



PENNSYLVANIA JOB IMPACT BRIEF JANUARY 2021

Sustainable Development

ReImagine Appalachia blueprint creates 243,000 jobs in Pennsylvania

Summary of results from PERI economic recovery program analysis

ReImagine Appalachia

Appalachians have never been afraid to roll up their sleeves and put in hard work. But for too long, certain politicians and their corporate backers have rigged the rules in their favor. They've exploited workers, scarred the land, and made our neighbors sick. Now is the time to come together to reimagine a 21st century economy for the Ohio Valley that is good for workers, communities, the environment, and our health.

In July of last year, the ReImagine Appalachia Coalition unveiled [its policy blueprint](#). The plan shows how federal resources can support high quality jobs in sustainable manufacturing, a modern Civilian Conservation Corps and by building out the region's broadband infrastructure. Now the final report from a study by the [Political Economy Research Institute at the University of Massachusetts-Amherst](#) shows that the blueprint could provide good jobs for 243,000 Pennsylvanians every year for the next 10 years. This paper summarizes the report's findings.

Our campaign has said from the outset that national climate change legislation will happen, whether it is in a few months, or one year, or five years. It looks increasingly likely that it will happen this year. A growing number of Americans and members of Congress, as well as President Biden, agree that we need a big federal economic stimulus package, and that climate infrastructure investment should be a major part of that stimulus. As this legislation begins to take shape, as our federal leaders rise to the occasion, Appalachians must be—and will be—at the table.

By enacting the blueprint, federal leaders could create 243,000 Pennsylvania jobs

A federal investment package with annual average allocations of \$11.3 billion to Pennsylvania, from 2021 to 2030, along with an additional \$19.7 billion in private investments, would generate approximately 243,000 jobs in Pennsylvania—enough to bring Pennsylvania's high unemployment rate back down towards 4 percent.

These federal investments would not only represent a counterforce to the economic collapse associated with COVID-19, they would also build the foundation for a more sustainable and vibrant Appalachia going forward. One that builds local wealth. The average household would also spend 40% less on energy.

The investment amounts, job numbers and compensation figures outlined in this brief are entirely based on the work of Robert Pollin, Jeannette Wicks-Lim, Shouvik Chakraborty, and Gregor Semieniuk in the Department of Economics and Political Economy Research Institute at University of Massachusetts-Amherst (January 2021), the preliminary report of findings from a study entitled Impacts of the ReImagine Appalachia & Clean Energy Transition Programs for Pennsylvania: Job Creation, Economic Recovery, and Long-Term Sustainability. In the Tables below, the compensation figures come from the PERI final report for Pennsylvania.

Our Strategy for Job Creation

Expand Opportunity through Public Investments: By urging our federal leaders to drive federal resources into Appalachia for needed infrastructure improvements, and attaching requirements for strong wages, benefits, diversity requirements and union rights, we can create good union jobs. Federal policy can also give people moving out of extractive industries priority for jobs created, while building pathways into union jobs and family-sustaining careers for women, Black people, indigenous people, and other people of color.

Build a 21st Century Sustainable Appalachia: National climate change legislation and federal economic stimulus packages are opportunities to bring much-needed resources into our region. The information below represents the number of jobs that can be created, in Pennsylvania, if policy and policymakers send a fair share of future climate change stimulus package to the region and ensure it is designed to meet the needs of the people living in Appalachia, not just the needs of corporations.

Repair Damage Done over the Last Century: Reclaim abandoned lands and put them back to good use. And provide health care and secure pensions for coal workers, especially those with black lung disease.

Repairing the Damage

Federal investment required: \$1.2 billion

Jobs created: 9,283

Table 1					
Repairing the Damage Job Creation through Annual Spending of \$1.2 billion					
\$1.2 billion in federal investment creates more than 9,000 Pennsylvania jobs annually					
	Spending amounts	Direct + indirect jobs	Induced jobs	Direct, indirect + induced jobs	Average total compensation
Plugging orphaned oil and gas wells	\$600 million	1,320	2,160	3,480	\$113,700
Gas distribution pipe- lines— repairing leaks	\$230 million	483	805	1,288	\$131,000
Dams/levees	\$350 million	3,255	1,260	4,515	\$69,900
TOTALS	\$1.2 billion	5,058	4,225	9,283	

Sources: PERI, *The Impacts of the ReImagine Appalachia and Clean Energy Transition Programs for Pennsylvania*.

Modernizing the electric grid. By upgrading our antiquated electric system, decentralizing generation, expanding broadband, and making our homes and businesses more energy efficient, the state can cut emissions, save money, and create new jobs. (In Table 2 and later tables we rely on the assumption that total investment in sectors that combine private and public investment consists of nine dollars of private investment for each dollar in public. This is based on p. 47 of PERI, *The Impacts of the ReImagine Appalachia and Clean Energy Transition Programs for Pennsylvania*.)

