEEP. As previously indicated, many trainees who do not complete the program will have developed some skills that could benefit them and generate government savings in the future. However, this study did not have access to the data required to accurately reflect this in the calculations.

3.4 Employment Value

Taxes, Employment and Income Assistance, and Crime

The Province recovers a portion of its cost per graduate through tax revenues. Each graduate that moves into full-time employment is estimated to earn a total annual income of approximately $26,000[21] based on an average hourly wage of $13[22]. After deducting the basic personal tax exemption, each graduate has approximately $17,616 in income that is taxed provincially and $15,473 in income that is taxed federally. Based on a provincial tax rate of 10.8% and a federal tax rate of 15%, each graduate generates approximately $1,903 and $2,321 of provincial and federal income tax revenue respectively, for a total of $4,224 annually per graduate.

After tax income per graduate is approximately $21,776 annually. According to BUILD and BEEP staff, graduates could be expected to spend on average approximately one third of after-tax income on taxable goods. Based on a provincial sales tax rate of 7% and a federal sales tax rate of 5%, each graduate generates approximately $508 and $363 of provincial and federal sales tax revenue respectively, for a total of $871 annually per graduate.

Total costs recovered through tax revenues equal approximately $5,095 annually per graduate for every year they remain employed.[23]

Based on data from ETT, BUILD generates approximately 22 graduates on average in a given year and approximately 62% will find employment. These 14 graduates who become employed generate approximately $5,095 each in tax revenue for every year they remain employed. Therefore, total costs recovered through tax revenues per BUILD graduate equal $3,242 on average BEEP generates approximately 11 graduates on average in a given year and approximately 69% will find employment. These 8 graduates who become employed generate approximately $5,095 each in tax revenue for every year they remain employed. Therefore, total costs recovered through tax revenues per BEEP graduate equal $3,705.

The Province also recovers a portion of its costs per graduate through avoided EIA payments. Assuming that one third of BUILD graduates would have been eligible for basic EIA at $195 and shelter assistance at $285 per month before they entered the program, each BUILD graduate would generate approximately $1,920 in avoided EIA payments annually, on average, for every year of employment. Assuming that one quarter of BEEP graduates would have been eligible for basic EIA at $195 and shelter assistance at $285 per month before they entered the program, each graduate would generate approximately $1,440 in avoided EIA payments annually, on average, for every year of employment.[24]

Finally, the Province can recover a portion of its costs per graduate through avoided crime related costs. According to research coming out of the Department of Justice Canada[25] in 2003, the average cost per reported Criminal Code incident is estimated to be $28,000. According to BUILD and BEEP staff, approximately 75% and 65% of trainees have had a history with the justice system, respectively. Based on a conservative assumption, 20% of BUILD and BEEP graduates are estimated to have participated in a Criminal Code incident had they not found employment or enrolled in further education/training. With an average of approximately 22 BUILD graduates

annually and 11 BEEP graduates annually, this would result in a total of $123,200 and $61,600 in avoided crime related costs annually at BUILD and BEEP respectively. This amounts to $5,600 in avoided crime-related costs per BUILD and BEEP graduate.

After accounting for tax revenues generated, and avoided EIA payments and crime-related costs, the annual costs recovered per BUILD graduate equals approximately $10,762 for every year they remain employed. The annual costs recovered per BEEP graduate equal approximately $10,745 for every year they remain employed.

3.5 Cost Recovery

Given an annual net cost per BUILD graduate of $29,014 and annual costs recovered per graduate of $10,762, the Province can expect its full cost per BUILD graduate that remains employed to be recovered in just over approximately two and a half years.

Given an annual net cost per BEEP graduate of $22,826 and annual costs recovered per graduate of $10,745, the Province can expect its full cost per BEEP graduate to be recovered in just over two years.

Some graduates (approximately 28% of BUILD graduates and less than 5% of BEEP graduates) will enter into further education/training. The Province will not recover its costs as quickly with these graduates as they will not generate tax revenue immediately. However, the Province can expect to recover their costs at a similar, if not more advanced rate, with those who complete further education/training and find employment.

In addition to the training and employment value that has been monetized above, there are other potential benefits which cannot be easily monetized. For example, some trainees are role modelling an employed lifestyle for the first time in their family's history. The example they set can profoundly impact future behavioural patterns of children and other family members when it comes to the pursuit of education and employment[26]. This may help break the cycle of intergenerational poverty, with resulting economic and social benefits.

4. Energy and Water Efficiency Upgrades and Associated Savings (as of March 31st, 2011)

4.1 Number of Units Retrofitted[27]

4.1.1 BUILD (See Table 3)

Manitoba Hydro Low Income Energy Efficiency Program Deep Energy/Water Retrofits: BUILD completed insulation, Compact Fluorescent Light (CFL), showerhead, faucet aerator, and toilet retrofits in 691 housing units (497 Manitoba Housing Authority (MHA), 159 privately-owned low-income single family dwellings, and 35 Dakota Ojibway First Nations Housing Authority (DOFNHA) units). Pipewrapping retrofits were completed on 80 units (76 MHA, 3 private, and 1 DOFNHA unit). It was assumed pipewrapping was only used on electric hot water tanks.

Basic Energy/Water Retrofits: BUILD completed CFL, toilet, showerhead, and faucet aerator retrofits in a further 3,203 MHA units. In addition, BUILD retrofitted 273 Kinew units with toilets, showerheads, and faucet aerators only.

TABLE 3 **Number of Units Retrofitted: BUILD**

Unit type / Retrofit Type	Manitoba Housing Authority (MHA) Units	Privately-Owned Low-income Single Family Dwellings	Dakota Ojibway First Nations Housing Authority (DOFNHA) Units	Kinew Units	Total Units
Insulation	497	159	35	-	691
Compact Fluorescent Lights	3700	159	35	-	3,894
Pipewrapping	76	3	1	-	80
Toilets	3700	159	35	273	4,167
Showerheads	3700	159	35	273	4,167
Faucet Aerators	3700	159	35	273	4,167

TABLE 4 Number of Units Retrofitted: BEEP

Unit type / Retrofit Type	MHA Units	Privately-Owned Low-income Single Family Dwellings	MHA Apartment Units	Private Non-profit Apartment Units	Sponsor Managed Units	Total Units
Insulation	375	16	-	-	-	391
Compact Fluorescent Lights	375	16	-	-	-	391
Pipewrapping	310	2	-	-	-	312
Toilets	375	16	130	235	45	801
Showerheads	375	16	117	200	38	746
Faucet Aerators	375	16	117	200	38	746

4.1.2 BEEP (See Table 4)

Manitoba Hydro Low Income Energy Efficiency Program Deep Energy/Water Retrofits: BEEP completed insulation, CFL, toilet, showerhead, and faucet aerator retrofits in 391 housing units (375 MHA and 16 private units). Pipewrapping retrofits were completed in 312 housing units (310 MHA and 2 private).

Basic Energy/Water Retrofits: BEEP completed showerhead and faucet aerator retrofits in 117 MHA apartments, 200 private non-profit apartments, and 38 sponsor managed units. Toilet retrofits were completed on 130 MHA apartments, 235 private non-profit apartments, and 45 sponsor managed units.

4.2 Savings — BUILD[28]

4.2.1 Average annual savings per unit from completed retrofits by unit type — includes insulation, CFLs, showerhead, and faucet aerators unless otherwise stated[29] (See Table 5)

MHA (Manitoba Hydro Low Income Energy Efficiency Program deep Energy/Water retrofit)

Average annual electric energy savings per electric heated unit: 665kw.h = $44 = 0.52 tonnes of CO_2e. Pipewrapping retrofits were also completed on these units. There were no electric heated units that received insulation retrofits in the year from which the data was calculated. Therefore the average annual insulation energy savings for this sector was not available to extrapolate across cumulative number of homes. Average annual gas energy savings per gas heated unit: 371 cu.m = $109 = 0.71 tonnes of CO_2e.

This includes the negative interactive effects of CFLs in gas heated units. In addition, there is an average annual electric energy savings per gas heated unit from CFL retrofits: 272 kw.h. = $18 = 0.21 tonnes of CO_2e.

MHA (Basic energy/water retrofit)

Average annual electric energy savings per electric heated unit: 570 kw.h = $38 = 0.44 tonnes of CO_2e.

Average annual gas energy savings per gas heated unit: 18 cu.m. = $5 = 0.04 tonnes of CO_2e. This includes the negative interactive effects of CFLs in gas heated units. In addition, there is an average annual electric energy savings per gas heated unit from CFL retrofits: 272 kw.h = $18 = 0.21 tonnes CO_2e.

Insulation retrofits were not completed on the above units.

Average annual water savings per unit: 47,427 litres= $157. Savings are realized by basic water retrofits: toilets, showerheads, and faucet aerators.[30]

Privately Owned Low-Income Single Family Dwellings

Average annual electric energy savings per electric heated unit: 4,928 kw.h = $326 = 3.80 tonnes of CO_2e. This is based on a sample size of 3 homes retrofitted in the year from which the data was

TABLE 5 **Average annual savings per unit from completed retrofits by unit type**

	MHA Units (Manitoba Hydro LIEEP deep Energy/ Water retrofit)		MHA Units (Basic Energy/ Water retrofit)		Privately-owned Low-income Single Family Dwellings		DOFNHA Units		Kinew Units	
	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas
kw.h	665	272	570	272	4,928	272	7,653	272	299	-
cu.m	-	371	-	18	-	1,102	-	1,122	-	42
litres	47,427	47,427	47,427	47,427	74,413	74,413	74,413	74,413	74,413	74,413
$	201	284	195	180	572	587	753	593	266	258
tonnes of CO_2e	0.52	0.92	0.44	0.25	3.80	2.31	5.90	2.35	0.23	0.09

calculated. Pipewrapping retrofits were completed on these units.

Average annual gas energy savings per gas heated unit: 1,102 cu.m = $323 = 2.10 tonnes of CO_2e. This includes the negative interactive effects of CFLs in gas heated units. In addition, there is an average annual electric energy savings per gas heated unit from CFL retrofits: 272 kw.h. = $18 = 0.21 tonnes of CO_2e.

Average annual water savings per unit: 74,413 litres = $246. Savings are realized by basic water retrofits: toilets, showerheads, and faucet aerators.

Dakota Ojibway First Nations Housing Authority (DOFNHA)

Average annual energy savings per electric heated unit: 7,653 kw.h = $507 = 5.90 tonnes of CO_2e. This is based on a sample size of 1 home retrofitted in the year from which the data was calculated. Pipewrapping retrofits were completed on these units.

