



SOLAR +  
STORAGE

# PRELIMINARY STUDY

## SOLAR + STORAGE

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**Vieux Québec**

Québec, QC

Prepared for:

**STROM Spa**



# YOUR BILL BEFORE / AFTER

3% reduction on your annual bill

TODAY

Current annual bill

290 527 \$

/ year

WITH SOLAR

Estimated annual bill

281 291 \$

/ year

9 236 \$

Over 25 years, this represents estimated cumulative savings of 230 898 \$.

# PROJECT SNAPSHOT

## Proposed 128 kWp system

### Vieux Québec

515 boul. Champlain, Québec, QC

Annual consumption

**2,953,589 kWh**

Peak demand

**651 kW**

Proposed solar capacity

**128 kWc**

Proposed storage

**0 kWh**

Year-1 solar production

132,480 kWh

Solar self-sufficiency

5%

LEVELIZED COST OF ENERGY (LCOE)

0.035 \$/kWh

CO<sub>2</sub> , AVOIDED PER YEAR

0.3 tonnes



# Vieux Québec

Québec, QC

STROM Spa

## YOUR RESULTS

**Net profit of 26 412 \$ over 25 years**

YEAR 1 SAVINGS

**9 236 \$**

NET INVESTMENT

**73 689 \$**

NET PROFIT (NPV)

**26 412 \$**

Over 25 years

RETURN (IRR)

**9.7 %**

25 years

## DETAILED ANALYSIS

### CONFIGURATION

Solar power:	<b>128 kWc</b>
Battery Capacity:	<b>0 kWh</b>
Battery Power:	<b>0.0 kW</b>
Total roof:	<b>10,243 pi²</b>
Solar potential:	<b>8,194 pi²</b>

### FINANCE

Gross CAPEX:	<b>230 400 \$</b>
Total subsidies:	<b>- 156 711 \$</b>
NPV (25yr):	<b>26 412 \$</b>
LCOE (Energy Cost):	<b>0.035 \$/kWh</b>

**Payback: 10.0 years | LCOE: 0.035 \$/kWh**

Trees planted (equiv.)

**12**

Cars removed (equiv.)

**0.1**

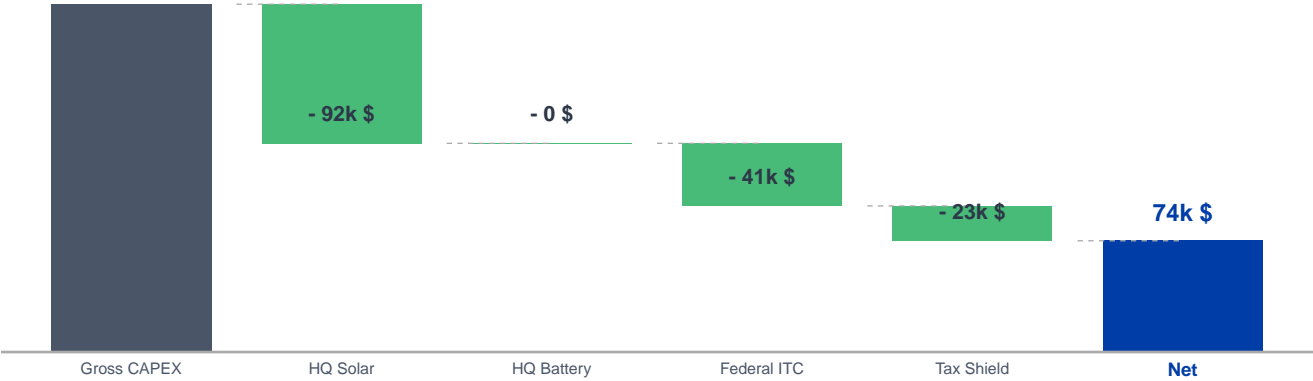
Energy coverage

**5%**



# NET INVESTMENT

68% reduction through incentives



## INCENTIVES BREAKDOWN

HYDRO-QUÉBEC SOLAR  
\$1,000/kW (max 40%)

92 160 \$

HYDRO-QUÉBEC BATTERY  
\$300/kW (max 40%)

0 \$

FEDERAL ITC  
30% of net CAPEX

41 472 \$

TAX SHIELD  
CCA Class 43.2

23 079 \$

Direct subsidies (Hydro-Québec + ITC):  
156 711 \$

Tax benefit (CCA):