Modernizing the Grid

Federal investment required: \$3.2 billion

Leveraged private investment: \$18 billion

Total investment: \$21.2 billion

Jobs created: 142,199

Table 2

Modernizing the Grid Job Creation Through Total Annual Spending of \$21 billion					
\$3.1 billion federal investment creates over 143,000 Pennsylvania jobs annually					
	Spending amounts	Direct + indirect jobs	Induced jobs	Direct, indirect + induced jobs	Average total compensation
Electrical grid upgrades	\$870 million	3,741	2,262	6,003	\$79,900
Building retrofits	\$2.3 billion	14,720	5,520	20,240	\$68,800
Solar	\$8.4 billion	30,240	20,160	50,400	\$81,900
Onshore wind	\$3.4 billion	10,200	6,800	17,000	\$77,400
Low-emissions bioenergy	\$2.5 billion	11,500	5,750	17,250	\$66,800
Geothermal	\$1.26 billion	8,568	4,032	12,600	\$79,700
Small-scale hydro	\$1.26 billion	9,702	4,284	13,986	\$72,500
Broadband	\$1.2 billion	3,360	2,160	5,520	\$98,200
TOTALS	\$21.2 billion	92,031	50,968	142,999	

Sources: PERI, *The Impacts of the ReImagine Appalachia and Clean Energy Transition Programs for Pennsylvania.*

Expand Manufacturing by Making it More Energy Efficient and Clean: Federal investments can repurpose shuttered coal plants, turning them into eco-industrial parks. Together, we can spur more energy efficient manufacturing and reduce operating costs in a way that doesn't involve lowering wages.

Energy Efficient and Clean Manufacturing

Federal investment required: \$1.3 billion
Leveraged private investment: \$1.1 billion
Total investment: \$2.4 billion
Jobs created: 18,016

Table 3

Modernizing Manufacturing Job Creation Through Total Annual Spending of \$2.4 billion					
\$1.25 billion in federal investment creates 18,016 Pennsylvania jobs annually					
	Spending amounts	Direct + indirect jobs	Induced jobs	Direct, indirect + induced jobs	Average total compensation
Industrial efficiency, including combined heat and power	\$1.2 billion	4,680	3,360	8,040	\$87,000
Manufacturing R&D	\$580 million	3,190	1,798	4,988	\$114,800
Bioplastics R&D	\$580 million	3,190	1,798	4,988	\$114,800
TOTALS	\$2.4 billion	11,060	6,956	18,016	

Sources: PERI, *The Impacts of the ReImagine Appalachia and Clean Energy Transition Programs for Pennsylvania.*

Building a more sustainable transportation system. By laying rail and expanding infrastructure for electric vehicles fueled by renewables, policy and investment can create good jobs, while putting half of our region’s energy dollars to better use and create new jobs for transit workers and laborers.

Sustainable Transportation

Federal investment required: \$930 million
Leveraged private investment: \$522 million
Total investment: \$1.45 billion
Jobs created: 16,182

Table 4
Sustainable Transportation Job Creation Through Total Annual Spending of \$1.45 billion
\$145 million federal investment creates over 16,000 Pennsylvania jobs annually

	Spending amounts	Direct + in-direct jobs	Induced jobs	Direct, indirect + induced jobs	Average total compensation
Public transportation expansion/upgrades, including rail	\$870 million	13,311	2,871	16,182	\$34,000
Expanding high efficiency automobile fleet	\$580 million				
TOTALS	\$1.45 billion	13,311	2,871	16,182	

Sources: PERI, The Impacts of the ReImagine Appalachia and Clean Energy Transition Programs for Pennsylvania.

Relaunching the Civilian Conservation Corps. To absorb carbon, aka carbon farming, puts people to work expanding our forests, wetlands, and sustainable farms. By creating hiring priorities for returning citizens caught up in the “war on drugs” and opioid epidemic, these investments can also combat labor market discrimination.

Civilian Conservation Corp

Federal investment required: \$4.7 billion
 Jobs created: 56,700

Table 5
Carbon Farming Job Creation Through Total Annual Spending of \$4.7 billion
\$4.7 billion federal investment creates over 56,000 Pennsylvania jobs annually

	Spending amounts	Direct + in-direct jobs	Induced jobs	Direct, indirect + induced jobs	Average total compensation
Water/wastewater/ inland waterways	\$1.2 billion	8,280	3,360	11,640	\$69,100
Land restoration	\$600 million	4,800	1,920	6,720	\$68,200
Regenerative agriculture	\$1.7 billion	19,550	3,910	23,460	\$17,800
Farmland conservation	\$1.2 billion	10,800	4,080	14,880	\$57,300
TOTALS	\$4.7 billion	43,430	13,270	56,700	

Sources: PERI, The Impacts of the ReImagine Appalachia and Clean Energy Transition Programs for Pennsylvania.

Other priorities: Combatting negative impacts on fossil fuel industry workers: There are roughly 64,000 Pennsylvanians working in fossil-fuel based industries, including in oil and gas extraction, coal mining and refineries. The PERI analysis, driven by emissions reductions that come in part from reduced energy consumption of high-emission fuels, determined that by the year 2030, there would be 28,702 fewer fossil-fuel industry workers— about 1,000 of which each year would retire, but the rest of which would require re-employment.

