



Home Energy Loan Program

Economic Impact Study

November 2022



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Overview

In the City of Saskatoon, in 2021, stationary energy from heating and cooling buildings accounted for 62% of overall community GHG emissions, with residential homes accounting for 42% of these emissions. Therefore, it is critical to address household emissions through programming, many of which are through municipal initiatives.

HELP was developed to help Saskatoon homeowners by allowing residents to borrow money from the City to improve their home's energy efficiency, install renewable energy, or reduce water use by offering low-interest loans to cover the costs of these upgrades. Loans between \$1,000 and \$60,000 are available to homeowners residing in the City of Saskatoon for eligible retrofits. These loans are offered at low-interest rates and repaid through property taxes over 5-, 10-, or 20-year terms.

Initially, what started as a two-year pilot program with enough loan funding for 100 participants, was quickly oversubscribed in its first year and has now been extended to a four-year pilot with an additional \$11M from the Federation of Canadian Municipalities (FCM). To date, the program is still fully subscribed, even with the additional funding already received.

Using Statistics Canada Input-Output Economic Multipliers for the Saskatchewan economy, The Saskatoon Regional Economic Development Authority (SREDA) estimated the economic impacts of the Home Energy Loan Program, and the effect of lowering GHGs and potential savings from engaging in energy-efficient retrofits.

About the Study

Objective

The HELP Economic Impact Study analyzes and measures the economic impact of the City of Saskatoon's efforts in making households more energy efficient, saving homeowners money on their utility bills and reducing their overall GHG emissions. Therefore, also looking at the total dollars saved and total GHG emissions reduced because of the program.

The economic impact study looks at the total economic output, gross domestic product (GDP), labour income, taxes and jobs created.

Economic Impact Modelling

Economic impact modelling simulates changes in the economy caused by a specific business activity. This is done using multipliers that show the relationship between an initial increase in investment (input) and the resulting increase in output, GDP, labour income, jobs and taxes.

Statistics Canada has developed Input-Output tables for each province. These tables are updated every year but lag behind by three years. Using the most recent multipliers (2018), SREDA estimated the direct, indirect and induced impacts of the Home Energy Loan Program, and analyzed the total savings and the amount of GHGs reduced as a result of these retrofits. These impacts can be defined as follows:

- **Direct impact:** production changes in an economy as a result of direct household spending, supported from the loans received from the HELP.
- **Indirect impact:** production changes in an economy as a result of the re-spending within the industries receiving revenue from household retrofit activities.
- **Induced impact:** production changes in economic activity resulting from spending by employees of the direct and indirect affected companies.

Limitations

SREDA prepared this economic impact study at the City of Saskatoon's request. The City provided SREDA with the details of the loan program, including financials and supporting documents.

The study's industry classifications were made using the North American Industry Classification System (NAICS) codes. The results of this study are subject to limitations generally associated with estimating economic impacts, such as the exclusion of variables of interest for macroeconomic analysis (inflation, interest rates and other financial variables).

The estimated economic impacts of the loan program were completed using the most recently available Input-Output multipliers (2018), so estimates will vary with new updates to the multipliers.



(About the Study, Limitations continued)

Estimated annual savings for the GHG impact analysis, Saskatchewan electricity rates were provided by Natural Resources Canada, used in a similar program at \$0.167 per kWh along with GHG reduction data.

Separate rates involving the total electricity usage included both Saskatoon Light & Power's \$0.1618/kWh and SaskPower's \$0.1470/kWh energy charges. All other data related to GHG emission calculations, including the number of projects, total project costs and total electricity reduced, were provided by the City.

Introduction

An increasing need to address climate change is resulting in a global push for a reduction in GHG emissions, leading to many municipalities adopting various initiatives to reduce their carbon footprint and reach climate change goals. All while making homes more energy efficient, investing in businesses and the economy, creating good-paying jobs and helping homeowners save money.

