

Issue: VA ECONOMY and JOBS

Retraining for Solar Jobs in Virginia

Summary

Forget, for the moment, that black lung disease kills about one thousand miners a year; or that coal releases toxins that cause brain damage, heart problems, and cancer while also contaminating air- and drinking water supplies.^{1,2} Health and environmental issues aside, non-renewable energy usage such as coal and petroleum is on a downward spiral. In stark economic terms, “Coal-fired power plants are closing in record numbers—and the trend isn’t reversing itself anytime soon.”³ With those plant closures and the aging infrastructure required to sustain them, those jobs are going away and *they will not be coming back*.

Ignoring those and other displaced workers—many of whom will undoubtedly have exorbitant medical bills thanks to their former occupations—will not make the problem go away. If there is a silver lining to this situation, it’s that *there are jobs out there to be had* and they are *do-able by this displaced population* if we have the political will to implement and incentivize the job retraining required to transition to the new age of clean energy provisioning and the higher end jobs that go with them.

Job Retraining – the Political Picture

Working class voters gravitated to Donald Trump in the last presidential election in part because he promised to bring back their old jobs. This goal has proven to be as unrealistic today as it was when he announced his candidacy back in 2015. Blue-collar workers in America today are both unemployed and underemployed, often earning minimum wages far below what living wages required to raise a family.^{4,5} More jobs are becoming automated or have gone overseas. According to an article in the Atlantic magazine, Chinese imports alone have eliminated 2.4 million U.S. jobs since 2000.⁶

On the opposite end of the spectrum are employers, who claim they are having a difficult time filling skilled blue-collar jobs.⁷ Government-funded job training could alleviate both these dilemmas and assist workers and employers, with the American economy benefitting from both. As stated in the *New York Times Magazine* article, The Retraining Paradox, “Even as Republicans have voted to cut funding for training in recent years, they have paid it lip service as a way to put Americans back to work.”⁸ This is not a new problem. The multitude of inefficient and confusing retraining programs led to the Workforce Innovation and Opportunity Act, passed in 2014 with bipartisan support.⁹ Before this, some 47 different training programs were inefficient and were difficult for workers to navigate.¹⁰ However, the closest training center under this program is in South Carolina.¹¹

“In previous decades, we’d have down cycles where workers were laid off and then they’d be called back,” said Mary Alice McCarthy, the director of the Center on Education & Skills at the left-leaning think tank New America. “Now there is restructuring in most industries where people aren’t ever going to be called back or ever find jobs in that industry again—and we don’t have training systems that allow for that.”¹²

Solar Can Generate Jobs for Virginia

Conservative estimates are that up to 30-35% of peak electricity demand can be provided by intermittent resources such as solar and wind, without the need for extensive energy storage.¹³ Virginia's use of renewables, primarily solar, is far below this limit at only about 1% penetration.¹⁴ In Virginia, the peak summer generation capacity is 28.0 GW, while total installed solar capacity is only 0.7 GW.^{15,16} Without risk of disturbing the stability of the grid, the potential for new solar capacity is substantial, at $(30\% * 28.0 \text{ GW} - 0.7 \text{ GW}) = 7.7 \text{ GW}$. The 2018 rate of installation of new solar systems in Virginia was only 0.12 GW/year, 7 ½ times less than neighboring North Carolina which had an installation rate of 0.91 GW/year.¹⁷ If Virginia were to implement an aggressive program to reach 30% solar in 10 years, it would require increasing the yearly installation level to 0.77 GW per year. Given that the current number of solar jobs in Virginia is 3,890, this increase in installation efforts would result in a *six-fold increase in jobs* from the current 3,890 jobs to approximately 24,961 jobs in the state.¹⁸

A Case in Point: Can Coal Workers be Retrained for Solar Jobs?

Virginia has lost many coal industry jobs due to the 45% decline in Appalachian production in recent years.¹⁹ Joshua Pearce of Michigan Technologies University and Edward Louie of Oregon State University have reported on the feasibility of retraining coal workers for solar jobs in an article in the journal *Energy Economics*. They reviewed job descriptions and skills in the coal industry compared with skill sets in solar employment. Specific degrees, salary, and work experience were considered. "For example, an operations engineer in the coal industry could [be] retrained to be a manufacturing technician in solar and expect about a 10% salary increase. Similarly, explosive workers, ordinance handlers, and blasters in the coal industry could use their sophisticated safety experience and obtain additional training to become commercial solar technicians and earn about 11% more on average."²⁰

The authors suggested several avenues for funding training: workers paying themselves, coal companies paying before layoffs, and states or the federal government paying. It is not likely that a coal worker can pay for his own retraining. For it to be feasible for companies or government to fund retraining, the importance of solar energy has to be recognized and adequate allocations made in support of transition programs. There are larger labor needs in the solar industry than in coal's current use of large scale automation and shrinking employment opportunities, i.e. *solar requires more labor input, thus creating more jobs*.

