

# ReImagine Our Communities

## Sustainable Economy Toolkit



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**We believe in a future where our neighbors see themselves in this changing economy, and believe a better life is plausible, regardless of race, gender or social status.**

This toolkit is designed to help community-based organizations ReImagine their communities! The process outlined here will help your group lead a team of stakeholders develop a new vision for their neighborhood, community, or region - AND work collaboratively to achieve that vision.

These tools will help your community re-energize and influence your town, city, or region to protect public health while creating jobs, reducing poverty, and improving quality of life for all. We are excited to help you broaden your reach beyond the walls of the organization and engage diverse sets of stakeholders in the work of creating inspiring visions and implementing lasting change, all while meeting the diverse needs of our communities.

Together with our neighbors, we must rise above political divisiveness to re-find our common ground and our common humanity, and renew public trust at a time when it is needed most.

### **A big thank you to our partners:**

Relmagine Appalachia would like to especially thank the League of Women Voters of Pennsylvania Citizen Education Fund and Relmagine Beaver County for their [original vision](#) in creating this work and masterfully proving the success of this process. The content in this document is an adaptation of the original “Sustainable Economy Toolkit” which has been replicated across 7 entities in Pennsylvania.

**Re!magine  
Beaver County**



## WHAT IS SUSTAINABLE DEVELOPMENT? THE BACKGROUND

The Report of the World Commission on Environment and Development: [Our Common Future](#) first presented to the United Nations General Assembly way back in 1987. The report introduces this concept:

*“Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.”*

*“...it requires meeting the basic needs of all, and extending to all the opportunity to fulfill their aspirations for a better life.”*

*“Such equity would be aided by political systems that secure effective citizen participation in decision-making.”*

*“We do not pretend that the process is easy or straightforward. Painful choices have to be made. Thus, in the final analysis, sustainable development must rest on political will.”*

Today, the 2030 international Agenda for Sustainable Development [contains 17 Sustainable Development Goals](#) (SDGs) adopted by the U.N. General Assembly in 2015. The SDGs “recognize that ending poverty...must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our forests and oceans.”

**In working with your community, keep this perspective in mind. Creating a sustainable economy might be about windmills and solar panels, but it’s also about much more than that.**

The “tools” in the Sustainable Economy Toolkit, show how community members have identified sustainable development sectors and strategies that include renewable energy, but go beyond this to address agriculture and food systems, transportation, sustainable building construction, entrepreneurship, the arts, workplace development, broadband (in rural areas), riverfront recreation, eco-industrial parks and green chemistry, land stewardship, mine land reclamation and more. All of which create jobs – and we advocate for placing greater emphasis on clean job creation.

# Working with Others & Building Coalitions

Your group will likely want to start your sustainable economy initiative by planning an event.

Forming a planning committee for your initial meeting is an essential first step. You should start at least two months prior to your proposed event date – three months is better (and longer than that even better still).

When you form the planning committee, **your group should look beyond your own ranks** to include others. They can be allies from the past or new connections. There should be representatives from various sectors of the community – particularly from:

- faith-based groups
- government and public agencies
- union leaders and racial justice organizations
- environmental partners
- anti-poverty groups
- public health entities
- local colleges and universities
- economic and workforce development entities
- local business groups such as Downtown Partnerships

These sectors want to see the local economy grow, so they share a goal with you.

Working together on planning the first sustainable economy event will build and deepen relationships. Planning group members will bond in celebrating the success of the first event. This shared experience and the knowledge group members gain by working together will help the group to take steps to implement the sustainable development project ideas. Including people in your planning committee from government and agencies, local higher education institutions, faith, labor, and local business groups will create a foothold for the clean economy projects being proposed.

# Visioning

Your group will likely want to start your sustainable economy initiative by planning to hold some kind of event. We have found that holding a visioning session is a very effective way to both educate and engage the public.