Average annual gas energy savings per gas heated unit: 1,122 cu.m = $329 = 2.14 tonnes of CO_2e. This includes the negative interactive effects of CFLs in gas heated units. In addition, there is an average annual electric energy savings per gas heated unit from CFL retrofits: 272 kw.h. = $18 = 0.21 tonnes of CO_2e.

Average annual water savings per unit: 74,413 litres = $246. Savings are realized by basic water retrofits: toilets, showerheads, and faucet aerators.

Kinew

Average annual electric energy savings per electric heated unit: 299 kw.h = $20 = 0.23 tonnes of CO_2e.

Average annual gas energy savings per gas heated unit: 42 cu.m = $12 = 0.09 tonnes of CO_2e. There were no insulation or CFL retrofits performed on these units. Savings are realized by basic water retrofits: showerheads and faucet aerators.

Average annual water savings per unit: 74,413 litres = $246. Savings are realized by basic water retrofits: toilets, showerheads, and faucet aerators.

4.2.2 Total annual savings by retrofit type (See Table 6)

Insulation

Total annual energy savings from insulation retrofits in all 615 units: 19,777 kw.h and 355,253 cu.m = $105,505 = 690.05 tonnes of CO_2e. This does not include savings from insulation retrofits on 76 electric heated MHA units as there were no electric heated units retrofitted in the year from which the data was calculated.

CFL

Total annual energy savings from CFL retrofits in all 374 electric heated units: 101,541 kw.h = $6,722 = 78.54 tonnes of CO_2e.

Total annual energy savings from CFL retrofits in all 3,520 gas heated units: 955,680 kw.h and -84,480 cu.m. = $38,488 = 563.20 tonnes of CO_2e.

TABLE 6 **Total annual savings by retrofit type**

	kw.h	cu.m	litres	$	tonnes of CO_2e
Insulation	19,777	355,253	-	105,505	690.05
Compact Fluorescent Lights	1,057,221	-84,480	-	45,210	641.74
Pipewrapping	7,600	-	-	503	6.40
Toilets	-	-	85,173,480	281,924	-
Showerheads	88,250	112,650	98,101,780	363,600	291.22
Faucet Aerators	34,793	43,934	26,954,588	104,409	121.69
Total savings from all retrofits	**1,207,641**	**427,357**	**210,229,848**	**901,151**	**1751.10**

Pipewrapping

Total annual energy saving from pipewrapping retrofits in all 80 electric units: 7,600 kw.h = $503 = 6.40 tonnes CO_2e. Pipewrapping retrofits were only completed on electric hot water tanks.

Toilet[31]

Total annual water savings from toilet retrofits in all 4,167 units: 85,173,480 litres = $281,924.

Showerhead[32]

Total annual energy savings from showerhead retrofits in all 4,167 units: 88,250 kw.h and 112,650 cu.m = $38,883 = 291.22 tonnes of CO_2e.

Total annual water savings from showerhead retrofits in all 4,167 units: 98,101,780 litres = $324,717.

Faucet Aerator[33]

Total annual energy savings from faucet aerator retrofits in all 4,167 units: 34,793 kw.h and 43,934 cu.m = $15,189 = 121.69 tonnes of CO_2e.

Total annual water savings from faucet aerator retrofits in all 4,167 units: 26,954,588 litres = $89,220.

4.2.3 Total annual savings from all retrofits performed

Electric Savings: 1,207,641 kw.h
Gas Savings: 427,357 cu.m
Total Energy Savings in Dollars: $205,290 ($68,695 to low-income homeowner/tenant and 136,595 to government)
Water Savings: 210,229,848 litres
Water Savings in Dollars: $695,861 ($64,798 to low-income homeowner/tenant and $631,063 to government)
Greenhouse Gas Emissions Reductions: 1,751.10 tonnes of CO_2e

4.3 Savings — BEEP

4.3.1 Average annual savings per unit from completed retrofits by unit type — includes insulation, CFLs, showerhead, and faucet aerators unless otherwise stated[34] (See Table 7)

MHA (Manitoba Hydro Low Income Energy Efficiency Program Deep Energy/Water Retrofits)
Average annual electric energy savings per electric heated unit: 3,212 kw.h = $213 = 2.48 tonnes of CO_2e. Pipewrapping retrofits were completed on these units.

Average annual gas energy savings per gas heated unit: 707 cu.m: $208 = 1.35 tonnes of CO_2e This includes the negative interactive effects of CFLs in gas heated units. In addition, there is an average annual electric energy savings per gas heated unit from CFL retrofits: 272 kw.h. = $18 = 0.21 tonnes CO_2e.

MHA (Basic Energy/Water Retrofit)
Average annual gas energy savings per gas heated unit: 42 cu.m. = $12 = 0.09 tonnes of CO_2e. Insulation and CFL retrofits were not completed on these units.

Average annual water savings per MHA unit: 47,427 litres = $157. Savings are realized by basic

TABLE 7 Average annual savings per unit from completed retrofits by unit type

	MHA Units (MMHA Unit (Manitoba Hydro LIEEP deep Energy/ Water retrofit)		MHA Units (BMHA units (Basic energy/ water retrofit)		Privately-owned Low-income Single Family Dwellings		Private non-profit apartment Units		Sponsor managed Units	
	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas
kw.h	3,212	272	-	-	8,538	272	-	-	-	-
cu.m	-	707	-	42	-	1,106	-	42	-	42
litres	47,427	47,427	-	47,427	74,413	74,413	-	74,413	-	74,413
$	370	383	-	169	811	588	-	169	-	169
37 ones of CO_2e	2.48	1.56	-	0.09	6.58	2.32	-	0.09	-	0.09

water retrofits: toilets, showerheads, and faucet aerators.

Privately-Owned Low-Income Single Family Dwelling

Average annual electric energy savings per electric heated unit: 8,538 kw.h = $565 = 6.58 tonnes of CO_2e. Pipewrapping retrofits were completed on these units.

Average annual gas energy savings per gas heated unit: 1,106cu.m = $324 = 2.11 tonnes of CO_2e. This includes the negative interactive effects of CFLs in gas heated units. In addition, there is an average annual electric energy savings per gas heated unit from CFL retrofits: 272 kw.h. = $18 = 0.21 tonnes CO_2e.

Average annual water savings per unit: 74,413 litres = $246. Savings are realized by basic water retrofits: toilets, showerheads, and faucet aerators.

Private Non-profit Apartment

Average annual gas energy savings per gas heated unit: 42 cu.m = $12 = 0.09 tonnes of CO_2e Savings are realized by showerhead and faucet aerator retrofits. No insulation or CFL retrofits were performed on these units.

Average annual water savings per unit: 47,427 litres = $157 per year. Savings are realized by basic water retrofits: toilets, showerheads, and faucet aerators.

Sponsor Managed

Average annual gas energy savings per gas heated unit: 42 cu.m = $12 = 0.09 tonnes of CO_2e. Savings are realized by showerhead and faucet aerator retrofits. No insulation or CFL retrofits were performed on these units.

Average annual water savings per unit: 47,427 litres = $157 per year. Savings are realized by basic water retrofits: toilets, showerheads, and faucet aerators.

4.3.2 Total annual savings by retrofit type (See Table 8)

Insulation

Total annual energy savings from insulation retrofits in all 391 units: 805,316 kw.h and 60,017 cu.m = $70,915 = 733.85 tonnes of CO_2e.

CFL

Total annual energy savings from CFL retrofits in all 312 electric units: 84,708 kw.h = $5,608 = 65.52 tonnes of CO_2e.

Total annual energy savings from CFL retrofits in all 79 gas heated units: 21,449 kw.h. and -1,896 cu.m = $864 = 12.64 CO_2e.

Pipewrapping

Total annual energy savings from pipewrapping retrofits in all 312 electric units: 29,640 kw.h = $1,962 = 24.96 tonnes of CO_2e. Pipewrapping retrofits were only completed on electric hot water tanks.

Toilet[35]

Total annual water savings from toilet retrofits in all 801 units: 16,372,440 litres = $54,193.

TABLE 8 **Total annual savings by retrofit type**

	kw.h	cu.m	litres	$	tonnes of CO_2e
Insulation	805,316	60,017	-	70,915	733.85
Compact Fluorescent Lights	106,157	-1,896	-	6,472	78.16
Pipewrapping	29,640	-	-	1,962	24.96
Toilets	-	-	16,372,440	54,193	-
Showerheads	66,830	13,020	16,131,540	61,638	75.96
Faucet Aerators	26,348	5,078	4,432,325	17,905	31.90
Total savings from all retrofits	**1,034,291**	**76,219**	**36,936,305**	**213,085**	**944.83**

Showerhead[36]

Total annual energy savings from showerhead retrofits in all 746 units: 66,830 kw.h and 13,020 cu.m = $8,243 = 75.96 tonnes of CO_2e.

Total annual water savings from showerhead retrofits in all 746 units: 16,131,540 litres = $53,395.

Faucet Aerator[37]

Total annual energy savings from faucet aerator retrofits in all 746 units: 26,348 kw.h and 5,078 cu.m = $3,234 = 31.90 tonnes of CO_2e.

Total annual water savings from faucet aerator retrofits in all 746 units: 4,432,325 litres = $14,671.

4.3.3 Total annual savings from all retrofits performed

Electric Savings: 1,034,291 kw.h

Gas Savings: 76,219 cu.m

Total Energy Savings in Dollars: $90,826 ($16,734 to low-income homeowner/tenant, $71,646 to government and $2,446 to landlord)[38]

Water Savings: 36,936,305 litres

Water Savings in Dollars: $122,259 ($11,841 to low-income homeowner/tenant, $76,654 to government, and $33,764 to landlord)

Greenhouse Gas Emissions Reductions: 944.83 tonnes of CO_2e

Total NRCan Ecoenergy funds leveraged through BUILD and BEEP: approximately $500,000.

5. The Economic Multiplier Effect of Energy Efficiency

5.1 Measuring the Economic Multiplier Effect: the Oppenheim and MacGregor study

An economic multiplier effect is simply a mathematical calculation intended to quantify (at an order of magnitude level) the relative benefits of a given investment as contrasted to either alternative investments or a decision not to invest. The principle assumption is that money spent in a local economy will not simply be spent once, but in the act of spending, will spur a chain reaction as suppliers make purchases, labourers consume goods, and various taxes are levied. The multiplier is viewed as a good thing, a stimulus to economic activity that cascades through the local economy. Although all sectors of the economy create a multiplier effect, public investment (in public works, professional sports venues, or services offered) is most often the transaction placed under public scrutiny.

