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# Peer-to-peer financing mechanisms to accelerate renewable energy deployment

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## Abstract

Despite the clear need to reduce greenhouse gas emissions, lack of access to capital and appropriate financing mechanisms has limited the deployment of renewable energy technologies (RETs). Feed-in tariff (FIT) programmes have been used successfully in many countries to make RETs more economically feasible. Unfortunately, the large capital costs of RETs can result both in the slow uptake of FIT programmes and incomplete capture of deployment potential. Subsidies are concentrated in financial institutions rather than the greater population as traditional bank loans are required to fund RET projects. This article critically analyses and considers the political, financial and logistical risks of an innovative peer-to-peer (P2P) financing mechanism. This mechanism has the goal of increasing RET deployment capacity under an FIT programme in an effort to equitably distribute both the environmental and economic advantages throughout the entire population. Using the Ontario FIT programme as a case study, this article illustrates how the guaranteed income stream from a solar photovoltaic system can be modelled as an investment and how P2P lending

mechanisms can then be used to provide capital for the initial costs. The requirements for and limitations of these types of funding mechanisms for RETs are quantified and discussed and future work to deploy this methodology is described.

Q Keywords: [feed-in tariff](#) [funding innovation](#) [microfinance](#) [peer-to-peer lending](#) [photovoltaic](#) [renewable energy](#) [sustainability](#)

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## Notes

Organizations:

- Community Lend (2006): [www.communitylend.com/](http://www.communitylend.com/)
- Kiva (2005): [www.kiva.org/about](http://www.kiva.org/about)
- Lending Club (2006): [www.lendingclub.com/info/how-social-lending-works.action](http://www.lendingclub.com/info/how-social-lending-works.action)
- Microplace (2006): [www.microplace.com/learn\\_more/howitworks](http://www.microplace.com/learn_more/howitworks)
- MYC4 (2006): [www.myc4.com/About/WHAT\\_IS\\_MYC4](http://www.myc4.com/About/WHAT_IS_MYC4)
- Prosper – Prosper (2005): [www.prosper.com/welcome/how\\_it\\_works.aspx](http://www.prosper.com/welcome/how_it_works.aspx)
- United Prosperity (2008): [www.unitedprosperity.org/us/how\\_up\\_works](http://www.unitedprosperity.org/us/how_up_works)
- Virgin Money (2001/2002): [www.virginmoney.com/worldwide/](http://www.virginmoney.com/worldwide/)
- Wokai (2006): [www.wokai.org/f/about/index.php](http://www.wokai.org/f/about/index.php)

Current restrictions apply to where these organizations operate their lending and borrowing market. All websites accessed in July 2009.

Green Loans for Green Home Improvement [www.prosper.com/loans/personal/green/](http://www.prosper.com/loans/personal/green/)

The TREC is a non-profit, co-operative, environmental organization. Community power co-operatives are organized to develop local member-owned co-operative renewable

energy projects. Visit: [www.trec.on.ca/](http://www.trec.on.ca/)

Registered Educational Savings Plan in Canada. RESPs allow parents, friends or family members to put money away in a special savings account that will only become accessible when the child enrolls in a post-secondary educational programme. More information available via

[www.hrsdc.gc.ca/eng/learning/education\\_savings/public/resp.shtml](http://www.hrsdc.gc.ca/eng/learning/education_savings/public/resp.shtml)

An escrow account is a third-party holding account. In a waterfall payment scheme, the highest priority investor is paid first, followed by the next-highest priority investor and so on.

Detailed rules and programme details for the Ontario FIT programme can be found at [www.powerauthority.on.ca/FIT/](http://www.powerauthority.on.ca/FIT/)

Technical abbreviations: W: Watt – measure of electrical power; kW: kilo-watt which is 1,000 W (1,000 W). Used to describe the power capacity of an electrical generator; kWh: kilo-watt Hour – measure of electrical energy used; MWh: 1,000 kWh; ¢/kWh: cents/kilo-watt hour (a rate for sale of electricity used by the utility).

RETScreen is a decision support tool provided by Natural Resources Canada (NRCan). This is free software that can be used globally to evaluate energy production, emissions reductions, financial viability and risk involved for various types of RETs based on average local metrological data.

The analysis is done at nominal rates without accounting for inflation, since loan interest rates are also at nominal interest rates. All dollars are in Canadian Dollars unless specified otherwise.

Bankruptcy in Ontario, 2009 [www.bankruptcy-ontario.org/Ontario\\_exemptions.htm](http://www.bankruptcy-ontario.org/Ontario_exemptions.htm)

California Solar Shade Control Act, California Codes, Public Resource Code Sections 25980–25986. The California Public Resources Code can be found at [www.leginfo.ca.gov/calaw.html](http://www.leginfo.ca.gov/calaw.html)

Parallel metering: Uses 2 m wired in parallel to track the flow of energy into and out of the home. The disadvantages and advantages of this metering system can be discussed with the local utility and varies depending on jurisdiction.

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