

Power Purchase Agreements

Part I: An introductory guide for
Indigenous clean energy project
proponents in remote communities

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The Pembina Institute is a national non-partisan think tank that advocates for strong, effective policies to support Canada’s clean energy transition. We use our expertise in clean energy analysis, our credibility as a leading authority on clean energy, and our extensive networks to advance realistic climate solutions in Canada.

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Acknowledgements

The Pembina Institute is grateful for the contributions of the various experts and community energy leaders who shared their time, expertise and perspectives to create this resource. We proudly share this project with them and hope it can support Indigenous communities in their desire to build a clean energy future built on justice, self-determination and partnership. We likewise extend our gratitude to [Wah-ila-toos](#) and its Indigenous Council, whose support makes this work possible.

The Pembina Institute recognizes that the work we steward and those we serve span the lands of many Indigenous peoples. We respectfully acknowledge that our organization is headquartered in the traditional territories of Treaty 7, comprising the Blackfoot Confederacy (Siksika, Piikani and Kainai Nations); the Stoney Nakoda Nations (Goodstoney, Chiniki and Bearspaw First Nations); and the Tsuut’ina Nation. These lands are also home to the Otipemisiwak Métis Government (Districts 5 and 6).

These acknowledgements are part of the start of a journey of several generations. We share them in the spirit of truth, justice and reconciliation, and to contribute to a more equitable and inclusive future for all.

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Introduction

Energy policies in jurisdictions across Canada are built on complex arrangements of regulations, expectations and standards that Indigenous clean energy proponents must navigate when transitioning their communities to clean and affordable energy. One of the more challenging steps to developing clean energy projects is the power purchase agreement (PPA) process, when proponents must work with utilities to define the terms of the purchase and sale of clean energy.

This guide is part one of a [two-part series](#) for independent power producers (IPPs) who are just starting the process to develop a PPA. Part one defines PPAs, gives an overview of the phases of the project development process, and provides general information on how to prepare for the PPA process. Part two explores PPAs in greater detail, focusing on PPA contract terms and conditions.

The PPA process can be challenging and confusing, but there are many Indigenous clean energy leaders who have successfully navigated this stage of project development. Our hope is that this series can help other project proponents achieve similar success, enabling them to move their projects one step closer to a clean energy outcome that positively supports their communities and Indigenous-led visions of change.

This series provides general guidance only. We strongly encourage IPPs to seek appropriate legal support to navigate their energy and legal landscapes.

What are power purchase agreements and why do they matter?

PPAs, also known as energy or electricity purchase agreements, are long-term contracts between an IPP (seller) and, in remote communities, a regulated electric utility (buyer), as shown in Figure 1. They can help develop a solid economic case for renewable energy projects, attracting investment capital and decreasing risk.¹

¹ Dave Lovekin, Barend Dronkers and Ben Thibault, *Power purchase policies for remote Indigenous communities in Canada* (Pembina Institute, 2016), 21. <https://www.pembina.org/pub/power-purchase-policies-remote-indigenous-communities-canada>

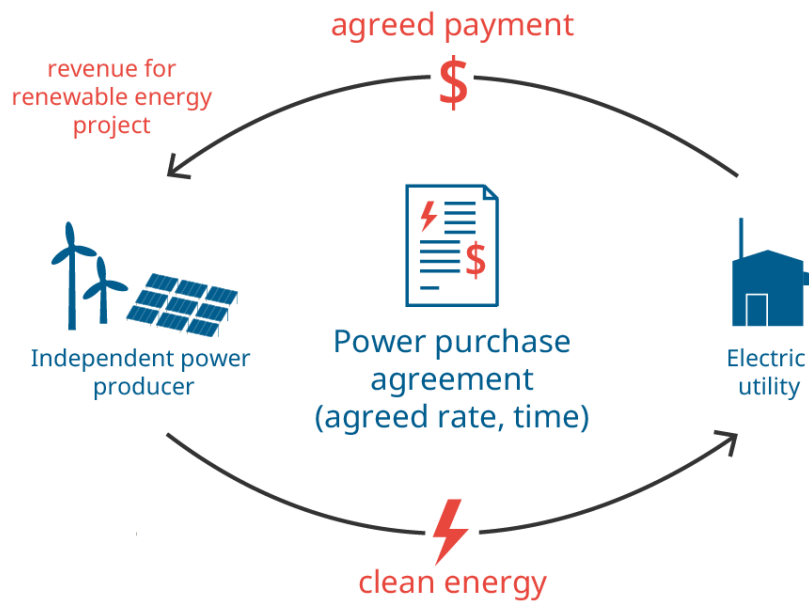


Figure 1. Power purchase agreement configuration

During the PPA process, it is not unusual for proponents to run into difficulties getting agreement on the amount of energy to be purchased and the rate structure.² Both play an important role in securing project financing.

