

Sustainability



Agenda

Promoting Energy Efficiency in Your Community: Solar Gardens--Your Offsite Community Solar Solution Training Session

DRCOG, 1290 Broadway
First Floor, Independence Pass Conference Room
9 a.m. - 11:30 a.m.
May 9, 2012

Residential rooftops across Colorado are sprouting solar panels as consumers go green and hedge against rising energy costs. But what about businesses, renters, homes screened by large trees, historic buildings and homes with roofs where panels just don't work? Solar Gardens are a solution that is growing in popularity.

- | | |
|---------------|--|
| 9:00 - 9:10 | Welcome and Introductions
Teri Whitmore, Denver Regional Council of Governments |
| 9:10 - 9:30 | Solar Gardens for Municipalities
Joy Hughes, Colorado Solar Gardens Institute |
| 9:30 - 9:50 | Solar in the Town of Breckenridge
Brian Waldes, Town of Breckenridge |
| 9:50 - 10:10 | Templeton Gap Landfill Infill Renewable Energy Park
Jesse Silverstein, Colorado Brownfields Foundation |
| 10:10 - 10:30 | Xcel Energy's Solar*Rewards Community Program
Jaclyn Webb, Xcel Energy |
| 10:30 - 11:00 | Q&A |
| 11:00 | Adjourn |



Speakers Biographies

Joy Hughes

Founder and CEO of the Solar Gardens Institute

Joy Hughes is the founder and CEO of the Solar Gardens Institute, which provides training and tools for community shared solar, and assists several communities in Colorado in developing solar gardens. Joy holds a BS in Engineering and Applied Sciences from Caltech and an MS in Computer Science from UC Santa Cruz. She worked on the Human Genome Project, the Mars Observer Camera, and at Apple Computer before moving to the startup world. Joy lives off the grid in Colorado's San Luis Valley.

Jesse Silverstein

Executive Director of Colorado Brownfields

Jesse Silverstein is Executive Director of the nonprofit Colorado Brownfields Foundation based in Jefferson County, Colorado. Jesse has extensive experience in preparing real estate market studies, financial analysis, and fiscal impact analysis for a variety of public-private redevelopment and urban renewal projects. Mr. Silverstein's experience includes positions as partner with Development Research Partners economic consulting, Director at Equitable Real Estate Investment Management, and Chief Appraiser for the Resolution Trust Corporation (Division of FDIC) in Washington, D.C. He is past President of the Denver Association of Business Economists and has authored brownfields articles in various local and national publications. Mr. Silverstein holds a Bachelor's Degree in economics from the University of Delaware, a Master's Degree in economics from the University of Colorado at Boulder, and has an MAI professional designation in commercial real estate analysis from the Appraisal Institute. Appointed by Governor Ritter, Jesse serves as a member of the Colorado Petroleum Storage Tank Committee.

Brian Waldes

CPA

Brian Waldes is a CPA and received an MSBA from Colorado State University in 2000. He worked for a big five accounting firm in Denver until 2002, when he moved to Breckenridge. Since starting with the Town of Breckenridge as Financial Services Manager in 2008, he has had the opportunity to work on some large renewable energy projects. These include a completed Power Purchase Agreement that provided for over 450 kW of solar arrays on Town facilities that currently meet roughly 10 percent of the Town Government's energy needs. Brian and the Town are currently pursuing the opportunity to construct two solar gardens on Town land, one 500 kW and one 2 mW.

Jaclyn Webb

Associate Product Manager at Xcel Energy

Jaclyn Webb is an Associate Product Manager at Xcel Energy. She manages the Solar*Rewards and Solar*Rewards Community programs and has over 5 years of experience working in the renewable and energy efficiency industry. Jaclyn has been an integral part of the development process for Solar*Rewards Community.

BRECKENRIDGE SOLAR GARDENS

PROGRAM GOALS

The potential Breckenridge Solar Gardens are intended to put otherwise vacant municipal land to use generating and distributing clean renewable energy to local governments, businesses, and citizens.