Each year, for the next 10 years, roughly 1,800 workers will deserve priority status for re-employment in jobs created via national climate change legislation. In addition, it is important to recognize the average annual compensation for workers in the fossil fuel industry, about \$100,000, is higher than the compensation found in most jobs listed above (with the exception of repairing leaks in gas lines). The PERI analysis recommends, among other things, income support from supplemental wage insurance for any difference in pay levels that result from moving into cleaner energy industries. Some additional training for new work may also be necessary. For this purpose, federal funding should be allocated towards union apprenticeship programs providing continued learning opportunities.

Conclusion: Our work is time sensitive. We are experiencing one of the most divisive and difficult times in our nation’s history. But there is also opportunity. We can use this moment to Reimagine Appalachia. Federal policymakers will be passing major legislation that will shape the future of our nation. Our blueprint creates a vision for a 21st century sustainable Appalachia, and identifies the federal resources needed to get from where we are to where we need to go. The findings of this study underscore what we already know - a better future is within reach, if we are willing to work for it. We’re working to ensure the people of Appalachia have a say in how our region rebuilds. Join us in defining our future.

Definitions: Direct, Indirect, and Induced Job Creation

Based on PERI, The Impacts of the ReImagine Appalachia and Clean Energy Transition Programs for Pennsylvania, forthcoming

We need to briefly describe the three channels through which jobs will be generated through clean energy investments. In fact, these three sources of job creation will be associated with any expansion of spending in any area of the economy, including clean energy investments. They are: direct, indirect, and induced employment effects. For purposes of illustration, consider these categories in terms of investments in home retrofitting or installing solar panels:

1. Direct effects—the jobs created, for example, by retrofitting buildings to make them more energy efficient or installing solar panels;
2. Indirect effects—the jobs associated with industries that supply intermediate goods for the building retrofits or solar panels, such as glass, steel, and transportation. In other words, indirect effects measure job creation along the clean energy investment supply chain;
3. Induced effects—the expansion of employment that results when people who are paid in the construction or steel industries spend the money they have earned on other products in the economy. These are the

Efficient Power, Good Jobs. Table 6 describes jobs associated with investments to modernize the grid, promote cleaner and more efficient manufacturing, and upgrade our transportation system to make it more sustainable.

Table 6		
Modernizing the Grid, Industry and Transportation Creates Jobs		
Modernizing the Grid	Upgrading the grid, reducing waste heat	Energy engineers, electricians, electrical power-line installers and repairers, boilermakers, power distributors and dispatchers, stationary engineers and boiler operators, pipe fitters and steamfitters, power plant operators, service unit operators, service unit operators, storage, and distribution managers
	Increasing efficiency in electric generation, and getting power from local renewable energy sources	Environmental, mechanical, and electrical engineers and technicians, electricians, installation technicians, helpers, managers, laborers, construction operators and managers, iron and steel workers, millwrights, sheet metal workers, metal fabricators, welders, machinists, electric equipment assemblers, construction equipment operators, industrial production managers, first-line production supervisors, industrial truck drivers, solar assessors
	Methane Digesters, Geothermal, Fuel Cells, Waterpower	Methane/landfill gas collection and capturing, generation system engineers, installers, project fuel managers and operators, production managers and technicians, engineers and technicians, hydrologists, hydroelectric production managers, and plant technicians
Clean & Efficient Manufacturing	Eco-Industrial Parks	Energy Managers/Sustainability officers, Green Marketers, Refuse and Recyclable Material Collectors, Hazardous Materials Removal Workers, Brownfield Redevelopment Specialists and Site Managers, Commercial and Industrial Designers, Industrial engineers, architectural drafters, Landscape Architects, Soil and Plant Scientists, water and soil conservationists, Marketing Managers, supply chain manager, Electrical and Electronics Repairers, Commercial and Industrial Equipment, Industrial Production Managers, Industrial Ecologists, and sustainable design specialists, Water Resource Specialists, and water/wastewater engineers, Industrial Machinery Mechanics, and Repair Workers, Helpers--Installation, Maintenance, and Repair Workers, Transportation Managers, Logistics Analysts, engineers, and managers, Production, Planning, and Expediting Clerks, Shipping, Receiving, and Traffic Clerks, Transportation Vehicle, Equipment and Systems Inspectors, Maintenance
	Freight rail	Civil engineers, rail track layers, electricians, welders, metal fabricators, first-line transportation supervisors, dispatchers, railroad conductors and yardmasters, laborers and freight, stock, and material movers, engine assemblers, production helpers
Sustainable Transportation	Energy-efficient automobiles	Computer software engineers, electrical engineers and technicians, welders, transportation equipment painters, metal fabricators, computer-controlled machine operators, engine assemblers, production helpers, operations managers
<p>Sources: Pollin & Wicks-Lim, <i>Political Economy Research Institute (PERI), UMass, Job Opportunities in the Green Economy (2008); Bureau of Labor Statistics at http://www.bls.gov/green/greencareers.htm#greendata</i></p>		