If You Fund It, They Will Come

How Federal Clean Energy and Manufacturing Funds Spurred Private Spending, Doubling Appalachia's Climate Infrastructure Investment in Coal Country

By Diana Polson and Rike Rothenstein

This is the first brief in a series that will examine the impact of federal climate and infrastructure funding on ReImagine Appalachia's four Appalachian states.

Executive Summary

North Central Appalachia, a region hard hit by the boom and bust of extractive industries and the loss of manufacturing jobs over decades, has benefited from recent federal investments in the clean energy economy. In this report, we explore data on clean energy investments to see how Appalachian states in the Ohio River Valley region—Kentucky, Ohio, Pennsylvania, and West Virginia—are faring as a result of federal clean energy investment. We find that federal investments have spurred significant private investment in the clean energy economy as new facilities have been built and are being built across our region. These investments have fueled a growing sense of hope that our Appalachian communities can have a thriving future as we build up our clean energy economy and manufacturing capabilities.

In this report, we analyze data on public and private investments in the manufacture and deployment of technologies that reduce greenhouse gas emissions from the U.S. from the Rhodium Group and MIT's Center for Energy and Environmental Policy Research's (CEEPR) Clean Investment Monitor (CIM). We find:

- Federal investments in clean energy, via the Inflation Reduction Act (IRA) and the Infrastructure Investment and Jobs Act (IIJA) (also known as the Bipartisan Infrastructure Law or BIL), grew 17-fold between 2022 and 2024, with a total of $11.5 billion in federal investments coming to our four states—Kentucky, Ohio, Pennsylvania, and West Virginia—within that 3-year time period.
- Federal investments led to a doubling in clean energy investment in projects in our region between

2022 and 2023—from $7.7 billion to nearly $15.9 billion—with continued increases in 2024.[1]

- The $11.5 billion in federal investment in our four states from 2022 to 2024 represents a relatively small share of total investment of just over $40 billion tracked in the Clean Investment Monitor over the same period—with private investment in clean energy technologies somewhere between 3 and 4 times larger than that of public investment. The majority of capital invested in clean energy is coming from private sources, with those funds attracted in by federal tax credits, grants, loans and loan guarantees.
- Communities across the region have benefited from these clean energy investments, with most Congressional districts in our four-state region seeing between $1 million and $5.7 billion in clean energy investments between the beginning of 2022 and the end of 2024.
    - The 27 Republican districts in our four-state region have seen an estimated $18 billion in investments between 2022 and 2024, while 13 Democratic districts saw an estimated $5.2 billion.
    - Republican districts, which represent 68% of our region's Congressional districts, saw 77% of the actual clean energy investments in our four-state region between 2022 (Q1) and 2024 (Q4).
- Our four-state Appalachian region has seen an estimated $23.2 billion investment between 2022 and 2024 in the manufacturing and deployment of greenhouse gas-reducing technologies. Even more investment is outstanding—another $23.7 billion is still in the pipeline to be spent.[2]

As we show, the IRA and IIJA have sparked a clean energy economic surge in Appalachia, bringing hope to a region previously devastated by fleeing manufacturing and loss of fossil fuel jobs. New investments have disproportionately created construction and now manufacturing jobs, while strong labor standards in the federal bills ensured that many new, clean jobs are unionized, higher paid, with good benefits.[3]

Under President Trump's second administration, however, continued growth of clean energy investments, including those subsidized by IRA tax credits, is uncertain. Choking off federal support will hurt businesses, workers, and communities, and threatens to nip in the bud the region's best chance at economic renewal in more than half a century. Bipartisan Congressional support for maintaining the clean economy investments unleashed by the Infrastructure Investment and Jobs Act and Inflation Reduction Act is vital to ensuring that our regional momentum won't be lost, and that we can continue to build a brighter future for Appalachia.

