

The Conference
Board of Canada



The Atlin Hydro Project

Making a Meaningful Contribution to Community
Health and Well-Being



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Key findings

- The Taku River Tlingit First Nation's development, operation, and ownership of the Atlin hydro project—a low-impact, run-of-river hydroelectric power station—offers a number of lessons for those interested in supporting or pursuing Indigenous participation in clean energy projects.
- In leading clean energy projects, Indigenous communities and their development corporations can build important project management experience, human resource capacity, and subject matter expertise. As a result of their work and ownership, the Taku River Tlingit First Nation is becoming an established expert in Indigenous clean energy projects.
- Partnering with the private sector can support community capacity development and ensure project success. The key is identifying and hiring the right contractors and committing to managing them well. The Taku River Tlingit First Nation brought in private sector expertise in the development of the project. The First Nation worked alongside these experts, which resulted in a transfer of skills and knowledge.
- Taking an equity position in clean energy projects can be a source of much-needed own-source revenue that supports community-specific objectives and respects local values. The Atlin hydro project provides the Taku River Tlingit First Nation with access to this critical revenue, which it is investing back into the local economy.
- Involvement in clean energy projects can also have a positive impact on community health and well-being. Own-source revenue is frequently invested in services and programs that support important community objectives. The Taku River Tlingit First Nation invested in several important programs in its community that impact health and well-being, economic development and employment, education, and language and cultural programming.
- Participation in clean energy projects is one way to increase Indigenous autonomy and capacity for self-determination. These projects are typically in line with cultural values, traditional practices, and the sustainability of First Nations traditional territory. Many Taku River Tlingit residents feel the hydro project was an important first step to gaining control of their community's future. Its completion translated into a renewed sense of pride in being Tlingit. And there is now more engagement in the Tlingit culture, government, and community.
- Despite the many positive outcomes, communities must be aware of the challenges and risks. In the Atlin hydro project, these included a lack of community capacity and technical skills, community consultation issues, and financing obstacles. Participation is not always the right option for everyone in every instance.



Introduction

Indigenous communities are increasingly developing medium to large infrastructure projects with varying interests in the Canadian clean energy economy. This case study explores one example of Indigenous participation in a clean energy project—the Taku River Tlingit First Nation’s development and ownership of the Atlin hydro project in Northwestern British Columbia. The focus is to investigate how community participation in this project impacts community health and well-being.

Indigenous participation in clean energy projects provides an option for pursuing economic reconciliation. And for that reason, it is encouraging that Indigenous participation in renewable energy projects is growing. Between 2017 and 2019, Indigenous participation in medium to large renewable energy projects has grown at a rate of 29.6 per cent.^{1,2} In 2019, there were 197 Indigenous medium to large renewable energy projects across Canada. Of these 197 projects, Indigenous communities own, on average, a 45 per cent equity position. This is an increase from 2017 when Indigenous

communities owned, on average, a 32 per cent equity position.³ One hundred per cent Indigenous community ownership in clean energy projects is also increasing.

Community involvement in these and other forms of infrastructure projects is well-documented. Impacts of community participation include employment and job creation, own-source revenue, and supply and procurement opportunities. However, fewer research initiatives have focused on other important outcomes. These include impacts on physical and mental health outcomes, cultural and community well-being, and trust and relationships between community members.

The Atlin hydro project

Atlin is a remote community situated in Northwestern British Columbia. According to the 2016 Census, approximately 300 people live in Atlin.⁴ However, community members report the population is closer to 450 residents.⁵ Atlin includes both Indigenous and non-Indigenous residents. And the Taku River Tlingit First Nation lives in a few areas in and around Atlin. In 2006, at the outset of the project, 105 Indigenous people reported living on Taku River Tlingit reserve lands.⁶

The Atlin hydro project is a low-impact, 2.1-megawatt, modified run-of-river, hydroelectric power station. It is located on Pine Creek in Atlin, British Columbia. The project is a move toward

1 Indigenous Clean Energy, *Accelerating Transition*.

2 Henderson and Sanders, *Powering Reconciliation*.

3 Indigenous Clean Energy, *Accelerating Transition*.

4 Ibid.

5 Participant interview, February 1, 2020.

6 Statistics Canada, *2006 Aboriginal Community Data Initiative: Taku River Tlingit First Nation*.

clean energy. The station replaced a diesel power generator as the primary power source in the community. Construction started in 2007, and the station began commercial power production in April 2009. Output is being sold to B.C. Hydro as part of a 25-year energy purchase agreement. The station currently supplies all the community's electrical power needs.⁷

The project is 100 per cent Indigenous-owned. The Taku Land Corporation, owned by the Taku River Tlingit First Nation, was the primary proponent for the project. It is one of the first Indigenous organizations to own and operate a small hydroelectric project in Canada. The development corporation created Xeitl Limited Partnership, a limited liability subsidiary company, to develop the project. This protected the First Nation from liability risks associated with the project.⁸

Understanding the impacts

Previous research has focused on the objectives and economic benefits of the Atlin hydro project.⁹ Accordingly, to move our understanding forward, this case study places an emphasis on understanding the impacts of owning, developing, and operating the hydro project for the health and wellness of the Taku River Tlingit First Nation. It also addresses the broader community capacity development aspects of the project for the First Nation and some of the challenges encountered in the development and ownership of the project.

Researchers from The Conference Board of Canada visited Atlin in March 2019. We conducted approximately 50 interviews with residents in the community. This included interviews with First Nation and non-Indigenous residents, members of the development corporation, members of the First Nation government, and business owners in the greater Atlin community. A town hall meeting was also held. Residents discussed the various challenges and benefits of the hydro project for their community.

To protect the anonymity of the residents interviewed in Atlin, this report only paraphrases their statements and perspectives.



7 Taggart, *Atlin Hydro Expansion*.

8 Pollon, "Clean Power Remains a Major Challenge."

9 Taggart, *Atlin Hydro Expansion*.

Recognizing diversity in the experiences of Indigenous communities participating in clean energy projects

This case study only captures the experiences of the Taku River Tlingit First Nation in the development of a run-of-river hydroelectric power station in its community. We recognize the diversity of Indigenous communities and Nations across Canada. Each community has its own culture and history, as well as its own experience with clean energy projects.



Key considerations and challenges to local participation

Pursuing infrastructure development projects in remote communities can be challenging. These projects need strategic planning and resources. They also need financial and technical expertise—and the Atlin hydro project was no exception.