In 2021, wildfires swept across North America, natural disasters thrashed many coastal countries, and heat waves blanketed many European nations, which is a direct effect of climate change and a warming planet. The City of Saskatoon is leading the push to help the city and homeowners reduce their GHG emissions in the fight against climate change. And one way is through the Home Energy Loan Program (HELP).

HELP is one initiative the City of Saskatoon has developed to reduce GHG emissions within the city. HELP provides loans to homeowners for energy efficiency retrofits, including improving energy efficiency in homes, installing renewable energy or reducing water use. Moreover, these loans include rebates to lower the barriers to participation and further support impactful energy retrofits.

Economic Impact Analysis

First Year Impact - Municipal Loan

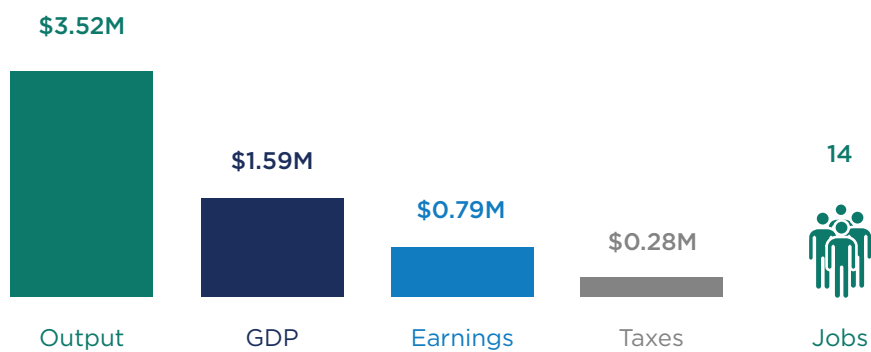
HELP launched on September 1, 2021 with \$2.5 million of start-up capital to loan program participants. From the amount invested into the many houses through the different retrofit projects across Saskatoon, in the first year, it is estimated to create the following economic impacts:

- **Total economic output:** \$3.52 million
- **GDP contribution:** \$1.59 million
- **Labour income:** \$0.79 million
- **Taxes:** \$0.28 million
- **Full-time equivalent jobs:** 14

Moreover, the HELP’s total economic output was a result of a combination of direct, indirect and induced outputs:

- **Direct output of \$2.50 million**, resulting from the direct expenditures associated with the cost of operations.
- **Indirect output of \$0.69 million**, resulting from the expenditures of suppliers attributed to the spending from homeowners and contractors.
- **Induced output of \$0.33 million**, resulting from the additional impact of spending by employees of contractors and suppliers.

HELP - Municipal Loan (Annual Impact)



Impact	Output (\$M)	GDP (\$M)	Earnings (\$M)	Taxes (\$M)	Jobs (FTE)
Direct	\$2.50	\$1.01	\$0.49	\$0.25	9
Indirect	\$0.69	\$0.36	\$0.22	\$0.01	4
Induced	\$0.33	\$0.22	\$0.08	\$0.02	2
Total	\$3.52	\$1.59	\$0.79	\$0.28	14

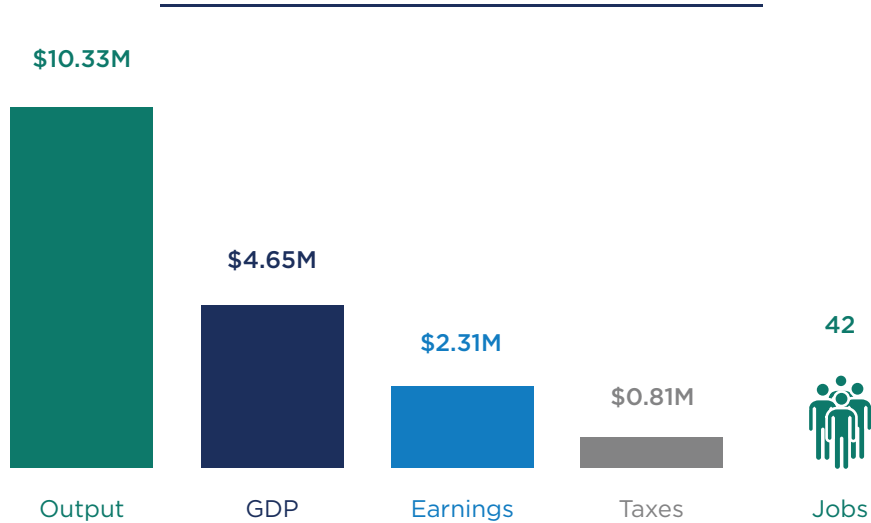
Potential Impact - Federation of Canadian Municipalities (FCM) Loan

