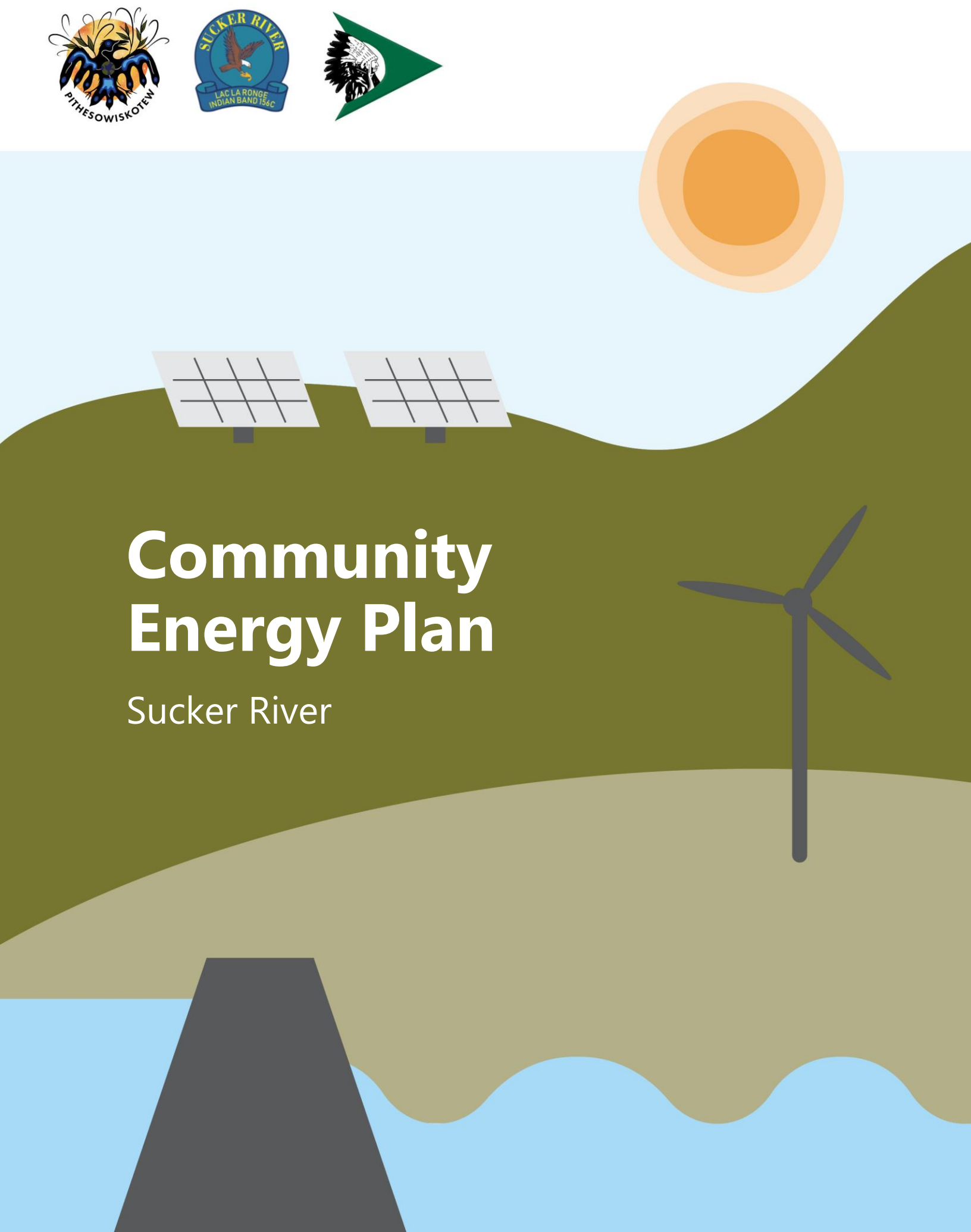


Community Energy Plan

Sucker River

Contents

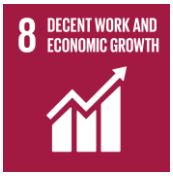
Sucker River's Community Energy Plan

Through Natural Resources Canada's (NRCan) Smart Renewables and Electrification Pathways (SREP) program, the Lac La Ronge Indian Band (LLRIB, the Band) is answering the United Nations' global call to action to address today's most pressing social, economic, and environmental challenges through its Sustainable Development Goals[1]. With our unwavering commitment to address these challenges, the Band is developing one Community Energy Plan for each of our six communities to pave the way for a sustainable future.

The community of Sucker River is part of the LLRIB, alongside La Ronge, Little Red River, Hall Lake, Stanley Mission, and Grandmothers Bay. Sucker River faces significant environmental, social, and infrastructure challenges. The impact of climate change throughout Northern Saskatchewan has led to major forest fires, and the rising cost of energy to provide heating and electricity in remote northern communities is unsustainable. Community energy planning enables Sucker River to advance Sustainable Development Goal #13, Climate Action, while also addressing:

#4 Quality Education

#7 Affordable and Clean Energy



#8 Decent Work and Economic Growth

#9 Industry, Innovation, and Infrastructure

[1] https://sdgs.un.org/goals

#11 Sustainable Cities and Communities

#12 Responsible Consumption and Production

"We extend our heartfelt gratitude to the Government of Canada for their significant contribution to our Indigenous communities through the Smart Renewables and Electrification Pathways program. This funding enables us to advance sustainable energy solutions, stimulate job creation, facilitate pivotal training, and enhance community involvement. By equipping our community members with knowledge about energy efficiency and renewable energy, we empower them and help create a future that aligns with our collective ambition of reducing GHG (greenhouse gas) emissions and fighting climate change. This financial backing goes beyond just funding; it's a pledge to our future, our growth, and our dedication to safeguarding the land that nourishes us and on which our survival depends."

- Chief Tammy Cook-Searson, Lac La Ronge Indian Band

What is a Community Energy Plan?

A Community Energy Plan (CEP) is a long-term plan made in collaboration with the community and community energy professionals that focuses on reducing energy use and embracing efficient and clean energy solutions. With its innovative strategies, a CEP identifies actions that can conserve energy, improve energy efficiency, and produce renewable energy locally. These actions – which reduce greenhouse gas (GHG) emissions, develop sustainable energy solutions in the community, and generate new economic opportunities – fill us with hope for a brighter, more sustainable future.

The CEP is a document for the community to refer to when making policy, plans, programming, and funding decisions. It enables the progressive cycle of planning, monitoring, implementing, and evaluating energy actions.

How to Use This Document

This document has been organized so that readers can learn about Sucker River's current energy use and energy planning work and the recommended action implementation plan to reduce energy use and generate local energy. Three accompanying reports also support this document:

1. **Sucker River's Community Energy Analysis**
    - Provides details on how the community's current energy use and projected outcomes of community energy actions were determined.
    - Includes assumptions, sources, and calculations.
2. **Sucker River's Community Energy Education and Engagement Report**
    - Shares the knowledge collected by the Community Energy Planning team through internal capacity building and through engaging with Sucker River's membership, staff, and Elders.
3. **Lac La Ronge Indian Band's Community Energy Planning Learning Materials**
    - Provides background information that supports readers in understanding the Community Energy Plan and provides a reference when doing community engagement and a list of energy term definitions and answers to frequently asked questions.

Who are the Community?

Sucker River has a population of 432 and is located 32 km north of the community of La Ronge. While the reserve area of Sucker River is quite small, LLRIB has identified Sucker River's traditional land use boundary as stretching from Big Sandy Lake in the south to Foster Lake in the north, putting much of central Saskatchewan within their traditional territory. Hunting, fishing, trapping, and foraging are important to many community members. The dominant language of the community is Woodland Cree.

Lac La Ronge Indian Band

Sucker River

Aerial Imagery

Legend

Boundary

The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.

0 100 200 300

Meters

N

Coordinate System:

NAD 1983 CSRS UTM Zone 13N

Scale: 1:9,500

(When plotted at 11"x17")

Project #:	4520.0003.01
Author:	SJA
Checked:	BG
Status:	FINAL
Revision:	A
Date:	2022 / 4 / 7

URBAN SYSTEMS

FIGURE 01

Figure 1: Sucker River Community Overview

What are the Community's Priorities?

LLRIB undertakes Strategic Planning every three to five years to identify an overarching vision and the key goals, outcomes, and strategies that support the most critical functions the Nation must take. The most recent Strategic Plan Vision from 2019 is:

aniskach isihtwawin – tukoota – kuskihowin

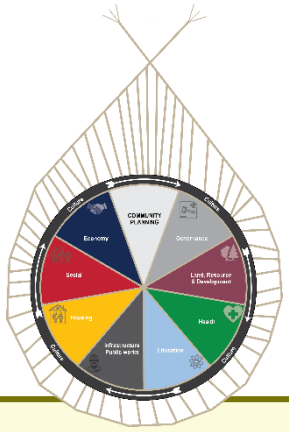
Tradition – Innovation – Success

Sucker River is committed to building a sustainable and secure future for our community through traditional knowledge of the land and sustainable practices, embracing innovations in harmony with their values. This commitment will ultimately lead to success for the Band.

The Community Development Plan[2] for Sucker River, crafted in 2022, built on the Strategic Plan Vision to develop 18 overarching goals and 111 actions. Of these goals, the following were reinforced as priorities through community energy engagement:

- Invest in Backup Power Generation[3]
- Motivate and Inspire Youth to Achieve Their Goals
- Ensure Members Have Access to Appropriate Housing
- Enhance Safety and Security in the Community
- Create Employment Opportunities for Members

These goals complement the Sustainable Development Goals listed above that the Community Energy Plan strives to address.



> *"There's high interest [in the project] since people want to fight climate change and reduce their carbon footprint, especially the youth. What we're hearing is that community members are* ***curious about clean energy projects and jobs and don't want to leave their communities*** *for a better quality of life by having to take jobs elsewhere."*
>
> - Desiree Maurice, Community Energy Coordinator

The accompanying Community Energy Education and Engagement Report details community priorities.

[2] https://llrib.com/wp-content/uploads/2023/02/2022-LLRIB-CCP-Sucker-River.pdf
[3] This goal was not identified in the Comprehensive community plan, but added through feedback from engagement. It could be considered aligned with the goal to Invest in Community Facilities and Infrastructure

Who is the Community Energy Planning Team?

In the Spring of 2022, the Lac La Ronge Indian Band hired a Community Energy Project Manager to begin the community energy planning work.

Jason Cook-Studer is a native of La Ronge with a Bachelor of Environmental Science and Soil Science from the University of Saskatchewan and is now enrolled in the Masters of Energy Security program within the School of Environmental Sustainability. At the core of Jason's mission lies a steadfast dedication to promoting sustainable practices across various domains, advocating for holistic approaches that balance ecological health with societal needs.

Jason's pivotal role in fostering renewable energy initiatives within the Lac La Ronge Indian Band underscores his commitment to harnessing clean energy sources for a sustainable future. He is responsible for reviewing work and providing support and leadership to the project team and its deliverables. Jason leads the following employees of the Pithesowiskotew (Community Energy Planning) team:

- **Joshua McCann** is a Métis father who grew up in La Ronge and lives in Saskatoon. He has been a youth leader for over a decade as Saskatchewan Metis Youth Council Representative Northern Region 1 and has been involved with MBC's Missinipi Youth Foundation since 1996. He applies his creativity with his cultural teachings and Western knowledge to find innovative ways to inspire and empower new thoughts in good ways. He is proud to give back to Lac La Ronge Indian Band, which has played an important role in his growth and who he is today. Joshua is a Community Energy Coordinator.
- **Florence Veteri**, a proud Woodland Cree Iskwew from the Treaty 6 Lac La Ronge Indian Band, studies Indigenous Social Work at the University of Regina. From her time as a Community Health Rep and Parent Support Rep at LLRIB Health Services to roles at Piwapan Wellness Center and Kikinahk Friendship Center, Florence actively engages in health promotion, child development, and community outreach. She is involved in transformative projects, including the "Raising Their Voices" initiative and the Bill C92 Project at Sucker River IR156C. Florence is a Community Energy Coordinator.
- **Desiree Maurice** is an Indigenous woman originally from Northern Pinehouse Lake, where her grandparents raised her in a life deeply connected to the land. Her upbringing on the land of Pinehouse Lake instilled in her a profound appreciation for sustainability and the natural world. Living off the land with her grandparents, she developed a strong sense of identity and connection to her heritage, which continue to guide her work and personal values.

  Passionate about community and dedicated to the well-being of her Nations, Desiree Maurice has always sought opportunities to engage in creative problem-solving. This passion naturally extended to clean energy initiatives, where she has found her true calling.

Being involved in clean energy projects has been incredibly empowering for her, and she is committed to continuing this vital work for the rest of her career.

Her journey in the clean energy sector was significantly enhanced by her participation in the 20/20 Catalyst Program. This program provided her with invaluable knowledge in clean energy technologies and project development, equipping her with the skills necessary to drive sustainable energy solutions within our communities. Looking ahead, she is excited to further her education by applying for the Master's in Energy Security program at the University of Saskatchewan, which will allow her to deepen her expertise and contribute even more effectively to her community's energy resilience.

Relocating to the Lac La Ronge Indian Band has given Desiree a unique opportunity to bring her knowledge and passion for clean energy to a new community. She is dedicated to working collaboratively with community members, sharing the insights she has gained, and supporting sustainable energy projects that benefit everyone. Together, they can build a brighter, more sustainable future for their Nations.

- **Jonah Ratt,** from the northern community of Sucker River, combines his heritage with a passion for clean energy and community empowerment. Raised on the trapline, Jonah learned traditional skills and values that now guide his work. Joining the Community Energy Team in February 2023 marked a turning point for Jonah. Under Jason's guidance, he gained important insights into the global shift toward clean energy.

  Today, Jonah excels in helping residents understand and reduce their energy use, aiming to cut carbon footprints and lower household costs. His work includes checking homes for energy efficiency, teaching, and getting the community involved in tailored Community Energy Plans. In addition to his team role, Jonah is a Northern Home Technician, helping residents with energy efficiency upgrades. Committed to ongoing growth, Jonah is dedicated to creating a sustainable future through collaboration and passion.

- **Jared McKay** was hired as the new Community Power Representative in February 2024. He is from Deschambault Lake and has been a committed and hardworking security officer with five years of experience maintaining safe and secure operations in La Ronge. Jared can also speak Cree.

At this point in the Community Energy Planning journey, the Pithesowiskotew team has built tremendous internal capacity. The accompanying Community Energy Education and Engagement Report shows more details on learnings and training completed.

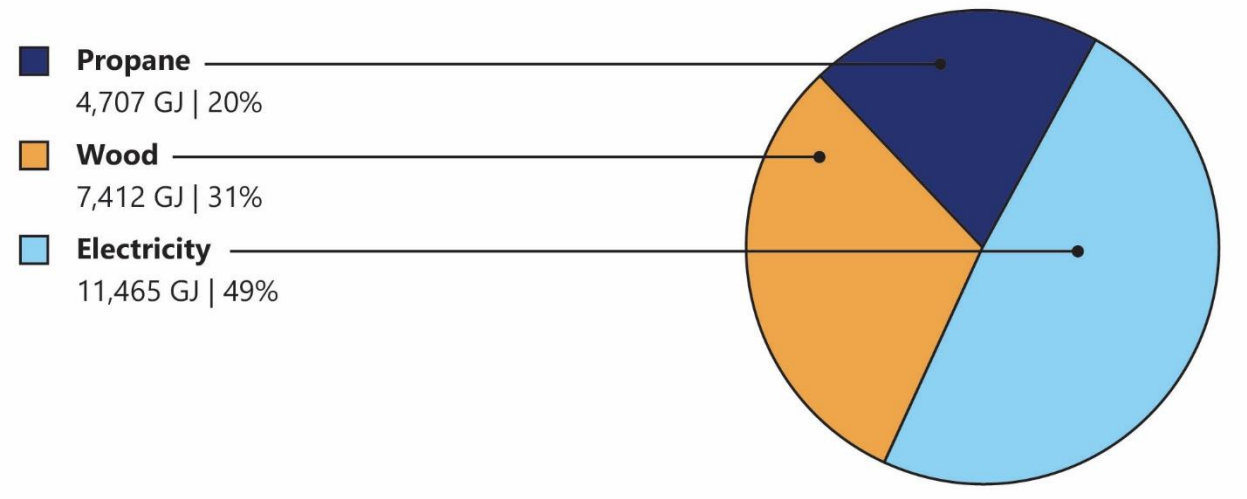
What is the Community's Energy Status?

Baseline Energy Usage

An energy baseline is a measure that communities can use to track and compare energy usage. It acts as a reference point for evaluating energy efficiency improvements and monitoring energy consumption in the community over time. The following section summarizes Sucker River's baseline energy usage, greenhouse gas emissions, and energy costs from 2018 to 2022. The accompanying Community Energy Analysis Report includes the assumptions, sources, and calculations.

Figure 2 below depicts Sucker River's average annual energy usage from 2018 to 2022 by energy source. For each energy type, the average only includes years where complete data was provided. Electricity accounts for nearly half (49%) of the community's energy usage. Wood is responsible for 31% of energy usage, followed by propane (20%).