Visioning sessions allow regular people to have their say in laying the groundwork for sustainable economic development to happen in their community, county or region. And when civic or business leaders also attend and participate, the experience makes the leaders more likely to buy into a sustainable vision of economic development.

The event should have an educational component that educates people about aspects of the clean economy, and a civic engagement component such as a visioning session. It can be a daylong conference, or an evening session. Your event may feature both educational and engagement aspects. It may be primarily educational, or it may be primarily participatory.

## Education/Raising awareness

Visioning sessions can start with an inspiring and/or otherwise motivational opening, and then move to an educational component, usually a set of 3-5 short (five minute) presentations. For a symposium that lasts e.g. from 9 a.m. to 3 p.m., the presentations can be longer, leaving time for visioning in the afternoon.

The speakers serve to make people aware of the viability of the clean economy TODAY, as well as in the future. The League of Women Voters have featured speakers presenting the results of the Clean Jobs PA studies, which in 2019 show more than 90,000 clean energy jobs in Pennsylvania. ReImagine Appalachia [has a host of studies](#) from Clean Manufacturing to Good Jobs to Expanding Broadband, with job impact studies for Ohio, West Virginia, and Pennsylvania. Many of these jobs are in manufacturing energy efficient appliances, heating systems, parts, etc. Some of the clean energy jobs are in transportation, including developing autonomous vehicles which are more energy efficient.

Some of the speakers should be exemplary models of successful clean economy businesses and initiatives, and in particular how your value system is reflected in these initiatives. While we often feature a renewable energy speaker, they don't all have to be solar installers. They could be artisans who craft products out of natural materials. Or a company that makes stormwater drainage systems out of recycled plastic.

The idea is to get people thinking expansively about the clean economy, including sustainable aspects of agriculture, and of eco-tourism. Through visioning, people create a clearer picture in their mind of specific examples of sustainable economic development.

**Sample schedule** for a visioning session:

#### WEEKDAY EVENING

**5 p.m.** Doors open

**5:30 p.m.** Food/refreshments (e.g. sandwiches & salads; perhaps even a vegetarian meal of hummus, lentil & rice wraps, tabouli; cheese, crackers, and fruit; pizza; cookies or other sweets)

**6:00 p.m.** Inspirational introduction by organizers or others in your community;

- A couple five-minute presentations about the viability of the sustainable economy, examples of specific businesses/initiatives, case studies of faith groups;
- Instructions for how each table should conduct the visioning activity.

**6:15-6:45 p.m.** Visioning – small group discussions at tables, people can write down their ideas on sticky notes (Post-Its) and put them on their table map, then discuss.

**6:45 - 7:30 p.m.** Report back – Holding up the map with the sticky notes, each table has two or three representatives present the key ideas from their table.

**7:30 - 7:45 p.m.** Next Steps – how people can stay involved; will there be more sessions, a report, educational workshops about particular topics, meetings with leaders, etc.

Following the educational component is the most interactive portion of the session – visioning table discussions. We use maps in our visioning sessions, thus tapping into visual senses, and moving from words to physical representations.

The visioning session seeks people’s ideas to answer the question:

- 1. What types of sustainable development would you like to see** (in your community, county, region)?

The visioning starts with people quietly thinking about what they’d like to see, and writing their ideas down on the sticky notes (one idea per sticky note) and sticking the sticky notes on the map; or directly drawing ideas on the map with a colored marker. Then, going around the table, each person introduces themselves and shares their ideas.

Many other groups bring in individuals who have experience in facilitation. It’s a good idea to take advantage of this asset and recruit them to moderate and take notes on the table discussion.

However, it’s not absolutely necessary to have specific moderators recruited in advance. When you explain the instructions for visioning, you can ask each table for a volunteer to take notes and help moderate the discussion. The session Agenda/program handout can be designed with instructions incorporated into the handout ([see example of a program from Re-Imagine Butler County visioning session](#)).



