Solarize Rogue

A community-supported approach to funding & installing residential solar arrays

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Introduction

Scientists have identified climate change concerns resulting from the combustion of fossil fuels. The burning of fossil fuels has resulted in increased greenhouse gas emissions, depleted air quality, and damaged natural ecosystems through harmful extraction and refining processes. In 1965 the U.S. President's Advisory Committee panel warned that the greenhouse effect, a phenomenon identified in 1824 by French physicist Joseph Fourier, was a matter of real concern. The United States has had at least forty years to consider these concerns that scientists have expressed but have lacked the federal leadership to take substantial measures to mitigate the effects (IPCC, 2014). The United States has been identified as the greatest producer of carbon dioxide causing climate change, but the lack of government leadership in addressing the causes and developing solutions has springboarded local groups to respond. In 2017 the United States continues to disregard their influence in global fossil fuel dependence, boldly demonstrated by President Donald Trump's withdrawal from The 2016 Paris Agreement which sought to "strengthen the global response to the threat of climate change" (UNFCC, 2017).

As a result, a group of youth have recently sued the U.S. Federal Government for not taking action on climate change. The Supreme Court case *Alec L. v. McCarthy*, filed in 2011, claims that through the government's affirmative actions in causing climate change (i.e. providing subsidies for fossil fuel industries and fast tracking fossil fuel exports), it has violated the youngest generation's constitutional rights to life, liberty, and property, as well as failed to protect essential public trust resources. The lawsuit was premised on the long-established legal principle of the Public Trust Doctrine, which requires our government to protect and maintain survival resources for future generations (Our Children's Trust, 2016). At the end of 2014, the plaintiffs received notice that the Supreme Court had decided not to hear their case. Not to be

deterred, they are continuing to build new federal cases on behalf of youth "to secure science-based climate recovery policy nationally" and plan to return to the Supreme Court when necessary.

Due in part to this lack of leadership, cities and community groups have begun taking the initiative to change their sources of energy, how they use and manage it, and how they navigate around larger organizational systems. Local governments have a vital role to fill in reducing greenhouse gas emissions, in helping individuals make informed choices about their energy use, and in shaping policy at the county and statewide level. Talent, Oregon is an example of a local government and community forging a renewable energy future for its residents. Starting in 2015, Talent residents began gathering to discuss the impacts of climate change in the region through a community action group initiative hosted by Rogue Climate, a local nonprofit. The action group developed a one year action plan for 2017-18 to assess and implement energy efficiency and renewable energy projects in Talent which was adopted to a Council goal by the Talent City Council in May 2017. Even though the Council has adopted it as a goal for the fiscal year, it will continue to be largely implemented by community volunteers.

In order to make this transition, we need creative and effective strategies. The Seeds for the Sol program, started in Corvallis, is a non-profit organization taking action now to make it easier for low and middle-income homeowners to afford photovoltaic solar systems. Made up of concerned citizens who want to redirect the financial benefits they've received from a fossil fuel economy and pass them onto the next generation in the form of renewable energy.

Methodology

This project began as an initiative to model the Corvallis Seeds for the Sol program which seeks to connect folks who want solar with those who have the financial capital to loan to their neighbors. In its infancy, a group of Talent residents met regularly to discuss the operations, processes, and goals for launching in the Rogue Valley. Over the course of about six months, the group developed program materials, hosted an informational presentation, and addressed many community members' questions. One of which being, "what's going to happen when the tax credits go away?" Because the Seeds for the Sol model utilizes federal and state tax credits in order to help fund solar projects, their existence is imperative.