Technical skills and community capacity

The First Nation-owned development corporation recognized that it had limited human resource capacity and technical know-how to independently develop the Atlin hydro project.^{10,11,12} Accordingly, the development corporation accessed private sector expertise in the development, management, and construction of the hydro facility. It hired and managed these paid contractors. The development corporation did as much work as possible in-house—often under the supervision of professionals. This relationship provided an opportunity to work alongside and learn from professionals. This, in turn, helped to build the business capacity of the development corporation and its employees. (See “The Atlin hydro project’s contribution to skills and capacity development.”)

¹⁰ Participant interview, March 11–15, 2019.

¹¹ Simpson, *The Atlin Hydro Project: Generation for Generations*.

¹² Taggart, *Atlin Hydro Expansion*.

The value of solid leadership on the part of the development corporation should not be understated in the development and completion of the Atlin hydro project. Having individuals with dedication and long-term commitment to the project was vital considering the scope of the project, the initial limited human resource capacity, and the many challenges encountered throughout the project.¹³

There are also technical skills needed in the day-to-day operation of the hydro plant. Local operators need to have computer and mechanical skills. So the development corporation has a service contract with remote technical service companies. They help with the technical issues.¹⁴

The maintenance and operations of clean energy projects do not generally need a large work force.¹⁵ There are currently four operators who share in the 24-hour-a-day monitoring of the plant. Currently, only one of these operators is a First Nation resident.¹⁶

The First Nation has made efforts to train operators. But recruitment and retention has been challenging. According to a member of the development corporation, one of the major deterrents for many First Nation residents is the responsibilities of the job—the idea of being accountable for ensuring the delivery of reliable electricity for the whole town.¹⁷ They do not want to let down the members of their community, including their families and friends. Under these circumstances, technical training and skills development for these positions may not be enough. There is also a need to build self-esteem and life skills. Future operators need to have the confidence and ability to apply their technical skills.

The First Nation offers training opportunities for its residents as part of the Skills Training Employment Program (see “Education” on page 19). This includes technical skills training, along with life skills training and building self-esteem. But they meet people where they are. And they see the need for a multigenerational change that will take time.¹⁸

13 Participant interview, July 23, 2020.

14 Participant interview, May 6, 2020.

15 Henderson and Sanders, *Powering Reconciliation*.

16 Participant interview, November 22, 2019.

17 Participant interview, May 6, 2020.

18 Participant interview, May 6, 2020.



The Atlin hydro project's contribution to skills and capacity development

By accessing private sector expertise, the development corporation was able to build human resource capacity. First Nation workers trained alongside consultants during the planning and permitting phase of the project. This provided training in technical skills. Areas of work completed in-house and, in some cases, supervised by outside experts include project management, hydrology, administration, technical reporting, field reconnaissance, preliminary mapping, and photography.¹⁹ This on-the-job training resulted in a transfer of skills to First Nation residents.

The development corporation also worked to build contract administration and project management skills. They hired the appropriate experts and managed them well. This helped establish the business credibility of the First Nation. The development corporation believes that the success of the hydro project encouraged subsequent government investments in the Taku River Tlingit First Nation.²⁰

Building in-house capacity improved the ability of the development corporation to take on new capital projects. These include paving the roads on the reserve in the Atlin area, the construction of the Tulsequah Chief mine water treatment plant, geexchange heated buildings with a lake loop, contracts with environmental firms doing mine reclamation, and work on B.C. highways.²¹ The development corporation is also working on an expansion to this hydro project. (See “The Atlin hydro expansion” on page 18). These projects provide employment opportunities for the community.



¹⁹ Simpson, *The Atlin Hydro Project: Generation for Generations*.

²⁰ Participant interview, March 11–15, 2019.

²¹ Participant interview, November 22, 2019.

Financing

Being that the project was a move toward clean energy in the community, the First Nation was able to negotiate with B.C. Hydro for a favourable energy purchase price on the power generated from the hydro project. This purchase price is generally higher than other projects connected to the British Columbia grid. Obtaining such a favourable purchase price may not always be possible in other instances or for other projects.^{22,23} But the own-source revenue generated from these types of agreements can be a strong incentive for any community looking to undertake these projects.

Despite the financial viability and promise of the project, financing proved challenging. There was little investment equity available to the First Nation. So the development corporation applied for several public grants. This required spending a considerable amount of time and resources on proposals to potential funders. And the corporation members took courses and relied on publicly available handbooks and reports.^{24,25,26}

The process of navigating multiple public granting agencies required considerable management and tact. In most cases, agencies would fund only a portion of what was requested. This is because there was little communication between granting

agencies. Agencies would read applications and base their decision on the amount of money to be granted, following the assumption that applications to other agencies had been successful. This was often not the case. The development corporation felt a “one window” approach would have made it easier to find public infrastructure funding for the hydro project.^{27,28}

Grant money was used to pay for project feasibility and a portion of the construction costs. Public investment in the hydro project has been profitable. Since operations began, the government has received more money through taxation and water rents than was initially granted for the project.²⁹

However, the majority of the project was paid for with debt financing. A favourable energy purchase agreement made debt financing a viable option.³⁰ The development corporation recognized it had little borrowing experience. So it hired a financial advisor with experience negotiating loans for large projects. It also hired a lawyer to help manage the legal side of borrowing large amounts of money.^{31,32} The financial advisor was instrumental in leading the development corporation through debt financing. The advisor also educated the corporation members at the same time. And he was willing to take the time to

22 Participant interview, January 14, 2020.

23 Taylor, “The Atlin Hydro Project—Embodying First Nation Principles.”

24 Simpson, *The Atlin Hydro Project: Generation for Generations*.

25 Participant interview, January 14, 2020.

26 Participant interview, March 11–15, 2019.

27 Participant interview, May 6, 2020.

28 Participant interview, January 14, 2020.

29 Participant interview, February 1, 2020.

30 Participant interview, May 6, 2020.

31 Simpson, *The Atlin Hydro Project: Generation for Generations*.

32 Participant interview, January 14, 2020.



explain the financing process at a level they could understand. This knowledge transfer helped build financial capacity in the First Nation.^{33,34,35}

The development corporation pursued financing from major banks and institutional lenders as well. However, many of the lenders had no experience working with a First Nation. Lending to a First Nation is a unique situation. Social and cultural misunderstandings had to be overcome. The advisor worked diligently to prepare the development corporation for every meeting.³⁶

The First Nation eventually secured debt financing from an institutional lender that could lend money with longer terms than major banks.^{37,38}