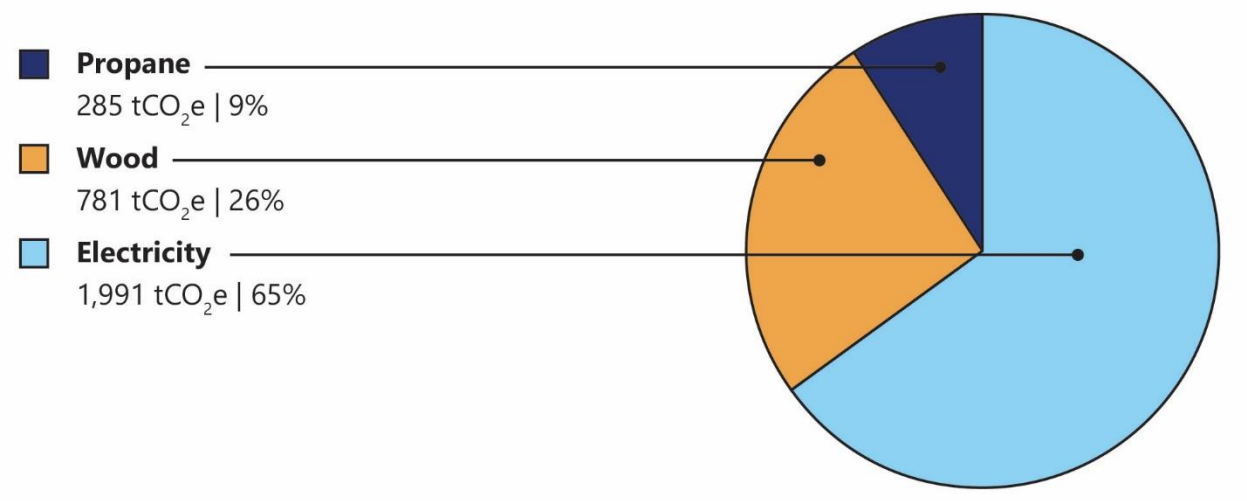
Figure 2: Average annual energy consumption by fuel type, 2018 – 2022 (GJ, %)



Greenhouse Gas Emissions from Energy Use

Figure 3 highlights the average annual greenhouse gas emissions by energy source. Emissions are measured by their tonnes (t) of carbon dioxide (CO_2) equivalent (e), also known as tCO_2e. For each energy type, the average only includes years where complete data was provided. As shown, roughly two-thirds (65%) of the community's greenhouse gas emissions are associated with electricity consumption, even though electricity only accounts for 49% of the community's energy usage. This is because a large portion of electricity in Saskatchewan is generated by burning coal and natural gas. Wood is responsible for 31% of Sucker River's greenhouse gas emissions, while propane is responsible for 20%.

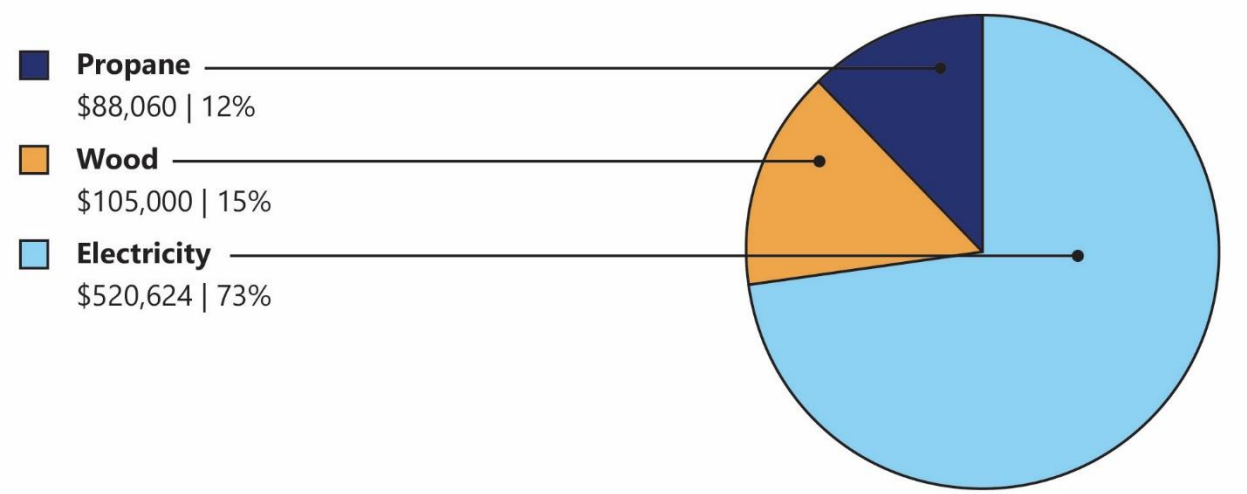
Figure 3: Average annual greenhouse gas emissions by fuel type, 2018 - 2022 (tCO_2e, %)



Estimated Costs from Energy Use

Figure 4 depicts Sucker River's average annual energy costs from 2018 to 2022 by energy source. For each energy type, the average only includes years where complete data was provided. On average, Sucker River spends $238,000 per year on energy. As shown, electricity accounts for 73% ($521,000) of the community's energy costs, even though it only accounts for 49% of energy consumption. This is due to the high cost of electricity compared to other energy sources. In contrast, wood accounts for 31% of the community's annual energy usage but only 15% of the community's energy costs.

Figure 4: Average annual cost by fuel type ($, %)

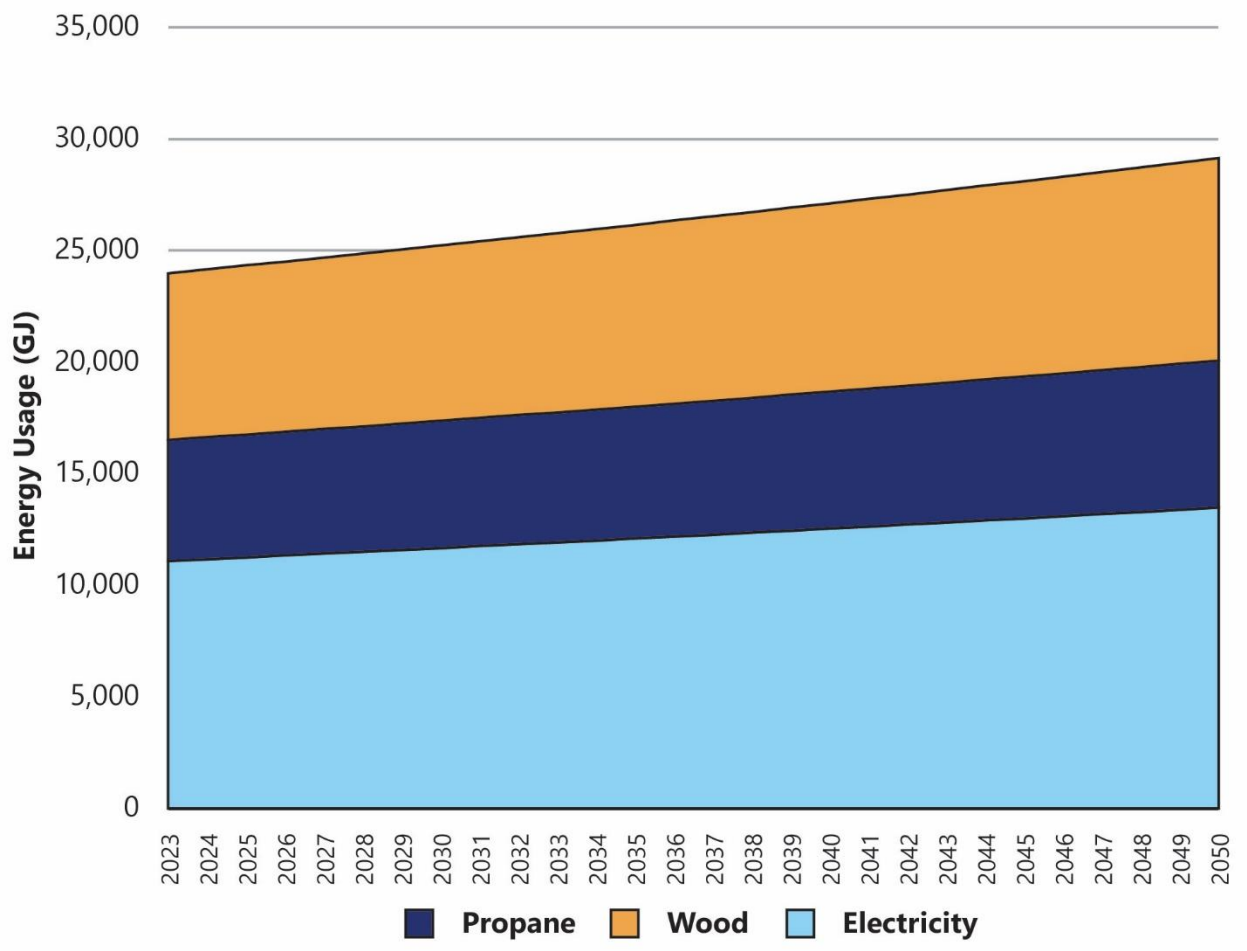


Business-As-Usual Forecasts

Business-As-Usual (BAU) forecasts use key energy trends from the baseline period and pre-established population projections to forecast Sucker River's future energy usage. As this represents energy usage in an "as-usual" scenario, this forecast does not explicitly include new developments in the community, proposed renewable energy projects, or the implementation of energy conservation or retrofits that would reduce community energy usage. This scenario is intended to show the cost of "doing nothing" to energy usage in the community to provide an estimate of what energy trends may look like in the future.

Figure 5 highlights the Business-As-Usual energy usage forecast for Sucker River from 2023 to 2050. As shown, energy usage is anticipated to increase by approximately 22% over the forecast period, from approximately 24,000 GJ in 2023 to 29,000 GJ in 2050. The forecast assumes that energy usage is correlated to population growth and will align with changes in on-reserve members throughout the forecast period. The forecast also assumes that the distribution of energy sources remains the same until 2050.

Figure 5: Business-As-Usual energy usage projection by fuel type, 2023 – 2050 (GJ)

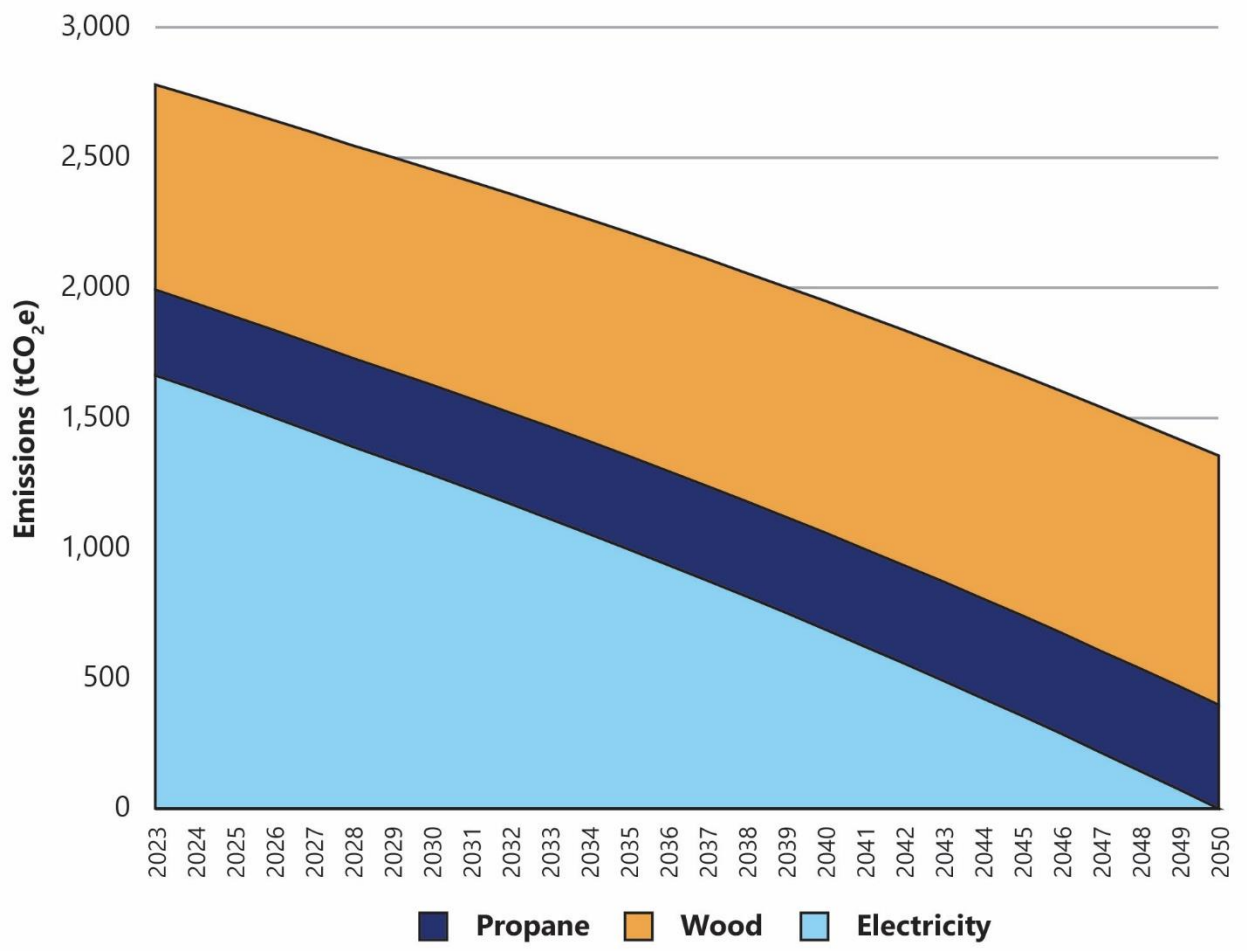


GHG Emissions from Energy Use

Figure 6 highlights the Business-As-Usual emissions forecast by energy source. As shown, the greenhouse gas emissions from propane and wood increase by approximately 22% between 2023 and 2050. However, greenhouse gas emissions from electricity will be eliminated by 2050 based on the assumption that the SaskPower electricity grid will achieve net-zero emissions as planned.[4] In other words, this means that although Sucker River would continue to use electricity, the electricity generated by SaskPower would no longer emit greenhouse gases.

[4] Dayal, P. (2023, August 16). Sask. premier says federal net-zero electricity targets would double power rates, experts dispute that. CBC News. Retrieved from: https://www.cbc.ca/news/canada/saskatoon/experts-say-net-zero-electricity-targets-are-possible-in-sask-1.6937188

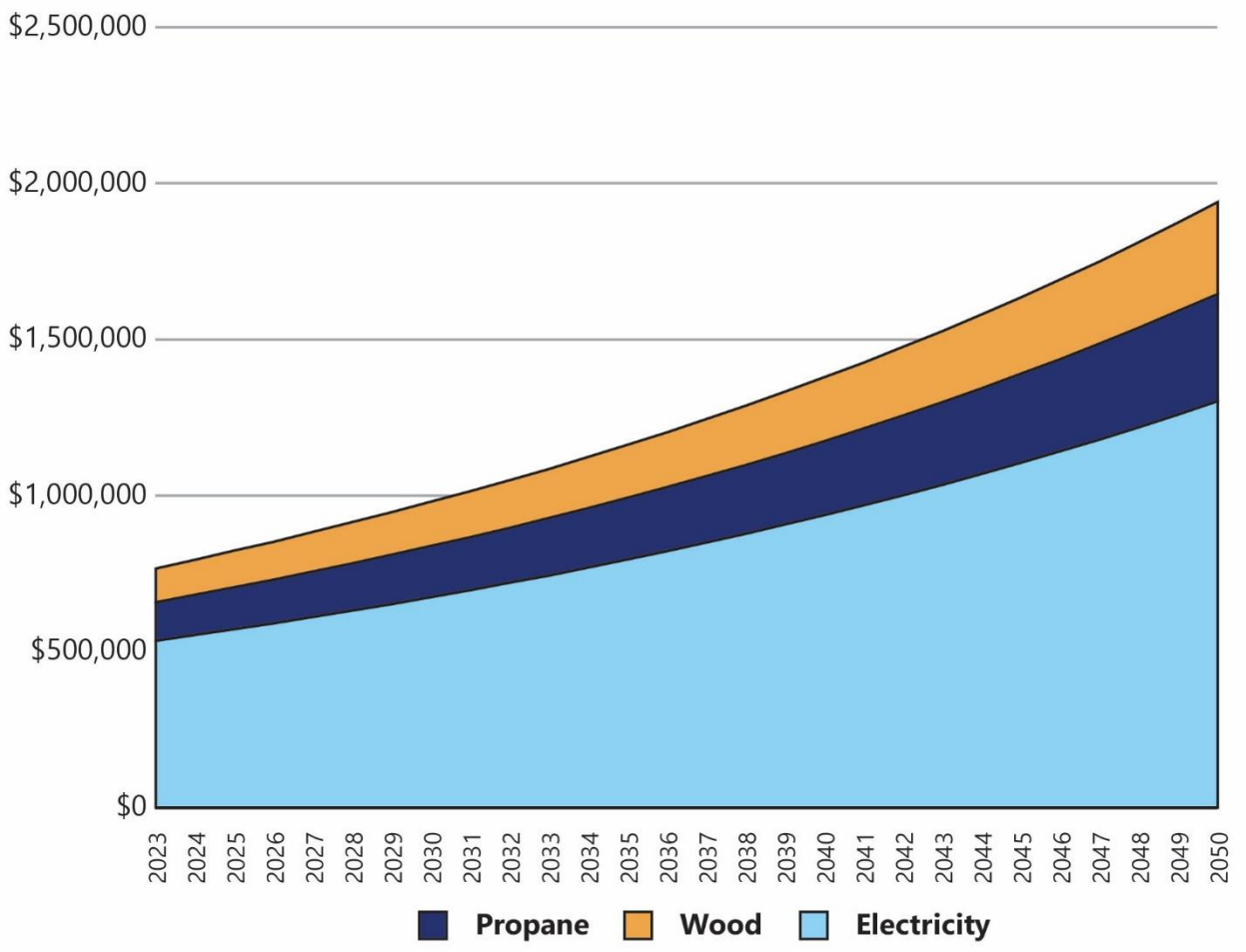
Figure 6: Business-As-Usual greenhouse gas emissions projection by fuel type, 2023-2050 (tCO_2e)



Estimated Spending from Energy Use

Figure 7 highlights the Business-As-Usual spending forecast by energy source between 2023 and 2050. The accompanying Community Energy Analysis Report includes the assumptions associated with these projections. According to this forecast, the community's annual energy spending will be approximately $1.9 MM by 2050. Electricity would account for roughly 67% of spending, while propane would account for another 18%. Wood would account for the remaining expenditures at 15%.