The Oregon Department of Energy offers residential energy tax credits (RETC) for solar projects based on $1.70 per watt of installed capacity up to $6,000 per residence taken over four years ($1,500 per year) and limited to 50 percent of the cost of a system with a minimum of 200 watts. This tax credit was scheduled to expire in 2012, but House Bill 3672 in 2011 extended the expiration date of the credit to January 1, 2018. Moreover, it is the top policy priority for the Oregon Solar Energy Industries Association (OSEIA) in 2017 to extend this credit another two years. At the federal level, the Federal Tax Credits for Solar Energy Systems are available at 30 percent of qualified expenditures including labor costs for on-site preparation, assembly or original system installation, and for piping or wiring to interconnect a system to the home through December 31, 2019. The credit then decreases to 26% for tax year 2020; drops to 22% for tax year 2021, and then expires December 31, 2021 (EnergyStar, 2016). Both tax credits can be combined to reduce the monetary burden on a resident. Despite these credits, there still remains a financial obligation on behalf of the resident.

These expiration dates combined with the immense workload of launching a corporate entity, led the group to acknowledge that only focusing on the Seeds for the Sol model would be short lived and unwise use of time and energy. The consensus came to be that the Seeds for the Sol model is great and should be utilized for the remaining life of the tax credit availability. After that, there is continued opportunity to help residents reduce financial and informational barriers to residential solar in community solar programs and neighborly lending. In the form of a more dynamic organization, we will be more advantageous in combatting climate change. We know there is opportunity and interest in community solar and the Oregon Public Utility Commission recently released draft rules for a community solar program for utilities and third-party developers with final rules due in July. We know that electricity is the largest sector of greenhouse gas emissions (EPA, 2015) (Figure 1) and that a great opportunity lies in installing solar for directly influencing a reduction in carbon emissions associated with electricity.

In the winter of 2016-17, a working dynamic systems model was built by Erik Burke and myself to demonstrate exactly that (Figure 2). The model used information gathered from Pacific Power and the EPA to calculate the reduction of carbon emissions as a result of photovoltaic installations in Talent. The components of the model included the number of homes in incorporated Talent (2,860), the average electricity usage in kilowatt hours per month per home (764 kwh), and the equivalent amount of carbon emission release (.537 metric tons/month). The key state variables or stocks were the number of solar installations in Talent (30) and the number of homes in Talent without solar (2830). The latter fed into the third stock which was the amount of carbon emissions released into the atmosphere. Important flow relationships included the addition of solar panels on a monthly basis (2), the average kilowatt-hours used per month per household, and the associated monthly release of carbon dioxide (CO_2). Auxiliary variables

included the percentage of a home's electricity use which gets covered by their solar installation (95%) and the average amount of kWh used per household per month (764 kwh). The model used a monthly time step over 360 months (30 years) and demonstrated that installing solar has a direct and immediate effect on reducing associated carbon emissions (Figure 3).

Initially, the Talent group established relationships with three local solar installers who are Energy Trust trade ally contractors: True South Solar, Alternative Energy Systems, and Willpower Electric. These three contractors were chosen due to their proximity to the work zone and because they are licensed and insured independent contractors. They are up-to-date on the latest Energy Trust standards, quality control requirements and incentives. Eventually, we intend to have a Program Director who will act as a liaison to the installers as well as be the general face of the program (talking to media, fielding and directing initial inquiries, etc).

In addition to the Program Director, the future entity will require a President to run meetings, understand the bylaws, and manage board members including the Secretary and Treasurer. To support the Program Director and President, we would seek an Office & Communications Manager for managing contracts, responding to questions, reminding people about their loans, sending press releases, and managing online mediums. We intend to have a Fundraising Director who would recruit and communicate with Pass-Through Partners, donors, and loaners as well as manage a committee of volunteers. A Technical & Research person will be crucial for identifying future program opportunities. And to support everything, a team of volunteers for tabling, canvassing, fundraising, and community communications.

For any of these roles to be effective, we need members of the community who want to have improved access to renewable energy sources. We would like to host regularly occurring recruitment events in order to continue spreading program information and bring community

members together. The events are likely to coincide with other events relating to residential energy efficiency opportunities which Rogue Climate is promoting. They'll be promoted through the local newspaper, flyers, by word of mouth, and through social media. The events will provide an informational presentation and booths where the experts will be ready to assist potential participants through their specific questions and the application process. They will serve as an opportunity to highlight the partnered installers and have potential participants sign up for their free solar evaluation.