About three years after construction was completed, the development corporation was able to buy out a portion of its long-term debt thanks to a loan from the First Nations Finance Authority. This was much less expensive money, as it came with lower interest rates. This financing helped keep more money in the community. At that time, the First Nations Finance Authority was just getting set up. The Taku River Tlingit First Nation was the first group to borrow funds from the First Nations Finance Authority.^{39,40}

The First Nation met the criteria for being a qualified borrower as set by the First Nations Finance Authority. It was able to show a good track record of financial management. The Taku River Tlingit First Nation had unqualified audits accepted by Indigenous and Northern Affairs Canada. And it had a history of completing these audits consistently and on time. This was a major part of meeting these criteria.⁴¹

Environment and culture

Protecting the land is a core value of many Atlin residents—First Nation and non-Indigenous alike. This can make certain economic development initiatives untenable and others challenging to pursue in a way that aligns with community interests.⁴²

For First Nation residents, concerns about the environmental impact of the project were rooted in historical trauma. They feared losing access to their land, an important part of their culture. Some members of the older generation are against any development projects. Conversely, many younger members viewed the hydro project as important to the development of a sustainable economic future.⁴³ These different perspectives can create tensions within the community.

33 Participant interview, May 6, 2020.

34 Simpson, *The Atlin Hydro Project: Generation for Generations*.

35 Participant interview, January 14, 2020.

36 Participant interview, May 6, 2020.

37 Taylor, "The Atlin Hydro Project—Embodying First Nation Principles."

38 Simpson, *The Atlin Hydro Project: Generation for Generations*.

39 Participant interview, May 6, 2020.

40 Participant interview, January 14, 2020.

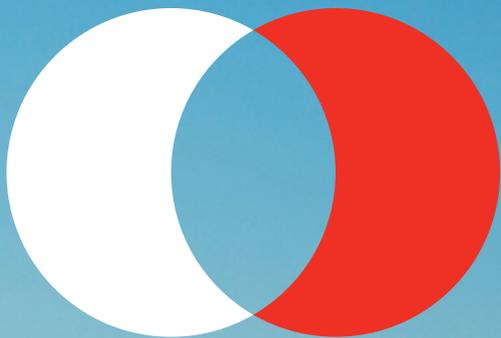
41 Participant interview, May 6, 2020.

42 Participant interview, March 11–15, 2019.

43 Participant interview, March 11–15, 2019.



Protecting the land is a core value of many Atlin residents, which can make some economic development initiatives untenable and others challenging to pursue.



Many non-Indigenous residents recognized the economic benefit of the hydro project. Yet some of the retired residents and vacation homeowners do not take part in the local labour force and economy.⁴⁴ Instead, many of these residents are more concerned about the impact of the project on the environment and recreational land use in Atlin.

Accordingly, the development corporation made efforts to address people's concerns. It held public consultation sessions to present the results of environmental and feasibility studies. Community feedback was then incorporated into the project plans.⁴⁵

Community consultation and reconciling different interests

Navigating the politics of this small community was difficult. Atlin is unincorporated. There is no municipal or regional government that unilaterally makes decisions for the community. Instead, there is a bottom-up approach. This requires community consultation for project development and approval.⁴⁶ As the project proponent, the development corporation held several community consultation sessions.⁴⁷ However, it was difficult to engage all affected parties and accommodate all viewpoints. Residents reported tensions in the community during the consultation process.^{48,49}

The First Nation residents were initially hesitant to take part in the community consultation process. But as owners of the project, their participation was crucial. The development corporation first held open house meetings with the entire community of Atlin and surrounding area. Yet, only a handful of First Nation residents took part in these meetings.⁵⁰

The development corporation is responsible first and foremost for protecting the rights and interests of the First Nation. To increase participation, it held separate consultation meetings for First Nation residents. More First Nation residents took part in these meetings. They were also more willing to talk about the financial and political aspects of the project.⁵¹

However, these separate meetings added to tensions in the broader community.^{52,53} In this sense, ensuring the appropriate level of participation on the part of the First Nation through separate meetings had an unintended consequence of making some non-Indigenous residents of Atlin feel excluded.

44 Town hall meeting, March 13, 2019.

45 Participant interview, March 11–15, 2019.

46 Simpson, *The Atlin Hydro Project: Generation for Generations*.

47 Participant Interview, March 11–15, 2019.

48 Town hall meeting, March 13, 2019.

49 Participant interview, March 11–15, 2019.

50 Participant interview, March 11–15, 2019.

51 Participant interview, March 11–15, 2019.

52 Town hall meeting, March 13, 2019.

53 Participant interview, March 11–15, 2019.



Best practices in community consultation in the mining industry suggest that active participation in the form of community direction is key.⁵⁴ It is not enough to mitigate the negative impacts of a project. Instead, it is beneficial to engage the community in discussing the developmental goals of the project and how a project can add value to the social well-being of the community. This can help to build the trust of the community and manage fear and anxiety.⁵⁵ Some non-Indigenous residents felt that while there was adequate community consultation for the hydro project, there was little opportunity for input on community direction.⁵⁶



Political considerations and continuity

This was an eight-year project. Over the course of the hydro project, there were two changes in leadership in the First Nation government. It was important for the development corporation to establish a clan directive early in the project. A clan directive sets out a clear commitment from the First Nation to complete the hydro project. The directive protected the project from changes in government leadership. This was an essential requirement for other levels of government and lenders.⁵⁷

Pursuing community objectives and benefits

First Nations acknowledge a holistic view of health and well-being.⁵⁸ Health and well-being include physical, spiritual, emotional, and mental health. This view also emphasizes the connections between individual, family, culture, and community.

The impact of the Atlin hydro project on the health and well-being of the community can be explained within a social determinants of health framework.⁵⁹ Social determinants of health are the conditions in which people are born, grow, work, live, and age.⁶⁰ They include social, economic, individual, and environmental factors

54 Franks, *Social Impact Assessment*.

55 Aalhus, Oke, and Fumerton, *The Social Determinants of Health Impacts*.

56 Town hall meeting, March 13, 2019.

57 Participant interview, December 2, 2019.

58 First Nations Information Governance Centre, *First Nations Regional Longitudinal Health Survey*.

59 Public Health Agency of Canada, *The Social Determinants of Health*.

60 World Health Organization, "About Social Determinants of Health."

Table 1
Impact of the Atlin hydro project on the social determinants of health in the Taku River Tlingit First Nation

Social determinant of health	Community Impact		
	No discernable/ immediate impact	Short-term impact	Long-term impact
Community infrastructure			X
Connection to the land			X
Employment		X	X
Food security		X	
Income			X
Education			X
Access to language and culture			X
Self-determination			X
Mental and physical wellness			X
Housing	X		
Access to potable water	X		
Early childhood development	X		
Prevention of family violence	X		
Racism and social inclusion			X

Note: Indigenous social determinants of health as presented in Wood, Ballard, and Naffa, “The Social Determinants of Health for First Nations Communities in Canada.” Their list of the social determinants of health is drawn from the work of the Aboriginal Child Welfare Working Group (see *Aboriginal Children in Care*) and the work of Reading and Wein (see *Health Inequalities*).
 Source: The Conference Board of Canada.

that shape daily living conditions and determine individual and population health. According to the Public Health Agency of Canada, it is both the direct impact and the interactions between social determinants of health that influence health and well-being status.^{61,62} It is the unequal distribution of daily living conditions along the social gradient that creates many of the health disparities between groups, as we see between Indigenous and non-Indigenous populations in Canada.

