

Renewable Energy

FUNDAMENTALS

OVERVIEW

The commercial real estate (CRE) industry is dependent on a stable supply of energy to power its business. The industry also requires a growing supply of reliable, renewable energy to meet its climate commitments. This Explainer provides an overview of the renewable energy opportunities for CRE owners and investors in Canada.

CORE CONCEPT

The primary renewable energy options available in Canada include:

1

Renewable Energy Certificates (RECs)

A REC represents one megawatt-hour (MWh) of electricity generated from a renewable energy source. It is issued as a tradeable certificate that verifies the renewable electricity was produced and added to the grid.

2

Virtual Power Purchase Agreements (VPPAs)

A VPPA is a financial contract where the buyer agrees to pay the off-site renewable energy project developer a contracted price for a specified amount of green power sold into the market (typically over a 15 year term), corresponding to the buyer's electrical load.

3

Onsite Renewable Energy

Onsite renewable energy refers to renewable energy that is generated (and potentially stored) onsite. Energy generated (typically green power) may be consumed at a building level, sold to tenants (via a Power Purchase Agreement), and/or fed into the local grid through a net-metering arrangement.

DEFINITIONS

Renewable Energy

Source of energy that is replenished through natural processes or using sustainable management policies, such that it is not depleted at current levels of consumption. Examples include solar, wind or hydro for power generation.

Green Power

Electricity generated from renewable sources. Green power is most commonly offered to customers as renewable energy certificates (RECs).

Power Purchase Agreement (PPA)

Contract for green power (and potentially the associated environmental attributes). This typically includes the purchase of a significant volume under a contract that lasts for ~15 years.

Net-Metering

Arrangement with the electric utility that allows the export of excess power generated on site to the local grid in exchange for a credit on the building's electricity bill.

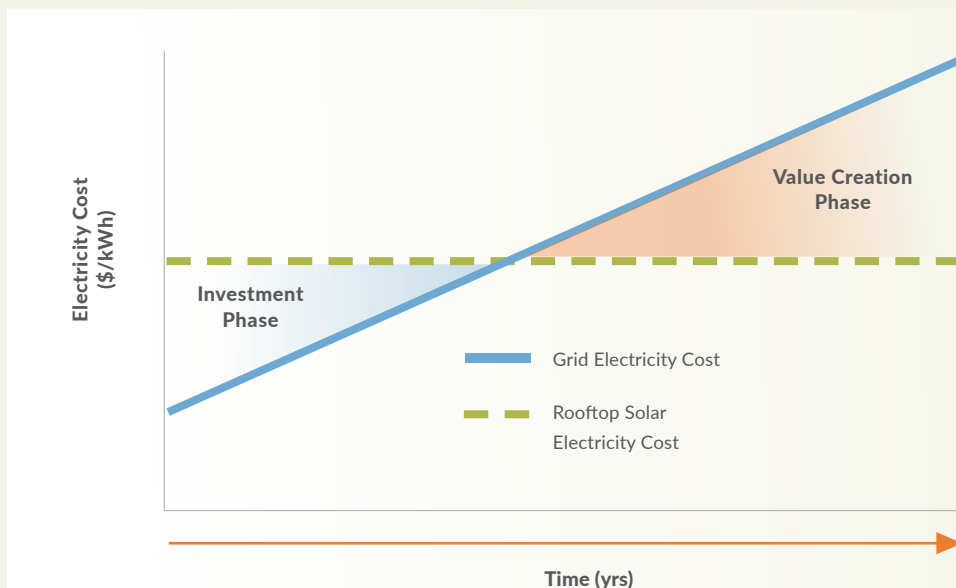
Summary of Renewable Energy Options

Options	CAPEX Impact	OPEX Impact	Emissions Impact	Capital Return	Income Return
RECs	None	Increase	Individual properties or portfolio scale	None	Negative
VPPA	None	None (ideally)	Individual properties or portfolio scale	None	Neutral (ideally)
Onsite Renewable Energy	Increase	Reduction	Individual properties	None or positive	Positive

ON-SITE RENEWABLE ENERGY – ROOFTOP SOLAR

Value Proposition

CRE owners can create value at an asset level when the cost of electricity from a rooftop solar project is less than the grid electricity cost over the project's lifetime (ownership model).