Before the launch of HELP, the City applied to the Federation of Canadian Municipalities (FCM) Community Efficiency Financing Program to secure additional capital to enhance the program and extend the program to a four-year pilot.

In the subsequent years from when HELP launched, of the funding received, \$7,333,200 will directly loan money to program participants, leading to the potential economic impacts created:

- **Total economic output:** \$10.33 million
- **GDP contribution:** \$4.65 million
- **Labour income:** \$2.31 million
- **Taxes:** \$0.81 million
- **Full-time equivalent jobs:** 42

HELP - Federal Loan (Potential Impact)



Impact	Output (\$M)	GDP (\$M)	Earnings (\$M)	Taxes (\$M)	Jobs (FTE)
Direct	\$7.33	\$2.97	\$1.44	\$0.73	26
Indirect	\$2.02	\$1.04	\$0.63	\$0.02	11
Induced	\$0.98	\$0.64	\$0.24	\$0.05	5
Total	\$10.33	\$4.65	\$2.31	\$0.81	42

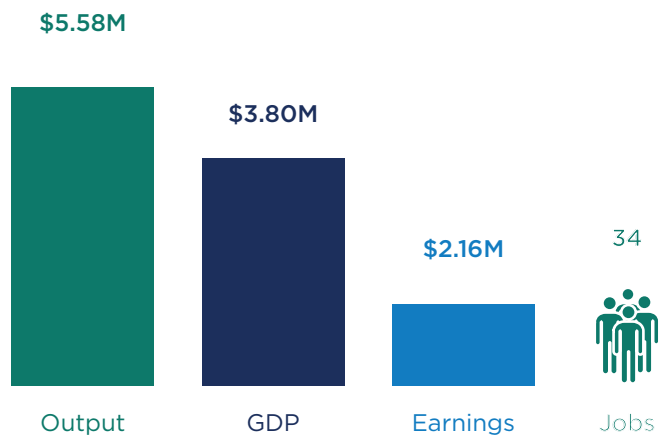
Economic Impact - Federation of Canadian Municipalities (FCM) Grant

Part of the Community Efficiency Financing from FCM, \$3,666,600, is a grant. Specifically, \$1,317,000 is available for rebates given directly to program participants. While the other \$2,349,600 is for a city-wide residential solar potential map, an energy coaching service for homeowners, a city-wide energy map and digital concierge tool, a real estate agent training program and a multi-faceted communications and education strategy.

Overall, the grant amount will lead to following economic impacts created:

- **Total economic output:** \$5.58 million
- **GDP contribution:** \$3.80 million
- **Labour income:** \$2.16 million
- **Full-time equivalent jobs:** 34

HELP - Federal Grant (Potential Impact)



Impact	Output (\$M)	GDP (\$M)	Earnings (\$M)	Jobs (FTE)
Direct	\$3.67	\$2.60	\$1.62	24
Indirect	\$1.00	\$0.60	\$0.32	5
Induced	\$0.92	\$0.60	\$0.22	5
Total	\$5.58	\$3.80	\$2.19	34

Greenhouse Gas (GHG) Impact Analysis

In the first year of the loan program, HELP saw 289 upgrades completed with an estimated annual savings of 206,961 kWh in electricity use, \$20,211 in utility costs, \$1,355 in carbon tax charges and 283 tonnes of CO₂e reduced.