There is evidence to suggest that the Atlin hydro project has had a positive effect on several Indigenous-specific social determinants of health in the Taku River Tlingit First Nation community.⁶³ (See Table 1.) That said, it is difficult to measure and quantify the exact impacts of the hydro project on health and well-being outcomes. This is because Atlin is a small, remote community with limited local health data. (See Appendix A, “Data limitations in Atlin.”) Due to the limitations around the availability of data in Atlin, a qualitative

61 Ibid.

62 Reading and Wien, *Health Inequalities*.

63 Wood, Ballard, and Naffa, “The Social Determinants of Health.”

approach was taken to better understand the impact of the hydro project on the social determinants of health for the Taku River Tlingit First Nation.

Preserving connection with the land

Infrastructure projects can directly affect the well-being of a First Nation community. These projects can restrict access to the land or negatively impact the local environment. Many First Nations communities report that industry projects impede their ability to harvest traditional food.⁶⁴ Fortunately, the Atlin hydro project has had a minimal impact on land use and the environment.

Access to cultural sites and control over land use are important predictors of well-being in First Nations people.⁶⁵ The ability to secure traditional country food improves food security and quality of diet.⁶⁶ Access to country foods and a healthy diet are both important in preventing diabetes and obesity, which can be prevalent in some Indigenous communities.

The Taku River Tlingit First Nation residents said that the planning of infrastructure and resource projects in their community can provoke anxiety.⁶⁷

The Taku River Tlingit motto is “Our Land Our Future.”⁶⁸ Residents advocate for responsible use of their resources. They want to protect their access to the land and cultural sites. They also want to minimize the impact of projects on hunting and fishing sites. Often the environmental impact and the economic benefit of a prospective project conflict with one another. For many, the environmental impact outweighs the importance of the economic benefits.^{69,70,71}

Environmental studies for the project assessed the potential impact of the hydro project on land use, cultural resources, and recreation.⁷² The project had no major impact on land use. The hydro station is located at a site on Pine Creek formerly affected by a placer mining settlement. And the project had no impact on sacred or burial sites.^{73,74} Residents were also concerned about the impact of the project on the Arctic grayling fish population. In response, the development corporation built a fish ladder to facilitate access between Surprise Lake and Pine Creek where the fish spawn. The design of the project also ensured that not too much water would be diverted from the natural river flow. And the project design reduced the risk that fish would be caught in the intake area. A set of waterfalls restricts access to the intake area.^{75,76}

64 Chan and others, *FNFNES Final Report for Eight Assembly of First Nations Regions*.

65 Kant and others, “Social, Cultural, and Land Use Determinants.”

66 Chan and others, *FNFNES Final Report for Eight Assembly of First Nations Regions*.

67 Participant interview, March 11–15, 2019.

68 Participant interview, March 11, 2019.

69 Participant interview, March 11, 2019.

70 Participant interview, March 11–15, 2019.

71 Participant Interview, March 11–15, 2019.

72 Taylor, “The Atlin Hydro Project—Embodying First Nation Principles.”

73 Participant interview, December 2, 2019.

74 Participant interview, July 23, 2020.

75 Participant interview, December 2, 2019.

76 Participant interview, July 23, 2020.





An environmental benefit of the project is the replacement of the diesel generator with renewable energy. It is projected that this will result in an average annual reduction of at least 4,350 tonnes of greenhouse gases.⁷⁷ In turn, local air quality has improved. And residents report pride in reducing these diesel emissions.⁷⁸ There is also the added benefit of the diesel generator serving as a backup power source when needed.

The switch to hydro has also reduced the risk of fuel spills. Runoff from a diesel spill can kill marine wildlife or contaminate a community's water supply.⁷⁹ Each year, 1.7 million litres of diesel were

being transported into Atlin to power the diesel generators.⁸⁰ There have been minor fuel spills in Atlin in the past.⁸¹

Finally, there is less noise in the community. Noise pollution from diesel generators in small remote communities has been linked to hearing impairment and sleep disturbances.⁸²

Employment and food security

There were local employment opportunities in the planning and construction of the hydro project. These temporary jobs helped First Nation residents gain valuable work experience and skills.

Employment opportunities in the remote community of Atlin are limited. At the outset of the project in 2005, the First Nation government was the major employer of residents living on Taku River Tlingit reserve lands.⁸³ Forty-three per cent of workers were employed in public administration positions. Apart from that, employment in the community has traditionally been seasonal. It is largely dependent on the operation of nearby mines.⁸⁴ In the last two decades, local mining job opportunities have dwindled. Leading up to the construction of the hydro facility, in 2005, the employment rate among the population 15 years and older living on Taku River Tlingit First Nation reserve lands was 63 per cent. However, many residents were part-time and seasonal workers. Of those employed, only 29 per cent worked a full year in a full-time position.⁸⁵

77 Taggart, *Atlin Hydro Expansion*.

78 Participant interview, June 1, 2020.

79 World Wildlife Federation–Canada, *Powering Nunavut's Future*.

80 Taggart, *Atlin Hydro Expansion*.

81 Participant interview, May 6, 2020.

82 Azodo and Adejuyigbe, "Examination of Noise Pollution."

83 Statistics Canada, *2006 Aboriginal Community Data Initiative: Taku River Tlingit First Nation*.

84 Participant interview, November 22, 2019.

85 Statistics Canada, *2006 Aboriginal Community Data Initiative: Taku River Tlingit First Nation*.

Unemployment and underemployment are linked to important mental health outcomes in First Nation peoples. Not having consistent employment contributes to distress. This distress can, in turn, increase the risk of suicide⁸⁶ and substance abuse.⁸⁷ Community members suggest that many Taku River Tlingit First Nation youth report that they feel hopeless about finding a job.⁸⁸