OWNERSHIP MODEL Key Considerations

Grid Electricity Cost

- Current grid electricity cost
- Annual electricity escalator

Rooftop Solar Electricity Cost

- Capital cost
- Financing rate
- Amortization period
- Annual operation & maintenance cost
- Electricity generation
- Life of the system

Options & Considerations

Business Model	Description	Core Success Metric
Ownership	Funded by the building owner	Financial Returns (IRR - Internal Rate of Return)
Third Party	Funded by a third party	Incremental Rent (NOI - Net Operating Income)
Hybrid	Owner/Tenant co-funded	Financial Returns/Incremental Rent

NOTE: All business model options require project development and O&M to be completed by a third party.

Rooftop Solar Project Drivers

The feasibility of rooftop solar projects is influenced by a combination of financial, regulatory, and building factors:

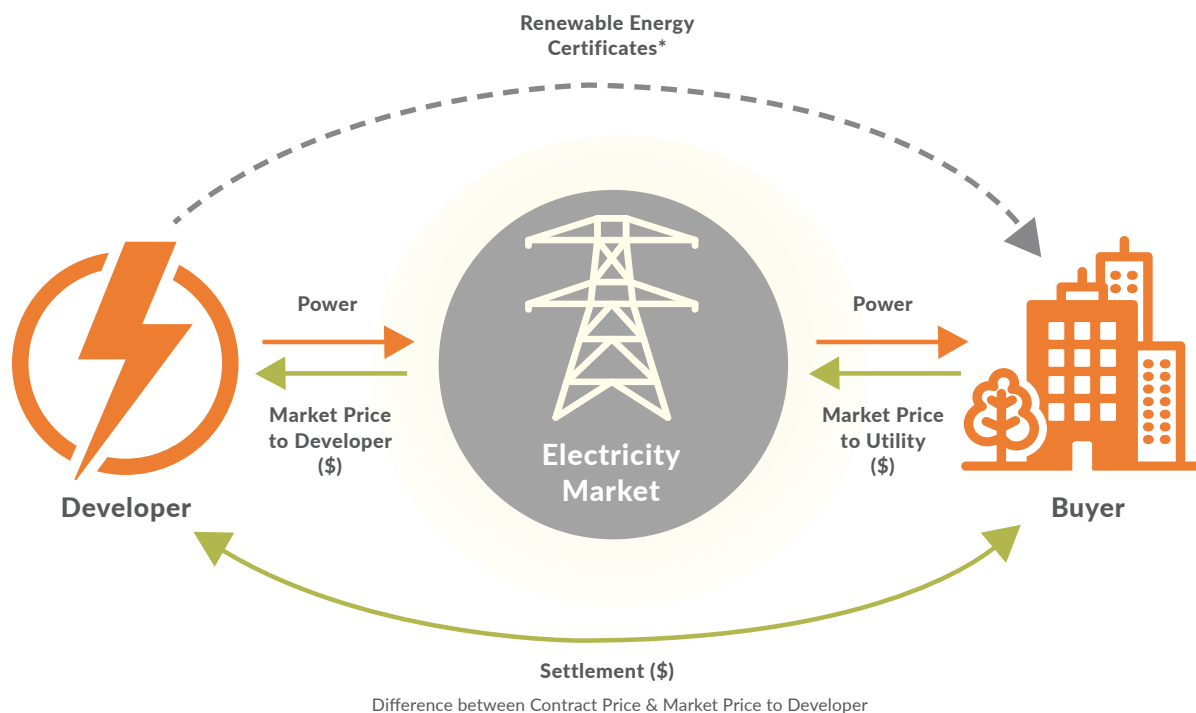
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| <ul style="list-style-type: none"> • Cost of electricity • Tenant lease term • Tenant interest/demand • Tenant load requirements | <ul style="list-style-type: none"> • Net-metering regulations • Local grid capacity • Site feasibility (e.g., quality of solar resource) • Building feasibility (e.g., size & age of roof, structural capacity) | <ul style="list-style-type: none"> • Cost of capital • Green financing (e.g., Canada Infrastructure Bank) • Tax implications or rebates (e.g., Investment Tax Credits) |
|--|---|---|