HELP - GHG and Energy Savings

206,961 kWh



Estimated Electricity
Usage Saved Per Year

\$20,211



Estimated Utility
Cost Saved Per Year

283 tonnes



Carbon Emission
Saved Per Year



The table below shows the average cost per retrofit project, the annual average savings per project and the average GHG emission reduced per project.

Overall, projects of a larger scale, such as basement insulation upgrades and solar PV installations, led to higher GHG reduction than small-scale projects, which include air sealing and doors.

Retrofit projects with the highest cost, savings and impact on GHG are as follows:

- **Highest cost** is solar PV, wall insulation, boiler replacement and air source heat pump.
- **Highest savings** on the household's monthly utility bill included solar PV, furnace replacement, boiler replacement and basement insulation.
- **Most impact on GHG reduction** are solar PV, electric heat pump water heaters, furnace replacement and boiler replacement.

	Average Project Cost	Annual Average Savings	Average GHG Reduction, tonnes/year
Wall Insulation	\$16,875	\$153	1.12
Window Replacement	\$13,815	\$82	0.54
Boiler Replacement	\$10,660	\$236	1.65
Airsource Heat Pump	\$10,605	\$(1,074)	-4.93
Furnace Replacement	\$7,356	\$272	1.84
Basement Insulation	\$6,939	\$162	1.17
Door Replacement	\$6,313	\$10	0.08
Central Air Conditioning	\$5,351	\$15	0.05
Water Heater Replacement	\$4,149	\$(45)	-0.35
HRV/ERV System	\$3,793	\$(32)	-.11
Solar PV	\$3,026/kW	\$118/kW capacity	0.711/kW capacity
Electric Heat Pump Water Heater	\$2,885	\$1	105.0
Attic Insulation	\$2,603	\$67	0.48
EV Charging	\$2,423	N/A	N/A
Air Sealing	\$895	\$75	0.52
Smart Thermostat	\$356	\$38	0.11

Conclusion

The City of Saskatoon is on the front lines of climate change and climate action, as cities and communities are where the economic and human costs of global warming are the highest. However, it is also where innovative sustainable solutions can be found, including programs such as the Home Energy Loan Program, which helps homeowners improve their home's energy efficiency.

Lowering the City of Saskatoon's total carbon footprint is not only on the city but also on residents taking the initiative to engage in projects that will help reduce their household GHG emissions, thereby reducing their energy costs and increasing savings.

With 289 upgrades already completed, households are collectively saving more than \$20,000 in their energy costs annually and are seeing a reduction in annual GHG emissions of almost 283 tonnes.

Moreover, in the first year, HELP is estimated to have generated \$3.52 million in total economic impact, added \$280,000 in taxes, and created 14 new jobs. At the end of the project, an additional \$10.33 million in total economic output is estimated, along with an additional \$810,000 in taxes and 43 new jobs attributed to the loans.