"Even a little solar in an area can compensate, employment wise, for a lot of lost coal. Solar is now making strides in North Carolina, Georgia, and Pennsylvania so there is hope for Appalachia yet."²¹

A Solar Training Network was established in 2015, with \$2.1 million in federal funding; President Obama's goal was to train 75,000 in solar careers by 2020. In fact the U.S. solar industry employed 260,077 workers in 2016, a nearly 25% increase in solar related jobs from 2015.²²

At the state level, Virginia has created the Community College Workforce Development Program, which provides training at community colleges throughout the state.²³ The training program offers over 25 courses specifically in the Energy Technology (ENE) track including an overview of hydroelectric, coal, and nuclear energy production methods and renewable solar, geothermal, wind, and fuel cell technology; the differences between conventional and alternative energy production, active and passive solar technologies, solar power installations, principles of wind energy and fuel cell technologies, and many more. The ENE program also includes an Associate of Applied Science

option in Energy Technology as part of the Environmental Control Technologies/Technicians program.

Obstacles to Overcome

One challenge to employing coal workers in the solar industry is location. Although some solar training is available near coal workers, most of the solar industry jobs in Virginia are not near the coal mining region.^{24,25,26} This is primarily a result of the prevalence of solar installations being located in more populated, higher-density areas of the state. This will be mitigated as solar installations grow in the state, but in the shorter term creative solutions are going to be needed such as sourcing jobs that can be done remotely, job sharing programs which might offset long commutes to larger cities, or looking at other renewable energy technology jobs that are more likely to be located in rural areas, such as wind- or hydro-electric energy project developments.

Dominion Energy Virginia, with a vested interest in maintaining control and dominance of their natural gas provisioning contracts, has also created obstacles to moving toward a solar based energy system in Virginia. For more information see Local Majority paper: [Renewable Energy in Virginia](#).²⁷

Until the constituents in Virginia—strongly supported by their legislators—realize the importance of solar and renewable energy opportunities, a push to invigorate the solar energy industry is not in their immediate future. Given the promise that solar and renewable energy jobs hold for a displaced workforce, there is no time like the present.

¹ <https://arlweb.msha.gov/S&HINFO/BlackLung/Videos.asp>

² <https://www.ucsusa.org/clean-energy/coal-impacts>

³ <https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/coal-transition>

⁴ <https://money.cnn.com/2016/05/04/news/economy/america-left-behind-white-men/index.html>

⁵ https://www.localmajority.org/wp-content/uploads/2019/08/VA.Minimum_Wage.20190819.JR_JW_RF_.pdf

⁶ <https://www.theatlantic.com/education/archive/2018/01/the-false-promises-of-worker-retraining/549398/>

⁷ <https://www.nytimes.com/2017/02/23/magazine/retraining-jobs-unemployment.html>

⁸ <https://www.nytimes.com/2017/02/23/magazine/retraining-jobs-unemployment.html>

⁹ <https://www.nytimes.com/2017/02/23/magazine/retraining-jobs-unemployment.html>

¹⁰ <https://www.theatlantic.com/education/archive/2018/01/the-false-promises-of-worker-retraining/549398/>

¹¹ <https://www.energy.gov/eere/solar/solar-training-network>

¹² <https://www.theatlantic.com/education/archive/2018/01/the-false-promises-of-worker-retraining/549398/>

¹³ <https://www.nrel.gov/docs/fy17osti/68349.pdf>

¹⁴ <https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-va/>

¹⁵ <https://www.eia.gov/electricity/state/virginia/>

¹⁶ <https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-va/>

¹⁷ https://www.seia.org/sites/default/files/2019-06/Factsheet_North%20Carolina_0.pdf and

https://www.seia.org/sites/default/files/2019-06/Factsheet_Virginia_0.pdf

¹⁸ <https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-va/>

¹⁹ https://www.arc.gov/assets/research_reports/CIESummary-AppalachianCoalIndustryEcosystemAnalysis.pdf

²⁰ https://hbr.org/2016/08/what-if-all-u-s-coal-workers-were-retrained-to-work-in-solar?utm_content=buffer7f9fb&utm_medium=social&utm_source=twitter.com&utm_campaign=greenbiztweets

²¹ <https://www.vox.com/2016/8/11/12420892/retrain-coal-workers-solar-jobs>

²² <https://fortune.com/2017/02/07/us-solar-jobs-2016/>

²³ <https://courses.vccs.edu/courses/ENE-Energy%20Technology>

²⁴ <http://www.vccs.edu/community-college-workforce-development-services-locator/>

²⁵ <https://www.solarstates.org/#state/virginia/counties/solar-jobs/2018>

²⁶ <https://www.yellowpages.com/search-map/va/coal-mines>

²⁷ https://www.localmajority.org/wp-content/uploads/2019/05/VA.Issue_.RenewableEnergyUpdate.4-30-2019.KP_.pdf