Periodically, as projects are installed, the team will host community celebrations highlighting the installations and all of the other clean power initiatives and opportunities available in the area. Hopefully, this celebration will turn into an annual "Green Power Community Celebration" to celebrate the progress Talent and the Rogue Valley makes in the implementation of their clean energy action plan and community development.

Results & Discussion

The first recruiting event for the Seeds for the Sol model occurred on Thursday, February 9 at the Talent Community Center. About fifty community members, mostly from Talent, attended to hear about this exciting solar program. The event was publicized through the Talent News & Review (a local newspaper), fliers and a Facebook event. The event began with an introduction of the key team members, a history of Rogue Climate Talent's work, and an overview of the program dynamics. Julie Williams, the President and Founder of Seeds for the Sol Corvallis attended and provided an inspiring description of the program's history. Then attendees were released to sign up at the different participation booths where team experts were standing by to answer questions and supply program contracts. Seven attendees signed up to

have solar installed, five to be pass-through partners, and five to be loaners with a total potential loan amount of $12,000. The event also featured two of the three partnered solar installers who signed up nine attendees for their free solar assessments.

Throughout this project's process, the group successfully installed two solar projects in Talent utilizing the Pass-Through Partner element of the Seeds for the Sol model for a combined total of 13.5kW with an estimated reduction of close to 20,000 pounds of CO_2. The Pass-Through Partner uses Oregon state tax-credits over four years to help finance installations in the community. In our case, two different Talent residents, who were also members of the project group, agreed to sell their state tax credit at 90 percent of its value to other members of the group. The Pass-Through Partner paid the homeowner $5,400 at the closing of the panel purchase. At that point, the Oregon Department of Energy recognized the Pass Through Partner as the owner of the $6,000 state tax credit and they will begin receiving the credit after they file their 2017 taxes.

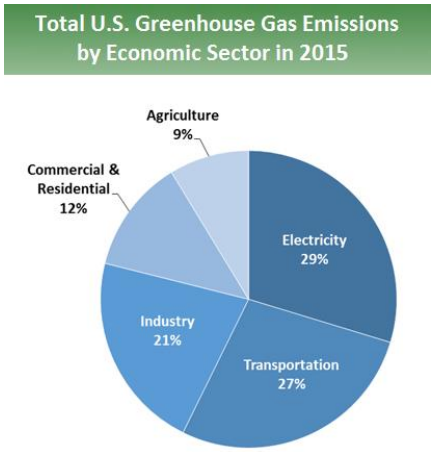
Conclusion

Lots of people love solar. Capturing solar energy on residential rooftops results in decreasing carbon emissions associated with electricity generation and use. Communities are strengthened through collective action for the common good. Yet, there is still a lot of work to be done. For this project to be successful, we need to file our Articles of Incorporation with the state to become a corporate entity. We need to develop a standard packet of information for new applicants and streamline our communication procedures. So far though the program has been well received and there is definitely interest in the community in participating in a program which aims to build community while transitioning off of fossil fuels. The program was recently

featured in a Mail Tribune article by Tony Boom which has sparked additional inquiries about the program.

Appendix A - Figures

Figure 1. The Total U.S. Greenhouse Gas Emissions by Economic Sector in 2015.



EPA, 2015

Figure 2. Dynamic Systems Model to Demonstrate a Reduction in Carbon Emissions Associated with Electricity.