Appendix A: Retrofit Measure Assumptions

Retrofits	Retrofit Measure
Furnace replacement	ENERGY STAR qualified condensing gas furnace that has a 97.0 percent AFUE or higher and a brushless DC motor.
Boiler replacement	ENERGY STAR qualified condensing gas boiler that has a 94.0 percent AFUE or higher.
Central air conditioning	Replace central air-conditioning system qualified to ENERGY STAR Program Requirements of SEER 16 or better off for a heat pump with ≥ 10 HSPF (Region IV) and SEER > 16 .
Window replacement	Windows and Glass Doors: U-Factor 1.08 W/m ² -K or less and ENERGY STAR qualified.
Door replacement	Two exterior doors to a R-5.
Attic insulation	Attic to achieve a total minimum insulation value of RSI 8.81 (R-50).
Basement insulation	basement wall area including joist headers of about 70% to additional R-20 or above.
Wall insulation	about 75% of exterior wall area does not include walls between individual units to an additional insulation of R-20 or more.
Air sealing	Perform air sealing to improve the air-tightness to achieve the air-change rate target indicated by a minimum 25% improvement.
Water heater replacement	Replace domestic water heater with ENERGY STAR qualified domestic hot water heat pump (DHW-HP) that has a UEF of 2.5 or higher.
Water heater replacement	Replace domestic water heater with an ENERGY STAR qualified instantaneous, condensing gas-fired water heater that has an UEF of 0.93 or higher.
HRV/ERV system	Assume no HRV/ERV in a home. Retrofit with an installation of an ENERGY STAR qualified HRV or ERV with SRE of 75% at 0 deg C and 64% at -25 C or better.
Smart thermostat	Install a minimum of five electronic thermostats if electric baseboard heaters are the primary space heating system
Airsource heat pump (cold climate)	Install Cold Climate Heat Pump. Must be listed on NEEP's Cold Climate Air Source Heat Pump List. COP at -15 C (5 F) ≥ 2.1 and HSPF ≥ 12.0 determined at maximum capacity. The required capacity of Cold Climate ASHP must be determined according to NRCAN's Cold Climate ASHP Sizing Guide.
Solar PV	Install a photovoltaic (PV) system composed of PV modules that are certified to CSA C22.2 No 61730 for safety and through either CSA-IEC C61215 or IEC 61215 for quality. Inverters should meet the CSA C22.2 C107.1 or CAN/CSA-C22.2 No. 62109 inverter safety standards. Rated solar PV panel peak power capacity should be higher or equal to 1.0 kW:
Electric heat pump water heater	Replace your domestic water heater with ENERGY STAR qualified domestic hot water heat pump (DHW-HP) that has a UEF of 2.5 or higher.

Appendix B: Glossary

The Canadian Input-Output Model: Normally used to analyze the link between final demand and industrial output levels. Two versions of the model are available: the national and the inter-provincial. The input-output model provides a detailed breakdown of economic activities among industries and a detailed breakdown of industry outputs and inputs, including GDP components and jobs, associated with any arbitrarily fixed exogenous demand. It also provides supply requirements from other sources such as international or inter-provincial imports and impacts on energy use and pollutant emissions associated with domestic production.

- **Direct impact:** production changes in an economy as a direct result of business activities.
- **Indirect impact:** production changes in an economy as a result of the re-spending of the industries receiving revenue from operational activities.
- **Induced impact:** production changes in economic activity resulting from household spending of incomes earned from the directly and indirectly affected firms.

GDP: The total unduplicated value of the goods and services produced in the economic territory of a country or region during a given period. GDP can be measured three ways: as total incomes earned in current production (income approach), as total final sales of current production (expenditure approach), or as total net values added in current production (value added approach). It can be valued either at basic prices or at market prices.

Jobs: Jobs are created from the direct, indirect and induced spending of an organization's economic impact. Direct employment stems from an organization's direct hiring. Indirect employment is the additional jobs created by other businesses that are benefitting from an organization's economic growth or spending. Induced employment is the additional jobs created as a result of spending from employees of businesses that are indirectly benefitting from an organization's increased spending or economic growth.

Earnings: Total earnings of employees, consisting of wages and salaries as well as supplementary labour income (such as employer's contributions to pension funds, employee welfare funds, the Unemployment Insurance Fund and Workmen's Compensation Funds).

Output: Output consists of those goods and services that are produced within an establishment that become available for use outside that establishment, plus any goods and services produced for own final use.



Our Role

The Saskatoon Regional Economic Development Authority (SREDA) strengthens the local economy so that all people can thrive here. We assist entrepreneurs with starting and expanding their businesses, develop Indigenous economic reconciliation strategies, support the rebound and growth of local businesses and coordinate effective collaboration to encourage growth across the Saskatoon Region.

Visit Us

103-202 4th Avenue North | Saskatoon, SK S7K 0K1
P: 306-664-0720 | E: info@sreda.com | **[SREDA.com](https://www.sreda.com)**