Recent work in the measurement of the economic multiplier effect created by energy efficiency has moved towards a "true cost accounting" approach, which is a more holistic philosophy that avoids the conventional economic practice of "externalizing" costs that are borne by society rather than the enterprise under consideration. An example of this approach, and its application specifically towards energy efficiency programs for low-income communities, is found in "Energy Efficiency Equals Economic Development" a 2008 publication by Oppenheim and MacGregor[39].

The paper looks in detail at programs that promoted energy efficiency and financial assistance for utility costs in four low-income states and calculated the economic impacts of these programs using multipliers based on regional economic data. They then recalculated the impacts based on national economic data to give a fairer point of comparison and prevent the specific economies of the sample states from skewing the general picture. This national data is summarized below as most directly relevant to the BUILD and BEEP program evaluations.

In their paper, Oppenheim and MacGregor found that for every $1 million of investment in making low-income homes more energy efficient, there were 337 jobs created and $34 million in increased economic activity. The data showed economic benefit accruing in 4 categories reproduced in the table below.

The net effect of direct investment is the economic benefit from the spending on the retrofitting of low-income homes. It would include the

TABLE 9 **Economic impacts per $1 million of investment in low-income energy efficiency**

Category of Benefit	Increased Impact ($)	Jobs Created
Net effect of direct investment	5.77 million	47
Net effect of bill savings	5.22 million	105
Effect of environmental improvement	5.74 million	36
Effect of 'non-energy' benefits	26,348	31.90
Total	**34.2 million**	**337**

economic activity unleashed by the purchase of equipment/supplies, payment of wages for the work, sales taxes paid, and similar expenditures.

The net effect of bill savings is the economic impact of the reduced utility bills to the consumer. In most instances, this would represent an increase in monthly disposable income for the household and would be spent on goods and services almost immediately. In instances where the household pays a "hot rent" inclusive of utilities, this saving could accrue to either a landlord or possibly to a government department making social assistance payments. In either of these latter instances, the saving is still recirculated within the local economy either by the landlord or in the form of reduced/diverted tax dollars.

The effect of environmental improvement is a measurement of the savings from avoiding pollution and greenhouse gas emissions associated with energy production. The list of potential harm and avoided hazards is long, and Oppenheim and MacGregor elect to conservatively value this by using the cost of carbon off-sets as a proxy economic value. While the carbon-trading markets have fallen in value since the publishing of the Oppenheim and MacGregor paper, and with the uncertainty of a successor agreement to Kyoto, this is not indicative of a falling cost of mitigation. Rather, it is symptomatic of the political expediency of externalizing these mitigation costs, and continuing to pass them to future generations for the sake of short term fiscal pain avoidance. These political developments should not undermine the validity of the Oppenheim and MacGregor calculation, as the true costs of mitigation would remain unchanged, and these figures were prepared as proxies only.

Almost half of the total economic activity stimulated comes in the form of "non-energy" benefits. Oppenheim and MacGregor use this category to include a long list of broader benefits that are not normally examined. Most of these are related to financial benefits that accrue from the reduction of poverty, on the stated assumption that reducing utility costs for low-income people proportionately reduces poverty and some of the associated social conditions. Some examples include:

- Reducing poverty will reduce some of the societal costs associated with crime.
- Reducing homelessness and transience will reduce costs for emergency shelter and mitigate the negative educational impacts of moving children.
- Increasing insulation will reduce the use of supplementary heat sources, a significant source of home fires during heating season.
- Improving comfort in the home will reduce health care costs associated with drafty conditions and/or homelessness.
- Savings of time for both the utility and the consumer in dealing with delinquent accounts, service terminations, reconnections and credit history impacts.

All of these social "non-energy" costs represent real world expenditures, which if they can be avoided, can free financial resources that can be used elsewhere. These alternative expendi-

tures spur other economic activity, and as in the other categories of benefit, contribute to the overall multiplier effect. In some instances, the savings accrues to the low-income individual, in others it accrues to a government or non-profit agency which incurs expenditures on behalf of this individual.

It should be noted that in all four categories of expenditure, Oppenheim and MacGregor report the net increase in economic activity brought about by low-income energy efficiency programs. For instance, the net effect of bill savings (more cash in pockets of consumers) is partially offset by recognizing a possible reduction in utility revenues. Similarly, the economic benefit of environmental protection would be net of the environmental impact created by manufacturing new water heaters, insulation, etc.

5.2 Applicability to the BUILD and BEEP Programs

It is a legitimate point of discussion to ask exactly how applicable the Oppenheim and MacGregor data is to the experience of the BUILD and BEEP programs. In the Oppenheim and MacGregor study, the data came from multiple jurisdictions and represented private utility company practices. BUILD and BEEP operate in a single provincial jurisdiction, interacting with a Crown corporation, and in a very different context relative to social safety nets and regulatory environments.

Initial efforts were made to perform local calculations using the same methodology and supported by Oppenheim and MacGregor. It soon became apparent that the current research project was under-resourced to work at that level of detail, and both Manitoba Hydro and various government departments were unable to provide required information for such calculations. In light of this, it is worth noting some of the major factors that would cause this multiplier effect to be greater or smaller. They include:

1. Manitoba Hydro has a higher proportion of energy generated using hydroelectric technology rather than coal-burning methods. At the same time however, energy saved locally in Manitoba is eligible for export into the grid further south, so the environmental protection impacts should be broadly applicable.
2. The American and Canadian economies are not identical, particularly since the onset of the financial crisis, so the use of the Regional Input-Output Modelling System methodology might generate somewhat different results. This would relate primarily to the pattern with which secondary and tertiary expenditures are made.
3. American healthcare is substantially less efficient than the Canadian single-payer system in terms of both percentage of Gross Domestic Product and per capita expenditures. Some of the health related "non-energy" savings would therefore be reduced.
4. Much of the BUILD and BEEP work has been done in homes where rents are inclusive of utilities, meaning that the primary beneficiary of reduced costs is often the Province of Manitoba. This doesn't necessarily reduce the size of the multiplier effect, but it might make it less specifically effective as a poverty reduction tool (depending on how government allocates those savings).
5. None of the employment or crime reduction calculations conducted by Oppenheim and MacGregor are based on a training program/social hiring model utilized by BUILD and BEEP. The targeting of hard-to-employ individuals at risk of involvement with the criminal justice system will result in a much higher benefit, although this is partially offset by the additional social costs of employment. Some basic "social return on investment"

figures were presented in a previous section of this report.

6. Manitoba's climate is much colder than the sample states examined by Oppenheim and MacGregor, making the consequences of energy inefficiency both more expensive and potentially more dire. In this sense, some of the savings may be under reported.
7. Manitoba has placed restrictions on service termination for utility arrears in the winter months, so costs associated with terminations and reconnections would be less. There would also likely be less health-related expenditures associated with service terminations.
8. The BUILD and BEEP programs are narrow in scope, constrained by specific program criteria. The general retrofit activities are comparable, however the profile of target households may result in difference in housing types as well as household composition.

The Oppenheim and MacGregor multiplier effect of 34 times the level of investment should not be viewed as a precise measurement or entirely applicable yardstick. For every factor that mitigates to a higher multiplier effect, this is another factor pointing towards a dampening effect. As a broad assumption, it can be asserted that the multiplier effects of direct investment, utility savings and environmental improvement are likely analogous (at least at the order of magnitude level).

Given the more efficient healthcare system and more comprehensive social safety net in Canada, it might be fair to reduce the impact of "other non-energy" savings. If we arbitrarily reduced this category by 50% in light of the above considerations, the overall multiplier effect drops from 34 times the level of investment to approximately 25.5 times. Even at this reduced level, the multiplier effect from investment in low-income energy efficiency is more than twice as great as the effect from investment in a manufacturing plant (reported by Oppenheim and MacGregor as 11.4 times the level of investment)[40].

The discussion above really underscores the need for detailed research using Manitoba data and utilizing the detailed, full-cost accounting approach employed by Oppenheim and MacGregor. Such a research project would be able to more accurately reflect the unique context of Manitoba, showing where current policies and practices perhaps make the low-income consumer's situation somewhat less urgent, while at the same time, demonstrating the larger potential savings dictated by our northern climate. Manitoba Hydro, as a committed stakeholder in the research results, may be the organization best positioned to initiate such a project.

Despite the need for more detailed and precise analysis, the implications of the Oppenheim and MacGregor research are still applicable. When viewed from a full-cost accounting perspective, investment in energy efficiency for low-income households is not only a good investment, but also a potential engine for economic development that can generate both fiscal returns and poverty reduction impacts. The additional social hiring dimension provided by the BUILD and BEEP models adds a third "bottom line."

6. Expansion and Replication

6.1 Opportunities for Expansion of this model in Manitoba

Key informants were interviewed to identify criteria that in their opinion would need to be met in order for BEEP and BUILD to successfully expand their operations within and outside their current geographic area of focus.

One key informant suggested that communities within approximately one hour (approximately 80 km) outside of Winnipeg could be serviced efficiently and effectively by BUILD while it continues to operate out of Winnipeg. This expansion would however impose on BUILD extra travel and administrative costs associated with working in units at a greater distance from its centre of operations. Communities over an hour outside of Winnipeg might be more efficiently serviced by creating a new social enterprise that replicates BUILD's CED model within the community.

BEEP has expanded its operations up to approximately an hour and forty-five minutes outside of Brandon after completing all the MHA units within Brandon. They charge more for extra travel and administrative costs associated with working in units at a greater distance from their centre of operations. According to BEEP staff, the transition has gone fairly smoothly and the surrounding communities have been very receptive to the work they have been completing in the community.

Since inception, BUILD and BEEP have completed energy and water retrofits in privately owned low-income housing units that are eligible for Hydro's LIEEP, direct managed MHA units, and a limited number of non-profit housing units where low-income tenants pay the utility bill. There are also some sponsor managed and non-profit housing units where only water retrofits have been completed. Beginning in the 2010/2011 operating year, BUILD and BEEP began working strictly in direct managed MHA units. Arrangements were made so that these units could receive energy efficiency upgrades even though the beneficiary of the energy efficiency savings is, in some cases, the Province of Manitoba and not the low-income renter.