Unemployment also increases the risk of food insecurity and nutrition-related disease.⁸⁹ Residents who are reliant on income assistance in Atlin often struggle. Income assistance from the federal government does not meet the basic needs of food and shelter for the people living in this small remote community.⁹⁰

The development corporation made efforts to maximize the local economic benefits and job opportunities of the hydro project—but not at the expense of timelines and project viability. It contracted work to local businesses and did on-the-job training where it was feasible.⁹¹ Approximately 10 companies from the Atlin area and 20 Northern companies were involved in the project.⁹²

As whole owners of the project, the development corporation was able to first provide work to the First Nation residents. Hiring locally also helped reduce the costs of the project. Most job opportunities occurred in the construction phase

of the project.⁹³ The corporation did on-the-job training to increase the number of jobs filled by First Nation residents. It did concrete testing and heavy equipment operator training.⁹⁴ In total, First Nation citizens filled 32 positions with 342 weeks of work.⁹⁵

The project had limited full-time, permanent employment opportunities for First Nation residents. As discussed, only one First Nation resident currently works as a day-to-day operator of the hydro plant. But the community still reported value in the seasonal job opportunities. For individuals with few employment opportunities, seasonal work can provide a decent paying job. And it can qualify the worker for employment insurance in the off-season.⁹⁶ Further, even temporary jobs can build skills and improve employability. Residents of the community also report that seasonal or part-time employment can have a meaningful impact on food security.⁹⁷

Income

Revenue from the Atlin hydro project is invested back into the First Nation community. The money is used to support economic growth and community programs.

86 Kumar and Tjepkema, *Suicide Among First Nations People*.

87 Henkel, "Unemployment and Substance Use."

88 Participant interview, March 11–15, 2019.

89 McIntyre, Bartoo, and Emery, "When Working Is Not Enough."

90 Participant interview, January 20, 2020.

91 Participant interview, May 6, 2020.

92 Taylor, "The Atlin Hydro Project—Embodying First Nation Principles."

93 Participant interview, March 11–15, 2019.

94 Participant interview, November 22, 2019.

95 Taggart, *Atlin Hydro Expansion: Economic and Social Benefits*.

96 Participant interview, March 11–15, 2019.

97 Participant interview, March 11–15, 2019.



The development corporation made efforts to maximize local economic benefits and job opportunities. The project provided work for local businesses and on-the-job training.



The health and well-being of a First Nation community is linked to the distribution of wealth across the community. Communities with higher incomes and equal income distribution often have better funding for infrastructure, social programs, and health services. These communities also have more employment opportunities and greater access to education.⁹⁸

According to a 2017 financial report, beginning in 2009, the average annual benefit of the hydro project is \$450,000. This is higher than was projected.⁹⁹ The development corporation mainly invests revenue into building the local economy. For example, it has bought several pieces of heavy equipment to provide services on reserve and undertake other capital projects.¹⁰⁰

Project revenue, when available, is also invested in the First Nation government at the direction of the joint clan meetings. Every First Nation resident can take part. At these meetings, the development corporation presents options for spending project revenue. The joint clan then ratifies the decision and mandates the First Nation leadership to implement project revenue.¹⁰¹

At the direction of the joint clan meeting, project revenue has been invested in the existing Tlatsini fund. The Tlatsini fund supports the Taku River Tlingit First Nation in its implementation of its land

use monitoring plan.¹⁰² The initial hydro revenue investment in the Tlatsini fund has given the First Nation the leverage needed to secure additional investments in the fund. Several million dollars have since been invested by other parties. The interest generated through the Tlatsini fund supports the land guardian program—a program under which Taku River Tlingit First Nation residents monitor Tlingit land use. The interest also covers the First Nation contribution to the Taku River Tlingit/British Columbia Land Use Plan implementation.^{103,104,105}

A joint clan meeting also mandated an investment of \$450,000 in the Atlin hydro expansion project.¹⁰⁶ (See “The Atlin hydro expansion.”)

The development corporation also collaborates with the First Nation government to directly invest project revenue into community programs. This includes educational training programs and culture and language programs.¹⁰⁷

Every First Nation resident has the opportunity to take part in joint clan meetings. But some residents called for more transparency and say in how project revenue is spent in the community. For example, one resident suggested that the elders in the community should receive more financial support.¹⁰⁸

98 Frohlich, Ross, and Richmond, “Health Disparities.”

99 Taggart, *Atlin Hydro Expansion: Economic and Social Benefits*.

100 Participant interview, November 22, 2019.

101 Participant interview, December 2, 2019.

102 Taku Conservancy, “Tlatsini Endowment Fund.”

103 Taggart, *Atlin Hydro Expansion: Economic and Social Benefits*.

104 Participant interview, December 2, 2019.

105 Participant interview, May 6, 2020.

106 Taggart, *Atlin Hydro Expansion: Economic and Social Benefits*.

107 Participant interview, February 1, 2020.

108 Participant interview, March 11–15, 2019.



The Atlin hydro expansion

The development corporation is currently developing an expansion to the original hydro facility. There is still significant untapped energy potential on Pine Creek. The development corporation plans to expand the current project with two new turbines and two new powerhouses.¹⁰⁹ The original hydro facility currently supplies all the community's electrical power. The plan is to sell the extra power generated from the expansion to Yukon Energy Corporation. The project involves building a new 93-kilometre transmission line. This line will connect the hydro facility to the Yukon electrical grid.¹¹⁰

The projected construction costs of the hydro expansion are about 10 times the original project.¹¹¹ In turn, it is anticipated that the economic and social benefits to the community will far exceed the original project. However, the environmental impact of the expansion also exceeds the original project.¹¹² And many First Nation and non-Indigenous residents have voiced concerns over the impact of the project on land use in and around the community.¹¹³

Currently, the development corporation has an agreement in principle with the Yukon Energy Corporation. The permitting work is near completion and was to be submitted in August 2020. The development corporation hopes to get the project approvals by the end of 2020 or early 2021.¹¹⁴ Community consultation is ongoing.¹¹⁵

This hydro expansion is front and centre in Yukon Energy's 10-Year Renewable Resource Plan moving toward 2030.¹¹⁶



109 Participant Interview, December 5, 2019.

110 Morrison Hershfield, *Atlin Hydro Expansion Pre-feasibility Study*.

111 Participant interview, February 1, 2020.

112 Morrison Hershfield, *Atlin Hydro Expansion Pre-feasibility Study*.

113 Town hall meeting, March 13, 2019

114 Participant interview, July 23, 2020.

115 Participant interview, December 2, 2019.

116 Yukon Energy, *Electricity for 2030*.

Education

Revenue from the hydro project helps fund the Skills Training Employment Program, with support from the First Nation government. The goal of this program is to build a skilled workforce within the First Nation.