Figure 7: Business-As-Usual cost projection by energy source, 2023-2050 ($)



Advancing Our Journey in Energy Sustainability

Based on the preliminary assessments and engagement completed in Sucker River, available in the accompanying Community Energy Analysis Report, an implementation plan was assembled to identify the strategies, actions, collaborators, and resources required to work towards energy goals, including reducing energy bills and energy-related emissions. This implementation plan (**Table 4**, **Table 5**, and **Table 6**) will act as a reference point for staff and leadership and can be used as a standalone document throughout the implementation of the recommended actions in the Community Energy Plan.

Community Energy Goals

1. Invest in Backup Power Generation
2. Motivate and Inspire Youth to Achieve Their Goals
3. Ensure Members Have Access to Appropriate Housing
4. Enhance Safety and Security in the Community
5. Create Employment Opportunities for Members

Table 1: Implementation Phase Legend

Phases	
P1	Initiation
P2	Development
P3	Implementation
P4	Operations

Table 2: Implementation Responsibility Legend

Responsibility	
P.team	Pithesowiskotew
SD	Social Development
CPR	Community Power Representative
Ed	Education
PW&H	Public Works & Housing
Pre-Em	Pre-employment
Bld Mngr	Buildings Managers
TBD	To Be Determined
Ec Dev	Economic Development
L&R	Lands and Resources

Table 3: Implementation Cost and Potential Savings Legend

Costs		Potential Savings	
$	$0-$50,000	**Low**	Payback under 1 year
$$	$50,000-$500,000	**Medium**	Payback in 1-20 years
$$$	$500,000+	**High**	Payback in 20+ years

Table 4: Energy Conservation Actions - Sucker River's Community Energy Implementation Plan

Energy Actions and Initiatives	Phase						Goals	Responsible	Cost	Potential Savings
	2022-23	2024-25	2026-27	2028-29	2030	2032+				
ECA: Energy Conservation Actions										
ECA 1: Provide Energy Conservation Coaching to Residents	P1 P2 P3	P1 P2 P3	P4	P4	P4	P4	3,4,5	SD, CPR	$	High
ECA 2: Create Community Energy School Programming	P1	P1 P2 P3	P3	P4	P4	P4	2,5	Ed, P.team	$	High
ECA 3: Provide Low-Cost Energy Conservation Items to Residents	P1 P2 P3	P1 P2 P3	P2 P3 P4	P4	P4	P4	3,4	P.team, PW&H, SD, CPR	$	High
ECA 4: Host a Community-Wide Energy Contest	P1	P1 P2 P3	P4	P4	P4	P4	2,3,4	P.team, SD	$	High
ECA 5: Improve Community Building Operations		P1	P2 P3	P3 P4	P4	P4	4, 5	PW&H, P.team	$	Med
ECA 6: Track and Report on Energy Usage	P1	P1 P2	P3 P4	P4	P4	P4	4,5	P.team	$$	Med

Table 5: Energy Efficiency Actions – Sucker River's Community Energy Implementation Plan

Energy Actions and Initiatives	Phase						Goals	Responsible	Cost	Potential Savings
	2022-23	2024-25	2026-27	2028-29	2030	2032+				
EEA: Energy Efficiency Actions - Improvements and Switches										
EEA 1: Community Natural Gasification		P1 P2	P2 P3	P3 P4	P4	P4	1,4,5	PW&H	$$$	Low
EEA 2: Retrofit Homes	P1	P1 P2 P3	P1 P2 P3 P4	P1 P2 P3 P4	P1 P2 P3 P4	P1 P2 P3 P4	3,4,5	PW&H, P.team	$$	Med
EEA 3: Retrofit Non-Residential Buildings	P1	P2	P2 P3	P2 P3 P4	P2 P3 P4	P2 P3 P4	4,5	PW&H, P.team	$$$	Med
EEA 4: Incorporate Energy Efficiency in New Homes And Community Buildings	P1	P1 P2 P3	P2 P3	P4	P4	P4	3,4,5	PW&H	$$	Med
EEA 5: Train Local Community Members to Become Certified Energy Advisors	P1	P1 P2 P3	P2 P3 P4	P2 P3 P4	P4	P4	2,3,4,5	P.team, Pre-Em	$	Med
EEA 6: Install Public EV Charging Stations		P1 P2	P2 P3	P3 P4	P4	P4	4, 5	P.team, Bld Mngr	$$	Low
EEA 7: Electrify fleet vehicles		P1	P1 P2	P3	P3 P4	P3 P4	4,5	P.team, TBD	$$	Low

Energy Actions and Initiatives	Phase 2022-23	2024-25	2026-27	2028-29	2030	2032+	Goals	Responsible	Cost	Potential Savings
EEA: Energy Efficiency Actions - Improvements and Switches										
EEA 8: Install Heat Pumps for Diesel and Electrically Heated Buildings			P1	P2	P3 P4	P4	4,5	PW&H, P.team	$$	Med
REA 7: Develop a District Energy Heating System			P1	P1 P2	P2 P3	P3	1,4	PW&H, P.team	$$$	Low

Table 6: Renewable and Low Emission Energy Actions – Sucker River's Community Energy Implementation Plan

Energy Actions and Initiatives	Phase 2022-23	2024-25	2026-27	2028-29	2030	2032+	Goals	Responsible	Cost	Potential Savings
REA: Renewable and Low-Emission Energy Actions										
REA 1: Develop a Utility-Scale Renewable Energy Project		P1	P1 P2	P2 P3 P4	P4	P4	1,4	Ec Dev, L&R, P.team	$$$	Med
REA 2: Install solar on community buildings		P1 P2	P2 P3	P3 P4	P4	P4	1,4,5	PW&H, P.team	$$$	Med
REA 3: Install Solar on Residential Buildings					P1	P2 P3 P4	1, 3, 4, 5	PW&H, P.team	$$	Med

Energy Actions and Initiatives	Phase 2022-23	2024-25	2026-27	2028-29	2030	2032+	Goals	Responsible	Cost	Potential Savings
REA: Renewable and Low-Emission Energy Actions										
REA 4: Train Local Community Members to Become Certified Renewable Energy Installers		P1 P2 P3	P2 P3	P4	P4	P4	2,3,4,5	P.team, Pre-Em	$	Med
REA 5: Establish Emergency backup Power at Public Centres		P1 P2	P2 P3	P3 P4	P4	P4	1,4	P.team, Bld Mngr	$$$	Low
REA 6: Develop a Micro-Hydro Project		P1	P2	P2	P3	P4	1,4	P.team, Bld Mngr, L&R	$$$	Med
REA 7: Develop a District Energy Heating System			P1	P1 P2	P2 P3	P3	1,4	PW&H, P.team	$$$	Low

A standalone writeup of each recommended action has been provided to enable straightforward decision-making and recommended next steps for major collaborators and funding bodies. Actions were broken down into three categories:

1. Energy Conservation Actions (ECA)
2. Energy Efficiency Actions – Improvements and Switches (EEA)
3. Renewable and Low-Emissions Energy Actions (REA)

The following sections summarize the key actions and tasks that Sucker River can advance to accelerate a more resilient and sustainable clean energy future.

The success of these actions relies on the ongoing work of the Pithesowiskotew team. Funding to maintain the team's continued employment is essential for our community to meet our energy goals.

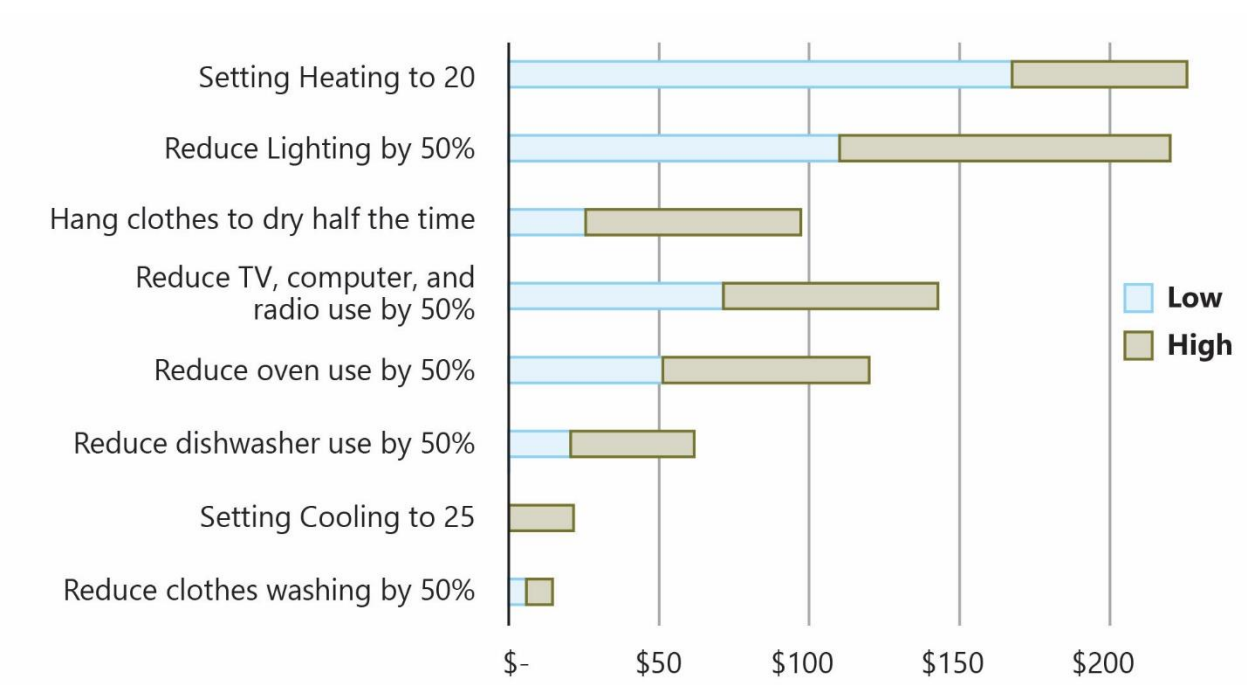
Energy Conservation Actions

Energy conservation involves adjusting our behaviours and habits to use less energy. Energy conservation may also be referred to as demand-side management, as it focuses on reducing the overall energy demand in our homes and places of work. Much of energy conservation is related to changing energy-wasting behaviours to energy-saving behaviours. In many cases, changing our energy-related behaviours can be challenging. Many energy-wasting behaviours may have become habits over time, and some energy-saving behaviours might take more time and effort to adopt than previous habits. However, some energy-saving behaviours can be relatively easy and require minor changes to our everyday habits.

Using RETScreen® Clean Energy Management Software, the project team modelled potential energy conservation actions to determine their energy impact. The results provide a general understanding of how different conservation actions can translate to energy cost savings. These are summarized in **Figure 8** below.

Where appropriate, four variations of these actions were modelled to represent the diversity of Sucker River's housing stock – categorized by type of heating and age of the home. The accompanying Community Energy Analysis Report includes the assumptions and additional details on the analysis associated with the initiatives.

Figure 8: Potential Annual Savings ($/year) in Sucker River by Energy Conservation Measure



ECA 1: Provide Energy Conservation Coaching to Residents

Sucker River will continue to provide energy coaching to our members to conserve energy throughout the community. This action would be low-cost to the community, requiring a portion of time from a local employee, and will see immediate savings from engaged participants who receive coaching.

Status

Through the SREP program, the Pithesowiskotew team has continuously educated and worked with community members on ways to save energy in their homes. SaskPower's Community Power Representatives (CPRs) for the six communities of Lac La Ronge Indian Band regularly offer bill reading, meter reading, home walkthroughs, and energy literacy to community members. These efforts help keep homes from being disconnected by SaskPower by developing customized strategies and assistance. This helps ensure homes have service from SaskPower.

The Pithesowiskotew team initially encouraged community members to sign up for SaskPower's Energy Assistance Program,[5] whose home energy coaches will come to a home, complete a walkthrough, and upgrade the home with free energy-efficient items. However, SaskPower recommended that the team hold off on its promotion, as they plan on providing another program better tailored to the community's needs soon. The timeline of program deployment is yet to be determined.

All tenants of Band-owned houses must participate in a basic home maintenance course. The Public Works & Housing Department is interested in including energy conservation in the education materials, which the Pithesowiskotew team can develop and support.

Community Support

All community residents have received the CPR program well. The program has increased employment opportunities within the community and enabled staff with diverse backgrounds to become champions of energy literacy and sustainability. The team's diverse backgrounds also lend a new perspective on supporting the community via strategic and collaborative engagement efforts.

[5] https://www.saskpower.com/Power-Savings-and-Programs/Home/Programs/Energy-Assistance-Program

Steps to Action Implementation

Phase 1: Hire & train an energy conservation coach.

- Complete with the hiring and training of Community Power Representatives – there is currently one CPR on the Pithesowiskotew team (Jared McKay).
- Training program materials have been compiled and are available if new coaches need to be onboarded.

Phase 2/Phase 3: Pilot service to family, friends, and the remaining community members.

- Currently underway through CPR's work.

Phase 4: Provide services to the entire community, monitor and maintain the program.

- Ongoing for the life of the program.
- If the CPR program ends, a Community Energy Coordinator can coach participants and monitor the outcomes for participating homes.
- Will include the collection of energy bills from participants to quantify outcomes over the long term.

Responsible Department

The Community Power Representative will continue to lead this initiative. Collaboration with Social Development will increase to help homes in greatest need and support energy cost savings at the household and community level.

Collaborators

- NRCan (SREP)
- SaskPower
- Ecofitt/CLEAResult (EAP delivery partner)

Funding Opportunities

- Northern First Nations Home Retrofit Program

ECA 2: Create Community Energy School Programming

Developing and offering school programming geared towards saving and generating sustainable energy would be an effective and low-cost opportunity to have a generational impact on LLRIB's clean energy journey. This initiative would only require a small portion of time from a Pithesowiskotew team member, potentially resulting in immediate energy savings from engaged students. Our youth can often be our best teachers within the homes!

Status

A Renewable Energy Science Education Kit 2.0 from Horizon Educational was purchased by the Pithesowiskotew team for hands-on learning of renewable energy technologies. Engagement worksheets were developed alongside a lesson plan from Horizon Educational to capture specific feedback from youth. Worksheets described the purpose of a CEP and provided age-appropriate definitions for key energy terms. The worksheet questions allow students to reflect on climate change impacts within our community and envision how they can be advocates of energy sustainability in the future. The kit and worksheets have been showcased at the teams' open house event held in their La Ronge office on April 19, 2024, and the Career Fair hosted by LLRIB's Lands and Resources and Keewatin Community Development Association on May 14-15, 2024, but have not been piloted in a classroom as of this writing.

Steps to Action Implementation

Phase 1: Develop energy conservation school programming.

- Initiated with worksheets for the Horizon Education Kit.

Phase 2: Pilot the program to one classroom.

- Initiated conversations with schools – no classroom identified yet. The Education Kit has already been piloted at events.
- The program champion will be engaged to deliver the program, either in-person or by providing resources and training to a local teacher to deliver directly to their class.
- The Pithesowiskotew team will refine the program as needed by assessing Pilot outcomes.

Phase 3: Implement the program in remaining participating classrooms.

- Will be initiated once the program is refined.

Phase 4: Monitor and maintain the program and update the curriculum every 1–2 years.

- Ongoing for the life of the program.
- Will be led by a Community Energy Coordinator.
- Work will be done to collect energy bills from participants to quantify outcomes or include a survey for participating students.

Responsible Department

A Community Energy Coordinator will lead this initiative in partnership with the Education Department to ensure that willing classrooms and teachers can participate.

Collaborators

- Chief Moses Ratt Community School
- Saskatchewan Ministry of Education
- Saskatchewan Environmental Society (SES)

Funding Opportunities

- TELUS Indigenous Communities Fund

Examples

- SES K-12 Education Programs

ECA 3: Provide Low-Cost Energy Conservation Items to Residents

Sucker River will provide low-cost energy conservation items for our members to use in their homes to conserve energy throughout the community. Given the low cost of the items, this is a low-cost action with rapid returns on investment.

Status

Sucker River, Grandmother's Bay, Hall Lake, and Sikachu Lake have participated in SaskPower's Northern First Nations Home Retrofit Program, where homes with electric heating, electric baseboards, and wood stoves receive free energy conservation items such as a smart thermostat, LED lightbulbs, a smart power strip, high-efficiency showerheads, and clothes drying racks.

The Pithesowiskotew team initially encouraged community members to sign up for SaskPower's Energy Assistance Program,[6] whose home energy coaches will come to a home, complete a walkthrough, and upgrade the home with free energy-efficient items. However, SaskPower recommended that the team hold off on its promotion, as they plan on providing another program better tailored to the community's needs soon. The timeline of program deployment is yet to be determined.

Community Support

The residents who have been able to participate in the program so far have appreciated the tools and advice and typically share their positive experiences with their neighbours, who then request to participate in this initiative.

[6] https://www.saskpower.com/Power-Savings-and-Programs/Home/Programs/Energy-Assistance-Program

Steps to Action Implementation

Phase 1: Identify low-cost energy conservation items.

- Complete through the Northern First Nations Home Retrofit Program.
- Item types, quantities, and costs are stored in a database that will be updated when changes to cost or technology (or other) occur. A team member will maintain this database.

Phase 2/Phase 3: Purchase and distribute low-cost energy conservation items.

- Items and distribution are provided through the Northern First Nations Home Retrofit Program.
- The Pithesowiskotew team has been identifying homes for the program and facilitating distribution.

Phase 4: Monitor outcomes and keep items in stock for regular distribution and replacement.

- SaskPower currently monitors the Northern First Nations Retrofit Program. Information collected is shared with the team.
- To continue this work beyond the Northern First Nations Retrofit Program, a Community Energy Coordinator can onboard new participants, monitor the outcomes for participating homes, and distribute/replace items as required.
- Will include the collection of energy bills from participants to quantify outcomes over the long term.

Responsible Department

The Pithesowiskotew team will work with the Public Works & Housing Department to track and identify homes participating in this action and collaborate with Social Development to identify homes of income-qualifying residents who would most benefit from the energy savings. A Community Energy Coordinator and/or a Customer Power Representative will be the local champion leading the implementation of the action.