The process of establishing and defining the contents of a PPA varies significantly based on the project location, the type of renewable energy system, and the parties involved, among other factors. In some jurisdictions, the process is more rigid and constrained than presented in this document, with clearly set out steps and terms and conditions, while in others it is much less structured. The information presented below is meant to assist Indigenous project proponents regardless of how established PPA negotiations are within their jurisdictions.

² For a discussion on rate structures, see Marvin Quitaras, “What’s a fair and equitable price for renewable energy in remote communities?,” *Pembina Institute*, March 10, 2021. <https://www.pembina.org/blog/whats-fair-equitable-price-renewable-energy-remote-communities>

Project development process

PPA negotiations are just one phase of the multiphase project development process. Table 1 details each phase in the process. Because project designs usually change over the course of the project development process, the phases are often iterative. The order of the phases also varies based on the project’s context.

Table 1. Project development phases

Phase	Details
Pre-feasibility	Investigative work to identify which renewable energy systems might be viable for the community in order to inform the selection of a system. Includes initial development of aspects of the preliminary design. May also involve assessing site availability, community benefits and funding eligibility. Around 30% of the design is complete.
Feasibility	More detailed evaluation of the system identified during pre-feasibility. This would include sizing the system, selecting the site, estimating costs, determining the permits and approvals required, and outlining the need for additional studies. Around 30–60% of the design is complete.
Front-end engineering design (FEED)	Engineering work that results in basic engineering and conceptual drawings for the project’s electrical, civil and mechanical components. The FEED is used as the basis for bidding contracts. The awarding of these will lead to the detailed engineering design (described below) and the final PPA process. Over 60% of the design is complete.
Interconnection study	Full detailed assessment of a project’s impact on the grid. The results include a technical report outlining the project’s feasibility given the utility’s requirements, the technical specifications and costs needed to connect the project, and the impacts the project would have on the utility’s power distribution system.
Detailed engineering design	Detailed engineering work that results in stamped drawings for the project’s electrical, civil and mechanical components. It is used to firm up contract prices and leads to the final project design and procurement of materials.
Community engagement	Community engagement, meetings and consensus-building throughout the project to ensure that project outcomes are aligned with community objectives and that the community is well informed.
Regulatory approval	Studies and applications for permits and approvals to meet site, environmental and any other applicable regulatory requirements.
PPA process	Process to strike a formal PPA between the IPP and the utility.
Construction	Surveying the site, shipping materials and equipment to the community, building the project and any supporting infrastructure (e.g., roads, distribution lines), and connecting the system with the existing electricity infrastructure.
Commissioning & startup	Final tests, verification of the system, and ultimately “turning on the switch” to generate electricity and feed into the grid.

Figure 2 shows a sample timeline for a five-year project development cycle and where the PPA process fits in. This cycle could potentially be shorter (<3 years) or longer (>5 years). Project timelines vary depending on many factors, including community support for the project, the size of the project, regulatory requirements, the level of familiarity of both the IPP and utility with the project development process, and the level of support and collaboration provided by the utility.