The discussions take place at the tables where people have been sitting listening to the presentations, with 4-10 people per table. The number of session participants could be as small as 20 people or as large as 80 people.

- 2. Ten minutes before the beginning of the report back period, the event leaders should announce that each table should identify 2-3 people to present the table's ideas:** 1 or 2 people hold the map and 1 or more speak about the ideas. (If you are recording, you should let people know that everyone who participates in reporting back in front of the large group should be willing to appear on video.)

There should be enough time in the schedule, and a small enough number of tables, for each table to be able to spend about five minutes presenting their table's key ideas to the large group.

- 3. Materials.** One map per table; sticky notes (e.g. sticky notes in small (2" x 1.5") and medium (3" X 3") sizes, and a variety of colors; Colored markers (about 5 per table); Paper for someone to take notes of the discussion that can be turned in.

Each table gets a large (24 x 36) map. The map can be of a community, a county, a congressional district, a region. Each table can have the same map or different tables can have different maps. Each table also gets sticky notes to write down their ideas (one idea per sticky note sheet) and place them on the map. Also, about 5 colored markers per table for people who want to write or draw their ideas directly on the map. The participants at a table should write their names on the table's map. There should be a photo taken of each table's finished map with the sticky notes (in case they fall off later).

#### **4. Photos & Video Documentation**

Take lots of pictures!! These will be helpful to add visuals and context to your final report. You may want to seek volunteer(s) for the role of photographer(s).

If your group has the funds to hire a professional videographer, or if your group includes people who have video skills and equipment, you can document the event (including the opening presentations) and capture people's presentation of their ideas during the report out session. This video footage can be used to create a 5-minute video of the highlights of your visioning session. This short video can be central to spreading the ideas generated in the visioning session, recruiting more people to support those ideas, presenting these ideas to leaders, and having the ideas implemented.

Include a notice in your program to alert the participants about the photographic and video documentation being made (see [Re-Imagine Butler County program example](#)). There are examples of short videos of visioning session highlights linked in the List of Tools below.

- 5. Inform the local press of your work.** Invite local journalists to the event and create or collect [media release\(s\)](#) with quotes from your educational speakers who present earlier in the program.

## Next Steps

After the reports, as you close the session, you should inform people how they can continue to engage, and what will happen with the ideas produced at the visioning session.

Your next steps could include:

- Inviting visioning session participants to join the planning committee.
- Doing more visioning sessions with different subgroups (e.g. college students) or in different parts of the county/region.
- Analyzing the information from the session and issuing a report.
- Scheduling a public presentation of the session highlights.
- Putting together a list of the different ideas and surveying participants (or the public) to prioritize, gauging interest and viability of different ideas.
- Holding educational sessions on specific ideas raised during the visioning (for example, to learn more about green manufacturing).
- Creating task force group(s) to further develop ideas and move towards implementation

# Analyzing Visioning Information

Our visioning sessions are set up to provide various forms of documentation. First, you'll want to keep track of the number and names of people who register in advance and who sign-in and participate in the visioning. Make sure to get their email addresses if possible. You should keep the names and contact information to reconnect with your participants and keep them informed of future events and actions.

The other types of documentation provided by the visioning session are: sticky notes (Post-its) on the maps (or photos of the maps with sticky notes); notes taken by each table's facilitator; video of the tables reporting out their ideas to the large group; and information from an evaluation form, including asking people to name the top ideas from the session. (See example of [evaluation form](#) from Re-Imagine Butler County)

The ideas on the sticky notes on the maps, and any drawings/writing on the maps (or photographs of the maps with the notes) should form the core of your analysis. Create large categories, and then list specific ideas underneath each category. See the Re-Imagine Butler County [analysis charts](#) for a good example of how this charting looks.

The notes taken by the table facilitators add dimension to the sticky notes, illustrating points with people's comments. The videos of the report-outs give these ideas life. The information on the evaluation forms can help to prioritize the ideas in terms of popular support.