When successfully planned and executed, rooftop solar projects utilize untapped property space to transform an operating expenditure (OPEX) into a positive IRR capital expenditure (CAPEX) (ownership model) or deliver incremental rent (third party model) while also delivering emission reductions that contribute towards corporate targets.

OFF-SITE RENEWABLE ENERGY - VPPAs

Value Proposition

CRE owners can create value, at an asset or portfolio level, when the market price (to developer) exceeds the contract price during the contract period.



VPPAs are a physical hedge on the future price of electricity at a known price. They involve potential upside, but also financial risk. If the market price (to developer) of power goes below the contract price, the buyer pays the difference to the project. If the market price (to developer) goes above the contract price, the buyer reaps the profit. VPPAs deliver a fixed level of emission reductions over the project lifetime.

Key Considerations

- VPPAs are generally only available in deregulated electricity markets such as Alberta
- VPPAs are typically contracted within the same market as the buyer's load to reduce risk
- One VPPA contract can help companies meet a small to large portion of their portfolio's electricity load
- Aligning VPPA contracts with tenant lease terms can be challenging

NOTES: (1) VPPAs are purely financial transactions, so the buyer still needs to meet its electricity load through traditional channels (and the buyer's relationship with its utility remains unchanged). (2) Within a VPPA contract, the corporate buyer does not own and is not responsible for the physical electrons generated by the project. (3) Some regulated electricity markets, such as Ontario, are introducing regulations to make VPPAs available.

SPOTLIGHT:

AMAZON'S RENEWABLE ENERGY EFFORTS

Amazon is the world's leading corporate buyer of renewable energy, using VPPAs to advance sustainability goals.

By 2023, it had signed 74 PPAs across 16 markets totaling 8.8 gigawatts (GW), with over 60% solar.