Introduction

Appalachia, a region hard hit by the boom and bust of extractive industries and the loss of manufacturing jobs over decades, has benefited from recent federal investments in the clean energy economy. In this report, we examine data from the Rhodium Group and MIT's Center for Energy and Environmental Policy Research (CEEPR) (hereafter "Rhodium/MIT") called the Clean Investment Monitor (CIM).[4] This data project tracks investments in the manufacturing and deployment of technologies that reduce greenhouse gas

1 These figures refer to what Rhodium/MIT define as "actual clean energy investment"—the real dollars spent during each quarter on retail purchases or new facility construction once a project has moved forward into construction and installation. This includes private investments supported by federal incentives.
2 These investments, reported by Congressional district, and including outstanding investments, only includes data on the manufacturing and deployment of greenhouse gas-reducing technologies, and does not include the Clean Investment Monitor's other category on "retail." Including retail, we have seen over $40 billion in actual investments between 2022-2024.
3 See Ted Boettner, "IRA Clean Energy credits with Labor Standards Can Boost Union Jobs and Economy in Appalachia," Ohio River Valley Institute, September 2024; online at https://ohiorivervalleyinstitute.org/ira-clean-energy-credits-with-labor-standards-can-boost-union-jobs-and-economy-in-appalachia/.
4 Clean Investment Monitor data can be found at http://www.cleaninvestmentmonitor.org/.

emissions in the United States, going back to 2018. Looking back several years, prior to the passage of these historic pieces of legislation, gives us a good sense of how these bills have impacted the clean energy economy.[5]

In this report, we examine data for four states in Appalachia—Kentucky, Ohio, Pennsylvania, and West Virginia—to show how investments have changed since the passage of these federal laws and who is benefiting in our region. What we find, detailed below, is that federal investments have spurred significant private investment in the clean energy economy, and where these investments go, good jobs follow.

Primarily two pieces of federal legislation, passed in 2021 and 2022, provided public funding for and incentives to expand private investment in the manufacturing and deployment of technologies that reduce greenhouse gas emissions:

- The ***Infrastructure Investment and Jobs Act (IIJA)***: The IIJA, also known as the Bipartisan Infrastructure Law, was signed into law in 2021. The IIJA provided $550 billion in new spending to upgrade infrastructure in the U.S., including funding for roads, bridges, railways, public transportation, clean drinking water, and high-speed internet, as well as funding to address climate change and clean up hazardous sites. Some of this funding is used for the manufacturing/deployment of technologies that reduce GHG.

- The ***Inflation Reduction Act (IRA)***: The IRA was signed into law in 2022, with the goal of reducing energy costs for households and providing pathways to help communities update infrastructure and prepare for the coming challenges of climate change. The IRA lowers energy costs for households and businesses and invests in clean energy, manufacturing, and transportation technologies, like electric vehicles, wind and solar projects, battery plants, etc. Clean energy and climate portions of the IRA were estimated to cost $392 billion between 2022 and 2031—$271 billion for tax credits and $121 billion on direct spending.[6]

These federal clean energy investments have stimulated growth nationally. In the latest Clean Investment Monitor update, Rhodium/MIT found that between 2022 (Q3) and 2024 (Q4), the public and private sector invested $289 billion in the construction and installation of facilities that manufacture and deploy clean technologies nationally, and as a result of this investment 2,034 new facilities have opened across the U.S. during this time. Even more projects, facilities, and jobs are in the pipeline. Counting facilities announced or under construction but not yet in operation, an additional $524 billion in outstanding investments remain to be spent nationally on the construction and installation of facilities, tied to 2,189 planned facilities.[7]

Continued federal funding and investment in the clean energy economy is vital to ensuring these projects and more in the future are realized, which will benefit communities across the United States and Appalachia. Yet, these funds are at risk. President Trump has made it clear that he wants to repeal the Inflation Reduction Act and pivot away from renewable energy and towards fossil fuels.[8] Some Republicans who see benefits from clean energy grants and tax credits within their districts have pushed back against the Trump Administration's plans, as have some business leaders.[9]

5 In this data, the tracking of actual clean energy investment goes back to 2018 and the tracking of federal funding of clean energy goes back to 2022.
6 Rki Fujii-Ranjani and Sanjay Patnaik, "What will happen to the Inflation Reduction Act under a Republican trifecta." Brookings Institute, January 6, 2025. Online at: https://www.brookings.edu/articles/what-will-happen-to-the-inflation-reduction-act-under-a-republican-trifecta/
7 Lily Bermel, E. Chan, Ryan Cummings, et. al. "Clean Investment Monitor: Q4 2024 Update." Rhodium Group and MIT CEEPR, February 24, 2025. Online at: https://www.cleaninvestmentmonitor.org/reports/clean-investment-monitor-q4-2024-update
8 See: Felicity Bradstock, "Renewable Energy Fights for Relevance in Trump's America." OilPrice.com , March 23, 2025. Online at: https://oilprice.com/Energy/Energy-General/Renewable-Energy-Fights-for-Relevance-in-Trumps-America.html.
9 David Gelles, "The Republicans Pushing Trump to Save Biden's Clean Energy Tax Credits." New York Times, March 17, 2025. Online at: https://www.nytimes.com/2025/03/17/climate/biden-clean-energy-tax-credits-trump.html

WHAT DOES THE RHODIUM/MIT CLEAN INVESTMENT MONITOR TRACK?