According to data provided by Manitoba Housing, there are close to 13,000 direct managed MHA units in Manitoba. Of the approximately 7,600 units located within Winnipeg, BUILD has completed energy retrofits in approximately 500 and water retrofits in approximately 3,700, leaving approximately 3,400 which may be in need

of retrofits. Furthermore, there are over 800 direct managed units within about an hour of Winnipeg which BUILD could service efficiently and effectively while operating out of Winnipeg. There are over 700 direct managed MHA units in Brandon and over 400 within about an hour of Brandon. BEEP has completed retrofits in all that required them. Furthermore, BEEP has completed retrofits in all other units in need within the Westman region and will begin to work in units in the Central region that are within a reasonable distance from its centre of operations in the 2011/2012 operating year. Eventually, both BUILD and BEEP will require access to other types of units if they are to continue operations. This need is more urgent for BEEP than for BUILD given that BEEP has completed retrofits in nearly all direct managed housing units within a reasonable distance from its centre of operations.

Hydro's Lower Income Energy Efficiency Program (LIEEP) provides qualifying homeowners with free energy efficiency upgrades. To qualify for the LIEEP, Hydro customers must have a household income (before taxes) that falls below the threshold indicated by the Low-income Cut-off -125 (LICO-125[41]) in addition to meeting other basic criteria. According to Hydro's 2009 Residential Energy Use Survey Report[42], the residential basic population estimated to fall below that threshold is approximately 105,700 (24% of all residential basic customers). Of these customers, approximately 78,800 own their dwellings, which is another basic criterion that must be met to qualify for the LIEEP. Furthermore, 2,600 Hydro customers, or 2.5% of all Hydro customers with eligible household incomes, have applied to participate in Hydro's Lower Income Energy Efficiency Program (LIEEP). That leaves at least 76,200 customers who own their dwellings in Manitoba who could benefit from participation going forward. It is estimated that there could be up to 50,500 of these units that could be serviced by BUILD and BEEP while operating out of their current locations[43]. A small number of these customers may not be eligible because their utility bills are covered by EIA. Furthermore, not all of these units will be in need of retrofits. For example, according to the 2009 Survey Report, approximately 15,700 customers who own their dwellings (excluding apartments) describe their overall level of insulation as either fair or poor. Another 33,000 describe their overall level of insulation as average. It should be noted that these figures are based on the customers own determination of the level of insulation in their dwelling which may not be as accurate as that of a qualified professional conducting an energy efficiency review.

Staff have identified a couple of challenges that need to be addressed before BUILD and BEEP can successfully begin working in private units again. First, coordinating the administrative requirements for work that was completed in private units was found to be extremely complex and time consuming for BUILD and BEEP staff with no compensation from Hydro. Second, BUILD and BEEP staff indicated difficulty finding private units that are eligible for Hydro's LIEEP despite advertising and outreach efforts for which they only received compensation from the Province. To be eligible, participants must be a homeowner with a total household income that falls below the LICO-125 and the household cannot be on EIA. Hydro also reviews proposals for work in direct managed, sponsor managed, and non-profit housing units and determines eligibility on a case by case basis. Since inception, BUILD and BEEP have completed retrofits in only 159 and 16 eligible private units respectively. BUILD and BEEP staff indicated a preference that Hydro advertise its LIEEP and then pass the eligible applicants on to BUILD and BEEP, since Hydro is most familiar with it. Third, there are some who are concerned about potential risks associated with having trainees with criminal records working in private housing units. BUILD staff suggest that risk has been minimized through job site supervision and that there have only been

a few issues which are somewhat comparable to issues arising with employees the private sector.

In addition to direct managed MHA units and privately owned low-income housing units, there are approximately 3,000 sponsor managed MHA units in Manitoba, according to data provided by Manitoba Housing. BUILD has not completed retrofits in any of the approximately 2,600 units located within Winnipeg or the 100 located within an hour of Winnipeg that may be in need of retrofits. There are approximately 45 sponsor managed units located within Brandon and BEEP has completed water retrofits in all of them. There are up to 80 more sponsor managed units within an hour of Brandon that BEEP has not completed any retrofits in. Sponsor managed units are not typically eligible for Hydro's LIEEP because they are occupied by renters and the utility bill savings benefit the Province of Manitoba, rather than the low-income tenant, in cases where the bill is paid by EIA or included in the cost of rent. Savings to EIA are considered a transfer of funds from Hydro to the Province of Manitoba, which is contrary to the Manitoba Hydro Act. However, Hydro will review proposals for work in sponsor managed units and determine eligibility on a case by case basis.

There are also approximately 15,600 non-profit housing units in Manitoba, according to data provided by MHA. Approximately 10,000 of these units are located within Winnipeg and BUILD has completed water retrofits in approximately 270 and energy retrofits in 35 of them. There are also over 1,100 non-profit units within an hour of Winnipeg that BUILD has not completed any retrofits in. There are nearly 650 non-profit units within Brandon and BEEP has completed water retrofits on approximately 235 of them. There are also over 900 non-profit housing units within an hour of Brandon that BEEP has not completed any retrofits in. Although these units are occupied by low-income tenants, they are not typically eligible for Hydro's LIEEP because they are renters and the utility bill savings benefit the Province of Manitoba or the non-profit landlord, rather than the low-income tenant, in cases where the bill is paid by EIA or included in the cost of rent. However, Hydro will review proposals for work in non-profit housing units and determine eligibility on a case by case basis. For example, BUILD has worked in 35 non-profit rental units where the beneficiaries of bill savings were low-income renters.

Expansion into all the above units will require stakeholders to coordinate efforts in making these units eligible for Hydro's LIEEP. In addition to direct managed MHA units, there are up to approximately 50,500 privately owned dwellings that are currently eligible for the LIEEP and up to approximately 15,400 more sponsor managed and non-profit units within an hour of Winnipeg and Brandon that could benefit from energy efficiency upgrades. Again, it should be noted that not all units will be in need of retrofits. However, given the above demonstrated economic, social and environmental benefits that can be generated through BUILD and BEEP's training and energy efficiency activities, there is potentially much to gain by expanding into those units that do require retrofits.

According to BUILD staff, the organization regularly receives applications for employment and there is a clear demand in the community for the opportunity that BUILD provides to individuals with multiple barriers to employment. This suggests that BUILD could meet an increased demand for labour that could come with expansion. BEEP recruits trainees primarily through Westbran. Not all Westbran clients are interested in pursuing the training offered at BEEP and the organization has had difficulty operating at full trainee capacity. According to ETT staff, there have been some discussions regarding BEEP undertaking some of its own assessment and intake; however, there are challenges around its capacity to provide the additional supports and resources for trainees who have not benefitted from the pre-employment training that

TABLE 10 **Number of Potential Units to Expand into**

Unit Type	In Winnipeg and surrounding area	In Brandon and surrounding area	In Manitoba
Direct Managed	8,400 *(4,200)*	1,100 *(1,100)*	13,000 *(5,300)*
Private owners*	At least 47,250 *(159)*	At least 3,309 *(16)*	76,200 *(175)*
Sponsor Managed	2,700	125	3,000
Private Non-Profit	11,100 *(35)*	1,550	15,600
Total	**69,450 *(4,394)***	**6,084 *(1,116)***	**107,800** ***(5,475)***

SOURCE: Hydro; Manitoba Housing; BUILD; BEEP, 2011
In italics: Number of units with completed retrofits
*In addition, there were homes upgraded through LIEEP contractors but these were outside of the scope of this study and therefore not included in the data provided.
**Not all units will be in need of retrofits.

Westbran provides. ETT has recently provided BEEP with funding to advertise locally and accept applications directly, which has generated a greater number of applicants. However, applicants are still referred to Westbran where they are assessed for eligibility and suitability. Some are able to enter BEEP immediately, while others are directed to Westbran to develop basic employment-ready skills.

6.2 Opportunities for Replication of this model in Manitoba

This section outlines suggested criteria that would improve the likelihood of successfully replicating the CED model employed by BUILD and BEEP in another community in Manitoba, as identified by key informants interviewed.

According to BUILD and BEEP staff, a recommended prerequisite is a local organization(s) with the combined ability to effectively and efficiently manage a social enterprise, perform energy efficiency retrofits, and provide access to resources, supports, and training in hard skills, soft skills, and life skills to a minimum of approximately twelve trainees at any given time. The resources and supports within the community (e.g. driver's license training program or financial management training) should be sufficient to appropriately respond to the needs of local individuals with multiple barriers to employment that are hired as trainees. Existing organizations should be identified to carry out the above activities before a new organization is created. It is important to be mindful that there is a critical mass of organizations in Winnipeg offering resources and supports with an understanding of the CED model. This may not be the case in other communities. While larger communities may have access to a greater supply of resources and supports, a key informant in Brandon suggested that there can be a "closeness" and "spirit of cooperation" between organizations in smaller communities, which can facilitate a successful response to the needs of local trainees.

According to BUILD and BEEP staff, an optimal replication would require three crews and include approximately twenty three and a half full time employees: one journeyman plumber, two journeyman carpenters (journeymen provide hard skills training for high-skilled tasks and ensure a high quality product), four non-trainee crew members, twelve trainees (for a minimum of six months at a time), two trainee support staff (e.g. social worker, driver's education instructor, soft skills and life skills coordinator), one half time bookkeeper, one project manager, and one executive director.

A sufficient number of housing units in need of retrofits, stocked relatively close together, and eligible for Hydro's LIEEP would serve as a basis to make replication sustainable and to attract and retain professional support staff. According to BUILD and BEEP staff, a social enterprise performing only energy retrofits would require

access to approximately 175 small units (row houses, duplexes, triplexes) or at least 90 single family dwellings annually for at least three years. A social enterprise performing only water retrofits would require approximately 2,400 high rise, or 1,600 non-high rise units or single family dwellings annually for at least three years. These figures are conservative estimates based on the experience of BUILD and BEEP. Staff suggest it would take a new social enterprise approximately four months to produce at this pace.

According to data provided by MHA, as of February 2011 there are few, if any, communities in Manitoba with a housing stock that could support an optimal replication as described above. Eligible units are currently limited to direct managed MHA and privately owned low-income units and Churchill is the only community with a sufficient stock of direct managed MHA units (337). However, it is not clear that all these units are in need of retrofits. This challenge could be addressed by expanding eligibility for Hydro's LIEEP to include sponsor-managed and non-profit units. For example, Dauphin has approximately 250 direct managed MHA units and 280 non-profit units for a total of approximately 530 housing units. Other communities that may be in a position to host a replication if eligibility were expanded include: The Pas, Swan River, and Winkler, which would have approximately 303, 332, and 335 housing units respectively. Expansion of activities within an hour outside of these communities may also help increase the housing stock to a size that would be sufficient to support an optimal replication. Furthermore, there are up to approximately 25,600 privately owned low-income housing units outside of Winnipeg which may add to the housing stock in these communities[44]. It should be noted that not all of these units will be in need of retrofits.