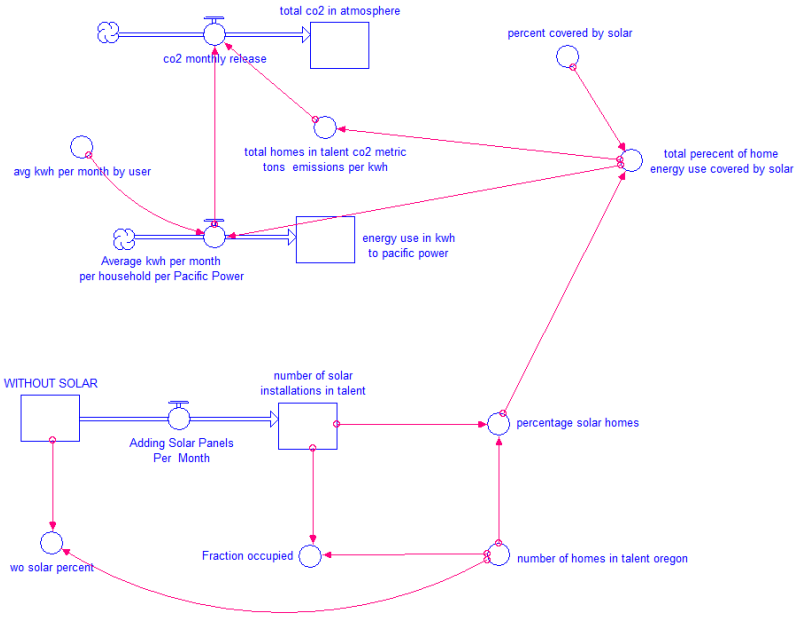
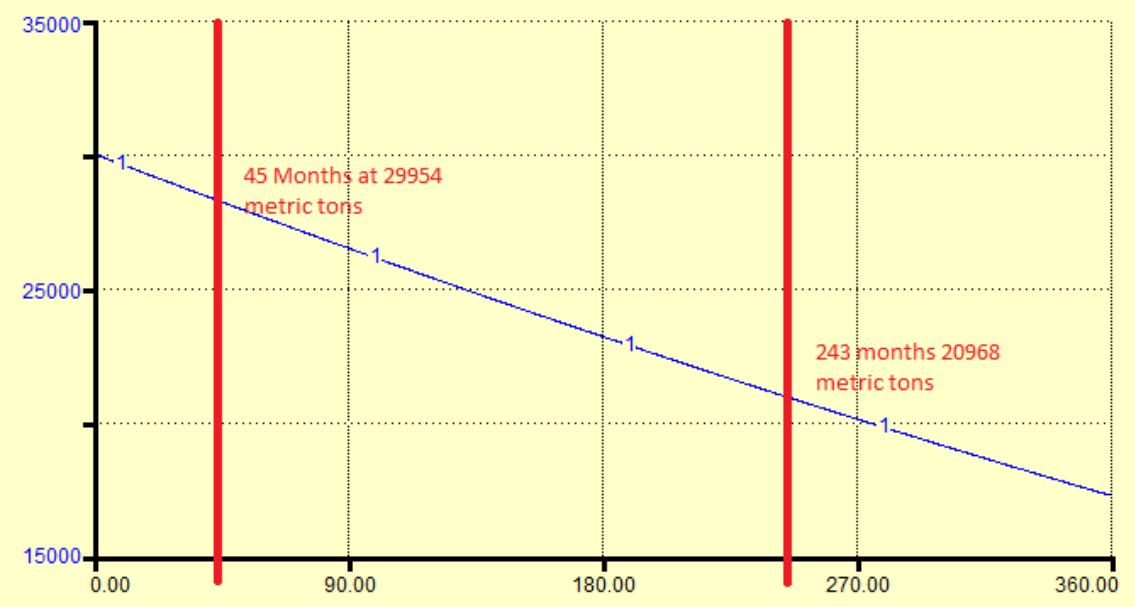


Figure 3. Dynamic Systems Model Demonstrates a Reduction in Carbon Emissions Associated with Electricity through Two Photovoltaic Solar Installations per Month for Thirty Years



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