The analysis of information from the visioning session(s) can be presented to the planning group and guide the planning group/steering committee to decide what to do next –

what topic areas to focus on, what types of activities to plan, and what types of people/ organizations to target and engage.

## Creating a Report

It will be helpful to create a report, full of the visuals you collected in the process, as a way of sharing the ideas that come out of your visioning session(s) (or task force group). You can hold a report release event, or schedule a presentation to a public body, as a formal way of presenting the envisioned ideas.

You may want to conduct a survey of a broader population to identify the appeal and practicality of key ideas suggested in the visioning. These survey results can back up the more qualitative information from the visioning session(s).

You may want to include in your report an analysis of the potential job-creating impact of one or more of the envisioned ideas.

You may also want to create a PowerPoint to go with your report so you can present your ideas to larger groups and decision-making bodies. Embedding a 5-minute video of highlights of your visioning session(s) will enhance the impact of your presentation and make your ideas lively and relatable.

Be sure to let the local and regional media know about your presentation. Send a press release, or media advisory, and then follow up with phone calls. Ideally, your group will already have built some relationships with reporters and media outlets.

## Building a Task Force

Your county or community may want to create a Sustainable Economic Development Task Force, as a follow-up to visioning, or as an alternative to visioning.

The task force will meet on an ongoing basis:

- to envision and originate a set of recommended projects and policies;
- and/or to further develop a set of ideas created in visioning sessions;
- and/or to help implement a set of recommended projects and policies.

The task force can be broken up into different subcommittees/task force groups.

The task force should be made up of people from different sectors including local government and agency leaders or staff (particularly from the planning department, also tourism bureau), local institutions of higher learning, churches or religious bodies, businesses and business groups, local environmental organizations, and people from the task force group economic sectors (e.g. farmers, builders). The task force should include a variety of stakeholders. Consideration should be given to diversity of age, race, socioeconomic, geographic, and other social identification status. Those most impacted by pollution and lack of sustainable

investment are the most marginalized in our community, and specific attention should be given to make sure diverse voices are included in visioning the future of your community.

We recommend that the task force membership be open to members of the public who are interested in the topics and in doing the work to create and to help implement sustainable development. The task force should also include some leaders who are recruited to attend.

In Indiana County, PA, following a community event where a broad variety of sustainable development opportunities was presented, county commissioners voted to create a “Sustainable Economic Development Task Force.”

The Indiana Task Force of about 80 people includes four different focus areas: Sustainable Agriculture, Renewable Energy, Sustainable Building Construction and Materials, and Environmental Restoration and Stewardship.

For each of the four sectors, the focus groups created goals in three different areas: economic development, citizen education/civic engagement, and job training/workforce development.

The Task Force process is documented on the [sustainableindianacounty.org](http://sustainableindianacounty.org) website. The website was created to increase transparency and give the public access to what the task force was doing and thinking, in real time.

The Task Force met about 8 times between September 2017 and May 2018. Each Task Force Group began by generating a **wish list** of desired projects/outcomes. Then, the Task Force groups explored what existing **assets** could support the wish list ideas. They noted what the **needs** would be to achieve successful implementation. They looked at potential resources and **partnerships** that could help develop and implement the wished-for goals. They came up with **recommended action steps**. They further honed their recommendations to be made to the Indiana County Office of Planning and Development. They got feedback from community stakeholders at a Task Force all day open house in June 2018.

Working with an outside contractor, the Task Force produced a report of recommendations. These [recommendations](#) were presented at a second Summit, in September 2018.

One benefit of establishing a Task Force is to help get grants for sustainable development projects. The Task Force members can sign onto grant proposals submitted by the planning and development department that fulfill the recommendation goals or aspirational visions set forth by the Task Force. The funding agency will be more apt to consider a proposal that is already backed by a group of action-oriented community members.