Another way to address the challenge of insufficient units would be to replicate with a less than optimal operation. According to BUILD and BEEP staff, with one crew operating instead of three, a social enterprise performing only energy retrofits would require approximately 58 small units (row houses, duplexes, triplexes), or at least 30 single family dwellings annually for at least three years. A social enterprise performing only water retrofits would require approximately 800 high rise, 533 non-high rise units or 533 single family dwellings annually for at least three years. With a smaller operation, staff suggest that it becomes critical that a sufficient number of partner organizations exist within the community to help manage the social enterprise and ensure trainees have access to resources, supports, and training in hard skills, soft skills, and life skills.

BUILD and BEEP staff suggest that successful replication requires access to both sufficient funding and guaranteed contract work, ideally with governments, crown corporations, or government-funded agencies based on a fee for service model. According to BUILD staff, without contract work, the social enterprise risks becoming micro-managed by its funder while losing flexibility to make changes to its operations in the most efficient and effective way. On the other hand, government grant funding is critical to ensuring the social enterprise can provide trainees with a comprehensive package of resources, supports, and training. Government subsidization can be justified given that the training of individuals with multiple barriers to employment produces significant benefits to the trained individual, their family, and the broader community. These benefits can include lower social assistance payments and a reduction in social problems like crime, residential turnover, school absenteeism, family violence, and addictions.[45]

It was recommended that any replication provide trainees with a wage rather than a living allowance or another form of remuneration for their training and employment. According to BUILD and BEEP staff, there is a sense of pride and accomplishment as well as a shift in mindset that comes with earning a paycheque as op-

posed to receiving a living allowance or government funding for on-the-job training. This can help motivate trainees to succeed, particularly those who have never experienced paid employment before.

Approximately 70% of BUILD and BEEP's revenues come from contracted government work, and approximately 30% come from government funding. BUILD and BEEP staff suggest that an optimal replication of the CED model they employ would require a similar breakdown of revenue sources totalling approximately $800,000 plus the cost of materials annually. In remote and northern communities, there may be extra costs associated with the transport of materials. Furthermore, there may be extra costs accompanying replication in remote and northern communities for mould remediation and heat recovery ventilators.

A key characteristic of the CED model employed by BUILD and BEEP is that it targets local individuals with multiple barriers to employment and prepares them for further education/training or sustainable employment. BUILD and BEEP staff indicate that successful replication will require a screening process that will help ensure this clientele is hired and trained. They suggest that this could be achieved with a screening process that filters in applicants who lack qualifications that are typically required to achieve sustainable employment upon graduation (e.g. driver's license, grade twelve diploma, formal work history, clean criminal record). Staff emphasize that it will be critical for trainees to have access to the resources, supports, and training that enable them to develop these qualifications and prepare for independent sustainable employment. Furthermore, staff suggest that all partners in the replication should be aware that turnover is likely to be relatively high and production low with this target clientele, compared to a clientele with fewer barriers to employment. There will be a certain amount of learning that occurs on the job site regarding work ethic, appropriate behaviours, and technical skill development, which can impact the time it takes to complete a job.

Finally, it was suggested that successful replication would depend on there being capacity within the community to absorb program graduates into the workforce or into further education/training programs. After six months in the program, some graduates will be prepared for sustainable employment and this will require a sufficient level of demand for their labour within the community. Other trainees may need more than six months to prepare for independent employment. These trainees would benefit from the existence of second stage employers within the community who understand the barriers these graduates face and who can continue to provide the level of support they require. Alternatively, some trainees could be given the option to remain in the program beyond six months until they are in a better position to enter directly into independent employment, which would reduce the need for second stage employers. A third option would be for the Province of Manitoba to create a Labour Market Intermediary that employs case-workers who can provide graduates with ongoing support as they transition into employment. A fourth option would be to develop a screening process that takes in a less challenging demographic. This would increase the likelihood that graduates would be in a position to move directly into independent employment. However, it removes one of the key features of the CED model which is, that it tends to target interventions at individuals with multiple barriers to employment.

7. Financial Sustainability

7.1 The Funding Need

In its 09/10 operating year, there were three main partners supporting BUILD and BEEP's efforts: the Province of Manitoba (Innovation, Energy and Mines (IEM), Entrepreneurship, Training and Trade (ETT)), Manitoba Housing Authority (MHA), and Hydro (MH). BUILD operated with a budget of approximately 2.4 million dollars and BEEP operated with a budget of over 918,000 dollars. Approximately 30% of BUILD and BEEP's revenues came from ETT, while the remainder came from MHA on a fee for service basis.

John Baker of Aperio Inc. has researched the added cost incurred by social enterprises with a social hiring component. Aperio Inc. is a management consulting firm serving private and non-profit organizations with a social purpose. His experience suggests that, on average, the operating costs of social enterprises with a social hiring component are 20% higher than similar companies in the private sector. This figure is based on an analysis of social enterprises in the construction industry with approximately 70% of employees experiencing barriers to employment. Costs may be higher or lower than this figure depending on the target clientele. An analysis of BUILD and BEEP's actual expenditures in the 09/10 operating year concluded that approximately 28.5% of BUILD's expenses and 23.5% of BEEP's expenses were training-related as opposed to contractor-related.

The analysis of actual expenditures also suggests that if BUILD and BEEP operated without a social mission they would need to charge approximately five percent and eighteen percent more per unit respectively than they currently charge plus materials. This suggests that a degree of cross-subsidization exists as a portion of ETT's funding contributes to contractor-related outcomes, it is inevitable that a certain percentage of training dollars will generate production value. If BUILD and BEEP continued to operate with a social mission, but without ETT funding to cover training-related expenses, they would need to charge approximately forty-five percent and forty-eight percent more per unit respectively than they currently charge plus materials. BUILD and BEEP indicate that they would not be able to operate with a social mission in the private market without someone funding their training-related costs.

7.2 The Funding Challenge

As suggested above, ongoing government grant funding will likely be critical to BUILD and BEEP's

financial sustainability. There is some concern among government partners that employment outcomes are not sufficient to justify ETT's continued funding, particularly given the relatively high per client costs of each program. ETT is accountable to Human Resources and Skills Development Canada for the delivery of its funding to these programs. According to ETT staff, continued funding will require that these programs meet their training objectives. A target combined employment and education/training rate has been set at 60% of all BUILD and BEEP trainees within a given contract. According to data provided by ETT, as of 2011 BUILD and BEEP's actual average rates are 50% and 49% respectively. However, when considering only those trainees who completed the full six months training program, BUILD and BEEP's average rates are 91% and 86% respectively.

There is no easy way to reduce the high per client costs associated with successfully preparing a multi-barriered clientele for further education/training or sustainable employment. According to BUILD and BEEP staff, a one hundred percent wage subsidy is justified because trainees are not employable when they enter the program. Furthermore, they require access to a comprehensive and integrated package of resources and supports which demands additional funding. Therefore, it is difficult to lower per client costs without straying from the CED model and hiring a clientele with fewer barriers.

Cost effectiveness may be improved if trainees were to receive a living allowance instead of a wage. However, as mentioned previously, BUILD and BEEP staff indicate that there is a sense of pride and accomplishment as well as a shift in mindset toward a wage for work mentality that comes with earning a paycheque as opposed to receiving a living allowance or government funding for on-the-job training. According to BUILD and BEEP staff, although it would cost less, alternative forms of remuneration, such as a living allowance, could have a negative impact on education/training and employment outcomes.

Given that BEEP's trainees are hired from an employment training centre where they develop basic employment-ready skills, one might expect BEEP's employment and education/training rate to be relatively higher than BUILD's. One explanation could be that Winnipeg's labour market may be in a better position to absorb program graduates than is the case in Brandon. The lack of second stage employers for BEEP to develop partnerships with has been noted above. Furthermore, ETT staff in Brandon are concerned that BEEP trainees acquire only a narrow slice of a trade in six months despite being prepared to develop a broader skill set, which limits potential employment opportunities upon graduation. BEEP began offering courses to broaden the scope of learning and potential employment opportunities. Furthermore, with designated trainers onsite, BEEP has now added an apprenticeship tier to its program. It has also begun the process of embedding its energy efficiency activities into a broader program providing training in affordable housing construction. This will help increase the training value of the program. Given the clientele BUILD hires, staff suggest it would be difficult to expand the scope of learning within six months. Instead, the objective is to develop some basic skills so trainees can go on to achieve a fuller learning of a trade. Therefore, they emphasize the importance of soft skills and life skills training over hard skills training.

7.3 Alternative Funding Sources

According to BUILD and BEEP staff it can be difficult to find employment development funders who will fund activities that go beyond hard skills development (e.g. cultural development workshops, breakfast/lunch programs, driver's licensing programs). BUILD cut its breakfast/lunch program because it could not secure continued funding for it. Staff feel this is an important piece of the full package of supports and resources needed to prepare trainees to succeed

as individuals and productive employees. ETT funds approximately half the driver's licensing program, yet staff note it is very difficult for graduates to find employment in the trades without a driver's license. Given the range of economic, social, and environmental benefits generated by BUILD and BEEP, other provincial departments may have a mandate to contribute funding for these activities, including Advanced Education and Literacy and Justice.

BUILD recently received federal funding that will cover some of these activities and approximately double its program size over the next few years. As a result, ETT's contribution has been reduced to approximately 15% of total revenues. According to BUILD staff, this funding is particularly helpful given that ETT has frozen its funding since the 08/09 operating year despite increasing costs associated with minimum wage, journeyman wage rates, and utility bills. BEEP has received federal funding in the past for its water retrofit activities.

Other than the three levels of government, organizations like the United Way of Winnipeg and Winnipeg Foundation may have a mandate to fund BUILD and BEEP's training-related costs. However, these funding sources are likely in a position to provide only supplemental funding. Furthermore, BUILD staff suggest that partnerships with these types of funders would demand additional resources to carry out associated administrative requirements.

BUILD and BEEP's contractor-related costs could be covered by applying a charge to the energy and water bill of a retrofitted customer. The expectation is that the retrofits would generate a reduction in utility bills which would outweigh the financing charges. Alternatively, the Public Utilities Board (PUB) could increase the gas and electricity rates by a very small percentage and set it aside for Hydro's LIEEP. Currently, all rate payers contribute to Hydro's Power Smart program, but it is likely accessed primarily by non low-income rate payers. Low-income rate payers, in effect, subsidize non low-income rate payers. By accessing the rate base, the PUB can help ensure that low-income customers can benefit from energy retrofits and savings.