Having an educated workforce is essential to support a sustainable economic future. A sustainable economic future, in turn, is key to the health and well-being of the Taku River Tlingit First Nation community. Residents report that there are not enough skilled workers to do all the work needed in the community.¹¹⁷ In 2006, 25 per cent of the population aged 25 to 64 living on Taku River Tlingit reserve lands did not have a high school education or equivalent, or any post-secondary education. Seventeen per cent reported a high school certificate as their highest level of education.¹¹⁸

There is also a demand for life skills training and employment readiness skills in the community. There are businesses in town that have employment opportunities in entry-level positions. But these businesses have difficulty filling and retaining staff. There is a high degree of turnover.¹¹⁹

The Skills Training Employment Program began in 2013. The aim of the program is to help First Nation citizens build the skills needed to enter the local workforce and stay there. The program offers training in life skills, building self-esteem,

essential skills, industrial employment skills, and cultural activities. This includes access to various social and mental health programs. The program offered training in the following industrial employment skills over the last six years: carpentry, heavy equipment operator, welding, plumbing, electrical, hospitality, administrative skills, IT/computer training, traffic control, and geo tech jobs. Course content is chosen based on the skills needed in the local economy. Approximately 50 individuals have graduated from the program.^{120,121} The self-esteem component of the program is rated by participants as the best part of the program.¹²²

Revenue from the hydro project supplements the existing funding for the Skills Training Employment Program. The program would still run without the hydro revenue. But it would run in a diminished capacity.¹²³

With the hydro revenue, the program is able to reach deeper into the lives of participants. Specifically, the extra funding makes it possible to tailor the program to the individual needs of its residents and the skills needed in the local economy. The current Skills Training Employment Program meets each participant where they are at in terms of their skill sets and readiness to enter the workforce. Program administrators work with individuals at their own pace. When residents are ready to take another step, the program is there. This process is far slower than any publicly funded skills and training program.

117 Participant interview, March 11–15, 2019.

118 Statistics Canada, *2006 Aboriginal Community Data Initiative: Taku River Tlingit First Nation*.

119 Participant interview, March 11–15, 2019.

120 Taku River Tlingit First Nation, "ATELP—Taku River Tlingit First Nation. Step Program."

121 Participant interview, November 22, 2019.

122 Participant interview, May 6, 2020.

123 Participant interview, May 6, 2020



The program, as it currently runs, would struggle to meet the metrics of success for publicly funded programs.¹²⁴

The response to the program has been positive in the community. First Nation residents have been able to overcome various socio-economic challenges, including substance abuse, and secure gainful employment after completing the program.¹²⁵ Other individuals have found local jobs on paving crews, carpentry crews, working in the local placer mining industry, and as heavy equipment operators and truck drivers.^{126,127} First Nation youth have also shown an increased interest in taking employment certification programs.^{128,129}

Culture and language

The First Nation government is working toward a model for its people's future. It includes not only sustainable economic development and responsible use of resources, but also a revival of culture.¹³⁰ Project revenue supports this cultural initiative.

Research has identified cultural continuity—or “being who we are”—as a salient predictor of health and well-being in First Nations communities.¹³¹ Knowledge of language and traditional practices are key components of cultural continuity. Seminal research has shown that youth suicide rates are six times higher in First Nations communities where fewer than 50 per cent of residents have knowledge of an Indigenous language, compared with First Nations communities where at least 50 per cent of residents have knowledge of an Indigenous language.¹³² Participation in traditional activities and language is also associated with resilience in First Nations.¹³³

There is a need to fund cultural and language programming in the community. There are few remaining Elders who can speak the Tlingit language.¹³⁴ In 2006, only 29 per cent of the population living on Taku River Tlingit reserve lands had knowledge of an Indigenous language. Furthermore, residents report that knowledge of their language is central to connecting with the Tlingit culture.^{135,136,137}

124 Participant interview, May 6, 2020

125 Participant interview, March 11–15, 2019.

126 Participant interview, November 22, 2019.

127 Taggart, *Atlin Hydro Expansion: Economic and Social Benefits*.

128 Participant interview, March 11–15, 2019.

129 Participant interview, March 11–15, 2019.

130 Simpson, *The Atlin Hydro Project: Generation for Generations*.

131 Oster and others, “Cultural Continuity.”

132 Hallett, Chandler, and Lalonde, “Aboriginal Language Knowledge and Youth Suicide.”

133 Pearce and others, “The Cedar Project.”

134 Participant interview, March 11–15, 2019.

135 Participant interview, March 11–15, 2019.

136 Participant interview, March 11–15, 2019.

137 Participant interview, March 11–15, 2019.



The development corporation invests project revenue, with support from the First Nation government, in Tlingit language classes and cultural activities in the community. This includes cultural camps for preschool, primary, and secondary school-aged children. These camps encourage children to engage with the land and traditional activities. The development corporation also makes annual donations to support residents

wanting to take part in international and local celebrations of Tlingit culture and community.¹³⁸

As discussed, money from the hydro project has also been used to support the Land Guardian Program. This program encourages Tlingit youth to take an active role in monitoring and managing the Tlingit lands. Activities include monitoring mining operations and hunting activities and collecting GPS locations of historical mining equipment.¹³⁹

Self-determination and physical and mental wellness

The results of a national survey on clean energy projects in Indigenous communities suggests that the most beneficial aspect of community participation in these projects is the strengthening of pride in the community and the assertion of Indigenous rights and territories.¹⁴⁰

First Nations people explain self-determination in their community as being a “self-sufficient” and “self-sustaining” Nation.”¹⁴¹ It includes the right of a First Nation community to self-govern and to control its own lands, economy, education, and infrastructure and social services. The perception of control over one’s life and circumstances relates to many health outcomes, including heart, lung, and kidney disease; diabetes; mental illness; substance use; and suicide.^{142,143} In First Nations communities, self-determination has been

138 Participant interview, March 11–15, 2019.

139 Participant interview, November 22, 2019.

140 Henderson and Sanders, *Powering Reconciliation*.

141 Oster and others, “Cultural Continuity.”

142 Marmot, *The Status Syndrome*.

143 Marmot, “Social Determinants of Health Inequalities.”

associated with mental health outcomes, including rates of depression¹⁴⁴ and suicide.¹⁴⁵

The Atlin hydro project has had an obvious impact on the self-determination of the Taku River Tlingit First Nation. The hydro project, and the activities of the development corporation in general, are helping the Taku River Tlingit First Nation gain control over the future of its community. The community now has greater control over its economic development, education, land use, and infrastructure and services.