Collaborators

- SaskPower
- Ecofitt/CLEAResult (Northern First Nations Home Retrofit Program delivery partner)

Funding Opportunities

- Northern First Nations Home Retrofit Program

ECA 4: Host a Community-Wide Energy Contest

Sucker River can encourage our members and residents to reduce energy usage by participating in a community-wide energy conservation contest. This action would only cost the time for the development of the contest and the cost of prizes to encourage participation. We expect a program like this to have immediate savings in reduced energy bills from participating homes.

Status

The Pithesowiskotew team has created a social media page, developed content for a year's worth of posts, and has begun regularly posting on their page. The team also did an Earth Day Earth Hour challenge contest in collaboration with Land and Resources in 2023 and 2024. The contest, which asked participants to share a picture of themselves and their families doing something that requires no energy, cost each department $500/year in contest prizes. In 2024, there were ten winners!

The Pithesowiskotew team has also applied for a grant through the Canada Service Corps,[7] which would distribute microgrants to multiple youth applicants in the community to kick-start their energy-related project ideas. The team has yet to hear back from the funder at the time of writing.

Community Support

The social media site for Pithesowsikotew has yet to receive the engagement and reach they had aimed for. They encourage everyone to connect with them online at all in-person events.

Steps to Action Implementation

Phase 1: Develop energy conservation contest programming.

- Initiated with the Earth Day Earth Hour challenge.
- Future contests will include other energy topics, such as conservation, efficiency, and self-generation.

[7] https://www.canada.ca/en/services/youth/canada-service-corps.html

Phase 2/Phase 3: Pilot the contest - update programming based on response & feedback.

- Can begin once the contest has been developed.
- A Community Energy Coordinator will deliver the contest to community members, track participation and collect participant data, and purchase and disperse prizes as required.

Phase 4: Offer the contest at regular intervals.

- Ongoing for the life of the program.
- A Community Energy Coordinator will deliver the contest to community members, track participation and collect participant data, and purchase and disperse prizes as required.
- Ideally includes the collection of energy bills from participants to quantify outcomes but will also include a survey for participants.

Responsible Department

The Pithesowiskotew team should continue to lead this initiative. Social Development should support the program's implementation to support energy cost savings throughout the community.

Collaborators

- Lands and Resources (current partner)

Funding Opportunities

- Clean Energy for Rural and Remote Communities Program
- Canada Service Corps

ECA 5: Improve Community Building Operations

Sucker River will work to hire and/or train building operators to conserve energy in non-residential buildings throughout the community. If the buildings already have employed operators, then this action has a minimal cost – simply the acquisition or development of training materials and time for employees to be trained. We expect to see material energy cost savings from improved community-building operations.

Status

The Pithesowiskotew team is in conversations with Johnson Controls about applying to the Indigenous Leadership Funding program to improve the overall energy performance of our buildings. This would see the installation of building system controls, solar panels, possible retrofits, and heat pumps for propane-heated buildings. The Emily McKenzie Memorial Centre and the Chief Moses Ratt School have been identified as potential buildings to include in this project.

Sucker River identified the following buildings and the most appropriate personnel to train:

- Chief Moses Ratt School – training for janitor
    - known to have high energy bills
- Band Hall – training for maintenance personnel
- Shop – training for maintenance personnel
- Water Treatment Plant - training for operators
- Fire Hall - training for emergency coordinator
- Band Store – training for store manager
- Emily Mackenzie Memorial – training for janitor

Sucker River supports the empowerment of its building operators to champion better energy practices.

Steps to Action Implementation

Phase 1: Recruit building operators and develop/identify training programs.

- The Pithesowiskotew team will develop/identify programming and recruit operators.

Phase 2: Provide training to community building operators.

- Will begin once a training program has been identified and operators recruited.
- Time from building operators will be required.

Phase 3: Update standards and procedures for building maintenance.

- To be advanced in parallel with programming development and can be built on through any feedback through training.
- The Pithesowiskotew team will work with the building operators to develop the standards and procedures.

Phase 4: Ongoing improved operations with monitoring and updating as required.

- Ongoing for the life of the program.
- The Pithesowiskotew team will connect with building operators, monitor the outcomes for participating buildings, and update the program curriculum, standards, and procedures as required.
- Ideally includes the collection of energy bills from participants to quantify outcomes but will also include a survey for participating students.

Responsible Department

Public Works & Housing would be the department responsible for identifying the appropriate building operations personnel to train and would be a collaborator in any community-specific programming considerations. A Community Energy Coordinator will coordinate this initiative.

Collaborators

- Public Works & Housing
- Saskatchewan Environmental Society (SES)

Funding Opportunities

- NRCan Codes Acceleration Fund
- Indigenous Leadership Fund

Examples

- SES Building Operator Training

ECA 6: Track and Report on Energy Usage

The success of all the above actions will be better understood if energy usage is collected and tracked. This work will be done for all Band-related data and could require significant time from one employee for the initial transition. Energy savings would be less direct, but the information tracked would be invaluable for monitoring all other actions and determining their next steps.

Community Support

The approach to information management varies between departments and communities but will often be only in paper form, and many administrative staff experience unnecessary inconveniences related to information retrieval. Collecting information has been a key challenge in this project. It creates a barrier to applying for funding and collaborating with departments.

Status

Lac La Ronge Indian Band has begun to use Element Connect: Housing & Tenant Tracking Software.[8] It is currently in use in Sucker River, collecting housing information, tenancy agreements, and work orders for the band-owned homes, and is intended to be implemented in all five remaining communities. Sucker River has expressed excitement over the new technology, and appreciates how it will keep a history on the house in case of tenant turnover, and how it holds the repair workers accountable for their work.

The LLRIB is also a signatory of the First Nations Capital & Infrastructure Agency of Saskatchewan's Assessment project, which will provide Energy Asset Condition Reports (eACRS), a more in-depth version of Indigenous Service Canada's Asset Condition Reporting System (ACRS) reporting that will consider energy. These assessments will also be tracked through Element Connect Software.

The Pithesowiskotew team is initiating the request to SaskPower for access to the monthly energy usage of Band-owned buildings. This could be incorporated into the Element Connect tracking software, so all information related to a building will easily be accessed in one location.

[8] https://www.elementconnect.ca/housing.html

Next Steps

Phase 1: Develop a method to access and store energy information easily.

- Has begun with Public Works & Housing adopting Element Connect.
- A method will be required to incorporate energy bills into the system.

Phase 2: Data collection & management for current energy use (energy baseline).

- Can begin once the method has been developed.
- A Community Energy Coordinator will source and collect the necessary information.

Phase 3: Monitor energy use in the community and update the energy database.

- A Community Energy Coordinator will source and collect the necessary information.

Phase 4: Report on community energy use as it changes annually.

- Ongoing for the life of the program.
- A Community Energy Coordinator will report on energy use.

Responsible Department

The Pithesowiskotew team should continue to lead this initiative. The Finance and Administration Departments will have the best connection to billing information, and either would be suitable partners in this action.

Collaborators

- Chief and Council
- Potential future funding bodies

Funding Opportunities

- ISC's Asset Management Program

Energy Efficiency Actions – Improvements and Switches

Energy efficiency refers to the technological solutions that reduce our energy use. Simply put, energy efficiency means using less energy to get the job done. Less energy used can lower energy costs, reduce emissions, and improve operational performance. Efficiency upgrades can also increase the value of buildings and other assets. These upgrades can be as simple as switching to LED lightbulbs, installing aerators in water fixtures, or as significant as upgrading a furnace to a heat pump or switching from gasoline to electric vehicles.

The following actions present paths toward increasing efficiency in our community.

EEA 1: Community Natural Gasification

Communities reliant on electricity, propane, and heating oil for heating their buildings will benefit from the reliability and benefits of being serviced by Natural Gas infrastructure.

According to SaskEnergy, a significant financial investment (>$1 MM) would be required to extend its current network to Lac La Ronge Indian Band communities, and it would be a commitment to utilizing the gas on a consistent and long-term basis.

Natural gas is currently the least expensive way to heat homes and will provide modest cost savings to residents over a long period. However, as a fossil fuel, this investment and transition to natural gas would not align with some of Lac La Ronge's energy sustainability goals or the national commitment to become net zero.

Status

Sucker River has begun the process by applying with SaskEnergy to gasify. At the time of writing, no timeline for the process was available.

Next Steps

Phase 1: Engage with SaskEnergy to explore the possibility of extending natural gas to Sucker River.

- Initiated with application.

Phase 2: Assess the feasibility of switching to natural gas heating.

- Can begin through discussions with SaskEnergy.
- Requires an understanding of current heating needs and costs – may require additional personnel to collect required data.

Phase 3: Implement and switch, based on priority, to natural gas.

- Can begin once switch is deemed feasible and buildings to prioritize are identified – identification could require additional personnel.
- Requires qualified personnel and gas hookup materials.
- Could potentially be absorbed into regular building maintenance operations, assuming heating system replacements would typically be performed by this staff.

Phase 4: Monitor outcomes and update infrastructure as required.

- Ongoing for the life of the project.
- Requires someone local to deliver on project, connect with building operators, monitor the outcomes for participating buildings and update the program prioritized list as required.

Responsible Department

The Public Works & Housing department is responsible for leading the gasification of buildings, identifying them, and delivering on the gasification hookups as part of their maintenance services.

Collaborators

- SaskEnergy
- Public Works & Housing

Funding Opportunities

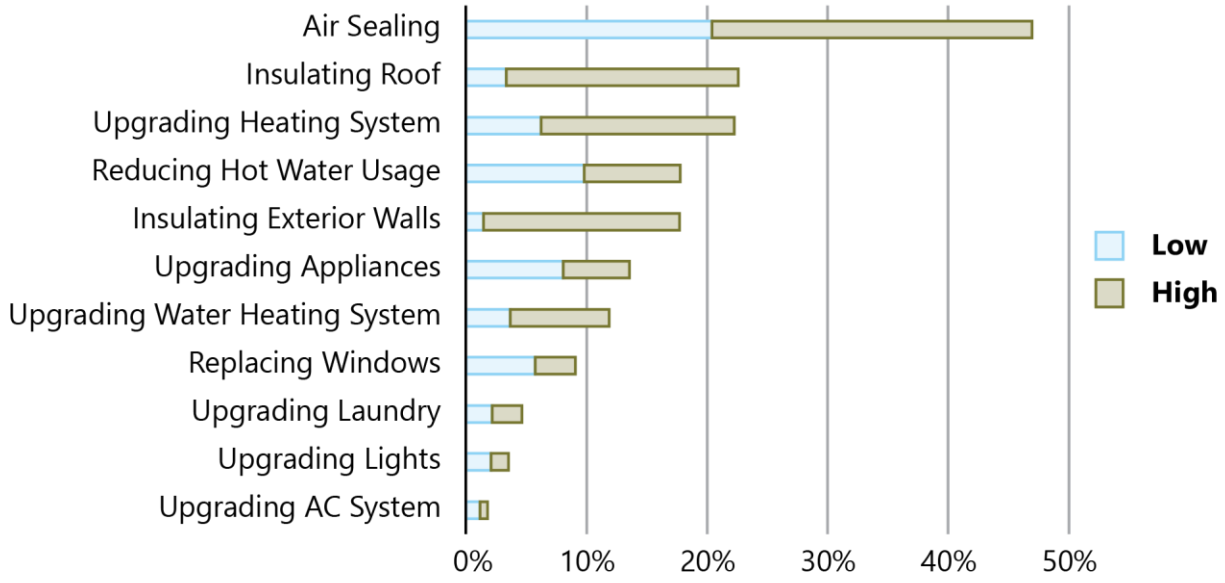
- Capital Facilities and Maintenance Program

EEA 2: Retrofit Homes

Home retrofits, such as air sealing and increasing insulation, can immediately reduce energy use for homes in our community that experience higher-than-average energy bills. These retrofits can be low- to medium-cost and require trained teams to deliver on the retrofits. This work will be done in conjunction with the housing maintenance work led by Public Works & Housing and will be part of the review process when housing conditions are assessed.

Using RETScreen® Clean Energy Management Software, the project team modelled potential retrofit initiatives on four variations of typical houses in the community to determine their energy impact. The assumptions associated with the initiatives are included in the accompanying Community Energy Analysis Report. The highest potential energy savings identified for LLRIB houses are included in **Figure 9**.

Figure 9: Modelled Energy Savings from Retrofits in Sucker River Homes



While the above provides a sense of which retrofits will likely be most common, each home will have different priorities based on its build, condition, and needs. The process of a home energy audit, which will help prioritize retrofits, can be found in the accompanying Education Materials report.

Status

If there is a damaged element of a home, a work order is created for Public Works & Housing to fulfill. Public Works & Housing will typically replace damaged items with a higher-efficiency version (e.g., a window with a higher R-value) and renovate homes up to the latest National Building Codes.

Leases for Band-owned homes are renewed every two years, and Public Works & Housing will typically perform an inspection at this time. A home energy audit will be paired with these inspections to reduce the inconvenience to the tenant.

Sucker River, Grandmother's Bay, Hall Lake, and Sikachu Lake have participated in SaskPower's Northern First Nations Home Retrofit Program, where homes with electric heating, electric baseboards, and wood stoves receive free energy efficiency upgrades such as increasing attic insulation, air sealing, HRV cleaning, and installing exterior insulation.

Community Support

Residents in surrounding communities who have been able to participate in the program so far have appreciated the improvements and typically share their positive experiences with their neighbours, who then request to participate in their homes. We hope to grow from what we have learned thus far and see these benefits extended to all homes in LLRIB.

Next Steps

Phase 1: Prioritize homes for energy evaluations.

- Initiated through Northern First Nations Home Retrofit Program.
- A Community Energy Coordinator can continue to identify homes in collaboration with the Public Works & Housing department.

Phase 2: Complete pre-retrofit energy evaluations.

- Will be initiated once homes have been identified and prioritized.
- A certified Home Energy Auditor will be engaged.
- Pre-retrofit energy evaluations may be a requirement for specific funding programs.

Phase 3: Complete recommended energy retrofits and post-evaluations.

- Can begin once retrofits are identified.
- Qualified personnel and building/retrofit materials will be required.

Phase 4: Monitor outcomes and update the home energy retrofit process as required.

- Ongoing for the life of the program.
- A Community Energy Coordinator can continue to identify homes in collaboration with the Public Works & Housing Department.

Responsible Department

Public Works & Housing would be responsible for delivering on the retrofits as part of their maintenance services. A Community Energy Coordinator will support the identification of homes and the coordination of the home energy audits.

Collaborators

- Public Works & Housing

Funding Opportunities

- Northern First Nations Home Retrofit Program
- Home Efficiency Retrofit Rebate
- Deep Retrofit Accelerator Initiative
- Retrofit Funding for multi-unit residential buildings

EEA 3: Retrofit Non-Residential Buildings

Like home retrofits, building retrofits can also lead to an immediate reduction in energy use. Retrofitting a building can involve many modifications, such as upgrading heating and lighting systems, adding insulation, sealing the building envelope, installing energy-efficient windows, and upgrading plumbing fixtures. These retrofits can be medium- to high-cost. Energy retrofit planning and execution will be absorbed into the work assumed by Public Works & Housing in close collaboration with the Pithesowiskotew team. Where applicable, energy retrofits should be done as part of maintenance and repair work on community buildings and part of the review process when community building conditions are assessed, and in some high energy consuming buildings, done as a "special project."

Previous ACRS reporting identified several community buildings in Sucker River that needed upgrades or renovations. As repairs are being considered, assessing these buildings for energy-focused retrofits is also possible. **Table 7** shows a list of community buildings with their prioritization for further assessment for energy retrofits. A certified energy auditor should be engaged to provide the most comprehensive assessment of building energy improvement opportunities.

As shown, buildings that community members frequent daily, such as a school or the arena, were given a higher priority level than buildings that are not frequented as often or for extended periods, such as lift stations. It was deemed most important to prioritize the buildings that would most impact the daily lives of Sucker River community members. For more information regarding the building prioritization criteria and specific energy recommendations for each building, please refer to the Community Energy Analysis Report.

Table 7: Energy Audit Priority for Sucker River Community Buildings

Community Building	Energy Retrofit Assessment Priority Level
Chief Moses Ratt School	High
Band Hall	High
Band Office	Medium
WTP Storage	Medium
Pumphouse	Medium
Cree Class Culture Room	Medium
Daycare (big building with Emily McKenzie)	Medium
Emily McKenzie Memorial Centre	Medium

Community Building	Energy Retrofit Assessment Priority Level
Headstart (big building with Emily McKenzie)	Medium
Fire Hall	Low
Lake Intake Pumphouse	Low
School Storage	Low
Sewage Lift Station #1	Low
Sewage Lift Station #2	Low
Water Treatment Plant	Low
Maintenance Shop	Low
Portable Classroom	Low
Storage	Low
Cold Storage	Low

Status

If there is a damaged element of a building, a work order is created for Public Works & Housing to fulfill. They will typically replace damaged items with a higher-efficiency version (e.g., a window with a higher R-value) and renovate homes up to the latest National Building Codes. Public Works & Housing has stated that there are upcoming renovations planned for numerous community buildings.

The LLRIB is also a Signatory of the First Nations Capital & Infrastructure Agency of Saskatchewan's Assessment project, which will provide energy asset condition reports (eACRS), a more in-depth version of Indigenous Service Canada's Asset Condition Reporting System (ACRS) reporting that will consider energy. These assessments will also be tracked through Element Connect Software.

The Pithesowiskotew team is in conversations with Johnson Controls about applying to the Indigenous Leadership Funding program. This program would include the installation of building system controls, solar panels, possible retrofits, and heat pumps for propane-heated buildings. The Emily McKenzie Memorial Centre and the Chief Moses Ratt School have been identified as potential buildings for this project.

Sucker River is also planning an $8 MM renovation for its health building, which will consider improved efficiency.

Next Steps

Phase 1: Prioritize buildings for energy audits.

- Initiated - see **Table 7** above.

Phase 2: Complete ASHRAE Levels 1 & 2 energy audits.

- Will be initiated with a qualified energy auditor once funding is secured.

Phase 3: Complete recommended energy retrofits and post-retrofit audits.

- Can begin once retrofits are identified through the audits.
- Qualified personnel and building/retrofit materials will be required.