In May 2018, the Indiana County Task Force was selected to receive a technical assistance grant by the U.S. EPA’s “Local Foods, Local Places” program. In October 2018, the EPA held a two-day workshop with the agricultural task force members, and interested local farmers and food producers, to create an action plan for creating a viable supply chain between local farmers and local market outlets for their products. The plan also included actions to improve the walkability and use of the downtown area of Indiana PA.

## APPENDIX

# ReImagine Your Community Sample Files and Resources

[Re-Imagine Beaver County 2019 report](#)

[Report of the Indiana County Sustainable Economic Development Task Force](#), September 2018

[Example of Program Book](#) for Summit Exploring the Variety of Types of Sustainable Economic Development, THRIVE: Sustainable Economy Summit, Indiana County April 2017

Sustainable Indiana County website: <http://sustainableindianacounty.org/>

Structure of the Task Force Focus Groups Process: Topics for Each Meeting: <http://sustainableindianacounty.org/task-force-progress/>

[Discussion Guide for Facilitators](#) – Re-Imagine Beaver County March 2017

[Evaluation Form for Symposium with Visioning Session](#), example from Re-Imagine Butler County, September 2018

[Examples of Jobs in the Sustainable Economy](#)

[Instructions for Visioning Facilitators](#)

[Example of Analysis of Visioning sticky notes](#); Re-Imagine Butler County September 2018

[Sample of Program which incorporates visioning instructions](#) (Re-Imagine Butler County, September 2018)

[Sample of a Press Release](#)

[Sample Media Release for Speakers](#) (courtesy Blue Lens LLC)

[Other Organizations: Sustainable Economy Resources](#)

[THRIVE: Sustainable Energy, Jobs & Economic Development Symposium](#) (May 2016) (by invitation, 40 people including League members, government, business. Included tour of Pittsburgh's Energy Innovation Center where the event was held. The EIC is a green renovation of a former trade high school.)



**Links to audio of the speakers:** <https://www.shalepalwv.org/thrive-sustainable-energy-jobs-economic-development-symposium/>

Solar Tour example – Butler Harvest Solar Tour, October 2019

Year end newsletter describing activities and progress, Re-Imagine Butler County 2019

Video – [The Sustainable Economy is Here](#) (Growth of Clean Jobs) – Sharon Pillar, at Indiana County THRIVE- Sustainable Economy Summit I, April 2017

Video – [Re-Imagine Beaver County First Visioning Session](#): Highlights of the Re-Imagine event March 2017

Video – [Re-Imagine Beaver County: Next Steps](#). Chemistry/Green Manufacturing, Dr. Terrence Collins September 2017

Video – Re-Imagine Beaver County October 2017, [Creating Mission and Vision: Identifying Key Stakeholders](#), Ryan Kieta Johnstown Vision 2025

Video – Re-Imagine Beaver County October 2017, [Getting Your Community Leaders to Work on a Sustainable Development Project](#), Preston Shimer League of Women Voters and former Upper St. Clair School Board Member

Video – Mario Leone Jr., Monaca Borough Manager, “[Implementing Sustainable Development Projects in Your Town or Borough](#).” THRIVE: Indiana County Sustainable Economy Summit I, April 2017.

Video – [Sustainable Municipality Certification](#), Jim Price of Sustainable Pittsburgh, THRIVE: Indiana County Sustainable Economy Summit I, April 2017.

Video – Dr. Patricia DeMarco, [Conducting a SWOT Analysis](#), Re-Imagine Beaver County, October 2017

Video – [Highlights of the Indiana County Sustainable Economic Development Summit II](#), September 2018

Video – [Highlights of Re-Imagine Butler County September 2018 symposium & visioning session](#)

# Faith, Environment and Community Resources

## **Interfaith Power and Light (with chapters across Appalachia)**

<https://www.interfaithpowerandlight.org>

IPL inspires and mobilizes people of faith and conscience to take bold and just action on climate change. They envision a stable climate where humans live in right and just relationship, interconnected with a healthy, thriving, natural world.