The hydro project has helped the Taku River Tlingit First Nation build human resource capacity. Building this capacity is key to its model of developing a sustainable economic future. This includes building the technical and trades skills of the First Nation's people and the business capacity of the development corporation. Building business capacity allows the development corporation to initiate new capital projects and take an independent role. It is now less reliant on outside companies to dictate project terms. This allows the First Nation greater control over its land use and the financial benefit generated from its natural resources.

The development corporation has also used project revenue to build infrastructure development and maintenance capacity through the purchase of heavy equipment and service equipment. In doing so, it has taken greater

control over services and infrastructure projects on the reserve.¹⁴⁶

As whole owners and operators of the hydro project, the First Nation government now has access to own-source revenue. It uses this money to help fund its own programs and services as it sees fit. This includes funding for the Skills Training Employment Program and the Land Guardian program. The extra money from the hydro project has helped the First Nation tailor these programs to the needs of its residents, the community, and the local economy.¹⁴⁷

A systemic review of the literature also suggests that the development of a clean energy power source in and of itself can have a positive impact on self-determination in Indigenous communities previously reliant on diesel.¹⁴⁸ The findings suggest that these projects can create the opportunity for the community to pull away from colonial systems and develop energy independence by securing a more dependable form of energy. In fact, several Taku River Tlingit residents reported a sense of purposefulness and determination in establishing renewable energy in their community.^{149,150}

This change in self-determination has translated into positive changes in health and well-being in the Taku River Tlingit First Nation community. Residents are proud to be whole owners and operators of the project.^{151,152,153}

144 Reading and Wien, *Health Inequalities*.

145 Chandler and Lalonde, "Cultural Continuity as a Hedge Against Suicide."

146 Participant interview, December 2, 2019.

147 Participant interview, May 6, 2020.

148 Stefanelli and others, "Renewable Energy and Energy Autonomy."

149 Participant interview, June 1, 2020.

150 Participant interview, March 11, 2019.

151 Participant interview, March 11–15, 2019.

152 Participant interview, March 11–15, 2019.

153 Participant interview, March 11–15, 2019.

And there is a renewed pride in being Tlingit. The youth want to learn more about who they are and where they come from.¹⁵⁴ There is a keen interest in revitalizing the Tlingit language and traditional practices. There is also a marked increase in participation in cultural activities.^{155,156} Additionally, the success of the project has been empowering. Interest and participation in Taku River Tlingit First Nation government affairs has increased.^{157,158} People are working together to launch new projects and programs. Over the last 10 years, community members also report a greater motivation for recovery among residents with substance abuse problems.^{159,160} Residents now see that progress is possible and that they are gaining control of their community's future.¹⁶¹ (See "The community impact of the hydro project.")

First Nation residents also believe that the participation and successful completion of the hydro project has had a positive impact on how the non-Indigenous residents view the Tlingit First Nation residents. People see Tlingit companies and Tlingit people successfully operate businesses and maintain more jobs generationally.¹⁶² Non-Indigenous residents also report an increase in community participation on the part of the First Nation residents.¹⁶³

154 Participant interview, March 11–15, 2019.

155 Participant interview, March 11–15, 2019.

156 Participant interview, March 11–15, 2019.

157 Participant interview, March 11–15, 2019.

158 Participant interview, March 11–15, 2019.

159 Participant interview, March 11–15, 2019.

160 Participant interview, March 11–15, 2019.

161 Participant interview, March 11–15, 2019.

162 Participant interview, August 24, 2020.

163 Participant interview, March 11, 2019.

The community impact of the hydro project

Susan Carlick is a Taku River Tlingit First Nation resident. At the time of the hydro project, she was an elected leader in the First Nation. She was involved in the development, visioning, and execution of the project. In conversation, she offered her perspective of the hydro project's impact on the community and agreed to go on the record.

"Personally and professionally, I am incredibly proud that we completed that project.... The purposefulness that I feel about the Taku River Tlingit First Nation taking the lead in getting rid of millions of litres of diesel being burned every year to power this town ... We did that. And there is no debate and uncertainty about how good that is for your community, our Nation, our family, the province.... And so, knowing that my people and our economic work can provide such outstanding results proves to me why we need to take the lead on more things. You know, this work has demonstrated to me how capable we are....

"And so that positive energy from being able to do something amazing, I believe, is causing Taku River Tlingit to take on other big things. And I believe that it is absolutely possible to achieve that goal. Revitalizing language, protect big places, develop a sustainable economy in Atlin ... all those things become more possible in the minds of people like me. Because we did the hydro project....

"But I know that people are now standing up to do greater things."

Source: Susan Carlick, June 1, 2020.

Conclusion

Local participation of the Taku River Tlingit First Nation in the Atlin hydro project had, and continues to have, a positive impact on several social determinants of health and well-being. Despite the value and strength of the qualitative evidence collected through this research project, having better health outcome data at the local level would be beneficial. It would then be possible to track whether the improvements seen in the social determinants of health in the First Nation community have resulted in quantifiable, measurable changes to health status and well-being. According to the social determinants of health model, gains in social, economic, individual, and environmental predictors of health will translate over time into observable changes in health behaviours and health status.¹⁶⁴ However, the question remains: How long before we begin to see measurable changes? The view of the Taku River Tlingit First Nation is that any statistical changes in the health and well-being in its community related to the hydro project will be generational. Societal change in its community is a multi-generational project—and the hydro project is an important first step. The positive impacts are starting to be seen.¹⁶⁵

Moving forward

The Atlin hydro project is an excellent example of the many benefits that Indigenous clean energy projects can bring to a First Nation community. The experience of the Taku River Tlingit First Nation sheds light on a number of lessons and practices that can inform other actors interested in supporting and/or pursuing Indigenous clean energy projects. While the number of Indigenous-owned clean energy projects in Canada continues to increase, Indigenous communities still own, on average, less than a 50 per cent equity position in these projects.¹⁶⁶ Understanding the challenges and how to maximize the benefits of these projects is helpful to any community looking to take an independent role in developing a clean energy project.