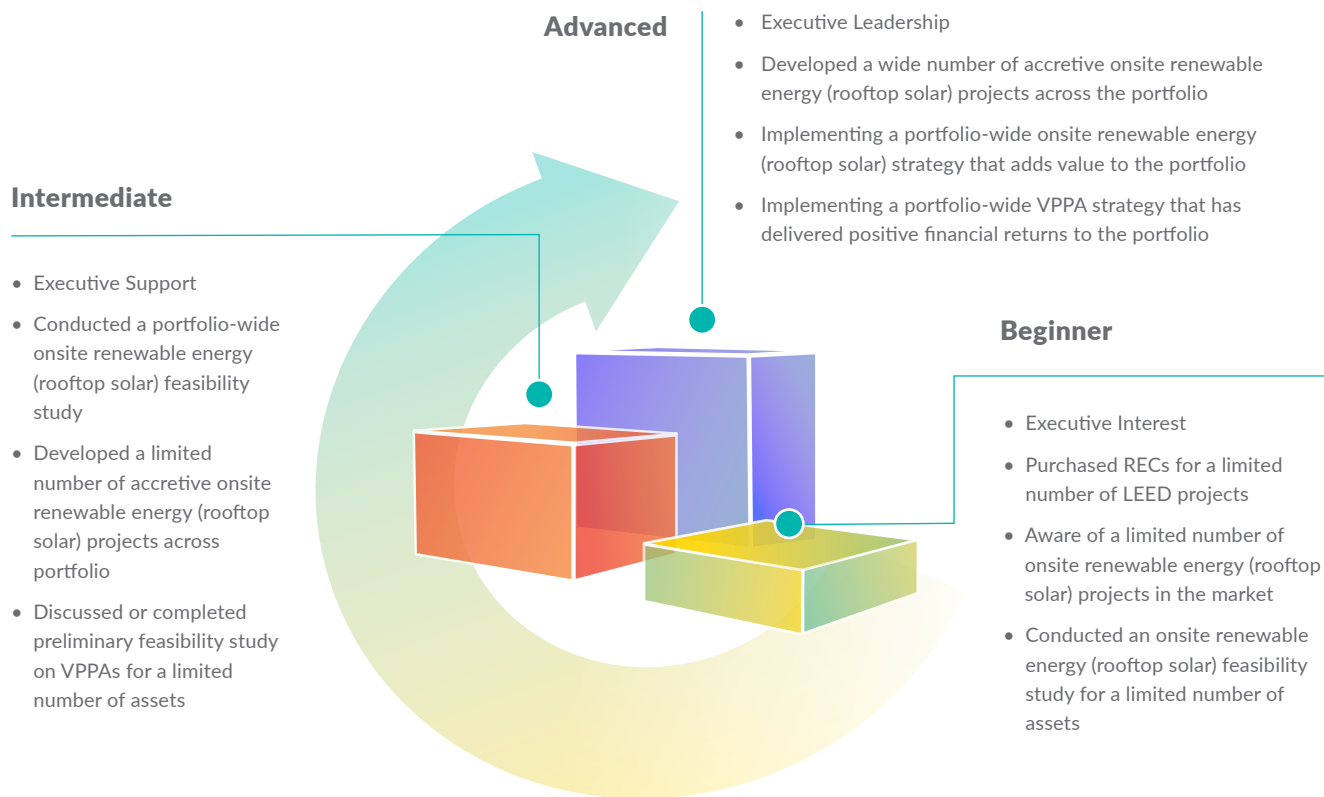
Amazon's VPPAs support new clean energy projects around the world and help meet their pledge to power operations with 100% renewable energy by 2025 and reach net-zero emissions by 2040.

Financially, VPPAs have offered Amazon energy price stability and savings when market rates rise, but also losses when prices fall.

Overall, the strategy enables Amazon to manage long-term energy costs while expanding its global renewable energy infrastructure and enhancing its environmental leadership.

PERFORMANCE SPECTRUM

Developing renewable energy strategies and projects is relatively new for Canadian CRE owners and investors. “Beginner,” “Intermediate,” and “Advanced” performance levels are summarized below.



KEY REFERENCES



Non-profit initiative launched by the Pembina Institute to accelerate corporate renewable energy procurement in Canada. It connects buyers and developers, offering resources and guidance to facilitate non-utility renewable energy transactions. With over 55 members, BRC-Canada supports market growth and contributes to Canada's transition to a net-zero electricity grid.



Global initiative led by Climate Group in partnership with CDP (formerly Carbon Disclosure Project), uniting over 400 influential businesses around the world, committed to 100% renewable electricity. Members pledge to source all their electricity from renewables by a set target date. The initiative drives corporate action, market demand, and policy advocacy to accelerate the global transition to clean energy.



Rocky Mountain Institute

Non-profit organization that has produced a guide - *Introduction to the Virtual Power Purchase Agreement* - that provides a clear, detailed overview of VPPAs, their place in the off-site renewable energy procurement market, how VPPAs work, and why VPPAs are increasing in popularity with companies. Intended for renewable energy buyers who are seeking to understand the VPPA mechanism better.

Leadership.
Influence.
Impact.



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This Explainer was developed in collaboration with REALPAC members and will be periodically reviewed and updated. Contact us for further questions or details. August, 2025.

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