## **Greenfaith**

<https://greenfaith.org>

GreenFaith is building a worldwide, multi-faith climate and environmental movement. Together their members create communities to transform ourselves, our spiritual institutions, and society to protect the planet and create a compassionate, loving and just world.

# Sustainable Economy Resources & Tools

## **Charting a Course for Appalachia's Economic Transition**

The Ohio River Valley Institute, an Appalachian think tank working to promote shared prosperity, clean energy, and more equitable civic structures, has researched a series of economic development strategies that can spur local job growth while mitigating our region's greenhouse gas output:

*The Centralia Model for Economic Transition in Distressed Communities* — Centralia, Washington, a former coal town with a now-booming economy, could provide a model for clean energy and economic transition in distressed communities in Appalachia and beyond: <https://ohiorivervalleyinstitute.org/the-centralia-model/>

*Repairing the Damage from Hazardous Abandoned Oil & Gas Wells* — An analysis of the economic benefits of a large-scale federal program to plug abandoned oil and gas wells in Ohio, Kentucky, Pennsylvania, and West Virginia: <https://ohiorivervalleyinstitute.org/hazardous-aog-wells/>

*Repairing the Damage: Cleaning Up the Land, Air, and Water Damaged by the Coal Industry Before 1977* — A report describing how cleaning up Appalachia's thousands of acres of abandoned mine lands could create jobs, reduce climate-warming emissions, improve quality of life, and minimize environmental damage: <https://ohiorivervalleyinstitute.org/cleaning-up-aml-damage/>

Ohio River Valley Institute website - <https://ohiorivervalleyinstitute.org/>

### **Documenting the Current Sustainable Economy & Jobs**

Reports and Tools from E2/ Environmental Entrepreneurs

*Energy Efficiency Jobs in America* – A comprehensive analysis of energy efficiency employment across all 50 states. Released December 2016, shows 1.9 million U.S. jobs in energy efficiency. <https://www.e2.org/energyefficiencyjobs/>

*Clean Jobs in America* March 2016 – A comprehensive analysis of clean energy jobs in America. [https://www.e2.org/wp-content/uploads/2016/03/CleanJobsAmerica\\_FINAL.pdf](https://www.e2.org/wp-content/uploads/2016/03/CleanJobsAmerica_FINAL.pdf)

*Clean Jobs Pennsylvania* – 66,000 Pennsylvanians work in clean energy [https://www.e2.org/wp-content/uploads/2016/07/FINAL\\_CleanJobsPA.pdf](https://www.e2.org/wp-content/uploads/2016/07/FINAL_CleanJobsPA.pdf)

*Our Energy Renewal – A Pennsylvania Clean Energy Map: Add your business!* <https://www.e2.org/pamap/>

*The Pennsylvania Green Jobs Survey Report 2010*, by the PA Dept. of Labor & Industry: Historic, useful to see list of many types/categories of green jobs  
[http://www.pacareertech.org/content\\_documents/9/PAGreenJobsSurveyReport\\_2010\\_1.13.2011.pdf](http://www.pacareertech.org/content_documents/9/PAGreenJobsSurveyReport_2010_1.13.2011.pdf)

### **Estimating and Marketing Economic Impact of Sustainable Economy**

The Solar Foundation produced an excellent example of analyzing and quantifying economic impact. The information is for the U.S. and by state. In 2016, there were 260,000 solar jobs in the U.S., plus indirect and induced jobs, creating \$154 Billion in economic impact in the U.S.  
[http://www.thesolarfoundation.org/wp-content/uploads/2017/04/2016-Census-Economic-Impacts\\_Final.pdf](http://www.thesolarfoundation.org/wp-content/uploads/2017/04/2016-Census-Economic-Impacts_Final.pdf)  
<http://www.thesolarfoundation.org/solar-jobs-census/factsheets-2016/>