23 079 \$

**TOTAL (SUBSIDIES + TAX BENEFIT):**

**179 790 \$**



# FINANCING OPTIONS

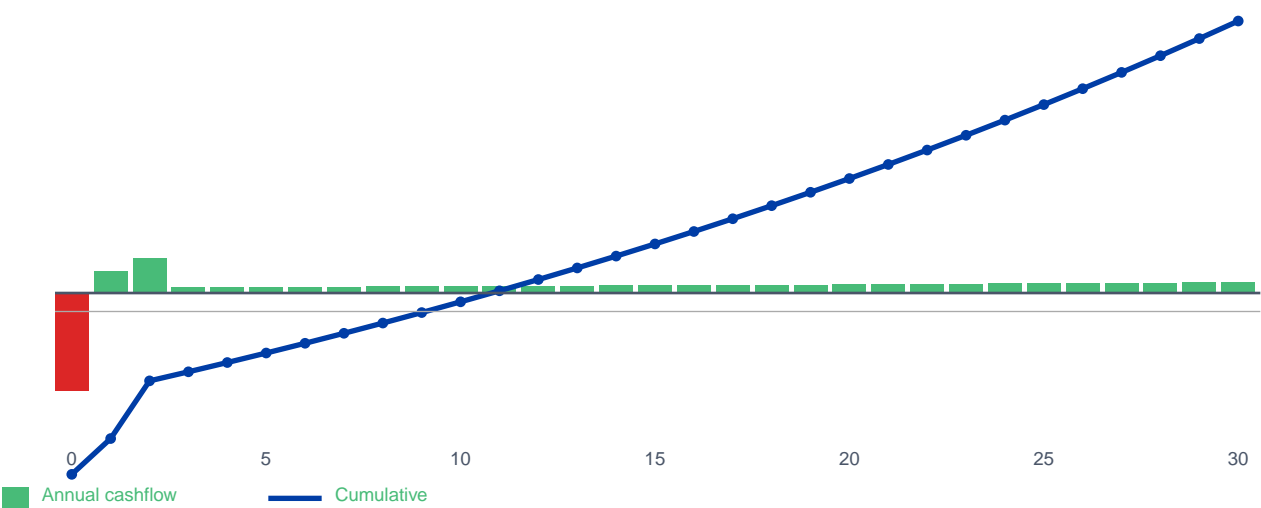
CASH	LOAN	LEASE
<div>Recommended</div> <div>Investment</div> <div>73 689 \$</div> <div>Year 1 Savings</div> <div>9 236 \$</div> <div>Payback</div> <div>10.0 yrs</div> <div>25-yr Profit (NPV)</div> <div>26 412 \$</div>	<div>Rate / Term</div> <div>5 % / 10 yrs</div> <div>Monthly Payment</div> <div>782 \$</div> <div>Year 1 Savings</div> <div>9 236 \$</div> <div>Net Year 1</div> <div>-143 \$</div>	<div>Rate / Term</div> <div>7 % / 15 yrs</div> <div>Monthly Payment</div> <div>662 \$</div> <div>Year 1 Savings</div> <div>9 236 \$</div> <div>Net Year 1</div> <div>1 288 \$</div>

Rates and terms are indicative. Financing options will be detailed in the firm quote.

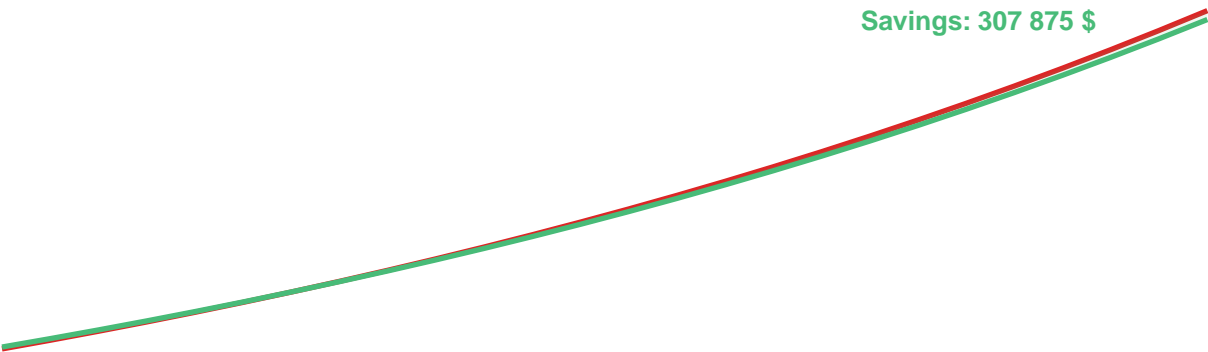
# FINANCIAL PROJECTIONS

Profitable in 10.0 years

Cash flow and return on investment



Why now? (cost of inaction)