TARGET CLIENTELE

Both businesses and local governmental entities will be able to participate in the gardens and save money in the process. But the ultimate goal is the broad participation of local citizens. A solar garden will enable all interested locals to participate in renewable energy while saving money, regardless of where they live in the County. This will be of tremendous benefit to those citizens who rent or live in areas with inadequate exposure or restrictive building codes.

FUNDING SOURCES

Breckenridge is working with Clean Energy Collective (CEC). The Town is supplying the land for the project, and CEC will fund the construction of the arrays.

HOW WILL PROGRAM BE SUSTAINED?

CEC's business model calls for the sale of the panels by CEC. The funds generated by the sale of the panels will sustain the operation of the garden.

PROGRAM MANAGEMENT

The Town's agreement with CEC will provide for the management of the program by CEC. The Town's involvement in the actual business management of the arrays will be minimal.

CRITICAL STEPS

The gardens are far from a certainty at this point in time, but the public process began in earnest months ago. The Town held an open house for the public and brought the potential projects before both the Planning Commission and Town Council.

KEY PARTNERS

We are partnering with CEC and High Country Conservation Center (HC3) on the applications and marketing for these projects.

WORKAROUNDS

Thus far the biggest challenge has been finding appropriate locations for these arrays. We have done just that, and gone through a public approval process. We plan on much more public engagement in the future should one or both of our projects be approved by Xcel.

SUCCESS STORIES

Breckenridge has completed a very successful Power Purchase Agreement (PPA) project. The arrays went on line in January of 2012 and have been producing ever since. We installed over 450 kW of arrays with no up-front expense. Through this project, we have learned a lot as both a Town and as an organization. We plan on applying this knowledge to our potential Solar Garden projects.

EXPORT OR EXPAND?

Yes. The challenges are land and community financial interest.

LESSONS LEARNED

The importance of public engagement cannot be overstated. We encountered challenges that few of us anticipated when promoting the PPA installations. Education and buy in are essential in these types of efforts.

FOR MORE INFORMATION

Brian Waldes, CPA, MSBA
Financial Services Manager
Town of Breckenridge
970.453-3382
brianw@townofbreckenridge.com

BROWNFIELDS AS COMMUNITY EE/RE ASSETS

PROGRAM GOALS

To help communities turn otherwise unusable brownfields sites into community assets. Our role is to evaluate possible renewable energy uses, identify opportunities and challenges to renewable energy use, make land use development recommendations to position sites for reuse, and to market the site to prospective renewable energy developers.

TARGET CLIENTELE

Local governments and property owners.

FUNDING SOURCES

We have utilized funding and technical assistance from:

- U.S. Environmental Protection Agency
- CO Dept. of Public Health & Environment
- National Renewable Energy Laboratory
- CO Governor's Energy Office
- Private donations
- CBF Sweat Equity

HOW WILL PROGRAM BE SUSTAINED?

We are finishing a pilot demonstration project; future projects will be on a case-by-case basis

WHO MANAGES THE PROJECT?

Jesse Silverstein, Executive Director, Colorado Brownfields Foundation is the project manager.

CRITICAL STEPS

Creative thinking, determination, grit, persistence, and more determination

KEY PARTNERS

1. Colorado Brownfields Foundation (Lead),
2. City of Colorado Springs,
3. El Paso County,
4. US Environmental Protection Agency,
5. CO Dept. of Health & Environment.

WORKAROUNDS

Our pilot project is testing our fortitude on zoning, permitting, intergovernmental jurisdictions, inter-jurisdictional utility territories, environmental liability, state judicial cleanup orders, public-private

partnering, real estate law, and market financing. We have identified solutions for all but the last two items.

EXPORT OR EXPAND?

Colorado has several hundred closed landfills as a result of regulatory changes in the 1980s. Many of these landfills are now located in the growth edges of communities and most are unusable due to geotech or other environmental factors. Looking at our denser communities, we expect to find environmentally impaired sites, or portions of sites, where the environmental remedy is to cap the site with renewable energy development.

LESSONS LEARNED

Utilize creative thinking, determination, grit, persistence, and more determination.

