



NEWS

The newsletter of the Colorado Renewable Energy Society

WINTER 2012

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CRES to Play Leading Role at World Renewable Energy Forum

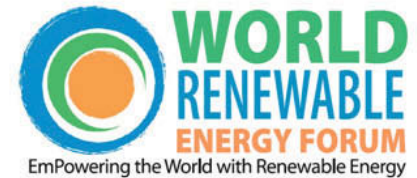
In 2012, the annual American Solar Energy Society's National Solar Conference will become the World Renewable Energy Forum (WREF). A joint effort of ASES and the World Renewable Energy Network, WREF will be produced with additional partners, including CRES, NREL and the International Solar Energy Society.

WREF will gather the world's top experts in solar energy, including research and technology, manufacturing and installation, policy and finance, and public and professional education. The forum includes seminars and panels as well as exhibit areas and ample opportunities for networking.

CRES will have a very visible role at the Forum. We're the local chapter for ASES, and CRES volunteers will be present throughout the conference. In addition, CRES will conduct a series of events called "CRES Presents Showcase Colorado – Where Colorado Organizations Connect to the Global Marketplace." Planned CRES events include:

- Electric Avenue, an outdoor exhibit highlighting electric cars and charging and battery technologies.
- A conference track of 12 sessions dedicated to Colorado business and technology.
- Tours of Denver's Sustainability Park.
- The 16th Annual CRES Awards Dinner.

WREF will take place May 13 - 17 at the Colorado Convention Center in Denver. For more information and to register to attend the Forum, go to www.wref2012.org.



Performance-Based Incentives:

The New Face of Residential Solar

By Leslie Martel Baer, MA • Mountain Muse Strategies, LLC

In March 2011, Xcel Energy's began shifting Solar*Rewards from up-front incentives (UFIs) – rebates based on the size of the installed system – to performance-based incentives (PBIs), which pay system owners for electricity generated. This shift impacts the return over the life of PV systems as well as their installation costs. While the 30% federal tax credit on PV systems runs through the end of 2016, the Solar*Rewards incentives available to Colorado's Xcel customers will continue to change (Table 1). The rebates and incentives available in Step 1 of the program have been spoken for, currently Xcel Energy is assigning rebates and incentives at the Step 2 levels.

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Table 1. Xcel Energy's Current Solar* Rewards Program Incentives

Step (Phased-in Program)	UFI Rebate \$/W	PBI Price per kWh	MW Reviewed in Step	MW Remaining in Step
1	\$1.75	\$0.04	4.000	0
2	\$1.00	\$0.09	1.071	3.929
3	\$0.50	\$0.11		5.0
4	\$0.00	\$0.14		6.0

How the new PBIs impact system owner costs

Let's compare the costs. In a previous article (CRES News Fall 2011), Namasté Solar Residential Sales Director Dan Yechout estimated the pre-incentive cost of \$5.25 per installed Watt (W) for small (< 10 kW) residential systems. Table 2 illustrates Xcel Energy's current "Step 2" for a homeowner owned 5 kW system in Denver.

Table 2. A 5 kW System Under Step 2

Average Monthly Residential Usage	602 kWh
Monthly Output of 5 kW PV System	660 kWh
Percentage of Usage Covered	110%
Net Upfront System Cost (\$2.98/W)	\$14,875
10-Year Electricity Savings (\$0.11/kWh)	\$7,946
10-Year PBI (\$0.09/kWh)	\$7,128

While the system will cost \$5,250 more than under the pre-March 2011 UFI-only program, it will generate \$7,128 in PBIs (also called renewable energy credits or RECs) over 10 years. In addition, assuming a grid-tied net-metering setup, it will provide \$7,946 in electricity savings over 10 years at today's rates.

An Investment with Risk and Reward

Residential solar PV is an investment and carries the potential for risk and reward – which depend upon future factors about which we can only hypothesize, as illustrated in Table 3. The economic viability of a system depends largely upon which Solar*Rewards Step a participant purchases under and how much Xcel Energy's electricity prices change.