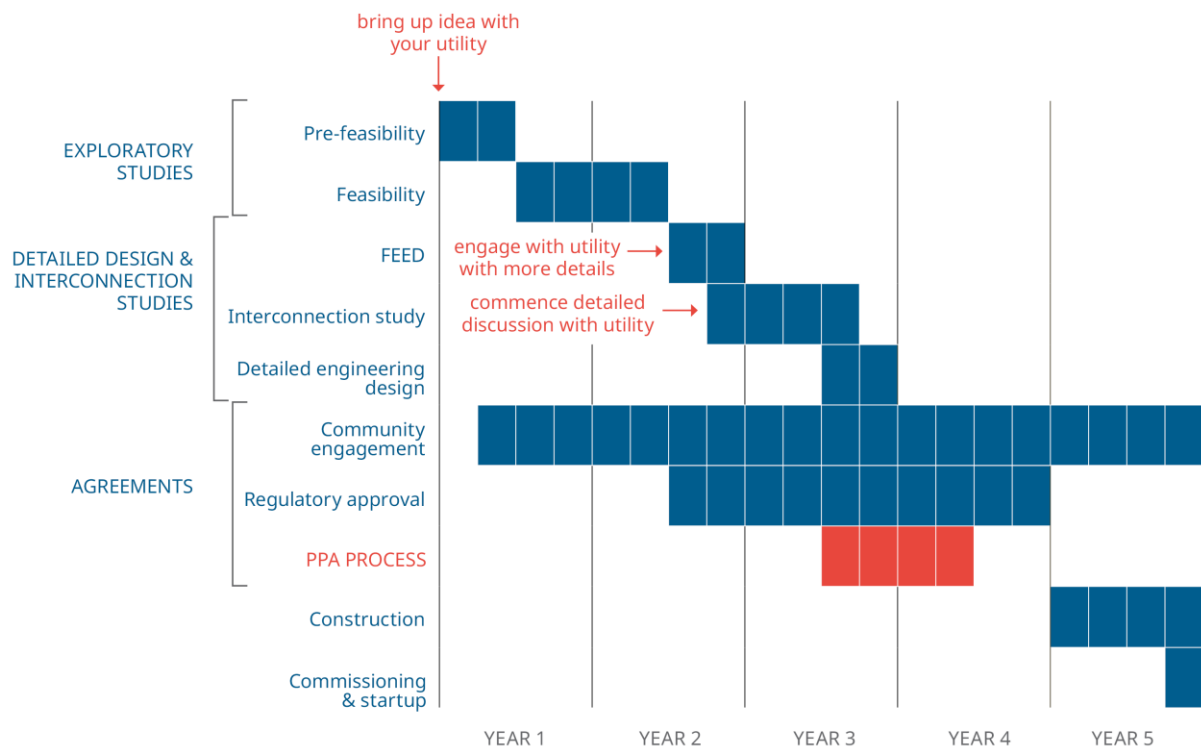


Figure 2. Timeline for project development process

Engaging with the utility occurs not just during the formal PPA process but during other phases as well, as shown in Figure 2 and discussed in the section “Working with the utility.” Engaging with the utility early is especially important in cases where the outcomes of the PPA process are key to securing financing. In these cases, some elements of the PPA process will occur earlier in project development to ensure alignment between the proponent and the utility.

Although not included in the timeline, operations and maintenance requirements are important to ensure that the project performs as designed over its lifetime.

Best practices

While no two project development processes are the same, listed below are a few good practices that can help in successfully developing a PPA.

Pre-feasibility

- Prioritize community support during the project and throughout the PPA process (e.g., communicate regularly, including holding community meetings, and seek consensus).³
- Engage with your utility early and regularly, on both the technical and commercial aspects of your project.
- Check for established and similar projects and incorporate lessons learned into your project.

Feasibility

- Seek advice from others experienced in negotiating PPAs for Indigenous proponents.

FEED

- Verify that your technology is compatible with utility systems and practices.
- Check the technical parameters of established and similar projects to identify parallels for commercial application elsewhere.

Interconnection study

- Conduct thorough technical analyses to inform a dispatch strategy that maximizes your project benefits.

All phases

- Iterate and update your project's commercial requirements at every stage of the process.
- Retain a lawyer to review every contract.

³ For a good example of community engagement, see Haítzaqv Climate Action, “Heiltsuk Climate Action.” <https://heiltsukclimateaction.ca>

How to prepare for the PPA process

This section provides information that can help you be well prepared when starting the PPA process.

Navigating your jurisdiction

An IPP policy is a government framework that enables IPPs of medium- to large-scale projects to generate and sell electricity to a utility through a legally binding contract (the PPA). The policy defines how PPA rates are set and may lay out other contract terms, such as contract time horizons.

Few Canadian jurisdictions have an IPP policy. While IPP policies are not necessary for renewable energy development, they can make it easier to develop PPAs. For jurisdictions that do not have an IPP policy, the PPA process is guided by utility and government discretion, project precedence, and community and utility experience, among other factors. Whether or not a jurisdiction has an IPP policy will strongly dictate the methods through which a PPA is established.

In Table 2, we indicate for each province and territory if there are any existing Indigenous-owned renewable energy projects in remote communities and if an IPP policy is in place. These two factors are important because they can indicate a utility's familiarity and experience with integrating an IPP and entering into a PPA.

Table 2. Jurisdictional scan of IPP policy and PPA precedents

Jurisdiction		Has remote Indigenous PPAs in place?	Has an IPP policy?
Provinces	BC	●	●
	AB	●	●
	SK	●	●
	MB	●	●
	ON	●	●
	QC	●	●
	NL	●	●
Territories	YT	●	●
	NT	●	●
	NU	●	●

Legend ● Meets the criteria ● Does not meet the criteria

Working with the utility

Engaging the utility early is necessary to ensure alignment with other plans for the microgrid and to avoid future hurdles. Early engagement also results in a higher chance for project success by providing a better understanding of the utility’s requirements, their level of comfort around infrastructure ownership and project cost-sharing, their criteria for success, and possible win-win scenarios for your project and the utility.