IMPLAN Economic Input-Output Model, developed by MIG Inc. <http://www.implan.com/>

### **Resources from Saint Francis University Institute for Energy:**

PA Wind Maps – Assess Your Wind Energy Resource: <https://www.francis.edu/Pennsylvania-Wind-Maps/>

Renewable Energy Business Directory – Lists more than 75 businesses that install clean energy (biomass, geothermal, hydro, solar, wind, efficiency). Plus tips on questions to ask the installer, etc. <https://www.francis.edu/Renewable-Energy-Business-Directory/>

### **Technical Assistance for Municipalities to Go Solar**

SolSmart program “provides recognition and no-cost technical assistance to help local governments reduce barriers to solar energy growth”. SolSmart is funded by the U.S. Dept. of Energy SunShot Initiative. <http://www.gosparc.org/>

### **Union Jobs & the Sustainable Economy**

The Blue-Green Alliance <https://www.bluegreenalliance.org/>

Just Transition in PA <https://www.bluegreenalliance.org/work-state/pennsylvania/>



## **Sustainable Pittsburgh Sustainability Performance programs that serve counties in Southwestern PA**

Learn how to become more sustainable, and get recognition for success!

Sustainable Pennsylvania Community Certification (in partnership with the PA Municipal League) <http://www.sustainablepacommunitycertification.org/>

Champions for Sustainability (for local businesses) <http://c4spgh.org/business-performance-programs/small-businesses/>  
<http://c4spgh.org/business-performance-programs/medium-large-businesses/>

Green Workplace Challenge (for businesses, colleges, K-12 schools, local governments and non-profits in southwestern PA) <http://www.gwcpgh.org/>

Sustainable Restaurants (for restaurants operating in southwestern PA)  
<http://sustainablepghrestaurants.org/site/>

**2030 Districts** The 2030 Districts program is a successful model for urban sustainability and economic growth that brings together the private sector, community groups and government. While the program is directed at cities, the 2030 District website has a lot of helpful information. <http://www.2030districts.org/>

### **Getting to the Future**

“Finding Pennsylvania’s Solar Future” Pennsylvania Dept. of Environmental Protection Office of Pollution Prevention and Energy Assistance: two-year statewide planning process 2017-2019 to equip PA to produce more solar energy. <http://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/SolarFuture/Pages/Finding-Pennsylvania%E2%80%99s-Solar-Future.aspx>

The Solutions Project: 100% renewable energy vision  
<http://thesolutionsproject.org/infographic/>

Click on each state and it shows how to supply all energy needs with a mix of renewables (solar pv, onshore & offshore wind, commercial and residential pv, wave devices, geothermal, tidal turbines, hydroelectric, csp plants). It also shows how many jobs renewable energy will create in each state, the cost of energy compared to a fossil fuel mix, and other economic impacts.

*Prepared by the League of Women Voters of Pennsylvania, 2017.*

# Jobs in the Sustainable Economy

## Renewable Electricity Generation: Geothermal, Wind, Water, Solar

### Wind Technicians

Install, inspect, maintain, operate and repair wind turbines”. Entry level; preceded by two-year technician training program.

### Land Acquisition Specialist

“Help developers and project owners obtain land for new wind development, and administer the land after it has been purchased or leased. Coordinate with permitting specialists, lawyers, engineers and scientists to ensure that the wind farm is built on time and within budget.” Mid-level/Advanced. Bachelor’s degree or higher in business, real estate, law.

### Aerospace engineers

“Design, test, and supervise the manufacture of turbine blades and rotors, and conduct aerodynamics assessments. They are frequently involved in site selection, working closely with meteorologists to determine the optimal configuration of turbines at a wind farm site.” \$94,780 median wage. [https://www.bls.gov/green/wind\\_energy](https://www.bls.gov/green/wind_energy)

## Energy-Saving Homes, Buildings, and Manufacturing

### Manufacturing/Government Energy Management

Energy Auditor: “Weatherization of a home, commercial, or other building is the process of improving the energy efficiency and health and safety of the structure through targeted retrofit measures. A trained energy auditor performs a comprehensive, computerized evaluation of the building and recommends various improvements based on testing and visual inspection. These improvements may include air sealing and insulating, duct sealing, heating and cooling system improvements, installation of energy efficient appliances and lighting, and various health and safety measures.” Also, Installer; Crew Leader.