8. Conclusions and Recommendations

8.1 Financial Sustainability

BUILD and BEEP's financial sustainability depends on ongoing government grant funding. These social enterprises would face significant challenges operating with a social mission in the private market without grant funding for their training-related costs. It is recommended that the Province continue to fund BUILD and BEEP's training related costs while working with program partners to improve cost effectiveness.

There is some concern among government partners that employment outcomes are not sufficient, particularly given the relatively high per client costs of each program. Interviews with informants indicate that there is no apparent easy way to reduce the per client costs associated with successfully preparing a multi-barriered clientele for further education/training or sustainable employment, particularly without straying from the CED model and hiring a clientele with fewer barriers. According to BUILD and BEEP staff, attempts to improve the cost effectiveness of these programs by replacing wages with lower-cost alternatives, such as a living allowance, may have detrimental impacts on education/training and employment outcomes and is not a recommended course of action.

ETT staff in Brandon are concerned that BEEP graduates face limited employment opportunities because they only acquire a narrow slice of a trade during their training period. They suggest that BEEP trainees are prepared to develop a broader skill set while at BEEP which would increase the training value of the program. BEEP has recently added an apprenticeship tier to its program to help accomplish this. It has also begun to embed its energy efficiency activities into a broader program providing training in affordable housing construction which demands a broader skill set.

BUILD and BEEP's contractor-related costs could be covered by applying a charge to the energy and water bill of a retrofitted customer. This could be accomplished through amendments to the Manitoba Hydro Act that give Hydro the mandate to finance energy efficiency retrofits by applying a charge to the utility bill of a retrofitted customer and that give Hydro the mandate to work with social enterprises who hire people that are under-represented in the trades to complete the retrofits.

The expectation is that the retrofits would generate a reduction in utility bills which would outweigh the financing charges. On-bill financing

would enable Hydro to remove LIEEP's eligibility requirements that currently prevent retrofits from being completed on houses where renters and social assistance recipients live. Alternatively, the Public Utilities Board (PUB) could increase the gas and electricity rates by a very small percentage and set it aside for Hydro's LIEEP. Currently, all rate payers contribute to Hydro's Power Smart program, but it is accessed primarily by non low-income rate payers. Low-income rate payers, in effect, subsidize non low-income rate payers. By accessing the rate base, the PUB can help ensure that low-income customers can benefit from energy retrofits and savings.

8.2 Importance of the Community Economic Development Model

BUILD and BEEP's Community Economic Development approach to employment development integrates both economic and social objectives. This holistic approach has been held up as an improvement over existing practices in traditional training programs which focus on hard skills training. The comprehensive and integrated package of resources and supports allows trainees to develop hard skills, soft skills, and life skills while addressing the multi-faceted and inter-connected barriers related to poverty and social exclusion that they face.[46]

Trainees benefit from skill development and knowledge in basic energy and water efficiency, new employment income, a driver's license, personal identification, a bank account, access to financial management courses, training in basic literacy and numeracy, counselling, and a significant improvement in their overall level of employability. BUILD trainees have further benefited from access to additional resources and supports including parenting courses, a breakfast and lunch program, and cultural programming.

According to BUILD and BEEP staff it can be difficult to find employment development funders who will fund activities that go beyond hard skills development. However, programs that employ a CED approach to employment development have been shown to be effective in helping trainees with multiple barriers successfully prepare for further education/training or sustainable employment. Without it, many trainees would be at risk of falling back into unemployment, poverty, and destructive patterns.[47]

Government funding toward BUILD and BEEP's training-related costs should be sufficient to ensure they can employ a CED approach to employment development which goes beyond training in hard skills to include training in soft skills and life skills, including cultural reclamation programming for trainees who have been affected by colonial policies.

8.3 Turnover

A relatively high turnover rate in both programs should be expected given the socio-economic characteristics of trainees, compared to programs that target a clientele with fewer barriers. Many of the challenges that contribute to trainee turnover (relocation, health issues, personal/family issues etc.) are the kinds of challenges that individuals and families living in poverty are more likely to face. A relatively higher turnover rate at BUILD when compared to BEEP can also be expected given that BEEP's trainees are hired out of an employment training centre where they have had an opportunity to acquire basic employment-ready skills.

To date, it has been difficult to influence turnover through the assessment and intake process without simply hiring trainees with fewer barriers. Some trainee barriers will develop after intake while others will only be revealed over time as the trainee progresses through the program. Furthermore, success depends largely on the trainee's readiness to succeed which may not be accurately assessed at intake.

BUILD's attempt to strengthen its assessment and intake process by introducing a one-month probationary period seems appropriate, particularly since turnover is concentrated in the first

month. This gives staff and trainees an opportunity to assess trainee barriers and readiness over the course of a month before they formally enter the program. An alternative to BUILD covering the cost of trainee wages during the trial period would be for ETT to pay trainees a living allowance during that time rather than a full wage.

8.4 Accessing and Sustaining Employment Outcomes

Given the multiple and varying barriers of BUILD and BEEP trainees, there are some who may require more than six months before they are prepared to succeed independently in further education/training or employment. BUILD and BEEP staff suggest that program partners explore options for introducing flexibility into the length of the training period by allowing trainees to remain in the program for up to twelve months, as needed. The expectation is that graduates would be more likely to succeed independently in further education/training programs and/or find sustainable employment as they will be able to demonstrate a stronger history of work experience and they will have acquired more of the qualifications that employers in the trades are looking for.

An alternative to extending the training period would be to ensure that graduates have access to ongoing resources and supports through second stage employers. This could be accomplished by exploring opportunities for increasing the number, strength, stability, and growth of social enterprises in Winnipeg and Brandon to provide graduates with supportive employment opportunities.

Given fewer second stage employers in Brandon, BEEP graduates in particular would benefit from having access to a case-worker based system, such as through the establishment of a Labour Market Intermediary. BUILD graduates would also benefit from having access to these case-workers as they won't all be employed by second stage employers. Case-workers employed by the Labour Market Intermediary would be deployed to work at BUILD and BEEP/Westbran to provide graduates and their new employers with ongoing access to the resources and supports they need to succeed on the job.

Furthermore, many graduates return to BUILD for follow-up resources and supports, which these case-workers could provide. This would help ease the burden of existing staff who have limited time to follow-up with returning graduates.

Despite being prepared for sustainable employment, staff report that graduates face ongoing barriers to accessing employment opportunities which are related to discriminatory and nepotistic hiring practices within the trades sector. BUILD staff report that graduates with criminal records are often ruled out by employers. They suggest that employers should instead conduct a risk assessment to determine which positions are suitable for a graduate given their particular criminal offense. Case workers employed by the Labour Market Intermediary could help break down these barriers to employment by developing stronger relationships with existing and potential employers.

8.5 Tracking Outcomes

Program outcomes related to training and energy and water efficiency upgrades need to be tracked to document the successes, and to identify what is or is not working and what needs to be improved. Some outcomes require tracking during the training period, while others require tracking upon graduation. Some important outcomes, particularly those generated by training in soft skills and life skills, cannot easily be measured. These will need to be tracked qualitatively. It is not clear that program partners have been working together to identify which outcomes need to be tracked and who is responsible for tracking them.

ETT has asked BUILD and BEEP to develop Skills Passports which document trainee accomplishments. However, staff report that it is challenging to find the time to keep these Skills

Passports up to date. ETT also requires BUILD staff (and will begin to require BEEP) to follow-up with graduates after three months to track their outcomes. This can be difficult and time consuming without access to current phone numbers or addresses. If BUILD and BEEP are going to continue to be responsible for tracking these outcomes, additional resources may be required to ensure there is capacity to do it effectively. These responsibilities could be carried out by case-workers employed by a Labour Market Intermediary.

Building upon existing Skills Passports, program partners should identify all program outcomes that need to be tracked (including outcomes generated by soft skills and life skills training) and develop a plan for tracking them. Resources should be made available to ensure there is capacity to implement this process through a Labour Market Intermediary.

8.6 Expansion

One key informant suggested that communities within approximately one hour outside of Winnipeg and Brandon could be serviced efficiently and effectively by BUILD and BEEP while operating out of their current locations. There are approximately 4,200 direct managed units that BUILD could service by expansion. There are over approximately 50,500 private dwellings in Manitoba that are currently eligible for the LIEEP and that BUILD and BEEP could service by expansion[48]. Furthermore, there are up to approximately 15,400 sponsor-managed and non-profit housing units where low-income people live that could benefit from energy efficiency upgrades through Hydro's LIEEP if eligibility was expanded. It should be noted that not all of these units will be in need of retrofits. Expansion into the above units will require stakeholders to coordinate efforts toward making these units eligible for Hydro's LIEEP. Given the above noted economic, social and environmental benefits that can be generated through BUILD and BEEP's training and energy efficiency activities, there is significant potential benefit to be gained by having program partners explore opportunities for expansion by increasing the types of units that are eligible for Hydro's LIEEP.

8.7 Replication

The feasibility of replicating the CED model employed by BUILD and BEEP within Manitoba could be further researched. This research suggests that a successful replication should consider the following:

A recommended prerequisite is a local organization(s) with the combined ability to effectively and efficiently manage a social enterprise and perform energy efficiency retrofits. The organization should also have the capacity to provide access to resources, supports, and training in hard skills, soft skills, and life skills to a minimum of approximately twelve trainees at a time with multiple barriers to employment. It is important to be mindful that there is a critical mass of resources and supports in Winnipeg that understand and complement the CED model, which may need to be developed in other communities.

The local organization would require sufficient guaranteed contract work, ideally with governments, crown corporations, or government-funded agencies, as well as access to government grant funding, to support an optimal sized operation of approximately twenty three and a half full time employees. This includes twelve trainees earning a minimum wage for at least six months at a time. To reach the optimal size, total funding and revenues need to equal approximately $800,000 plus the cost of materials annually, with approximately 30% covering training-related costs and 70% covering contractor-related costs, depending on the type of clientele hired. There may be extra costs accompanying replication in remote and northern communities.

There needs to be a sufficient number of housing units in need of retrofits, stocked relatively

close together, and eligible for Hydro's LIEEP in order to make replication worthwhile and to attract and retain professional support staff. A social enterprise performing only energy retrofits would require access to approximately 120 large units, 175 small units, or 90 single family dwellings annually for at least three years. A social enterprise performing only water retrofits would require approximately 2,400 high rise, 1,600 non-high rise units or single family dwellings annually for at least three years.