Before engaging with your utility, it is important to understand the utility’s experience with PPAs. This experience can suggest how comfortable a utility may be toward various practices, such as integrating operations cost savings into the PPA rate, which would take shape as a top up to PPA revenues and requires careful analysis of expected and actual utility operating costs from both the proponent and the utility. Prior experience may provide an indication of how open the utility may be to exploring new areas in a PPA. The receptiveness and attitude of a utility to negotiating a PPA with an Indigenous proponent and agreeing on favourable terms varies significantly depending on the policy and precedents in each jurisdiction.

PPAs are partnership documents between the IPP and utility; successful renewable power projects are built on successful partnerships. Developing a strong relationship with the utility can significantly reduce roadblocks to project development and is necessary for successfully designing a renewable energy system that fully integrates with the existing utility infrastructure. Factor the time and cost associated with building and maintaining this relationship into your project planning.

While engagement with the utility should happen early, engagement will also occur at various other times during the development process, as shown in Table 3.

Table 3. When in the development process to engage the utility

When	Details
Before exploratory studies	Bring up the idea with your utility to test their general receptiveness — are there any major concerns? Or are they generally supportive? Get an understanding of the application process for establishing a PPA — what is needed for the interconnection study, PPA process and any other requirements?
Before FEED studies	Once you have a better idea of what your project is going to look like (technology, size, location) and have an implementation plan, review these with your utility and again check for flags.
Before/during the interconnection study	This is when detailed technical discussions with the utility would take place. These discussions are based on interconnection and system impact studies (each of which is described in further detail in the following section). The nature of these discussions will depend on who is responsible for the study (the utility or the proponent). One key area of modelling that should be done transparently with the utility is determining and agreeing upon the final energy savings. This is core to establishing the revenue stream and enabling the proponent to determine the business case.
Throughout PPA process	Iterative discussions on contract terms and conditions.

Interconnection study

Depending on the jurisdiction, the utility or the proponent may be responsible for the interconnection study, which evaluates a project’s impact on the grid and what requirements and upgrades are necessary to connect the project to the community’s electricity infrastructure. Both parties to the PPA process generally prefer that the proponent have control and ownership of the interconnection study so that the details can be used to fully inform project design and benefits. This set up also provides the proponent with confidence in the timeline for completing

the study, enabling them to plan appropriately. The utility, however, will need to review the results.

Interconnection study costs are typically paid by the project proponent, who often hires a contractor to do the study. These costs and the outcomes of the study can vary significantly depending on the contractor. Validating contractor estimates and proposals is important, in addition to ensuring that the study aligns with the utility's expectations.

How the system impact study links to the interconnection study

There is sometimes confusion on the relationship between the system impact study (SIS) and the interconnection study. The SIS, also referred to as the connection impact assessment in Nunavut, is a component of the interconnection study. The SIS evaluates the impact of the proposed interconnection on the reliability of the transmission and/or distribution system and serves as a tool to align the project with the utility's plans for supplying electricity to the community. The SIS can take six months to a year to complete, depending on the complexity and the availability of input data.

Completing the pre-PPA checklist

Going into the PPA process well prepared can shorten the timelines for establishing an agreement with the utility and help you get the most out of the agreement. Completing the pre-negotiations checklist below can assist you in the following:

- understanding the precedents that have been set in your jurisdiction
- identifying any regulatory constraints that may apply to contract terms
- determining what changes from the “standard” PPA are required
- establishing your own expectations for the PPA

Pre-PPA checklist

<input type="checkbox"/>	Complete detailed design — power generation facility specifications, stamped drawings, electrical permits, equipment specification sheets, and interconnection study results.
<input type="checkbox"/>	Hire someone with experience in the PPA process.
<input type="checkbox"/>	Understand the utility’s cost of service in your community. ⁴
<input type="checkbox"/>	Define your business case — establish a financial model that includes a hypothetical PPA rate based on the cost of service and debt repayment.
<input type="checkbox"/>	Review other existing projects with PPAs, if available.
<input type="checkbox"/>	Review, research and understand the policy and legislation in your jurisdiction (e.g., an IPP policy, the relevant utilities act and regulations).
<input type="checkbox"/>	Review, research and understand the key regulatory hurdles faced by the utility — PPA rates must be justified to regulators.
<input type="checkbox"/>	Ensure the project meets the criteria used by the regulator in its approval process; for example, in Quebec, the criteria cover reliability, community and environmental acceptance, greenhouse gas reductions, and cost.

We developed this two-part series to support Indigenous IPPs at the early stages of their clean energy journey, with an emphasis on the PPA process, which can be especially challenging to navigate. This series was informed by a wide range of stories, perspectives and analyses offered by Indigenous clean energy proponents, other clean energy experts and utilities.

⁴ Emily He, “When business-as-usual is a barrier to clean energy,” *Pembina Institute*, September 13, 2021. <https://www.pembina.org/blog/when-business-usual-barrier-clean-energy>

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