The Rhodium/MIT (full name, Rhodium Group-MIT/Center for Energy and Environmental Policy Research (CEEPR)) Clean Investment Monitor (CIM) tracks public and private investments in the manufacture and deployment of technologies that reduce greenhouse gas emissions in the United States. This includes *the manufacturing of emission-reducing technologies*: e.g., technologies related to solar, wind, batteries, critical minerals, zero emissions vehicles, electrolyzers, and fueling equipment (EV charging equipment). Rhodium-MIT also count investments in *the deployment of technologies* that reduce greenhouse gas emissions (deployment includes producing clean energy or decarbonizing industrial production): e.g., solar, wind, nuclear, other clean electricity, storage, hydrogen, carbon management, sustainable aviation fuels, clean fuels, cement, iron and steel, and pulp and paper. The Clean Investment Monitor also tracks investments in the *retail purchase of greenhouse-gas reducing technologies by households and businesses* including zero emissions vehicles, heat pumps and distributed electricity and storage (solar, wind, hydro, fuel cells, and storage). The CIM tracks technologies that are eligible for tax incentives under the Inflation Reduction Act. But, it's important to note that some technologies are also eligible for incentives under other federal legislation. This project tracks *all* public and private investments in the covered technology categories.

The Rhodium Group and MIT-CEEPR have a higher bar for including projects in their data than some other groups who collect data on the clean energy economy. While other data may include all announced projects, the CIM will only include announced projects once there is a clear location and timeline, or, in the case of larger projects, when Front-end Engineering Design (FEED) work has begun. Actual investment, reported as actual dollars spent in a quarter, is not calculated until a project has broken ground.

This report examines this clean investment data from the Rhodium Group-MIT/CEEPR for our four Appalachian states - Kentucky, Ohio, Pennsylvania, and West Virginia. It is important to note that the MIT/Rhodium data do not capture substantial federal funds from the lUJA, IRA, and CHIPS+ that benefit our communities because these funds fall outside these researchers' definition of clean energy investments, defined broadly as "the manufacture and deployment of technologies that reduce greenhouse gas emissions." For example, federal funds that support workforce development and some economic development programs in the clean energy sector through the IIJA, IRA, and CHIPS are not part of the dataset analyzed in this report.

Federal Investments in Clean Energy Have Led to Significant Increases in Private Investments in Appalachia

Federal Investments

The Clean Investment Monitor data show that, nationally, federal investments in the manufacture and deployment of clean energy and transportation technologies totaled about $128 billion between 2022 (quarter 1) and 2024 (quarter 4) in the form of tax credits, grants, loans, and loan guarantees.[10] As table 1 shows, the majority of this federal investment—over 90%—was in the form of tax credits. The clean electricity tax credit, the advanced manufacturing tax credit, the zero emission vehicle tax credit, and the residential energy and efficiency tax credit make up the vast majority (87%) of the federal investments in clean energy.[11]

Table 1

Federal investment in the U.S. in clean energy and clean energy manufacturing, 2022 through 2024*

Segment	Federal Investments	Total Federal Investments	Share of Total Federal Investments (%)
Energy and Industry	Clean Electricity Tax Credits	$46,092	36%
	Emerging Climate Technology Tax Credits	$1,962	2%
Manufacturing	Advanced Manufacturing Tax Credits	$22,917	18%
Retail	Zero Emission Vehicle Tax Credits	$21,368	17%
	Non-residential Distributed Energy Tax Credits	$2,973	2%
	Residential Energy & Efficiency Tax Credits	$20,672	16%
Various	Grants, Loans, and Loan Guarantees	$11,662	9%
Total, All Tax Credits		$115,949	91%
Total		$127,612	

*Investments are shown in 2023 millions of U.S. Dollars meaning dollar amounts for 2022 and 2024 are adjusted for inflation from 2022 to 2023 and 2023 to 2024, respectively. This adjustment increases the 2022 dollar figure and slightly decreases the 2024 dollar figure, ensuring that the growth shown is in "real dollars" and not exaggerated because of rising prices.