Phase 4: Monitor outcomes and update the home energy retrofit process as required.

- Ongoing for the life of the program.
- A Community Energy Coordinator can continue identifying buildings in collaboration with the Public Works & Housing Department.

Responsible Department

Public Works & Housing would deliver the retrofits as part of their maintenance services. A Community Energy Coordinator would support the identification of buildings and coordinate the ASHRAE Levels 1 and 2 energy audits.

Collaborators

- Public Works & Housing

Funding Opportunities

- Deep Retrofit Accelerator Initiative

EEA 4: Incorporate Energy Efficiency in New Homes and Community Buildings

When new buildings are planned, simple improvements that increase costs by 10-20% can result in significant energy savings. When new homes and buildings are being planned, LLRIB will work to see the highest energy performance achieved based on the available funding resources.

Status

LLRIB is currently building higher-efficiency homes through CMHC's Rapid Housing Initiative. 39 homes are being built, with two single units to be built in Sucker River.

Sucker River's Child and Family Services is funding the construction of a new modern multipurpose facility. The building will include a well-being center, gym, and ten offices. They are working with an architect who will be considering efficient designs for the building.

Developing a Green Building Guideline is underway as part of the CEP project. These guidelines will utilize methods from the rapid housing initiative and compare costs with previous builds to better inform future building decisions.

Next Steps

Phase 1: Develop or adopt energy-efficient building guidelines.

- Has begun as part of the SREP project.

Phase 2: Provide training for local builders and trades.

- Can begin once guidelines have been adopted and a training program identified.
- A Community Energy Coordinator will deliver the program, either in person or by hiring an external trainer to deliver it directly to the builders and trades.
- Time from local builders/trades will be required.

Phase 3: Implement guidelines into building bylaws, permits, and inspection processes

- Can begin once guidelines have been adopted.
- A Community Energy Coordinator will incorporate updates into current processes.

Phase 4: Monitor outcomes and update the guidelines as required.

- Ongoing for the life of the program.
- A Community Energy Coordinator will deliver on the program, connect with builders/trades, monitor the outcomes for the new buildings, and update the guidelines, training, standards, and procedures as needed.

Responsible Department

Public Works & Housing would be responsible for adopting the guidelines and delivering energy-efficient builds and retrofits as part of the current services provided.

Collaborators

- Public Works & Housing
- Canada Energy Step Code
- Energy Efficiency Building Trainers/training program delivery bodies

Funding Opportunities

- NRCan Codes Acceleration Fund

EEA 5: Train Local Community Members to Become Certified Energy Advisors

Having a certified Energy Advisor (EA) locally would increase our community's affordability and uptake of energy audits, increasing retrofits. This action requires a keen interest and dedication to becoming certified. Those trained and certified must also be registered with NRCan and affiliated with an NRCan-licensed service organization (SO). The candidate must pass the Foundation Level and Energy Advisor (House) exams to become an EA.

Sucker River will also consider offering training to become certified and/or creating a licensed service organization to manage auditors directly. The course will be partnered with Northlands College and/or Pre-Employment Supports. Through Pre-Employment, there is a requirement for anyone on assistance to make tangible steps towards employment, such as completing certification courses.

Community Support

Community members have been enthusiastic about the opportunity to be trained in clean energy-related industries, and having a certified EA within the community would be extremely valuable to LLRIB's energy sustainability journey. Community members have also expressed a reluctance to request energy audits when the closest certified auditor is 4+ hours away.

Status

Jonah Ratt has passed the Foundational level exam and is working towards the remaining requirements to become an EA. Hailing from Sucker River, Jonah has been an inspiration for its community members. Jason Cook-Studer has reviewed the course materials and intends to become a certified energy auditor trainer. The team has also been promoting the course at their events, with sign-up sheets to become trained.

Desiree Maurice and Jonah Ratt will apply for training through Indigenous Clean Energy's "Bringing It Home" initiative that fosters community-centred "Healthy Energy Living," enabling environments that engrain energy efficiency for new and retrofitted homes and facilities.[9]

The Pithesowiskotew team has also signed on with Iron and Earth's submitted application to the Sustainable Jobs Training Fund. Their project would create solar PV installation and energy advisor certification programs.

[9] https://indigenouscleanenergy.com/our-programs/bringing-it-home/

Steps to Action Implementation

Phase 1: Recruit participants to take the certification and identify an affiliate trainer to deliver on course/provide course materials.

- Has begun with sign-up sheets at public events.
- Requires local space to host training – some space is available at the Pithesowiskotew office.

Phase 2/3: Run training program.

- Can begin once the program has been developed with an affiliate trainer.
- A Community Energy Coordinator will coordinate with trainers or deliver the training material directly.

Phase 4: Monitor program, consider offering regularly, and revisit curriculum for updates every 1-2 years.

- Ongoing as needed.
- Will depend on demand for energy audits, the success rate of participants, and resources available to provide training.
- A Community Energy Coordinator will deliver on the program, monitor the outcomes for participating students, and update the program curriculum as needed.
- Will ideally include the collection of employment data from participants to quantify outcomes.

Responsible Department

A Community Energy Coordinator will lead this initiative in partnership with Pre-Employment Supports.

Collaborators

- Natural Resources Canada
- Local Energy Advisors and Service Organizations
- Northlands College
- Indigenous Clean Energy

Funding Opportunities

- Employment and Social Development Canada's Sustainable Jobs Training Fund

EEA 6: Install Public EV Charging Stations

One way to demonstrate support for adopting ZEVs is to purchase EV charging stations for community use. This will reduce range anxiety and increase charging options for potential ZEV drivers. It can also boost tourism to accommodate the growing number of ZEV drivers. Charging stations are a low—to medium-cost investment, which would require high usage rates to generate revenue for the community but would provide moderate emissions savings.

Financial considerations were estimated for Sucker River to install four Level 2 charging stations and one Level 3 charging station for public use by 2025. They can be found in the accompanying Community Energy Analysis Report. Based on the analysis, Level 3 charging stations would likely be profitable if the community received at least 85% grant funding to offset costs and charged at least $34/hour for their use. The average pay-per-use hourly charge for Level 3 stations is about $15.[10]

Status

Sucker River recognizes the importance of supporting the adoption of EVs through the installation of charging stations. They anticipate the costs of EVs will go down, and there is a potential opportunity for battery mineral mining to bring economic opportunities to the region.

Sucker River has identified the Band Store, the and hall, and Chief Moses Ratt School as potential sites for installing EV stations.

The team is also looking to secure funding from NRCan's Zero Emission Vehicle Infrastructure Program,[11] and Indigenous Clean Energy's ChargeUp program[12] to support the installation of electric vehicle charging stations in all six communities.

Next Steps

Phase 1: Identify a location, determine energy needs, and obtain quotes from installers.

- Initiated with the identification of the Band Store, the band hall, and Chief Moses Ratt School.
- A Community Energy Coordinator is coordinating with other building managers of facilities that would host the stations, EV station installers and service providers, and electricians.

Phase 2: Secure funding and/or financing.

- Can begin as soon as location(s) is/are identified.
- A Community Energy Coordinator is collecting information in preparation for the next available grant funding program.

[10] https://ama.ab.ca/electric-vehicles/charging/cost
[11] https://natural-resources.canada.ca/energy-efficiency/transportation-alternative-fuels/zero-emission-vehicle-infrastructure-program/21876
[12] https://indigenouscleanenergy.com/our-programs/charge-up/

Phase 3: Install charging stations.

- Can begin as soon as financing is secured.
- EV station installers, service providers, and electricians will be required.
- A Community Energy Coordinator will coordinate with the host site, EV station installers and service providers, and electricians.

Phase 4: Operate, maintain, monitor, and update service as required (e.g., increase stations, charge rates, etc.).

- Ongoing for the life of the program.
- A Community Energy Coordinator will monitor the stations, ensure they are maintained and operating as anticipated, and analyze their use and success.

Responsible Department

A Community Energy Coordinator will lead this initiative in partnership with the building managers of the host sites to ensure that the stations are installed in locations with an on-site champion for proper use and maintenance. Identified potential host sites include:

- Sucker River Band Store
- Sucker River Band Hall
- Chief Moses Ratt School

Collaborators

- SaskPower
- SaskEV
- Electric Vehicle Charging Station Installers
- Site hosts

Funding Opportunities

- Zero Emission Vehicle Infrastructure Program
- ICE Charge Up

EEA 7: Electrify Fleet Vehicles

As the Bands' fleet vehicles are due for replacement, LLRIB will look to establish an internal policy to replace retiring assets with ZEVs. To initiate this transition, it is proposed that we pilot one fleet vehicle to confirm that it can meet the service level required for the fleet and other key learnings to inform the fleet's adoption of ZEVs.

The additional upfront costs of a ZEV can be up to $10,000 per vehicle, but this can be recovered through existing federal rebate programs and offset from operational cost savings commonly seen in ZEVs.

The personnel purchasing vehicles for Sucker River will incorporate EV purchases into their scope of work since they would be doing the same for internal combustion engine vehicles instead. The same goes for vehicle maintenance—if trained, the same personnel or outsourced service providers will maintain EVs as they do internal combustion engines (ICEs).

Status

Sucker River would consider switching its garbage truck, community van, maintenance trucks, and buses to electric.

Next Steps

Phase 1: Study the feasibility of electrifying fleet vehicles.

- Can begin as soon as decided.
- A Community Energy Coordinator will support local personnel with an understanding of current vehicles in use and their needs and research on comparable EVs.

Phase 2: Pilot one fleet vehicle and monitor outcomes.

- Can begin once a vehicle is identified and a comparable EV has been identified.
- Some additional funds may be required to pay for the extra upfront costs, unless the identified vehicle can be downsized while still delivering on the same level of service required.
- A Community Energy Coordinator will track the vehicle usage, ideally compared to a fleet-owned internal combustion engine (ICE) vehicle with similar usage.

Phase 3: Purchase electric vehicles when up for renewal and based on availability.

- Can begin if the pilot is deemed successful and worthy of expansion.
- A Community Energy Coordinator will support local personnel with an understanding of current vehicles in use and their needs and research on comparable EVs.

Phase 4: Monitor and maintain vehicles as required and switch as more availability arises.

- Ongoing for the life of the program.
- A Community Energy Coordinator will track current in-use vehicles and their needs, as well as track comparable EVs, monitor use, and report on any cost and savings differences.

Responsible Department

The department currently responsible for the purchase, use, and maintenance of vehicles would be best suited to continue that role for the purchase, use, and maintenance of electric vehicles. A Community Energy Coordinator will support the reporting of their use in comparison to internal combustion vehicles and support any funding application submissions.

Collaborators

- SaskPower
- SaskEV

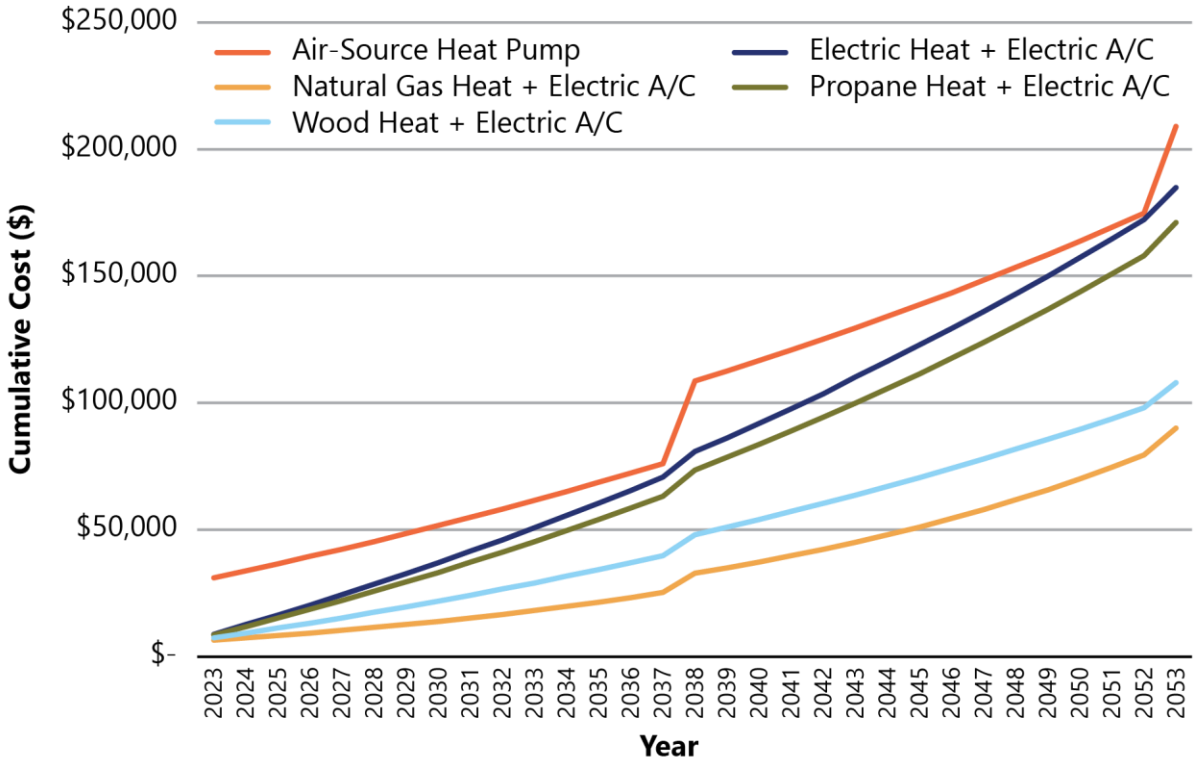
Funding Opportunities

- Municipal Fleet Electrification

EEA 8: Install Heat Pumps for Diesel and Electrically Heated Buildings

Buildings heated by diesel, propane, or electric furnaces will benefit from switching to high-efficiency electric air-source heat pumps (ASHP). These units have an upfront cost and require a backup heating source for extreme winter days when temperatures dip below -20˚C. However, they can offer financial payback by reducing home and building energy costs and GHG emissions. **Figure 10** below summarizes the cumulative (i.e., installation and operational) costs for various heating and cooling systems from 2023-2053. More details on this analysis can be found in the Community Energy Analysis Report.

Figure 10: Heating System Cumulative Cost Comparison (2023-2053)



Status

Sucker River has yet to pursue this action.

The Pithesowiskotew team is in conversations with Johnson Controls about applying to the Indigenous Leadership Funding program. The program would include the installation of building system controls, solar panels, and possible retrofits, including heat pumps for propane-heated buildings.

Next Steps

Phase 1: Prioritize buildings for switching to heat pumps (based on heating fuel and load).

- Can begin as soon as decided.
- A Community Energy Coordinator can identify buildings in collaboration with the Public Works & Housing Department.

Phase 2: Pilot one building to install a heat pump and monitor outcomes.

- Can begin once a building with a heating system requiring replacement is identified.
- Some additional funds may be required to pay for the additional upfront costs.
- A heat pump equipment provider and installer will be required.
- Will require personnel to track the energy usage and collect the information for the previous system to compare.

Phase 3: Implement heat pumps in prioritized buildings.

- Can begin if the pilot is deemed successful and worthy of expansion.
- A Community Energy Coordinator can identify buildings in collaboration with the Public Works & Housing Department.
- A heat pump equipment provider and installer will be required.

Phase 4: Monitor outcomes and update the heat pump installation process as required

- Ongoing for the life of the program.
- A Community Energy Coordinator will track buildings and their heating system replacement schedule, monitor use, and report on any cost and savings differences.

Responsible Department

Public Works & Housing, currently responsible for purchasing, installing, and maintaining heating systems for their community-owned buildings, would be best suited to continue that role for the purchase, installation, and maintenance of heat pumps. A Community Energy Coordinator will support the reporting of their use in comparison to previous heating systems and support any funding application submissions.

Collaborators

- SaskPower

Funding Opportunities

- Clean Energy for Rural and Remote Communities Program
- Indigenous Leadership Fund

Renewable and Low-Emission Energy Actions

Renewable energy can be implemented at different scales to provide reliability and resiliency in remote regions. Across the communities of the Lac La Ronge Indian Band, members shared that the electricity grid can be unreliable, with frequent and prolonged outages due to weather events or repairs. Small- to large-scale renewable projects can support a single home or entire community with an alternative energy source.

The following actions to develop renewable and low-emissions energy projects are based on identified community priorities and available energy resource potential in LLRIB.