FOR MORE INFORMATION

Jesse Silverstein
Colorado Brownfields Foundation
10184 West Belleview Avenue, Suite 100
Littleton, Colorado 80127
303-962-0942
jesse@coloradobrownfields.org

www.ColoradoBrownfields.org

XCEL ENERGY SOLAR*REWARDS

PROGRAM GOALS

The Solar*Rewards Community program was designed to allow for more customers to participate in solar energy/renewable programs without the commitment of installing a PV system on their own home/business.

TARGET CLIENTELE

Developers who are interested in building the solar gardens, as well as electric customers across Xcel's territory who are likely to want to purchase shares in a garden.

FUNDING SOURCES

RESA, which is funded by the 2% surcharge from Xcel ratepayers.

HOW WILL PROGRAM BE SUSTAINED?

Xcel will maintain a strict number of MW allowable through the program each year. This, as well as the program budget will maintain the balance between available funds and payments through the program incentives.

CRITICAL STEPS

1. Building the online application portal
2. Setting rules and requirements
3. Working with the PUC through the 2012 RES Compliance Plan process
4. Marketing and communicating the program
5. Training

KEY PARTNERS

1. PUC
2. Installers
3. Development Community

EXPORT OR EXPAND?

Program model could be used to expand to other Xcel Energy service territories.

LESSONS LEARNED

Plan for a lot of administrative details, including billing, metering, application management, etc. The process of creating a program from scratch is quite challenging.

FOR MORE INFORMATION

Jaclyn Webb
Xcel Energy | Responsible By Nature
Associate Product Manager
jaclyn.webb@xcelenergy.com

Boulder Company's Plan to Create Power in Parking Lots Wins Praise

By Mark Jaffe The Denver Post 04/18/2012 - 11:09 PM EDT

By Erin Geegan's calculation, there are more than 3,500 square miles of parking lots in the United States, and her aim is to put up solar trees — 33-foot-by-33-foot solar arrays on 9-foot columns — to cover as much of that space as she can.

To do that, Geegan, 48, created Boulder-based Zam Energy a year ago, and that, in turn, led to her being recognized today at the White House as one of 10 "Champions of Change."

It isn't new technology that Geegan is bringing to the market — she is selling a solar tree developed by San Diego-based Envision Solar — but she has a new business model.

"This is all about the financing," Geegan said. "Solar doesn't need grants if you finance it properly."

Her recipe? Looking for municipalities, universities and institutions with high credit ratings and big parking lots.

The credit ratings enable her to sign long-term contracts on which a financing group she works with can float loans to build the forests of solar trees.

The solar trees cost \$120,000 to \$140,000 each and generate 15 kilowatts of electricity, Geegan said.

Zam — a one-woman operation named after the Tibetan word for infinite — sells the electricity to the city or institution.

"We've had agreements with other developers, but none has borne fruit the way it has with Erin. She gets the whole picture," said Desmond Wheatley, Envision's chief executive.

Another potential sales area is companies with fleets of vehicles that could be converted to run on electricity. The solar trees can be equipped with chargers.

Zam is discussing a project with the National Renewable Energy Laboratory to design a way to more efficiently integrate the solar trees and vehicles with the electricity grid.

"A big part of this is clearly defining markets," Geegan said. "You just can't decide you are going to sell solar panels."

So far, Zam has two customers: the city of Boulder and the Boulder smart-grid company Infotility.

But Geegan said she is aiming to have \$30 million in contracts in the pipeline next year.

Zam is Geegan's second startup. After graduating from Purdue University, she watched the personal- computer market grow explosively and saw that the new buyers weren't just customers but a community.

In 1989, Geegan approached Hewlett-Packard with the idea of developing an ongoing relationship with its PC users.

Her company, Interactive Papyrus, began by mailing floppy disks with information and ads.

"Things got a lot easier when the Internet came along," she said.

When she sold her interest in the company in 2000, it had 160 employees.

Mark Jaffe: 303-954-1912 or mjaffe@denverpost.com