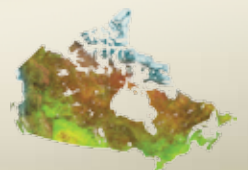# RETScreen® International
Clean Energy Decision Support Centre
www.retscreen.net

RETScreen® Software
Online User Manual

Natural Resources Canada

Ressources naturelles Canada

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Brief description of the RETScreen simplified analysis

RETScreen® International is a clean energy awareness, decision-support and capacity building tool. The core of the tool consists of a standardised and integrated clean energy project analysis software that can be used world-wide to evaluate the energy production, life-cycle costs and greenhouse gas emission reductions for various types of renewable and energy-efficient technologies (RETs).

The RETScreen simplified analysis allows the user to quickly calculate the simple payback of power production projects using only the power capacity, the capacity factor, the electricity export rate, and the initial and annual costs. To perform a more complete technical and financial analysis of the proposed project, the user can download the professional version of the RETScreen International Clean Energy Project Analysis Software free-of-charge at: www.retscreen.net.

Cell colour coding

The user enters data into "shaded" worksheet cells. All other cells that do not require input data are protected to prevent the user from mistakenly deleting a formula or reference cell. The RETScreen Cell Colour Coding chart presents the colour coding for input and output cells.
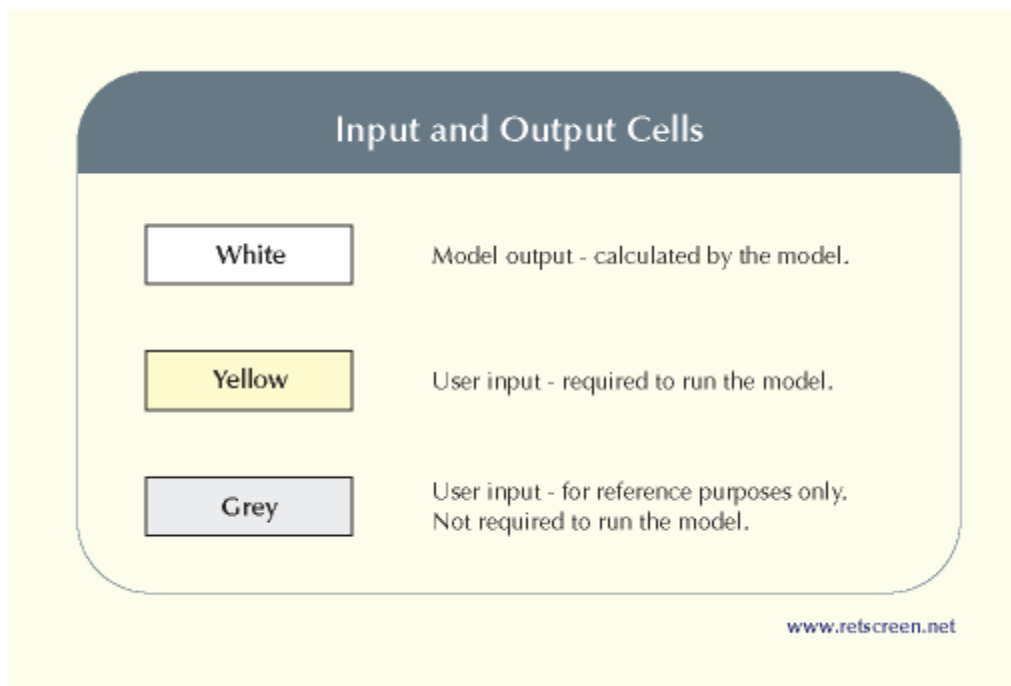
RETScreen Cell Colour Coding

Project information

The user enters information about the project in the cells below.

Language - Langue

The user selects a language from the drop-down list.

L'utilisateur choisit une langue à partir de la liste déroulante.

Project name

The user enters the project name for reference purposes only.

Project location

The user enters the project location for reference purposes only.

Prepared for

The user enters the name of the person or organisation for whom the RETScreen analysis is prepared. This information is for reference purposes only.

Prepared by

The user enters the name of the person or organisation who prepared the RETScreen analysis. This information is for reference purposes only.

Technology

The user enters the technology type considered for reference purposes only.

Power capacity

The user enters the power capacity.

Capacity factor

The user enters the capacity factor, which represents the ratio of the average power produced over a year to the rated power capacity of the equipment.

For example, typical values for grid-tied photovoltaic systems range from 10 to 20% (for collectors facing the equator or due-south in the Northern Hemisphere, and with the collectors tilted at the same angle equal to the local latitude). As a further example, the capacity factor is about 14% in Toronto, Ontario, Canada which is close to the North American average. It could be as low as 10% in a cloudier region like Vancouver, British Columbia, Canada, and as high as 20% in a sunny region like Phoenix, Arizona, USA.

Electricity exported to the grid

The model calculates the electricity exported to the grid.

Electricity export rate

The user enters the electricity export rate, which is the rate paid by the electric utility or another customer.

Electricity export income

The model calculates the annual electricity export income. This value is calculated by multiplying the electricity exported to grid by the electricity export rate.

Initial costs

The user enters the installed cost per unit capacity. The initial costs represent the incremental initial costs which is the sum of the design, purchase, construction and installation costs of all the elements of the power system less any "credits" for not having to design, purchase or install base case equipment and materials. Typically, due to economies-of-scale, the larger the capacity, the lower the installed cost per unit capacity.

Total initial costs

The model calculates the total initial costs. This value is calculated by multiplying the power capacity by the initial costs.

Monthly fixed charge

The user enters the monthly fixed charge (if any apply). The monthly fixed charge represents the costs incurred each month (e.g. payment to the local electric utility).

Operating and maintenance costs

The user enters the annual operating and maintenance costs. The operating and maintenance (O&M) costs are the sum of the annual costs that must be incurred to operate and maintain the proposed case system (e.g. clean collectors, annual allowance for eventual inverter replacement cost, etc.).

Total annual costs

The model calculates the total annual costs. This value is calculated by adding the monthly fixed charge and the O&M costs.

Simple payback

The model calculates the simple payback (year), which represents the length of time that it takes for a proposed project to recoup its own initial cost, out of the income or savings it generates. The basic premise of the simple payback method is that the more quickly the cost of an investment can be recovered, the more desirable is the investment. For example, in the case of the implementation of an energy project, a negative payback period would be an indication that the annual costs incurred are higher than the annual savings generated.

The simple payback method is not a measure of how profitable one project is compared to another. Rather, it is a measure of time in the sense that it indicates how many years are required to recover the investment for one project compared to another. **The simple payback should not be used as the primary indicator to evaluate a project**. It is useful, however, as a secondary indicator to indicate the level of risk of an investment. A further criticism of the simple payback method is that it does not consider the time value of money, nor the impact of inflation on the costs.

On the other hand, the payback period is often of great importance to individuals or small firms that may be cash poor. When a firm is cash poor, a project with a short payback period, but a low rate of return, might be preferred over another project with a high rate of return, but a long payback period. The reason is that the organisation might simply need a faster repayment of its cash investment. The model uses the total initial costs, the total annual costs (excluding debt payments) and the total annual savings and income to calculate the simple payback. The calculation is based on pre-tax amounts and includes any initial cost incentives and grants.

To perform a more complete technical and financial analysis of the proposed project, the user can download the professional version of the RETScreen International Clean Energy Project Analysis Software free-of-charge at: www.retscreen.net.

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The user is encouraged to properly register at the RETScreen Website so that the Centre may periodically inform the user of product upgrades and be able to report on the global use of RETScreen.

Notes

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