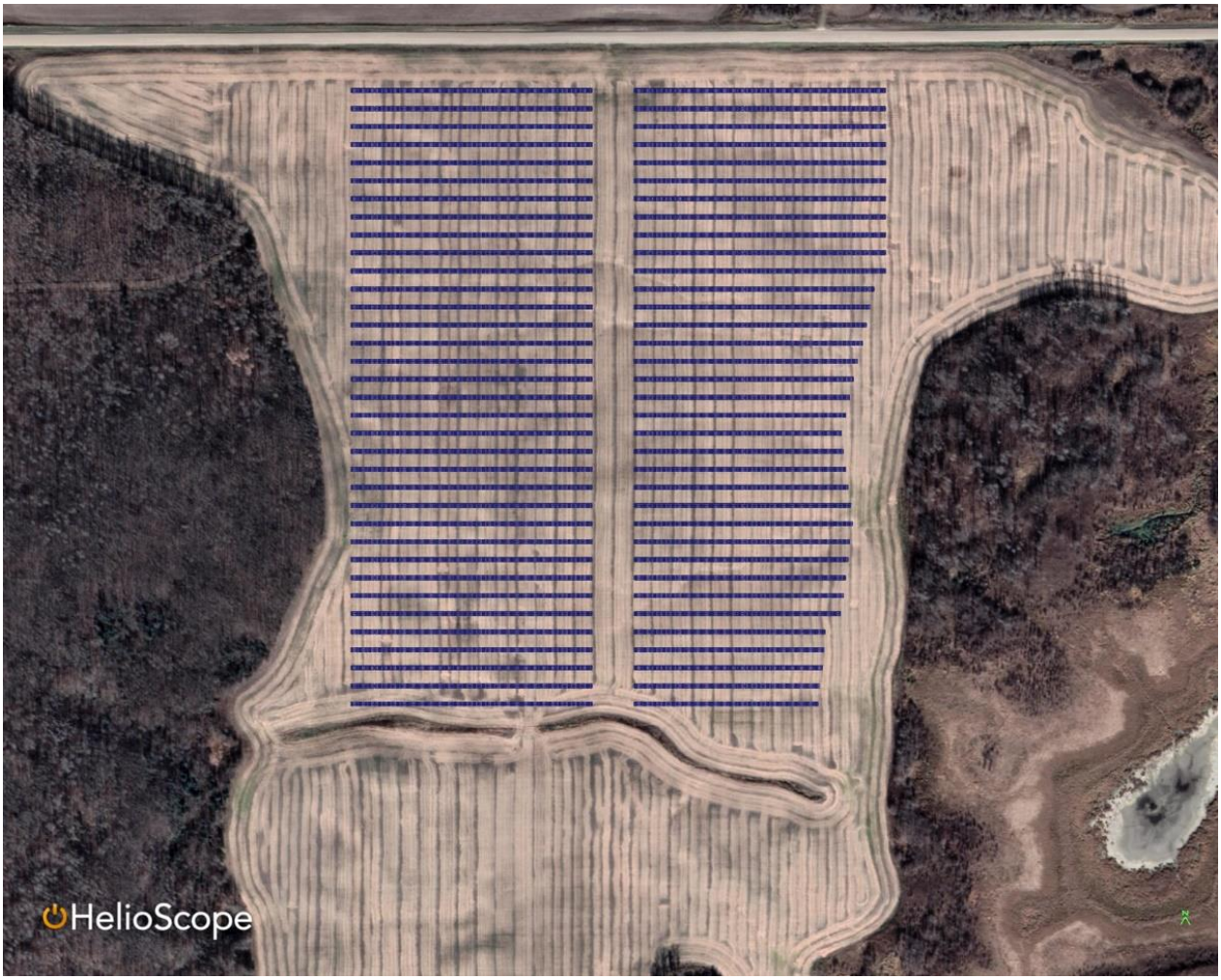
REA 1: Develop a Utility-Scale Renewable Energy Project

If the community wants to significantly offset emissions from electricity usage, developing a utility-scale renewable energy project will be essential to LLRIB's sustainable energy journey. These projects have significant investment costs and would see a moderate return on investment through electricity sell-back by the end of the project's lifetime if this action was pursued locally. The funding from this project's revenue will also help fund the Pithesowiskotew team's employment, which will then help the team pursue other actions.

Example: Ground-Mount Solar (Little Red River)

If all six communities were to invest in one location for a larger-scale project on Band-owned land, the recommendation would be to consider Little Red River's land due to its higher solar potential and larger unshaded land space. The system model, which is on farmland, is shown in **Figure 11**. The project will use a raised mounting system to enable solar and food farming on the same lot. The proposed system's total installed capacity is 13,800 kW, and the annual electricity output was determined to be approximately 17,920,467 kWh.

Figure 11: Ground-Mount Solar PV System Configuration as Designed in Helioscope

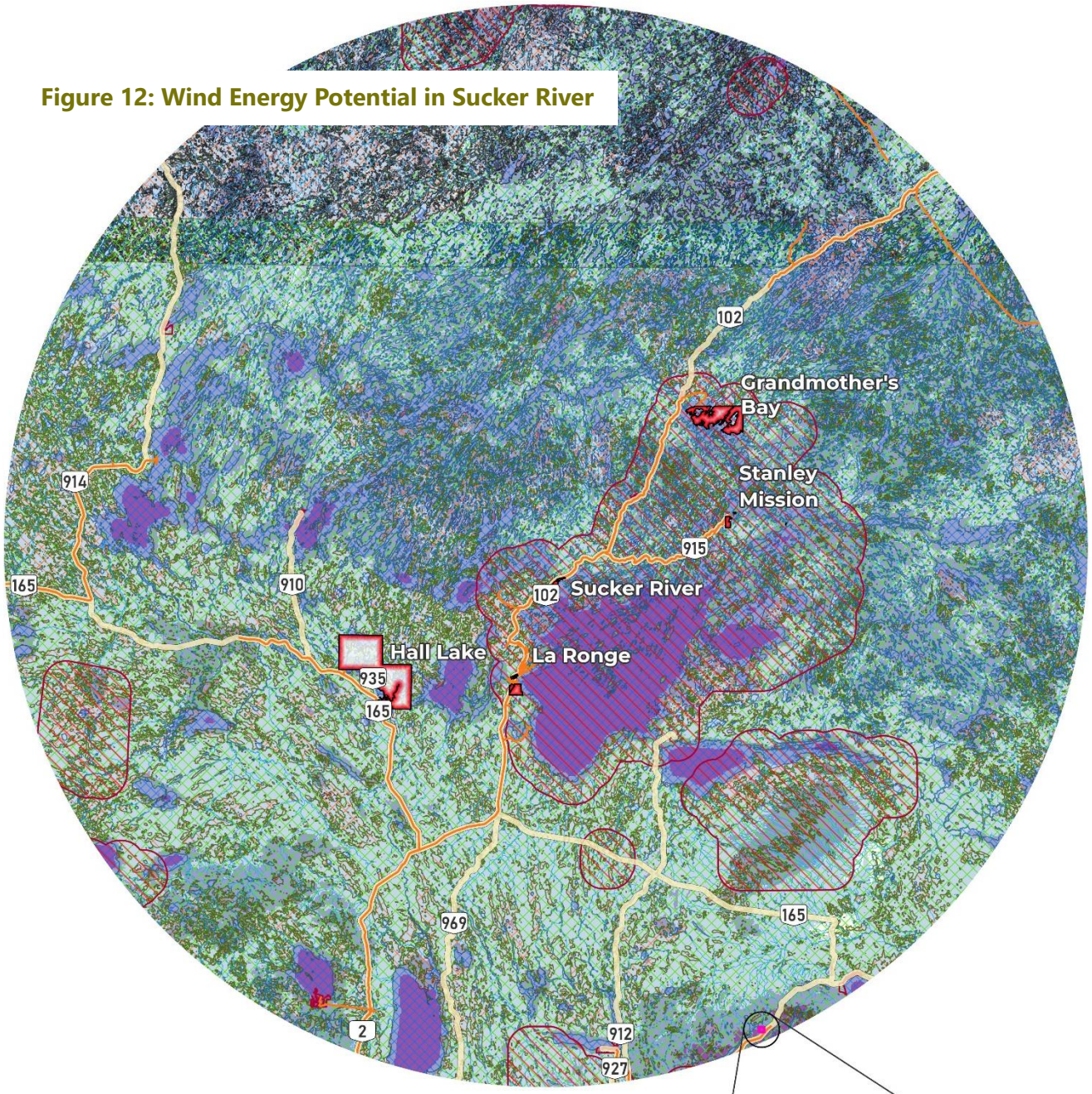


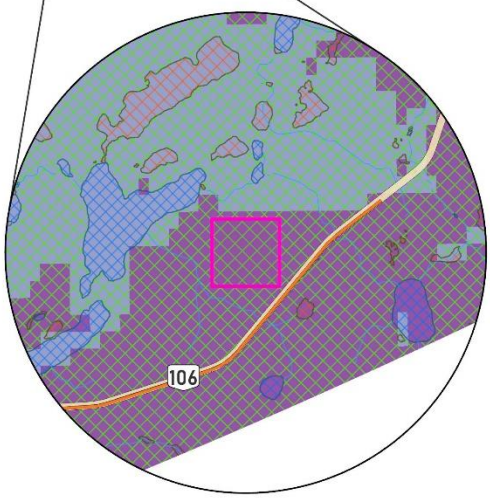
Based on this analysis, assuming the electricity is exported to the grid at $0.075/kWh, the project would have a Simple Payback Period of 20 years. It would be able to produce electricity at $0.10/kWh without any external grant funding. For more details on the analysis, please refer to the Community Energy Analysis Report.

Example: Wind near Lac La Ronge

Figure 12 below highlights a potential wind power project location. This site is outside of the LLRIB reserve land, heavily treed, and proximal to a nearby road and existing power lines. Based on a desktop review of wind resource data, the site has an average wind speed of 6 m/s at an elevation of 50 m.

Figure 12: Wind Energy Potential in Sucker River





Legend

Example Energy Generation Site
- Wind Project Footprint
- Wind Turbine Avoidance Zones
- Lac La Ronge Indian Band Community
- Highway
- Watercourse
- SaskPower Overhead Primary Distribution Power Line

Land Cover Class
- Trees
- Water
- Rangeland

Wind Speed at 50m elevation, m/s
- <4
- 4 - 5
- 5 - 6
- 6 - 7
- >7

Data Sources: Government of SK, Urban Systems Ltd, SaskPower, Impact Observatory, Microsoft, and Esri.

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N W E S

0 20 40 60

Kilometres

Scale: 1:900,000 (When plotted at 11x17")

Coordinate System: NAD 1983 UTM Zone 13N

The key findings from our technical analysis of this site show that it is less desirable than known successful local and regional wind projects. For more details on the analysis, please refer to the accompanying Community Energy Analysis Report.

Status

In January 2024, the Lac La Ronge Indian Band submitted two applications to Natural Resources Canada's Smart Renewable Electrification Pathways (SREP) Project to study the feasibility of large-scale wind or solar photovoltaic (solar PV) project opportunities. These applications outlined a summary of key steps and activities to advance a feasibility study to determine further their benefit to Sucker River. While the projects are not in the community itself, they may represent an exciting investment opportunity that contributes to LLRIB's clean energy goals and objectives. In May 2024, the Band was informed they were unsuccessful with this grant application.

On the smaller, community-scale clean energy project front, the Pithesowiskotew team successfully secured funding for the Strategic Partnerships Initiative to complete a solar feasibility study. The team will work with Urban Systems and Aurora Solar Inc. to utilize this funding to study various project sites and opportunities for incorporating solar PV and energy solutions on select community buildings.

Next Steps

Phase 1: Engage with SaskPower to confirm interconnections at identified sites.

- Can begin as soon as decided.
- A Community Energy Coordinator will participate in the engagement.

Phase 2: Complete technical feasibility study to complete a commercial analysis, detailed site investigations, land tenure and permitting, and project design.

- Can begin once the site is deemed potentially feasible from an interconnection perspective by SaskPower.
- External resourcing to investigate the site will be required.
- A Community Energy Coordinator will coordinate with external resources.

Phase 3: Secure financing.

- Can begin as soon as the site is deemed feasible and the project is designed.
- A Community Energy Coordinator will apply for any grant funding pursued or partner with a developer.

Phase 4: Install project.

- Can begin as soon as financing is secured.
- Will require a large-scale renewable energy installer/developer.
- A Community Energy Coordinator will coordinate with the installer/developer.

Phase 5: Operate, maintain, and monitor production.

- Ongoing for the life of the project.
- A Community Energy Coordinator will monitor the project, ensure it is maintained and operating as anticipated, and analyze its success.

Responsible Department

- Lac La Ronge Indian Band's Economic Activity Management Limited Partner, Kitsaki Management, would be responsible for an investment of this magnitude in collaboration with the Pithesowiskotew team, Lands, and Leadership.

Collaborators

- Lands and Resources Department
- Owners and Users Near the Site
- SaskPower
- Renewable Energy Installers/Developers

Funding Opportunities

- Capital Facilities and Maintenance Program
- Strategic Partnerships Initiative
- Building Capacity with the Smart Renewables and Electrification Pathways Program

REA 2: Install Solar on Community Buildings

Solar electricity generation converts sunlight to usable electricity using solar photovoltaic (PV) panels.

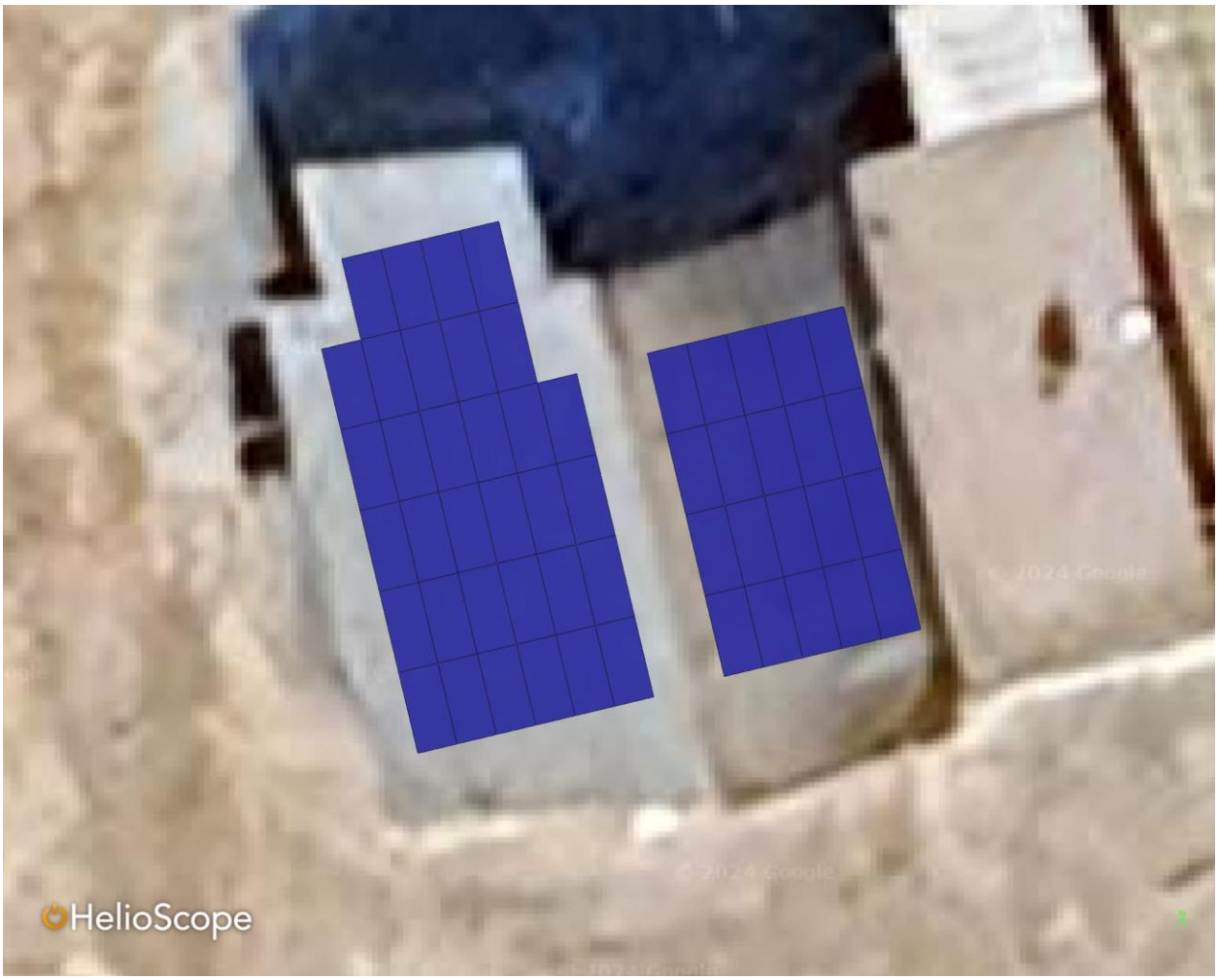
Solar installation on Sucker River- owned community building rooftops can be done quickly through accessible installers, with a significant upfront investment (>$50,000) that would see a moderate return on investment through offset electricity bills within the life of the equipment.

Project Example

The Sucker River Community Hall, shown in **Figure 13**, was used as a possible site for rooftop solar. Using Helioscope PV Analysis software, an optimal solar PV configuration for a rooftop system with a total installed capacity of 29.2 kW was reviewed, as shown in **Figure 14**. The annual electricity output was determined to be approximately 26,085 kWh with 61% of electricity consumed within the month it was produced.

Figure 13: Sucker River Community Hall

Figure 14: Sucker River Community Hall's Solar PV System Configuration as Designed in Helioscope



Installing solar panels on the community hall would require an upfront investment of around $98,100 for a 29.2 kW system, which would see a return on investment within 25 years if it were 47% grant-funded. For more details on the analysis, please refer to the accompanying Community Energy Analysis Report.

Status

This action has been pursued through Iron and Earth's Community Solar Skills training planned for 2024. This training will include installing a small (4kW to 9kW) solar PV system on a community building. Sucker River's Community Hall and Chief Moses Ratt School have been identified as potential candidate buildings for this installation and training.

Lac La Ronge Indian Band had applied for funding through the Low Carbon Economy Challenge in partnership with Evolv Solar to install solar on community buildings across our six communities, including Sucker River's Community Hall and Chief Moses Ratt School. This application did not meet the required $/tonnes of CO_2e to qualify for funding. This project has now been submitted to the Indigenous Leadership Fund. However, in June 2024, the team was informed they were unsuccessful with this grant application.

The Pithesowiskotew team successfully applied to the Strategic Partnerships Initiative, which will be funding up to $80,000 for a solar feasibility study. The team is conversing with Aurora Solar Inc. to utilize this funding to develop a study best suited to the communities' priorities, including preliminary solar concept designs and high-level cost estimates for the installation of solar on Chief Moses Ratt School.

Next Steps

Phase 1: Identify priority buildings to install solar, engage with SaskPower, and obtain quotes from solar installers.

- Can begin as soon as decided.
- A Community Energy Coordinator will identify buildings in collaboration with the Public Works & Housing Department and engage with SaskPower and installers.

Phase 2: Secure financing and plan installations.

- Can begin as soon as homes are identified.
- A Community Energy Coordinator will apply for any grant funding pursued.
- Will require local installers to support planning.

Phase 3: Install solar.

- Can begin as soon as financing is secured.
- Rooftop solar PV installers and electricians will be required.
- A Community Energy Coordinator will coordinate with homes, rooftop solar PV installers, and electricians.

Phase 4: Operate, maintain, and monitor production.

- Ongoing for the life of the program.
- A Community Energy Coordinator will monitor the PV systems, ensure they are maintained and operating as anticipated, and analyze their use and success.