Source: Keystone Research Center analysis of Rhodium Group-MIT/CEEPR Clean Investment Monitor, via the bulk data download: https://www.cleaninvestmentmonitor.org/

10 The Rhodium Group-MIT/CEEPR Clean Investment Monitor does not break down this level of detail by state, so here we show the investments nationally to give the reader a sense of which programs are providing the most investment. The federal investment data begins in the first quarter of 2022 and goes until the fourth quarter of 2024 (most recent data).

11 More information about these tax credits and grants and loans can be found in the Clean Investment Monitor methodology: https://cdn.prod.website-files.com/64e31ae6c5fd44b10ff4058f/674f5a00ea2094069b46661b_The%20Clean%20Investment%20Monitor_Methodology.pdf. The grants and loans are primarily from the IRA and IIJA and can be found in Appendix A of the Clean Investment Monitor methodology.

EXAMPLE 1

IMPACT OF FEDERAL FUNDING FOR CLEAN ENERGY PROJECTS IN APPALACHIA

Cleveland-Cliffs Corporation in Middletown, OH

Project: With the help of the Inflation Reduction Act, Cleveland-Cliffs will be able to replace its old blast furnace with two Electric Melting Furnaces (EMF) as well as a Hydrogen-Ready Direct Reduced Iron (DRI) Plant. This project plans to demonstrate hydrogen-based ironmaking technology enabling Cleveland-Cliffs to further decarbonize rolled steel products for its customers in the U.S. automotive industry. The upgrades at the Middletown Works facility in Southwest Ohio allow the company to significantly cut emissions and production costs, with an estimated $450 million in annual savings. Also, this investment will secure 2,500 jobs at Middletown Works, where the unionized workforce is represented by the International Association of Machinists and Aerospace Workers. The flex-fuel DRI plant and electric melting furnaces will create 170 additional jobs; 1,200 building trades jobs will be created during peak construction. Cleveland-Cliffs plans to engage community and labor stakeholders during the project and to make plans for workforce development, quality jobs, maximizing project benefits, and minimizing or mitigating any potential negative impacts.

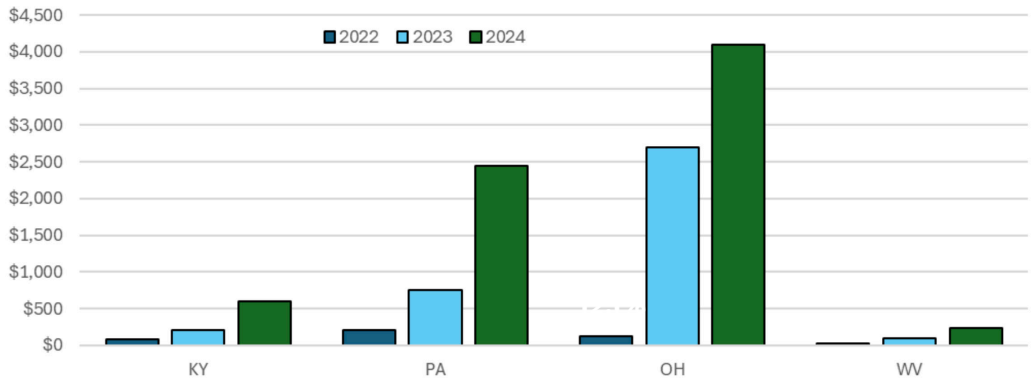
IRA funding: $500 million through the DOE's Industrial Demonstrations Program
District: 8th OH congressional district, House of Representative member: Warren Davidson (R)
Jobs: 170 new permanent jobs, 1,200 union construction jobs
Union: International Association of Machinists and Aerospace Workers (IAM)

Photo Credit: Nick Graham, Journal News website, retrieved March 11, 2025

As figure 1 and table 2 below show, federal investments in clean energy via the IRA and IIJA in all four of our Appalachian states have increased significantly between 2022 and 2024. Ohio saw the most dramatic increase—3,440%—meaning federal investment in 2024 equaled 35 times its level in 2022. As table 2 shows, our region as a whole saw an increase of federal clean energy funding of over 1,600% (or 17-fold) between 2022 and 2024, from $422 million to nearly $7.4 billion. Between 2022 and 2024, federal clean energy investments to our four states totaled over $11.5 billion.

