



Policy Analysis with RETScreen



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- Cities DO NOT need to improve state solar incentives
- Target Cities for both NPV and PP improvement
- Target Cities for only PP improvement

RETScreen Overview

RETScreen® INTERNATIONAL

www.retscreen.net



- World's leading clean energy decision-making software



- Energy efficiency; heating & cooling; power generation; and cogeneration
 - Fossil fuels
 - Renewable energy



- 36 languages covering 2/3rds Earth's population



- 460,000+ users in 222 countries & territories
 - 30,000+ new users each year
 - 700+ universities & colleges use for training & research
 - Well over \$8 billion in direct user savings since 1998

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RETScreen for Projects *and* Policy

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RETScreen as a tool to demonstrate the viability of clean energy *projects*

But also...

...useful for planning, designing, implementing, and reviewing the viability of clean energy *policies*

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Examples of RETScreen Use for Policy

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- International (UNFCCC)
- National (Canada)
- Sub-National (Texas)
- Municipal (Toronto)
- Utility (National Grid)



State of New Hampshire
Public Utilities Commission
21 S. Fruit Street, Suite 10, Concord, NH 03301-2429



STEP 1: INCENTIVE PRE-APPROVAL APPLICATION

FOR NON-RESIDENTIAL SOLAR THERMAL¹ AND SOLAR ELECTRIC SYSTEMS up to 100 KW or 100 KW EQUIVALENT

- System must become operational on or after November 1, 2010.
- Pre-approval will reserve your place in the funding queue. Once the facility has been installed at the site, applicant must then complete Step 2 by submitting a **final incentive request form**.
- The incentive pre-approval expires **9 months** from the date this application is pre-approved and funding is reserved.
- When all available program funding has been reserved for approved projects, applicants that meet all program and project requirements will be placed on a waitlist. Projects placed on the waitlist are not guaranteed funding.

*****Because this application requires original signatures, no electronic copies will be accepted*****

Technical Requirements

1. Any renewable energy system must comply with all manufacturers' requirements, installed according to manufacturer's recommendations, and meet all applicable requirements of the State Building Code pursuant to RSA 155-A:1, IV including the National Electric Code 2008 and the International Fire Code.
2. Any interconnection of the renewable energy system with your utility must comply with your Interconnection Agreement, the Puc 900 Net Metering Rules (if applicable), as well as any applicable tariffs governing interconnection.
3. Solar PV systems must have a manufacturer's rated panel output under standard test conditions (STC) of equal to or less than 100 Kilowatts and must be certified by a nationally-recognized testing laboratory as meeting the requirements of UL 1703.
4. Systems shall include a labor warranty of no less than five years in order to qualify for a rebate.
5. Solar electric systems greater than 50 kW shall include a revenue grade meter to measure production of the system [and shall include data monitoring through a web-based system].
6. Solar thermal systems with a collector area of 500 sq. ft. or greater shall have an output meter and/or web-based temperature monitoring to measure system performance and shall track performance on a monthly basis, at a minimum.
7. All applicants shall submit: 1) a RETScreen modeling analysis and 2) a system schematic and/or construction drawings.
8. Self-installer labor costs and used equipment are not eligible for inclusion in total system costs.

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Case Studies & Templates

- Power – Photovoltaic – Feed-in Tariff – Policy / Canada
- Power – Wind – GHG Reduction Income – Policy / China
- Heating – Solar Water Heater – Capital Cost Incentive – Policy / USA
- User-defined – Tax and Finance Measures – Policy / Canada

+ many more!



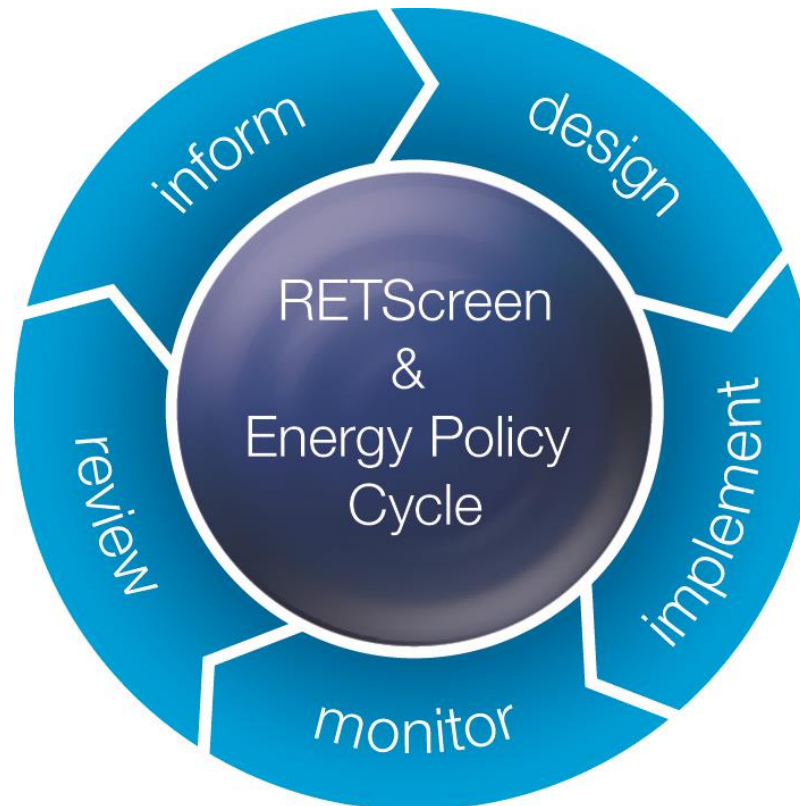
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The Policy Cycle