Responsible Department

Public Works & Housing, currently responsible for purchasing, installing, and maintaining heating systems for their community-owned buildings, would be best suited to continue that role for purchasing, installing, and maintaining rooftop Solar PV systems. A Community Energy Coordinator will support the reporting of their use in comparison to previous electricity bills and support any funding application submissions.

Collaborators

- SaskPower
- Solar PV Installers
- Iron and Earth

Funding Opportunities

- Capital Facilities and Maintenance Program
- Indigenous Leadership Fund
- Strategic Partnerships Initiative

REA 3: Install Solar on Residential Buildings

Based on full-year accounts, between 2018 and 2022, the average home in Sucker River used approximately 16,900 kWh of electricity per year. An optimal solar PV configuration for a rooftop system on a typical house was reviewed using Helioscope PV Analysis software. The proposed configuration, given the available rooftop space of a typical house shown below in **Figure 15**, is 7.2 kW, and the annual electricity output was determined to be approximately 9,440 kWh with 66% of electricity consumed within the month it was produced.

Figure 15: Residential Solar PV System Configuration as Designed in Helioscope

Solar installation on Sucker River-owned residential rooftops can be done quickly through accessible installers, with a moderate upfront investment of around $24,200 for a 7.2 kW system that would see a return on investment within 25 years if it were 22% grant-funded.
For more details on the analysis, please refer to the Community Energy Analysis Report.

Status

Sucker River has yet to pursue this action. There is a greater interest in larger-scale renewable energy generation projects to create revenue for the community and sustain the employment of community energy coordinators, which will then deliver on smaller-scale installations that benefit individual homeowners. Sucker River has also noted their concerns about the solar panels getting vandalized if installed at individual homes instead of at a centralized location.

Next Steps

Phase 1: Identify priority homes to install solar and obtain quotes from installers.

- Can begin as soon as decided.
- A Community Energy Coordinator will identify homes in collaboration with the Public Works & Housing Department and engage with SaskPower and installers.

Phase 2: Secure financing and plan installations.

- Can begin as soon as homes are identified.
- May require personnel to apply for any grant funding pursued.
- Will require local installers to support planning.

Phase 3: Install solar.

- Can begin as soon as financing is secured.
- Rooftop solar PV installers and electricians will be required.
- A Community Energy Coordinator will coordinate homes, rooftop solar PV installers, and electricians.

Phase 4: Operate, maintain, and monitor production.

- Ongoing for the life of the program.
- A Community Energy Coordinator will monitor the PV systems, ensure they are maintained and operating as anticipated, and analyze their use and success.

Responsible Department

Public Works & Housing, currently responsible for purchasing, installing, and maintaining heating systems for their community-owned homes, would be best suited to continue that role for purchasing, installing, and maintaining rooftop Solar PV systems. A Community Energy Coordinator will support reporting of their use compared to previous electricity bills and support any funding application submissions.

Collaborators

- SaskPower
- Solar PV Installers

Funding Opportunities

- Capital Facilities and Maintenance Program
- The Canada Greener Homes Loan

REA 4: Train Local Community Members to Become Certified Renewable Energy Installers

More local renewable energy installers would increase the affordability and uptake of private installations in the community and become a source of income for our members. This action requires local people to be interested in and dedicated to becoming certified. Certification requires taking a certification course and passing the final exam.

Sucker River will also consider offering training for community members to become certified, which will be in partnership with Northlands College and/or Pre-Employment Supports. Through Pre-Employment, there is a requirement for anyone on assistance to make tangible steps towards employment, such as completing certification courses.

Community Support

Community members have been enthusiastic about the opportunity to be trained in an employable skill.

Status

In October 2023, Iron and Earth facilitated a 2-day Condensed Community Solar Skills program for 12 participants in Little Red River. The course shared foundational knowledge on renewable energy, including hands-on interaction with circuit boards and a solar oven, and basic electrical safety. This course was insufficient for receiving any certification, but it introduced many participants to relevant concepts. The course was intended to be paired with installing a small (4 kW to 9kW) system on one community building – this building has not yet been selected.

In April 2024, Jason Cook-Studer participated in training on designing and installing solar PV systems with battery energy storage through Stardust Solar.

The Pithesowiskotew team has also signed on with Iron and Earth's submitted application to the Sustainable Jobs Training Fund. Their project would create solar PV installation and energy advisor certification programs. The total ask was for 1,500 jobs over three years, spread over multiple provinces, some of which would be appointed to LLRIB. The team has yet to receive a response from this application.

The Pithesowiskotew team will be providing a condensed solar skills training course in the Fall of 2024 with the Trapper's Association N9, which would include trappers near La Ronge, Sucker River and Hall Lake. Available space has also been identified at the Pithesowiskotew offices for hosting training programs.

Steps to Action Implementation

Phase 1: Recruit participants to take the certification and identify an affiliate trainer to deliver on the course and provide course materials.

- Has begun with sign-up sheets at public events.
- Local space to host training is required.

Phase 2/3: Run the training program.

- Can begin once the program has been developed with an affiliate trainer.
- A Community Energy Coordinator will coordinate with trainers or deliver the training material.

Phase 4: Monitor the program, consider offering it regularly, and revisit the curriculum for updates every 1-2 years.

- Ongoing as needed.
- Will depend on demand for renewable energy installations, the success rate of participants, and resources available to provide training
- A Community Energy Coordinator will deliver on the program, monitor the outcomes for participating students, and update the program curriculum as required.
- Will ideally include collecting employment data from participants to quantify outcomes.

Responsible Department

A Community Energy Coordinator will lead this initiative in partnership with Pre-Employment Supports.

Collaborators

- Natural Resources Canada
- Local renewable energy installers
- Pre-Employment Supports
- Northlands College

Funding Opportunities

- Sustainable Jobs Training Fund

REA 5: Establish Emergency Backup Power at Public Centres

The community will pair renewable energy generation with backup battery storage to increase resiliency and emergency preparedness. Due to climate change and other emergencies, the community may require backup power at key facilities for extended periods of time, which would require significant backup storage. Given the high installation costs associated with the Powerwall systems, this action will require community buy-in and, ideally, some external funding support. For more details on battery storage considerations, please refer to the Community Energy Analysis Report.

Status

In response to a 5-day power outage in May 2021, Sucker River set up an electric plug-in backup generator to connect to the hall. They expressed a desire to have a backup generator built into the building.

Next Steps

Phase 1: Engage with SaskPower and potential developers and identify sites.

- Can begin as soon as decided.
- A Community Energy Coordinator will participate in the engagement.

Phase 2: Complete battery storage feasibility study and business case.

- Can begin once SaskPower deems the site potentially feasible.
- External resourcing will be required to study feasibility and develop business cases.
- A Community Energy Coordinator will coordinate with external resources.

Phase 2: Secure financing.

- Can begin as soon as a favourable business case is developed.
- A Community Energy Coordinator will apply for any grant funding pursued or partner with a developer.

Phase 3: Install the system.

- Can begin as soon as financing is secured.
- A renewable energy installer will be required.
- A Community Energy Coordinator will coordinate with external resources.

Phase 4: Operate and maintain, monitor use, and expand as required.

- Ongoing for the life of the project.
- A Community Energy Coordinator will monitor the project, ensure it is maintained and operating as anticipated, and analyze its success.

Responsible Department

A Community Energy Coordinator will lead this initiative in partnership with the building manager(s) of the host site(s).

Collaborators

- SaskPower
- Renewable Energy Installers/developers
- Site Hosts

Funding Opportunities

- Capital Facilities and Maintenance Program
- Strategic Partnerships Initiative

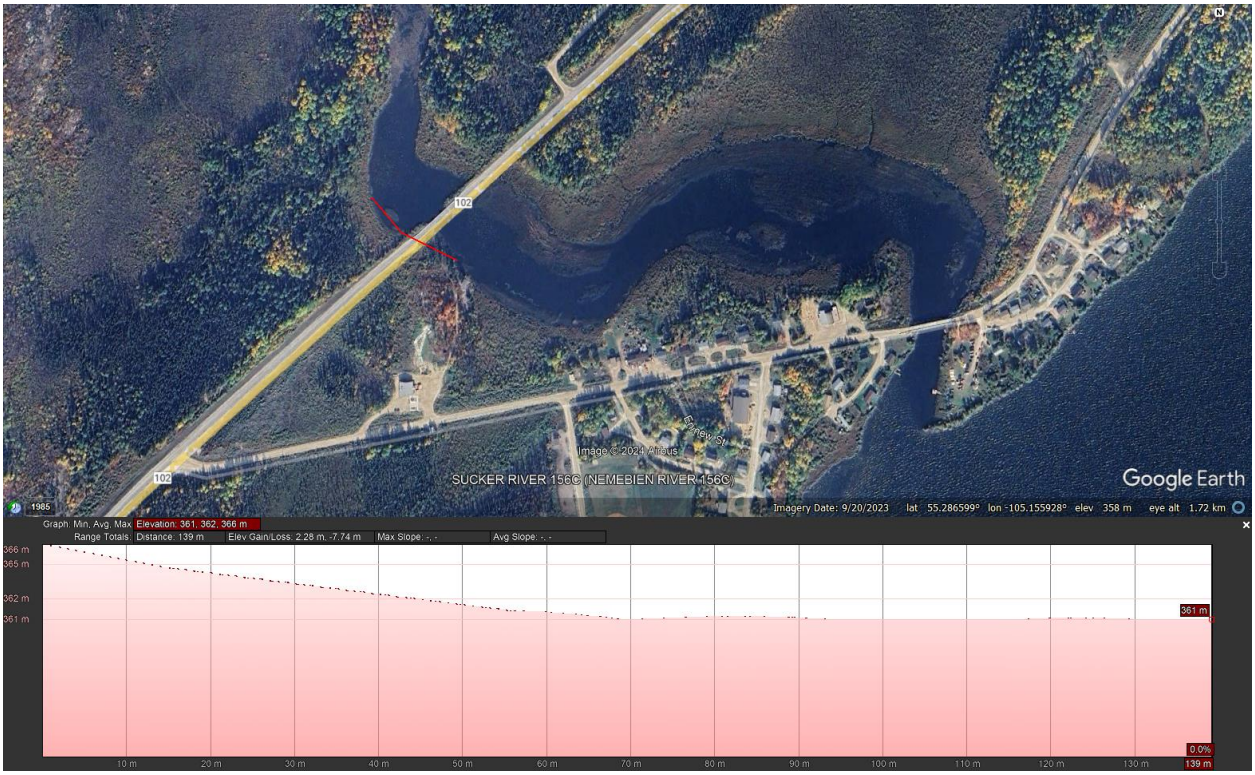
REA 6: Develop a Micro-Hydro Project

Installing mini or micro-hydro facilities is another way to offset electricity use from nearby community buildings. These facilities are less common, so pricing is less known, but it is anticipated that their equipment and installation would be considerable (>$50,000) and that a moderate return on investment would be seen, potentially within the facility's usable life.

Project example

The project team conducted a preliminary analysis of small hydro potential in the community by modelling the power generation potential and unit economics for the Nemeiben River, starting just across the highway from the community. The community energy project team identified this watercourse due to its proximity to the community and significant elevation change. There was no gauging station to understand the historical flow of this river. **Figure 16** shows the location of the watercourse.

Figure 16: Location of Potential Hydropower Facility



The project team worked with a local installer to conduct a preliminary financial analysis for four 15 kW Turbulent B-200 turbines, a system sized based on the head of the watercourse. The analysis found that installing micro-hydro would require an upfront investment of around $1,682,000. Given the operational costs, the project must generate at least **499,100 kWh/year** to make any profit.

Given that this assessment is high-level, an actual project may be financially feasible. If the community would like to pursue this opportunity further, a more in-depth feasibility study, with on-site assessments and flow rate monitoring would be required. For more details on the analysis, please refer to the Community Energy Analysis Report.

Status

In January 2024, the Lac La Ronge Indian Band submitted one application to Natural Resources Canada's Smart Renewable Electrification Pathways (SREP) Project to study the feasibility of generating micro-hydro at four nearby rivers, including the Nemeiben River. In May 2024, the Band was informed they were unsuccessful with this grant application.

In partnership with the Pithesowiskotew team, Pioneer Infrastructure is doing an assessment in late July 2024 to review potential micro-hydro sites for Sucker River, Montreal River near La Ronge, Stanley Mission, and Grandmothers Bay.

Next Steps

Phase 1: Engage with SaskPower and identify site.

- Can begin as soon as decided.
- A Community Energy Coordinator will participate in engagement.

Phase 2: Assess hydropower resources and complete site investigations and feasibility study.

- Can begin once the site is deemed potentially feasible by SaskPower.
- Will require external resourcing to study feasibility and investigate the site.
- A Community Energy Coordinator will coordinate with external resources.

Phase 3: Project design development.

- Can begin once site is deemed potentially feasible by hydropower resource assessment.
- Will require external resourcing to design the facility.
- A Community Energy Coordinator will coordinate with external resources.

Phase 4: Secure financing.

- Can begin as soon as location(s) is/are identified.
- A Community Energy Coordinator will apply for any grant funding pursued or partner with a developer.

Phase 5: Install hydro.

- Can begin as soon as financing is secured.
- Will require a mini- or micro-hydro installer and electrician(s).
- A Community Energy Coordinator will coordinate with external resources.

Phase 6: Operate, maintain, and monitor production.

- Ongoing for the life of the program.
- A Community Energy Coordinator will monitor the PV systems, ensure they are maintained and operating as anticipated, and analyze their use and success.

Responsible Department

If the micro-hydro system is generating electricity for a building, then the building manager would be responsible for the purchase, installation, and maintenance of the micro-hydro system. The Lands and Resources Department would be responsible if the project is stand-alone. A Community Energy Coordinator will support the reporting of the hydro system in comparison to previous electricity bills and support any funding application submissions.

Collaborators

- Landowners and Users Near the Affected Waterway
- SaskPower
- Mini/Micro Hydropower Installers

Funding Opportunities

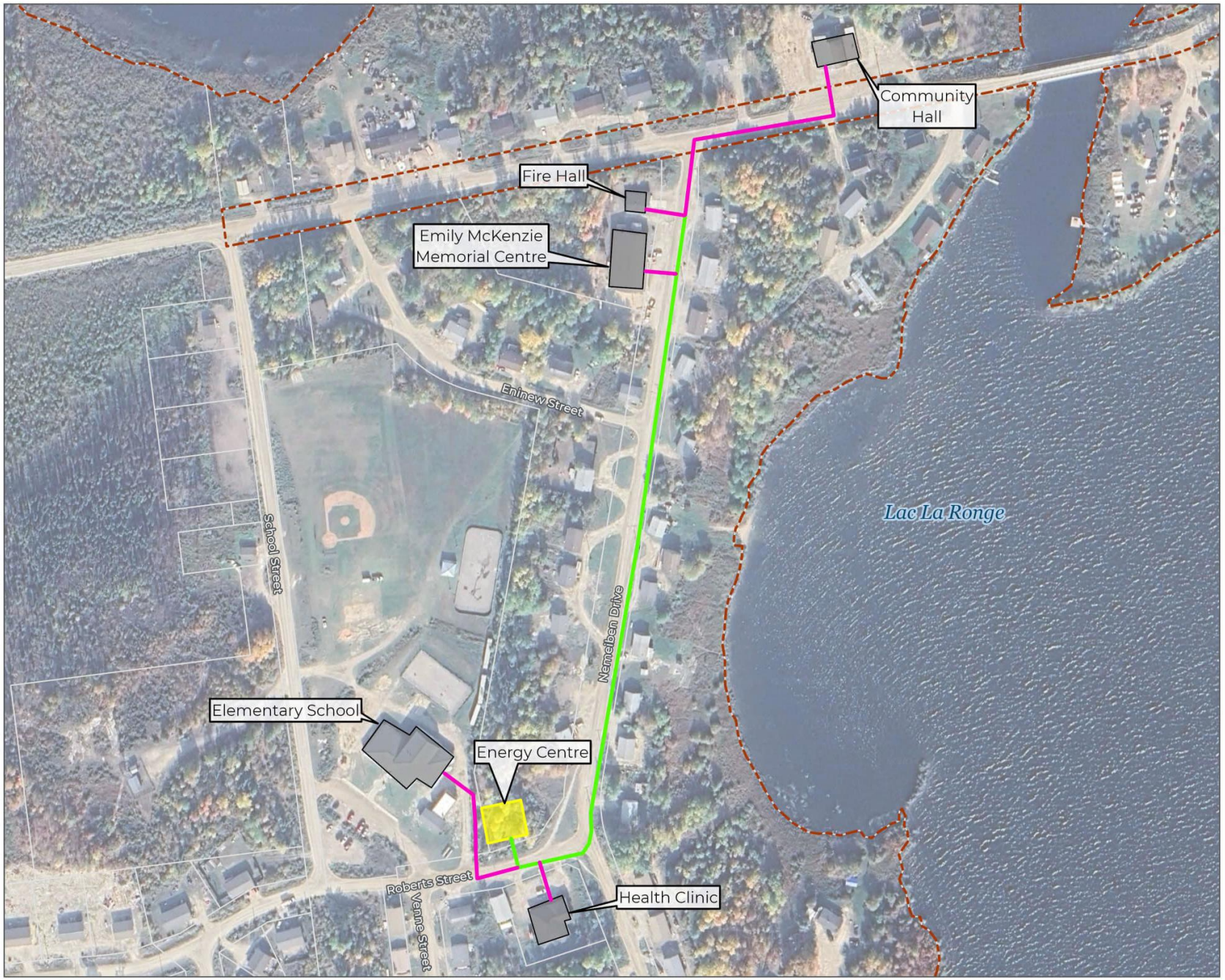
- Capital Facilities and Maintenance Program
- Building Capacity with the Smart Renewables and Electrification Pathways Program

REA 7: Develop a District Energy Heating System

Installing a district energy heating system, heated by biomass or another feasible fuel source, is one way to ensure consistent and reliable heating for connected buildings. These facilities are not common in the region, so pricing is less known, but it is anticipated that their equipment and installation would be considerable (i.e., multiple millions of dollars) and would see a low return on investment, potentially not within the usable life of the facility.