Figure 1

Federal investments in clean energy have grown significantly in all four Appalachian states between 2022 and 2024, in millions of 2023 USD



Source: Keystone Research Center analysis of Rhodium Group-MIT/CEEPR Clean Investment Monitor, via the bulk data download: https://www.cleaninvestmentmonitor.org/

Table 2

Federal investment in clean energy in KY, PA, OH, WV, 2022 to 2024, in 2023 million U.S. dollars

	2022	2023	2024	Total	Percent Increase from 2022 to 2024
KY	$74	$203	$594	**$872**	**705%**
PA	$203	$751	$2,443	**$3,396**	**1106%**
OH	$116	$2,690	$4,095	**$6,901**	**3440%**
WV	$30	$89	$235	**$353**	**689%**
Total	**$422**	**$3,733**	**$7,367**	**$11,521**	**1646%**

Source: Keystone Research Center analysis of Rhodium Group-MIT/CEEPR Clean Investment Monitor, via the bulk data download: https://www.cleaninvestmentmonitor.org/

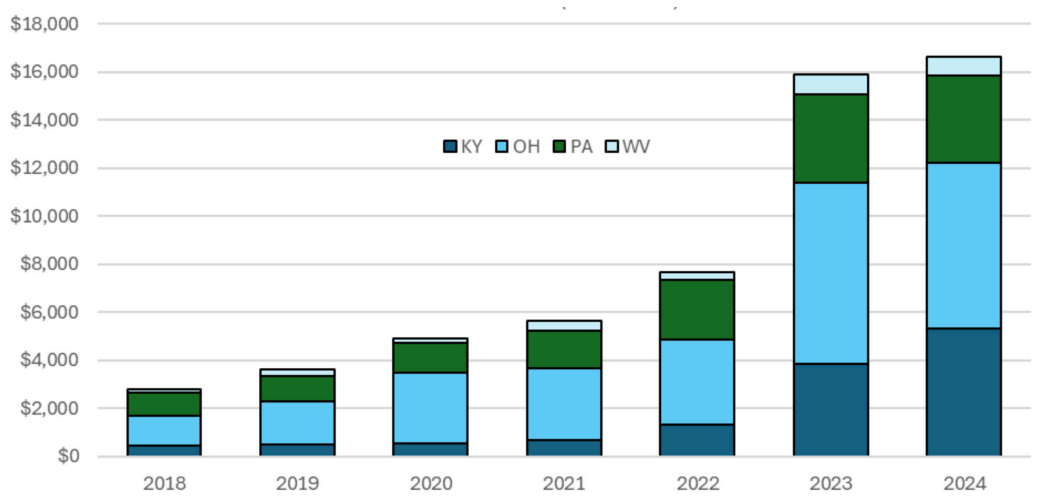
Private plus federal clean energy investment in our region doubled between 2022 and 2023

Federal investments in clean energy have spurred increases in total actual clean energy investments (private-led investments supported by federal incentives).[12] Figure 2 shows that actual clean energy investments more than doubled between 2022 and 2023, from $7.7 billion to nearly $15.9 billion. This upward trend in investment continued in 2024, although not to the same extent.[13]

Figure 2

The Appalachian region saw clean energy investment double between 2022 and 2023 and continue to grow in 2024

Estimated actual clean energy investments* in Kentucky, Ohio, Pennsylvania, West Virginia, 2018 to 2024 (in millions)



***Actual clean energy investments include both public and private investments.**

Source: Keystone Research Center analysis of Rhodium Group-MIT/CEEPR Clean Investment Monitor, via the bulk data download: https://www.cleaninvestmentmonitor.org/

The $11.5 billion in federal investment in our four states from 2022 to 2024 represents a relatively small share of total investment of just over $40 billion tracked in the Clean Investment Monitor over the same period—with private investment in clean energy technologies somewhere between 3 and 4 times larger than that of public investment. The majority of capital invested in clean energy is coming from private sources, which are incentivized by federal tax credits, grants, loans and loan guarantees.