There are few, if any communities in Manitoba with a housing stock that could support an optimal replication as described above. To address this challenge, one option would be to expand eligibility for Hydro`s LIEEP to include sponsor-managed and non-profit units. This could lead to more communities with a housing stock that is sufficient to support an optimal replication.

Another option would be to replicate with a less than optimal replication. With one crew instead of three, a social enterprise performing only energy retrofits would require approximately 40 large units, 58 small units, or 30 single family dwellings annually for at least three years. A social enterprise performing only water retrofits would require approximately 800 high rise, 533 non high rise units, or 533 single family dwellings annually for at least three years. With a smaller operation, it becomes critical that a sufficient number of partner organizations exist within the community to help manage the social enterprise and ensure trainees have access to resources, supports, and training in hard skills, soft skills, and life skills.

It is important that there be sufficient capacity within the community to absorb graduates into the workforce or into further education/training programs in order for the cost saving and social benefits to be realized. This should include a sufficient amount of second stage employers who can continue to provide graduates with access to ongoing supports and resources. If these are absent or insufficient in number, one option would be to implement a more flexible model that allows some trainees to stay longer than six months. Alternatively, through the use of the Labour Market Intermediary model, case-workers could be placed within the social enterprise to provide graduates and their new employers with ongoing access to the resources and supports they need to succeed on the job.

It should be understood that turnover is likely to be relatively high and production low, given the characteristics of trainees with multiple barriers to employment. Furthermore, there will be a certain amount of learning occurs on the job site regarding work ethic, appropriate behaviours, and technical skill development, which can impact the time it takes to complete a job.

8.8 Overall Conclusions

Return on Investment in BUILD and BEEP's training mandate:

Given an annual net cost per BUILD graduate of $29,014 and annual costs recovered per graduate of $10,762, the Province can expect its full cost per BUILD graduate that remains employed to be recovered in just over approximately two and a half years. Given an annual net cost per BEEP graduate of $22,826 and annual costs recovered per graduate of $10,745, the Province can expect its full cost per BEEP graduate to be recovered in just over two years.

Some graduates (approximately 28% of BUILD graduates and less than 5% of BEEP graduates) will enter into further education/training. The Province will not recover its costs as quickly with these graduates as they will not generate tax revenue immediately. However, the Province can expect to recover their costs at a similar, if not more advanced rate, with those who complete further education/training and find employment.

Return on Investment in BUILD and BEEP's Energy and Water Retrofit Activities:

According to data provided by Manitoba Hydro, BUILD, and BEEP, BUILD's retrofit activities in

2010/2011 will generate utility bill savings of approximately $359,326 annually[49]. The net present value of these savings equals $3,142,885[50]. Given a one-time investment of approximately 1,740,473, costs will be recovered in just less than five years. BEEP's retrofit activities in 2010/2011 will generate utility bill savings of approximately $116,985 annually. The net present value of these savings equals $1,111,974[51]. Given a one-time investment of approximately $477,890, costs will be recovered in just over four years.

BUILD and BEEP's 2010/2011 operating year is considered typical in terms of what can be expected from organizations of their kind that have been operating for a few years. The expectation is that the outcomes similar to those above could be generated in subsequent years assuming a similar operational level and context. During the 2010/2011 year, BUILD operated with approximately 60 employees, including 25 trainees at a time. BEEP operated with approximately 8 employees, including four trainees at a time.

The Multiplier Effect:

The overall multiplier effect of investment in low-income energy efficiency in Manitoba is estimated to be approximately 25.5 times the level of investment. This effect is more than twice as great as the effect from investment in a manufacturing plant, which is reported by Oppenheim and MacGregor as 11.4 times the level of investment.[52]

Despite the need for more detailed and precise analysis of the multiplier effect in Manitoba, the overall implications of the Oppenheim and MacGregor research still apply. When viewed from a full-cost accounting perspective, investment in energy efficiency for low-income households is not only a good investment, but also a potential engine for economic development that can generate both fiscal returns and poverty reduction impacts.

Appendix A

Participation:

The below table shows participation broken into two time periods:

- Cumulative up to March 31, 2010 which has been internally evaluated and is final;
- Year of April 1, 2010 to March 31, 2011 which has not yet been internally evaluated and is still an estimate.

TABLE A1 **Home Participation**

Time Period	Community	MH	Private	DOFNHA	Total All Homes
Participation Gas Homes in Manitoba					
Cumulative to March 31/10 (Final)	BEEP	16	7	0	23
	BUILD	218	106	28	352
	Total	234	113	28	375
Year of April 1/10 to March 31/11 (Estimated)	BEEP	49	7	0	56
	BUILD	203	50	6	259
	Total	252	57	6	315
Cumulative to March 31/11 (Estimated)	BEEP	65	14	0	79
	BUILD	421	156	34	611
	Total	486	170	34	690
Participation Electric Homes					
Cumulative to March 31/10 (Final)	BEEP	215	2	0	217
	BUILD	76	3	1	80
	Total	291	5	1	297
Year of April 1/10 to March 31/11 (Estimated)	BEEP	95	0	0	95
	BUILD	0	0	0	0
	Total	95	0	0	95
Cumulative to March 31/11 (Estimated)	BEEP	310	2	0	312
	BUILD	76	3	1	80
	Total	386	5	1	392
Total Participation All Homes					
Cumulative to March 31/10 (Final)	BEEP	231	9	0	240
	BUILD	294	109	29	432
	Total	525	118	29	672
Year of April 1/10 to March 31/11 (Estimated)	BEEP	144	7	0	151
	BUILD	203	50	6	259
	Total	347	57	6	410
Cumulative to March 31/11 (Estimated)	BEEP	375	16	0	391
	BUILD	497	159	35	691
	Total	872	175	35	1082

MH = Manitoba Housing homes; Private = private homeowner homes; DOF = Dakota Ojibway First Nations Housing Authority.

Savings: Savings for Insulation — Year of 2009/10

Starting in 2009/10, energy savings were recorded at a more detailed level as follows: savings were recorded by type of home; and insulation savings were recorded separately from basic energy items. As such, data from this year was used to provide savings for this research project. The chart below divides out the insulation savings items for 2009/10. Insulation savings are directly related to the home heat fuel, thus the electric savings from insulation are directly associated with the electric heated homes and gas savings are directly associated with the gas heated homes. These averages may be used to extrapolate insulation savings, however, this is dependent on the sample size, which is low in some cases. Note that the total average savings for Manitoba Housing homes retrofitted prior to 2009/10 was higher than noted below due to these homes having more insulation work performed.

TABLE A2 **Community Insulation Savings by Sector — Year of 2009/2010**

Home Type	Participation	Energy	Total Savings: Insulation	Total GHG (tonnes of CO_2e)	Avg Savings Per Home: Insulation	Avg GHG (tonnes of CO_2e)
Electric Heated Homes By Sector						
Build DOFNHA	1	kWh	6,988	5.38	6,988	5.38
Build MH	-	kWh	-	0.00	-	0.00
Build Private	3	kWh	12,790	9.84	4,263	3.28
BEEP MH	85	kWh	216,486	166.59	2,547	1.96
BEEP Private	2	kWh	15,746	12.12	7,873	6.06
Total Electric Homes	**91**	**kWh**	**252,010**	**193.92**	**2,769**	**2.13**
Gas Heated Homes By Sector						
Build DOFNHA	28	m^3	30,899	58.79	1,104	2.10
Build MH	176	m^3	62,133	118.21	353	0.67
Build Private	**106**	m^3	**114,916**	**218.64**	**1,084**	**2.06**
BEEP MH	15	m^3	10,339	19.67	689	1.31
BEEP Private	6	m^3	6,526	12.42	1,088	2.07
Total Gas Homes	**331**	**m^3**	**224,812**	**427.73**	**679**	**1.29**

- Has persistence factored into savings
- Home savings up to March 31, 2010 and has been evaluated and is final savings data- Savings based on engineering estimate

Savings: Savings for Basic Energy Efficiency Items — Year of 2009/10

The table below provides the average savings per individual basic energy savings item. The basic energy savings items installed in each home was dependent on the house requirements and/or homeowner/tenant. On average, a home was provided with a kitchen and 1 -2 bathroom faucet aerators, 1 shower head, 6 CFLs, pipewrap on water pipes for electric hot water tanks; however this would vary.

TABLE A3 **Average Savings Per Basic Energy Item***

Item	Gas Savings (cu.m.)	GHG (CO_2e tonnes)	Electric Savings kw.h.	GHG (CO_2e tonnes)
Pipewrap	n/a	n/a	95.0	0.08
Showerhead	30.0	0.06	214.2	0.16
CFL**	n/a	n/a	271.5	0.21
Faucet aerator — Bathroom	4.20	0.01	32.1	0.25
Faucet aerator — Kitchen	5.40	0.01	36.3	0.03

* Savings based on engineering estimates and reflect current Power Smart Programs
** 271.5 KW.h savings per year represents a total of three 13 watt bulbs and three 23 watt bulbs.
One 13 watt bulb = 34.3 KW.h ; one 23 watt bulb = 56.2 KW.h
Note: For GAS HOMES ONLY there would also be negative 24 cu.m of gas interactives per year, and negative 0.05 tonnes of CO_2e per year.

Endnotes

1 BUILD is currently partnering with the federal government through a 3 year training contract which ccame into effect after the timeframe incorporated into this study.

2 This number includes 23 trainees that were actively training at the time (June 28, 2011).

3 As of March 31st, 2011

4 With recent federal funding, BUILD can essentially double the size of its operation and employ up to 40 trainees.

5 2011 State of the Inner City Report – Neoliberalism: what a difference a theory makes. CCPA – MB. 2011.

6 Ibid. Helme, S. (2007). From the sidelines to the centre: Indigenous support units in vocational education and training. Journal of Vocational Education & Training, 59:4, 451-466. Helme, S. Polesel, J. Nicholas, T. (2005). Koorie experiences of qualifications pathways in VET: Obstacles or opportunities? Centre for Post-Compulsory Education and Lifelong Learning. University of Melbourne

7 MacKinnon, 2011.

8 Minimum wage has increased since the time period incorporated into this study, so trainees now earn between $10.00 and $10.50

9 Minimum wage has increased since the time period incorporated into this study, so trainees now earn between $10.00 and $10.50

10 One Build trainee went on to receive further education/training before completing the full six months training program. Two BEEP trainees went on to receive employment before completing the full six months training program.

11 Turnover rate is the number of participants who did not complete the full six months training for reasons other than employment, further education/training, enrolment in another ETS intervention, or self sufficient and expressed as a percentage of total participants with closed files

12 Other: 3 left the labour market, 2 failed to report, 2 NA, 1 was referred to an external service, 1 requested to leave, 1 had a change of plans, 1 had inappropriate service

13 ETT, June 2011.

14 (Standing Committee on Social Affairs, Science and Technology 2009).