Table 3. Payback and 10-year ROI Steps 2–4 Based on Different Electricity Price Increases (5 kW System)

Step 2					
Annual Rate of Price Increase	0%	3.4%	5%	7%	10%
10-Year Net Return (\$)	\$199	\$1,532	\$2,248	\$3,232	\$4,917
10-Year Net Return (%)	1.3%	10.3%	15.1%	21.7%	33.1%
Years to Payback	9.9	9.1	8.8	8.5	8.1
Step 3					
Annual Rate of Price Increase	0%	3.4%	5%	7%	10%
10-Year Net Return (\$)	\$33	\$1,366	\$2,082	\$3,066	\$4,751
10-Year Net Return (%)	0.2%	8.2%	12.5%	18.4%	28.6%
Years to Payback	10.0	9.3	9.0	8.7	8.3
Step 4					
Annual Rate of Price Increase	0%	3.4%	5%	7%	10%
10-Year Net Return (\$)	\$659	\$1,992	\$2,708	\$3,692	\$5,377
10-Year Net Return (%)	3.6%	10.8%	14.7%	20.1%	29.3%
Years to Payback	9.6	9.1	8.8	8.6	8.2

These calculations assume that the program will remain as described, assume fixed PV installation costs over the three Steps and do not factor in the time value of money.

Why the Shift to PBIs?

Steps 2 and 4 do offer consumers a slight advantage over the UFI-only program, which would have yielded a 0% return at 10 years with a 10-year payback on the 5 kW system. However, as Yechout points out, the time value of money makes the new structure less desirable for consumers: it is better to get money sooner rather than later.

Xcel Energy has clear motivations for the changes. Solar*Rewards was running a deficit. By paying incentives over time, Xcel evens out the program's cash flow. Further, as Jaclyn Webb of Xcel Energy explained, the program now incentivizes systems that produce electricity. Because rate-payers fund these incentives through a 2% electricity charge, Xcel Energy must bring online the program's required amount of solar generating capacity and ensure that the installations are generating electricity over the long term.

PBIs motivate suppliers and owners to install and maintain high-quality PV systems, Yechout said. Such systems are more likely to meet their production estimates, ensuring that the system owner is seeing the desired revenue stream.

Because PBIs provide a contracted (i.e. guaranteed) revenue stream, some industry observers believe more financing will be available. They contend that a reliable income can be used to pay down loans. In practice, commercial firms that lease systems to homeowners may be seeing the availability of such capital, but installers are not yet seeing this opportunity for homeowners.

The Consumer's Best Bet

For some homeowners, buying a system continues to make sense. The 3.4% increase in electricity prices – approximately Xcel's 10-year estimate – is a conservative assumption. Therefore, for homeowners willing to make a \$15,000 investment and with no need to receive more than the 10.3% 10-year rate of return (about a 1% annual return), self-ownership is a reasonable choice and offers a hedge against even higher electricity costs.

However, taking out a loan for a PV system may not make sense. Loan fees and interest rate reduce the rate of return. For many homeowners, a leased system may be more economical. The leasing company finances the system and receives the REC, while the homeowner typically sees a modest reduction in utility bills. With little or no obligation to monitor or maintain the system, leasing allows homeowners to access the benefits of PV while avoiding the up front cash outlay.

Finally, consider other technologies as part of your PV strategy. Energy efficiency, solar thermal, geoexchange or other technologies may offer a more sensible investment today, and might make your home more "PV ready" tomorrow. ●

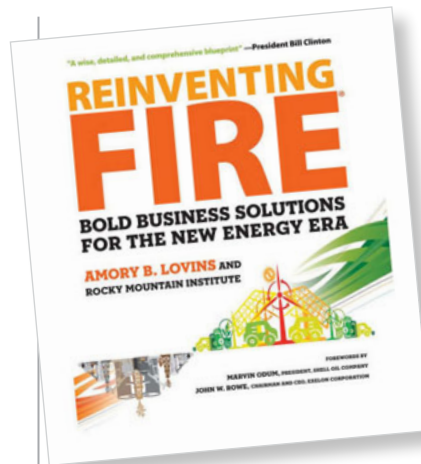
Reinventing Fire: Bold Business Solutions for the New Energy Era

By Amory Lovins and Rocky Mountain Institute.
Hardcover and ebook
Chelsea Green Publishing Co.
White River Junction, Vermont

Renewable energy is a capitalist plot. It's a not-so-veiled attempt to put money into the pockets of small and large businesses, public enterprises and individual citizens by reducing the amount of energy they use, and by managing the cost of the energy that they purchase. Heinous, indeed!