This case study also draws attention to the need for a national integrated surveillance system of health and well-being for Indigenous communities in Canada. Work has been done as part of the Arctic Social Indicator project to develop a surveillance program that can be used to measure changes in human development in Arctic communities.^{167,168} This dual monitoring system calls for two streams of data collection. The first is the measurement of several standardized social indicators across Northern communities. The second is the measurement of community-specific indicators. These community-specific indicators would be developed in consultation with each community. This may also be an appropriate method for tracking the health and well-being implications of infrastructure projects in Northern Indigenous communities.

164 Reading and Wien, *Health Inequalities*.

165 Participant interview, December 2, 2019.

166 Indigenous Clean Energy, *Accelerating Transition*.

167 Larsen, Schweitzer, and Petrova, *Arctic Social Indicators*.

168 Aalhus, Oke, and Fumerton, *The Social Determinants of Health Impacts*.

Currently, there are organizations and federal initiatives aimed at collecting social data in Indigenous communities across Canada. But participation is inconsistent. This limits the availability of community-level data. A national dual-monitoring system would provide not only a set of consistent indicators that could be compared over time and across Indigenous communities, it would also be tailored to a given community's needs. Monitoring could focus on specific outcomes targeted to community initiatives, programs, and projects. It would be possible to measure determinants of community wellness identified as important to the community. This system would provide the opportunity for Indigenous people to take ownership over data collection and monitoring in their communities. In turn, this autonomy could encourage improved participation in surveillance initiatives. It could also improve subsequent participation in program evaluation in Indigenous communities across Canada.

Having an appropriate surveillance system at the community level—a system built in partnership with Indigenous communities—is critical to gaining a better understanding of the links between Indigenous participation in clean energy projects and community well-being. And it is also imperative to moving forward, together, down the road to reconciliation.



Appendix A

Data limitations in Atlin

This research aimed to quantify the health and well-being impacts of the Atlin hydro project for the Taku River Tlingit First Nation. The goal was to track changes in various health outcomes in the population over time. Outcomes of interest included rates on nutrition-related diseases, including diabetes, hypertension, and obesity, along with rates on mental health outcomes, including suicide, depression, anxiety, and substance use and abuse. However, the proposed quantitative analysis was not possible. This case study explored many data sources, but no suitable health data were found to support a robust empirical analysis.

The Taku River Tlingit are a small First Nation, making confidentiality a major concern in the release of health data. In addition, the First Nation government does not collect detailed community health data at the individual level. At the provincial level, British Columbia tracks health outcomes. However, the province does a geographic analysis of data by health authority or health service delivery area. As a result, data for Atlin are aggregated within a broader area, known as the Stikine region.¹ The aggregate health data for the Stikine region is not a good proxy for examining the health of the Taku River Tlingit First Nation. The region includes other Indigenous and non-Indigenous communities in Northern B.C. in addition to Atlin. In

2006, the First Nation people living on Taku River Tlingit First Nation reserve lands represented less than a quarter of the Indigenous population in the Stikine region.^{2,3}

At the federal level, the Canadian Community Health Survey⁴ and Aboriginal Peoples Survey⁵ are two major sources of health data for the Indigenous population in Canada. However, neither survey collects data on reserve. The First Nations Information Governance Centre does collect health data on reserve across Canada. However, the Taku River Tlingit does not participate in this initiative.⁶

Indigenous and Northern Affairs Canada also calculates a community well-being index that tracks the socio-economic well-being of Indigenous communities in Canada in five-year intervals. This index tracks several social determinants of health, including labour, education, income, and housing status in a given region. Unfortunately, data were also only available for the Stikine region.⁷

1 Kashanchi, "Atlin."

2 Statistics Canada, *2006 Aboriginal Community Data Initiative: Taku River Tlingit First Nation*.

3 Statistics Canada, Stikine, British Columbia. Aboriginal Population Profile. 2006 Census.

4 Statistics Canada, "Canadian Community Health Survey – Annual Component."

5 Statistics Canada, "Aboriginal Peoples Survey."

6 First Nations Information Governance Centre, "Participating Communities (Regional Health Survey 2002/03)."

7 Indigenous and Northern Affairs Canada, Information Management Branch, "Community Well-Being."

Appendix B

Methodology

In an effort to address our research questions and objectives, a review of academic and grey literature was conducted. We reviewed articles, reports, and policy documents related to Indigenous community participation in infrastructure projects and community health and well-being. The scope of the project was guided by an advisory committee and review process, which included experts within the field of Indigenous clean energy. We also surveyed all available population health and social data for the community of Atlin, British Columbia.

We applied a social determinants of health framework to our research question on the health and well-being impacts of the hydro project. There is no definitive list of the social determinants of health for Indigenous peoples. But there is a consensus among researchers and policy-makers on several determinants of health known to impact the health and well-being of Indigenous peoples. The research in this impact paper was guided by the list of social determinants of health for First Nations communities proposed by the Aboriginal Child Welfare Working group¹ and by the work of Charlotte Reading and Fred Wein.² However,

other models of Indigenous social determinants of health exist. For example, Inuit Tapirit Kanatami has a list of the social determinants of Inuit health in Canada.³

Researchers from The Conference Board of Canada made a weeklong community visit to Atlin, B.C., in March 2019. They worked with members of the Taku River Tlingit First Nation and the development corporation to coordinate the visit. Researchers conducted approximately 50 interviews with residents in the community over the week-long visit. This included interviews with First Nation and non-Indigenous residents, members of the development corporation, members of the First Nation government, and business owners in the greater Atlin community. They also held a town hall meeting. Residents discussed the various challenges and benefits to their community of the hydro project.

1 Aboriginal Children in Care Working Group, *Aboriginal Children in Care*.

2 Reading and Wien, *Health Inequalities*.

3 Inuit Tapirit Kanatami, *Social Determinants of Inuit Health*.



Appendix C

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The Atlin Hydro Project: Making a Meaningful Contribution to Community Health and Well-Being

Amanda Thompson

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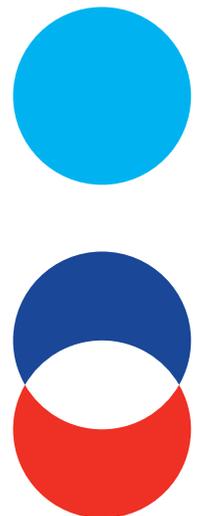
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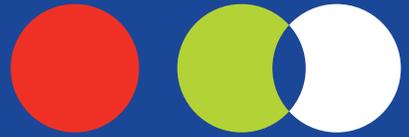
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