Project Example

An underutilized parcel of land was identified as a potentially viable location for the biomass boiler due to its central location in proximity to multiple large community buildings. The proposed project layout is displayed in **Figure 17**.



Community Energy Plan

Sucker River Biomass System

- First Nation Community
- Land Parcel
- Building
- Energy Centre

Biomass System Network

- Primary Distribution Network
- Secondary Distribution Network

The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.

0 50 100
Meters

Coordinate System: NAD 1983 CSRS UTM Zone 13N

Scale: 1:2,000 (When plotted at 11"x17")

Data Sources:

- Data provided by NRCan, Google Earth

Project #:	4250.0002.02
Author:	LS
Checked:	KM
Status:	
Revision:	A
Date:	2024 / 6 / 14

URBAN SYSTEMS

Figure 17: Proposed Biomass Project Layout

Given that the building heating energy use is an estimation, the actual correct size of the boiler and energy center are still being determined, and the estimated price for this system cannot be confidently estimated. Based on a comparable design, district energy and heating systems of this size can cost around $5-10 MM for equipment, installation, and engineering design.

For a wood chip biomass boiler system to be comparable in fuel costs to a current system and to enable an eventual payback, the following rates for the wood chips at a 30% moisture content (MC) would be required:

Base Case System	Comparable $/t fuel rate for 30% MC wood chips
Natural Gas	$70/t
Propane	$390/t
Electricity	$540/t

For reference, based on research completed on costs throughout Western Canada, wood chips from wood waste has an average fuel rate of $160/t.

For further information on assumptions, sources, and calculations, please see the accompanying Community Energy Analysis Report.

Status

Sucker River has yet to pursue this action but would consider it given the right opportunity.

No local suppliers with available feedstock could provide information on potential pricing and quality to expect with a system in the region. Without a known feedstock source, pricing, and moisture content, there is no certainty in a biomass system's energy and financial modeling. A successful biomass project with a financial payback would require the feedstock costs to be competitive with the costs of the current heating system.

Next Steps

Phase 1: Identify a consistent fuel source and buildings to connect and obtain energy information to determine feasibility.

- Can begin as soon as decided.
- Local staff with an understanding of current community buildings and their heating energy usage, or the ability to collect that information, will be required.

Phase 2: Secure financing and long-term heating contracts with buildings.

- Can begin as soon as buildings are identified and a consistent, cost-effective fuel source is identified.

- A Community Energy Coordinator will reach out to any privately owned buildings that could commit and join the system and apply for any grant funding pursued.

Phase 3: Install district energy.

- Can begin as soon as financing is secured.
- District energy heating system installers and trades will be required.
- A Community Energy Coordinator will coordinate with participating building owners and operators, installers, and trades will be required.

Phase 4: Operate, maintain, and monitor production.

- Ongoing for the life of the program.
- A Community Energy Coordinator will monitor the district energy system, ensure they are maintained and operating as anticipated, and analyze their use and success.

Phase 4: Expand/adjust as required.

- Ongoing for the life of the program.
- A Community Energy Coordinator will track the system's performance, any nearby candidate buildings, and their heating system replacement schedule to consider adding to the network and reporting on usage with recommendations for any next steps (e.g., expansion).

Responsible Department

Public Works & Housing would be best suited to continue that role for the purchase, installation, and maintenance of district energy, as they are responsible for purchasing, installing, and maintaining heating systems for their community-owned buildings. A Community Energy Coordinator will support the reporting of their use in comparison to previous heating systems and support any funding application submissions.

Collaborators

- Public Works & Housing
- Nearby/candidate private building owners
- Fuel source provider

Funding Opportunities

- Capital Facilities and Maintenance Program
- Clean Energy for Rural and Remote Communities Program

What's the Impact of Implementing the CEP?

Business As Recommended Forecast

The Business-As-Recommended (BAR) forecast incorporates recommended actions into the baseline Business-As-Usual (BAU) forecast to understand how the recommended actions may impact Sucker River's future energy usage. The forecast includes the three action categories modeled separately for residential and community uses. The focus of these eight actions is highlighted in **Table 8**.

Table 8: Focus of modeled actions in the Business-As-Recommended Forecast

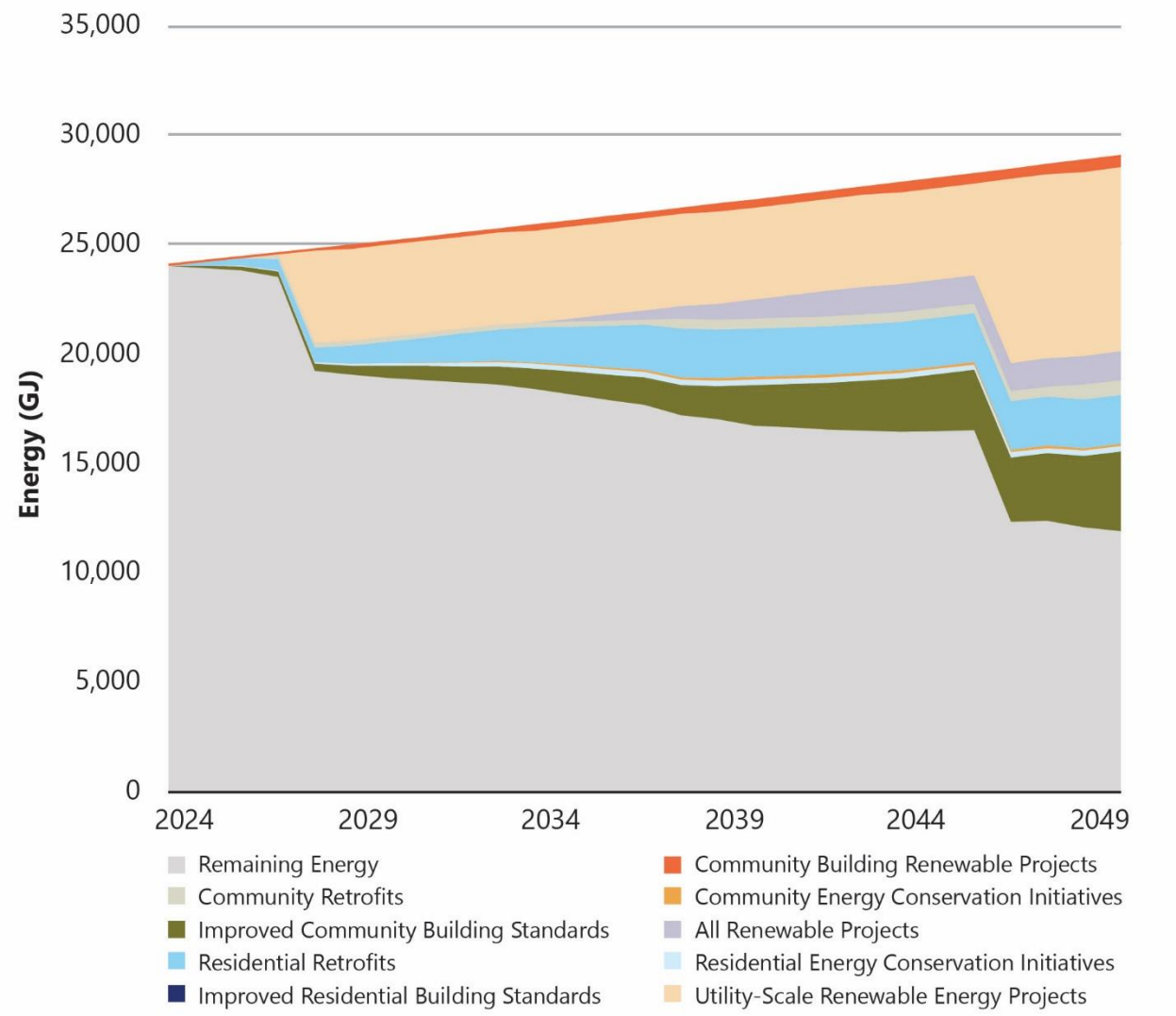
	Energy Actions Modelled	
Action Category	**Residential**	**Community**
Energy Conservation	• Home energy conservation	• Band-owned community buildings' energy conservation
Energy Efficiency	• Home retrofits • Higher-efficiency new homes • Switching to higher-efficiency heating	• Building retrofits • Higher-efficiency new buildings • Switching to higher-efficiency heating
Renewable and Low-Emissions Energy	• New solar panels on existing homes	• New solar panels on existing buildings • Large-scale project -shared by all six communities

This scenario will show how these modelled actions would impact the community's energy usage, greenhouse gas emissions, and costs. Electric vehicles were not included in the Business-As-Usual or Business-As-Recommended projections, as the projections and assumptions are the same for both scenarios. The methodology and assumptions used in this forecast and projections for electric vehicles are included in the accompanying Community Energy Analysis Report.

Energy Use

Figure 18 highlights the energy savings (GJ) associated with the eight modelled actions and the remaining energy in the BAR scenario between 2024 and 2050. Overall, the modelling suggests the actions would result in a 59% reduction of energy used by 2050 compared to the BAU scenario.

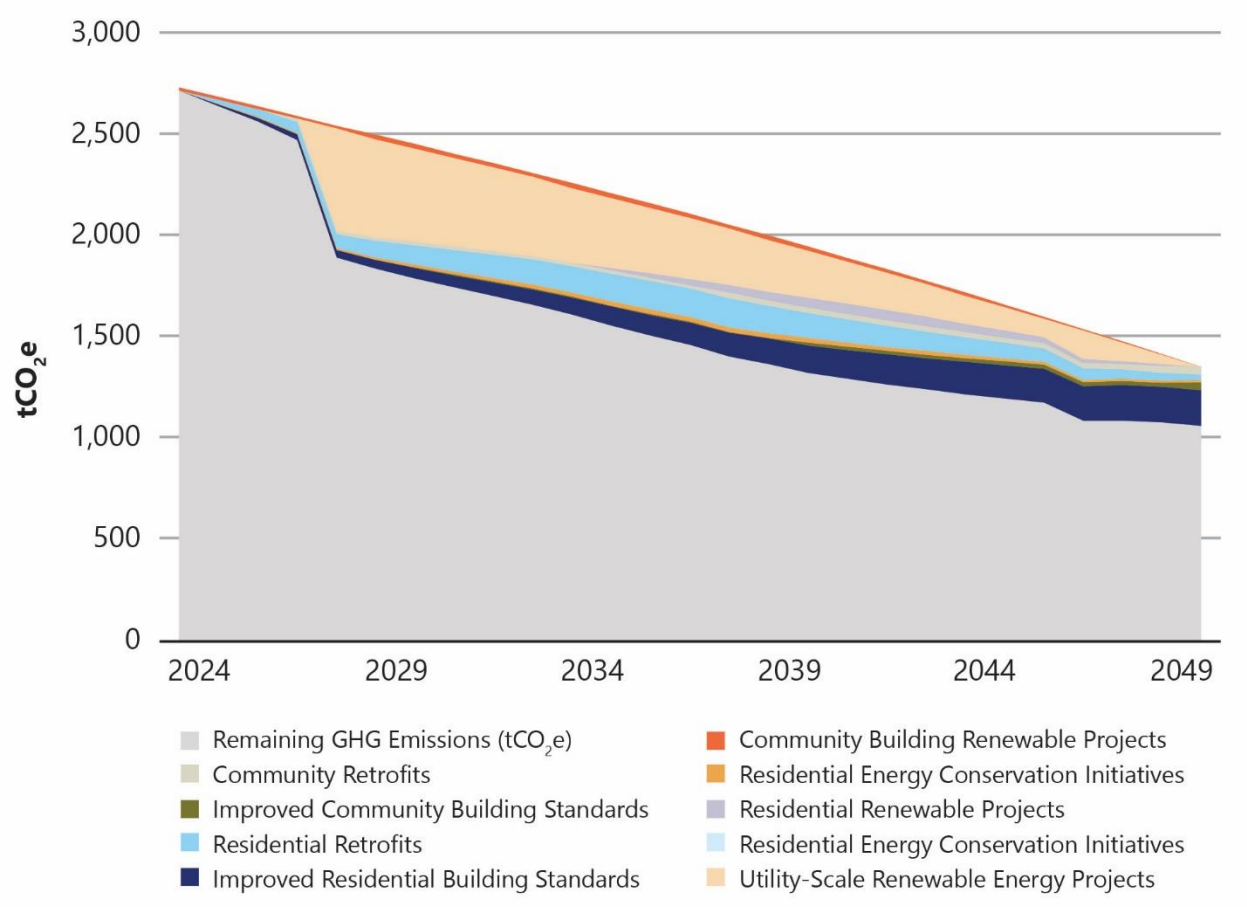
Figure 18: Energy savings (GJ) by action and remaining energy in the Business-As-Recommended Scenario, 2024 – 2050



GHG Emissions

Figure 19 highlights the greenhouse gas emissions savings (tCO_2e) associated with the modelled action categories and the remaining emissions in the BAR scenario between 2024 and 2050. Overall, the actions are associated with a 22% reduction in emissions compared to the BAU scenario.

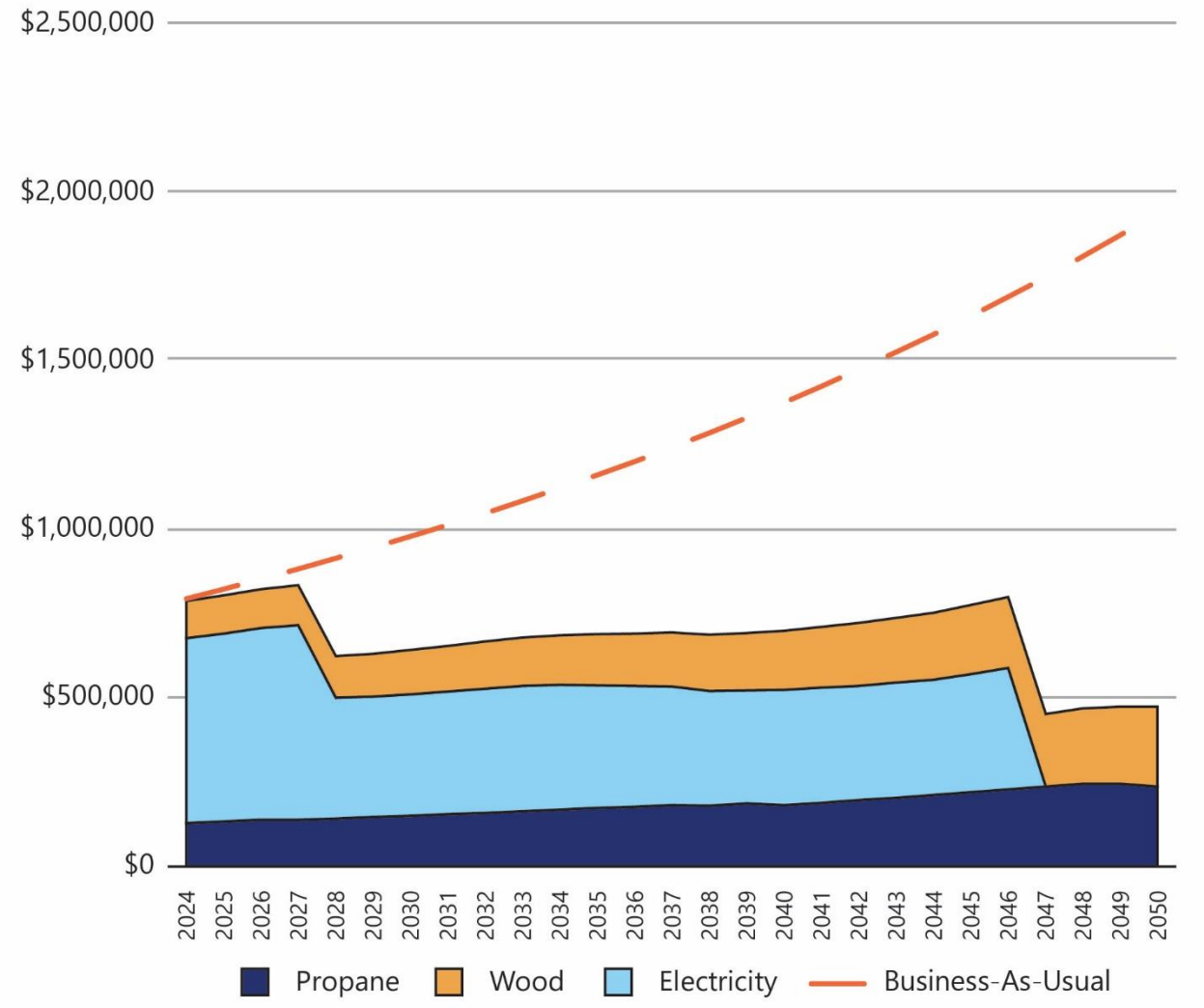
Figure 19: Reduction of greenhouse gas emissions by action and remaining emissions in the Business-As-Recommended Scenario (tCO_2e), 2024 – 2050



Estimated Spending

Figure 20 highlights the projected energy cost in the BAR scenario between 2024 and 2050 compared to the BAR scenario. The modelled actions are associated with a cost reduction of approximately 75% by 2050. This figure only includes the cost of purchasing energy and does not include the cost of implementing any of the actions.

Figure 20: Spending on energy by type in the Business-As-Recommended scenario, 2024 – 2050



Next Steps

The pathway to reduced energy use, improved energy systems, and switching energy sources can be approached by many actions, as shown in the above recommendations. The implementation plan can be used as recommended, in the order recommended, or as the community sees fit. Each action has outlined the beginning of a business case and work plan, which can be used to present to Chief and Council for funding requests individually, and in grant applications.

Key themes within these actions are clear – there is a need for local presence in the community to champion the actions. There have been strides already taken towards many of these actions by the Pithesowiskotew team; they are connecting with many potential partners and applying for all relevant grant funding applications to maintain momentum for community energy action and to sustain their roles and efforts for the community. The journey of this team of leaders is just beginning. If given the opportunity through sustained employment, they will continue to answer the United Nations' global call to action and our community's energy goals.