The plot has its manifesto in *Reinventing Fire*. Amory Lovins and his colleagues at the Rocky Mountain Institute have created a guide to bring the United States to energy independence and end the era of fossil fuels. The book is divided into four areas of energy consumption: Transportation, buildings, industry and electricity. For each segment, Lovins analyzes the issues and opportunities from the technical, economic and cultural/political viewpoints. He develops multiple scenarios for moving forward from the present to 2050. The scenarios compare the effects of business as usual with different approaches to energy efficiency and alternative energy sources.

The level of research and backup is typical for Lovins; virtually every statement or statistic is supported by references and endnotes. The book is well crafted, with



illustrations and graphics that drive home the differences of the various scenarios and how the components of a given solution contribute to the overall success. It is supplemented by a deep website giving access to references and RMI research. The website's organization and presentation matches the quality of the book.

Reinventing Fire is not an easy, comforting read, and that's not the book's purpose. Yes, you can read it front to back. But the book will play a more important role as a text and reference book that should be owned – and studied – by businesses, engineers, designers and individuals. Lovins's arguments are clear and based solidly in fact. He makes no attempt to downplay the magnitude of the challenges or the resistance to change. The business case is simple: There's money to be made by saving energy and converting to alternative sources. This book shows you how. ●

Regional Chapter News



NCRES hosted the first FoCo Eco Cruise last fall in lieu of the traditional Solar Tour. The bike-friendly tour focused on residential and commercial buildings in north Fort Collins that integrate green building, green energy and sustainable landscaping. More than 40 hardy souls braved some truly despicable weather (ahh, Colorado!), including several folks that rode all day in the wind and rain. Plans are underway for this year's Cruise. Mark Saturday May 19, 2012 (that's the weekend following WREF) to visit Fort Collins. Bring your bike!

NCRES monthly meetings this winter will include presentations by 2011 CREC award winners. Visit www.ncres.org for more information.



SECRES hosted a public meeting with a talk on Solar Gardens that was very well attended. Colorado Springs City Council unanimously approved a new rate structure for Colorado Springs Utilities to allow solar gardens, and Governor John Hickenlooper attended the groundbreaking on the first project, which occupies a retired landfill. When complete, the solar garden will produce up to 1MW of PV. Leases on the garden sold out quickly.

SECRES exhibited at the Colorado Sustainability Conference in October. The event drew nearly 400 attendees and many excellent speakers, with renewable energy at the top of the list of sustainability enablers.



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Join us at the CRES 2012 Winter Gala Dinner Fundraiser

Spend an evening in support of renewable energy and energy efficiency! Join industry leaders and community supporters from across the state for an evening of entertainment, food and drink to support the Colorado Renewable Energy Society's programs and initiatives. The Second Annual Winter Gala and Fundraiser will take place on Friday, February 10 at the Arvada Center for the Arts and Humanities.

Following a VIP reception, the Gala begins with cocktails, hors d'oeuvres and a silent auction. Auction items range from restaurant gift certificates and ski lift tickets to a behind-the-scenes tour of the Denver Zoo.

When the silent auction closes, more fun is on the way. We'll enjoy a sit-down feast while hearing from two well-known speakers, Denver City Councilwoman Robin Kniech and American Solar Energy Society President Susan Greene.

After dinner, the bidding gets serious! Auctioneer Don Martin will entertain the audience during a live auction that features something for every budget and taste. Past auction items have included a wine country getaway to California, several "stay-cations", a motor scooter, and the popular Board of Director's Wine Cellar.



Arvada Center for the Arts and Humanities
6901 Wadsworth Boulevard
Arvada, CO 80003
Friday, February 10, 2012,
VIP Reception 5:00 p.m.; Gala begins at 6:00 p.m.

CRES Member: \$75; CRES Couple: \$140
Non-member: \$100; Non-member Couple: \$190

VIP Reception and Gala Ticket:
CRES Member \$125; CRES Couple \$240
Non-member \$150; Couple \$290

Register on the CRES website: www.cres-energy.org
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Contact Lorrie McAllister at 303-806-5317 x88
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