Without solar

With solar + storage



## NEXT STEPS

### What the design fee covers (\$2,500 + taxes)

- Complete site visit
- Preliminary engineering
- HQ interconnection application prep
- Detailed firm quote

### What you need to provide

- %i Hydro-Québec bills (12-24 months)
- %i Roof information (age, condition)
- %i Single-line diagram (if available)
- %i Ownership / lease confirmation

### What you receive

- ! Firm quote with guaranteed pricing
- ! Detailed implementation schedule
- ! Clarified scope and exclusions
- ! File ready for HQ application

**Contact us to schedule your site visit**

info@kwh.quebec | 514.427.8871 | [www.kwh.quebec](http://www.kwh.quebec)



# THEY TRUST US

15+

Years of experience

120

MW installed

25+

C&I Projects

*« The detailed analysis allowed us to make an informed decision.  
The expected ROI proved accurate within 2%. »*

— Operations Director, Manufacturing Company

Our clients include companies in manufacturing, institutional, and commercial sectors.

## NEXT STEP

Contact us to schedule your free site visit

[info@kwh.quebec](mailto:info@kwh.quebec) | 514.427.8871 | [www.kwh.quebec](http://www.kwh.quebec)



## EQUIPMENT & WARRANTIES

Tier-1 solar panels

**25 ans/years**

warranty

CSA/UL certified inverters

**10-15 ans/years**

warranty

KB Racking mounting  
structure

**25 ans/years**

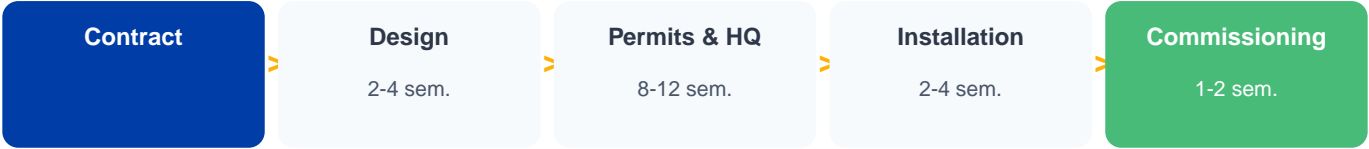
warranty

Certified workmanship

**10 ans/years**

warranty

# TYPICAL TIMELINE



Timelines subject to Hydro-Québec approval and structural conditions



# ROOF CONFIGURATION



## LEGEND

- Usable solar areas: 952 m<sup>2</sup>
- Constraint areas (HVAC, obstacles): 50 m<sup>2</sup>

**Net usable area: 902 m<sup>2</sup> (9,705 sq ft)**

## SIZING BY ZONE

Zone	Area (m <sup>2</sup> )	Orientation	Panels	kWp
Zone 1	154	N/A	51	25.5
Zone 2	503	N/A	169	84.5
Zone 3	223	N/A	75	37.5
Zone 4	71	N/A	24	12.0
Total	952		319	159.5



## KEY ASSUMPTIONS

Assumption	
Utility price escalation	3.5%/an
Panel degradation	0.5%/an
System lifespan	25 ans
HQ Program	Autoproduction
Est. self-consumption	~90%
Discount rate (WACC)	7%
Solar O&M (% CAPEX)	1.0%/an
Storage O&M (% CAPEX)	0.5%/an

# EXCLUSIONS

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The following items are not included in this preliminary estimate:

- Prior roof work
- Electrical upgrades (if required)
- HQ interconnection fees (TBC)
- Battery storage (optional, if not included)
- O&M contract (optional)
- Crane or specialized lifting fees

Note: These items can be assessed and priced during the detailed design phase.



APPENDIX A

SCENARIO COMPARISON

This analysis compares multiple simulated configurations for this site.

Scenario	PV (kW)	Battery	NPV 25yr	IRR	Payback
400 kWc + 120 kWh	400	120 / 60	231 370 \$	12.7 %	7.0 yr
980 kWc + 120 kWh	980	120 / 60	219 687 \$	9.7 %	9.0 yr
400 kWc + 120 kWh	400	120 / 60	210 752 \$	12.4 %	7.0 yr
1470 kWc + 120 kWh	1470	120 / 60	186 759 \$	8.6 %	11.0 yr

Contact us to discuss the optimal scenario for your needs.