### Weatherization Training Centers

“are specialized training organizations that focus on teaching whole-house building science to an on-the-ground workforce that can immediately put training into practice. Weatherization Training Centers are located around the country. Many centers travel to deliver training to areas without a local center.” <https://energy.gov/eere/education/explore-careers-weatherization-0>

### Sustainable Transportation: Vehicles, BioEnergy, Hydrogen and Fuel Cells

“Widespread adoption of fuel cells could create 180,000 new jobs in the United States by 2020, and 675,000 jobs by 2035”. Mechanical engineers, Chemists, Chemical engineers, Electrical engineers, Materials scientists, Laboratory technicians, Factory workers, Machinists.

Industrial engineers, Power plant operators, Power plant maintenance staff, Bus, truck and other fleet drivers, Vehicle technicians, Fueling infrastructure installers, Hydrogen production technicians, Trainers, Educators, Insurers. <https://energy.gov/eere/education/explore-careers-fuel-cell-technologies>

## Bioenergy Jobs

“Abundant, renewable bioenergy can contribute to a more secure, sustainable, and economically-sound future by providing domestic clean energy sources, reduce U.S. dependence on foreign oil, generate U.S. jobs, and revitalize rural America.”

**Feedstocks:** Farmers, Seasonal workers, Mechanical engineers, Harvesting equipment mechanics. Equipment production workers, Chemical engineers, Chemical application specialists, Chemical production workers, Biochemists, Aquaculture technicians, Agricultural engineers, Genetic engineers and scientists, Storage facility operators

**Conversion:** Microbiologists, Clean room technicians, Industrial engineers, Chemical & mechanical engineers, Plant operators

**End Use:** Station workers, Construction workers, Codes & standards developers, Regulation compliance workers, Consultants

**Transport of Feedstocks & Biofuels:** Truck drivers, Truck filling station workers. Pipeline operators, Barge operators, Railcar & Train station operators.  
<https://energy.gov/eere/education/explore-bioenergy-careers>

## Other Types of Jobs

### Agriculture

Vertical Farmer, Herbal Medicine practitioner

### Natural Products

Home Textiles Retail Store Owner, selling products made of natural fibers  
Green Chemistry  
Potato starch cutlery distributor  
Owner of mushroom-based packaging manufacturing company

### Tourism

Eco-tour Operator  
Trail construction and maintenance

### Native Gardens Landscape Architect

## All About the Jobs

“A broad coalition of clean energy groups launched a campaign 2/22/17 to highlight the three million jobs their industries support nationwide. Those figures, cited from DOE’s U.S. Energy and Employment Report , mean American clean energy jobs are equivalent to employment opportunities in retail stores and represent more than double the number of building construction jobs. Among those involved in the campaign: Advanced Energy Economy, American Council on Renewable Energy, AJW, Alliance to Save Energy, American Wind Energy Association, the Business Council for Sustainable Energy, Energy Storage Association and Solar Energy Industries Association. Environmental Entrepreneurs also released a fact sheet about the three million jobs.”

### Sources include:

- <https://energy.gov/eere/education/explore-clean-energy-careers-0>
- <https://www.energy.gov/sites/prod/files/2016/03/f30/U.S.%20Energy%20and%20Employment%20Report.pdf>
- [https://www.e2.org/wp-content/uploads/2017/02/E2\\_CleanEnergyJobs\\_National.pdf](https://www.e2.org/wp-content/uploads/2017/02/E2_CleanEnergyJobs_National.pdf)

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