15 Connecting multi-barriered people to good jobs through a labour market intermediary: A community directed plan for action. Silvius and MacKinnon. 2011.

16 Both BUILD and BEEP data is based on its 09/10 operational year

17 Note: The following analysis is based on BEEP normally operating with up to 8 trainees at a time, for a total of approximately 16 trainees annually. This is below capacity which would be to operate with up to 12 trainees at a time. This analysis only considers federal and provincial income and sales taxes. There are various other government transfers that could be affected which are not included in the analysis because there was no data available that could indicate the numbe of trainees that would be eligible for each of them or the number of trainees whose eligibility would change as a result of earning a higher income. These include the Canada Child Tax Benefit, the

GST rebate, the Universal Child Care Benefit, the Provincial Child Care Subsidy the Manitoba Shelter Benefit, and the Working Income Tax Benefit.

19 Annual basic exemptions – Provincial: $8,384, Federal: $10,527

20 It is assumed that approximately one third of BUILD and one quarter of BEEP trainee slots had been on EIA before they entered the program. This is based on a small survey BUILD staff undertook with a sample of 15 trainees and a snap shot of BEEP participants in 09/10. Rates are for a single employable person with no children. Rates are higher for single parents and persons with disabilities and change depending on family size and age of children. It is important to note that there are other federal programs that BUILD and BEEP participants no longer receive assistance from after entering the program (i.e. Labour Market Agreements, Labour Market Development Agreements) which would add to costs recovered by government.

21 Based on a forty hour work week and fifty weeks of work annually.

22 This is a conservative estimate based on Manitoba Industrial, Commercial and Institutional Construction Sector Minimum Wage Schedules found at http://www.gov.mb.ca/labour/standards/doc,ici-wage,factsheet.html#q884

23 This analysis only considers federal and provincial income and sales taxes. There are various other government transfers that could be affected which are not included in the analysis because there was no data available that could indicate the number of trainees that would be eligible for each of them or the number of trainees whose eligibility would change as a result of earning a higher income. These include the Canada Child Tax Benefit, the GST rebate, the Universal Child Care Benefit, the Provincial Child Care Subsidy, the Manitoba Shelter Benefit, and the Working Income Tax Benefit.

24 It is assumed that approximately one third of BUILD and one quarter of BEEP trainee slots had been on EIA before they entered the program. This is based on a small survey BUILD staff undertook with a sample of 15 trainees and a snap shot of BEEP participants in 09/10. Rates are for a single employable person with no children. Rates are higher for single parents and persons with disabilities and change depending on family size and age of children. It is important to note that there are other federal programs that BUILD and BEEP participants no longer receive assistance from after entering the program (i.e. Labour Market Agreements, Labour Market Development Agreements) which would add to costs recovered by government.

25 http://www.justice.gc.ca/eng/pi/rs/rep-rap/jr/jr12/p7.html http://www.statcan.gc.ca/daily-quotidien/040728/dq040728a-eng.htm

26 Durlauf, Steven. 2006. "Groups, Social influences, and Inequality." In *Poverty Traps*, ed Samuel Bowles, Steven N. Durlauf, and Karla Hoff. Princeton, New Jersey: Princeton University Press.

27 Data provided by Hydro, BUILD and BEEP. Hydro data provided was internally evaluated up to March 31, 2010. See Appendix A.

28 Energy savings data provided by Hydro. See Appendix A for details and sample sizes.

29 Includes: insulation, CFL, showerhead, and 2.5 faucet aerators unless otherwise stated. This is based on an average installation across all homes; actual installation of basic items by home varied. Energy savings for water energy saving items are based on the assumption that the water and home heating is from the same fuel source; however, in actuality, there are gas heated homes that had electric hot water tanks so electricity savings may in fact be higher and gas savings lower than indicated. Dollar savings are based on a cost of $.0662/kw.h, $.2933/cu.m, and $3.31/1000 litres.

30 In 2009, MHA performed a before and after utility bill comparison in bachelor suites at 185 Smith street which determined annual savings to be approximately $155. This amounts to $165 at current water rates. Some of the MHA units BUILD performed water retrofits in were family suites which would be expected to have higher savings.

31 Water savings from toilet retrofits are based on replacement of a 13 litre toilet with a 6 litre toilet and 8 flushes per day.

32 Water savings from showerhead retrofits are based on the following assumptions: (1) replacement of a standard showerhead using 9.5 litres/min with a low-flow showerhead using 5.69 litres/min generates a savings of as much as 29 litres of water in a 7.5 minute shower. (2) A two-member household in MHA or private apartment units and a four-member household in single detached units (private, DOFNHA, Kinew). (3) A daily shower per household member.

33 Water savings from faucet aerators include the following assumptions: (1) The replacement of a standard bathroom/kitchen faucet aerator using 8.5 litres/min with a low-flow faucet aerator using 5.69 litres/min generates a savings of as much as 1,163 litres of water annually. (2) A two-member household in MHA and private apartment units and a four-member household in single detached units (private, DOFNHA, Kinew). (3) A usage of 414 minutes of water a year per household member. (4) An average of 2.5 faucet aerators per home.

34 Includes: insulation, CFL, showerhead, and 2.5 faucet aerators unless otherwise stated. This is based on an average installation across all homes; actual installation of basic items by home varied. Energy savings for water energy saving items are based on the assumption that the water and home heating is from the same fuel source; however, in actuality, there are gas heated homes that had electric hot water tanks so electricity savings may in fact be higher and gas savings lower than indicated. Dollar savings are based on a cost of $.0662/kw.h, $.2933/cu.m, and $3.31/1000 litres.

35 Water savings from toilet retrofits are based on replacement of a 13 litre toilet with a 6 litre toilet and 8 flushes per day.

36 Water savings from showerhead retrofits are based on: (1) replacement of a standard showerhead using 9.5 litres/min with a low-flow showerhead using 5.69 litres/min generates a savings of as much as 29 litres of water in a 7.5 minute shower. (2) A two-member household in MHA or private apartment units and a four-member household in single detached units (private, DOFNHA, Kinew). (3) A daily shower per household member.

37 Water savings from faucet aerators are based on: (1) The replacement of a standard bathroom/kitchen faucet aerator using 8.5 litres/min with a low-flow faucet aerator using 5.69 litres/min generates a savings of as much as 1,163 litres of water annually. (2) A two-member household in MHA and private apartment units and a four-member household in single detached units (private, DOFNHA, Kinew). (3) A usage of 414 minutes of water a year per household member. (4) An average of 2.5 faucet aerators per home.

38 This is assuming all units are metered. When they are not metered, as will be the case in some rural areas, there will not be any utility bill savings. However, the municipal utility would experience savings as a result of lower water treatment and pumping costs and the avoidance of future capital expenditures on water treatment facility expansions.

39 Oppenheim, Jerrold and Theo MacGregor, Energy Efficiency Equals Economic Development: The Economics of Public Utility System Benefit Funds, Democracy and Regulation, June 2008. Accessed at: www.democracyandregulation.com

40 Ibid, page 8.

41 The LICO is a standard measurement developed by Statistics Canada to identify the income threshold below which a family spends a larger proportion of its income than the average family on the basic necessities of shelter, food, and clothing. It is commonly used to indicate poverty. The LICO-125 is calculated using the same Statistics Canada definitions except that income thresholds are increased by 25%.

42 The 2009 Residential Energy Use Survey Report was mailed to 19,422 selected customers in November 2009. The customers were randomly selected from 439,096 customers in Manitoba Hydro's residential basic class, which is comprised of all residential customers except seasonal customers and those in diesel communities. A response rate of 24.9% was realized. Data is preliminary and is currently being finalized. Final data may vary by less than 1% from the preliminary data and is well within the margin of error.

43 This figure combines the number of customers with low-incomes who owned their homes in Winnipeg with a comparable number for Brandon. Data from the 2009 Residential Energy Use Survey Report provided the number of customers with low-incomes who owned their homes in Winnipeg. A comparable number was estimated for Brandon based on calculation that used the ratio of the Brandon population to the Manitoba population, the number of low-income customers in Manitoba and the percentage of low-income homeowners in Manitoba.

44 This figure was estimated based on a calculation that subtracted the number of low-income customers who are homeowners in Winnipeg and Brandon from the number of low-income customers who are homeowners in Manitoba.

45 Loxley 2010, 248

46 Loewen et al, 2004.

47 Loewen et al, 2004.

48 This figure combines the number of customers with low-incomes who owned their homes in Winnipeg with a comparable number for Brandon. Data from the 2009 Residential Energy Use Survey Report provided the number of customers with low-incomes who owned their homes in Winnipeg. A comparable number was estimated for Brandon based on calculation that used the ratio of the Brandon population to the Manitoba population, the number of low-income customers in Manitoba and the percentage of low-income homeowners in Manitoba.

49 This savings figure does not include savings from the insulation retrofits that were completed in 55 electric heated MHA units. These savings were not available as there were no electric heated units that received insulation retrofits in the year that the data was gathered

50 Based on a 4% interest rate (conservative estimate of the long term interest rate on a government bond), a one-time

investment of $1,740,473, and a 20-year payment period (estimation for expected life span of retrofits - not all retrofits have an expected life span of 20 years: all basic water saving devices are 15 years; CFLs are 7 years; and insulation retrofits are 30 years. Insulation retrofits make up approximately two thirds of the annual savings and water retrofits make up approximately one third of the annual savings) Source of retrofit lifespans: Manitoba Hydro's standard expectations based on industry experience where applicable, or weighted averaging where more specific information or sampling has been available for specific technologies.

51 Based on a 4% interest rate (conservative estimate of the long term interest rate on a government bond), a one-time investment of $477,890, and a 20-year payment period (estimation for expected life span of retrofits - not all retrofits have an expected life span of 25 years: all basic water saving devices are 15 years; CFLs are 7 years; and insulation retrofits are 30 years. Insulation retrofits make up approximately two thirds of the annual savings and water retrofits make up approximately one third of the annual savings) Source of retrofit lifespans: Manitoba Hydro's standard expectations based on industry experience where applicable, or weighted averaging where more specific information or sampling has been available for specific technologies.

52 Oppenheim, Jerrold and Theo MacGregor, Energy Efficiency Equals Economic Development: The Economics of Public Utility System Benefit Funds, Democracy and Regulation, June 2008. Accessed at: www.democracyandregulation.com