APPENDIX B

FINANCIAL CASH FLOW TABLE

Year	Rev	O&M	Invest	Tax	NET	CUMUL
0			-74k \$		-138k \$	-138k \$
1					30k \$	-108k \$
2					49k \$	-59k \$
3					8k \$	-51k \$
4					8k \$	-43k \$
5					8k \$	-35k \$
6					8k \$	-27k \$
7					8k \$	-18k \$
8					9k \$	-10k \$
9					9k \$	-911 \$
10					9k \$	8k \$
11					9k \$	18k \$
12					10k \$	27k \$
13					10k \$	37k \$
14					10k \$	47k \$
15					10k \$	57k \$
16					11k \$	68k \$
17					11k \$	79k \$
18					11k \$	90k \$
19					11k \$	101k \$
20					12k \$	113k \$
21					12k \$	125k \$
22					12k \$	137k \$
23					13k \$	150k \$
24					13k \$	162k \$
25					13k \$	176k \$

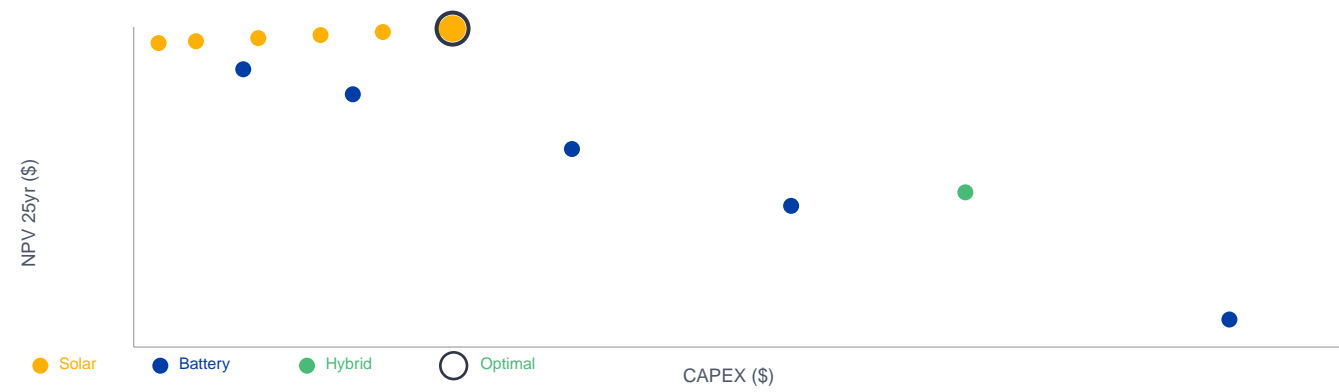


APPENDIX C

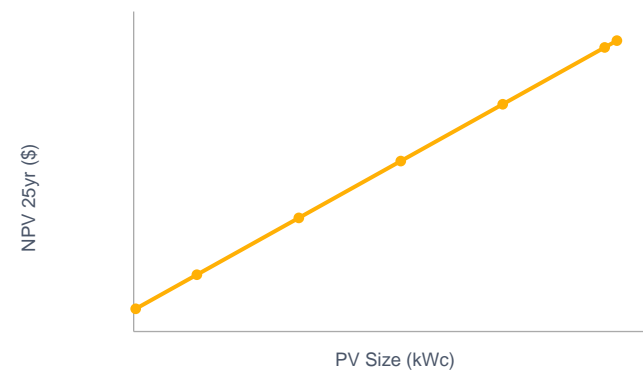
OPTIMIZATION ANALYSIS

The charts below show how NPV varies with different system configurations. The optimal point is identified.

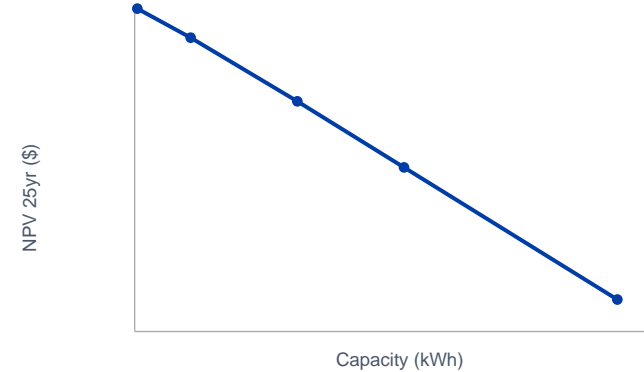
Efficiency Frontier (CAPEX vs NPV)



Solar Optimization



Battery Optimization



Recommended optimal configuration

Optimal PV size	128 kWc
Optimal battery capacity	0 kWh / 0 kW
Self-sufficiency achieved	5.2 %
Payback period	