- Inform
- Design
- Implement
- Monitor
- Review



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- Centre Overview
- Software & Data
- Training Course
 - Clean energy project analysis
 - Energy efficiency
 - Heating / Cooling
 - Power
 - Combined heat & power (Cogeneration)
 - Legal aspects of energy projects
 - e-Textbook
 - Case studies / Templates
 - Figures & graphs
 - Photos
 - Training calendar
 - Other languages
- RETScreen Help & Contact Us

Legal aspects of energy projects

The high cost of developing comprehensive and complete legal documents for renewable energy and cogeneration projects. In the *RETScreen Clean Energy Legal Toolkit* has

This initiative was undertaken by NRCan/Canmet supported financially by a grant from the Renewables Canada program by lawyers from leading American firms.

Training material
[RETScreen - Legal Aspects of Clean Energy Projects](#)

e-Textbook / Guides
[RETScreen - Legal Aspects of Clean Energy Projects](#)

- Sample legal documents**
- [Real property agreements](#)
 - [Green leases](#)
 - [Finance agreements](#)
 - [Engineering, procurement & construction agreements](#)
 - [Fuel supply and O&M agreements](#)
 - [Power purchase agreements](#)
 - [Interconnection agreements](#)
 - [Energy performance contracts](#)
 - [Emissions/Environmental attributes trading agreements](#)

The initiative has brought together sample legal documents and the time and costs associated with developing legal documents and public stakeholder awareness and capacity regarding

Many legal documents in a clean energy project are not necessarily sequential. Not all energy projects but may still be useful as an information

To facilitate discussion and information sharing, the Toolkit is also incorporated within the RETScreen software.

Note
The RETScreen Training Course (i.e. the Toolkit) does not necessarily reflect the views of the Government of Canada, its ministers, officers, employees or agents make a

Construction_Term_Loan_Agreement[1].doc - Microsoft Word

File Edit View Insert Format Tools Table Window Help Adobe PDF Acrobat Comments

100% Read

CONSTRUCTION AND TERM LOAN AGREEMENT

This CONSTRUCTION AND TERM LOAN AGREEMENT (as amended from time to time, this "Agreement") is entered into on _____, by and among _____, a _____ (the "Borrower"), the lenders named on the signature pages to this Agreement (the "Lenders"), and _____, as agent for the Lenders (together with its successors and assigns in that capacity, the "Agent").

RECITALS:

1. The Borrower intends to design, construct, own, and operate a _____-fired, _____ megawatt electric generating facility to be located in _____.
2. The Borrower has asked the Lenders to provide a portion of the financing for this facility, and the Lenders are willing to do so on the terms and conditions contained in this Agreement.

The parties therefore agree as follows:

ARTICLE 1

DEFINITIONS

Capitalized defined terms used in this Agreement have the meanings given to them in **Schedule X**, and the rules of construction set forth in **Schedule X** govern this Agreement.

ARTICLE 2

Page 1 Sec 1 1/57 At 2.5cm Ln 1 Col 1 REC TRK EXT OVR English (U.S)

RETScreen 4 Demonstration: PV System Policy

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- Prov. of Ontario (Canada) wants to attract investment in grid-tied PV
 - Private investors target 12% internal rate of return on equity
- Test case for policy options
 - 50 kW system near Toronto (fixed tilt at 25°, equator facing)
 - US\$2500/kWp installed system cost
 - Total O&M costs of US\$15/kWp/year (excluding inverter replacement)
 - Inverter replacement after 12 years US\$15,000 (in today's dollars)
 - 20 year project life
 - 70% debt financing at 6% interest rate over 15 years
 - Electricity tariff of US\$0.10/kWh escalating at 3% annually
 - Inflation at 2% (for O&M)
- Potential policy options (target: achieve 12% IRR on equity)
 - No incentive: will this attract investment?
 - Feed-in tariff: how high does this need to be to attract investment?
 - Carbon credits: what price per tonne of CO_{2-eq} is required to attract investment?
 - Carbon credits: same calculation, assuming PV output reduces gas generation
 - Capital incentive: what percentage of initial costs to attract investment?
 - Soft loan: what debt interest rate is required to attract investment?

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Questions?

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