12 Actual clean energy investments is calculated by the Rhodium Group/MIT CEEPR as the real dollars spent during each quarter on retail purchases or new facility construction once a project has moved forward into construction and installation.
13 This figure includes data on the manufacturing and deployment of technologies, as well as the retail purchases of greenhouse gas reducing technologies (ZEVs, heat pumps, distributed electricity) by households and businesses.

EXAMPLE 2

IMPACT OF FEDERAL FUNDING FOR CLEAN ENERGY PROJECTS IN APPALACHIA

Form Energy in Weirton, WV

Project: On the historic site of the former Weirton Steel Corporation, Form Energy completed phase one of its first iron-air battery production facility with the prospect of bringing hundreds of new manufacturing jobs to the Ohio River Valley. Form Factory 1 started trial production in July 2024 and currently has over 300 employees. Thanks to private investments and federal funding support of up to $150 million, Form Energy plans to expand its facility, scale up production, and employ 750 people by 2028. The company has a community benefits agreement with the city of Weirton investing in external and internal educational programs to train and support local workers. Partners include the West Virginia Northern Community College, the John D. Rockefeller IV Career Center as well as the Community Foundation of the Ohio Valley.

IIJA funding: DOE's Battery Materials Processing and Battery Manufacturing program, up to $150 million
District: 2nd WV congressional district, House of Representative member: Riley Moore (R)
Jobs: 750 jobs projected by 2028
Union: The construction of the factory was mostly done by unionized labor

Photo Credit: Form Energy website, retrieved March 7, 2025

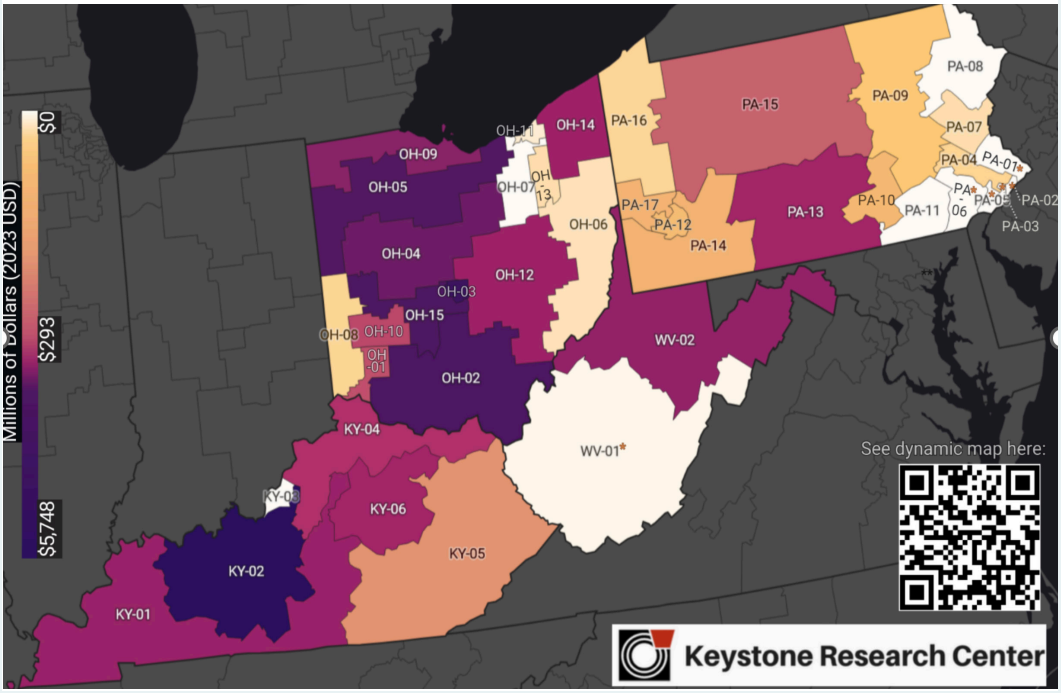
Federal Climate Infrastructure Investments Specifically Targeted Coal Country and Are Now Benefiting Communities Across Our Region

Map 1 below shows where the clean energy investments have gone in our four Appalachian states between 2022 and 2024.[14] These data only include projects that have gone beyond the "announced" stage, and on to breaking ground (construction or operation). These calculations of actual investments are calculated by the CIM researchers, based on the estimated real dollars spent during each quarter on retail purchases or new facility construction.[15] So, once a project has broken ground, the CIM tracks actual investment in its construction and equipment. For map 1, we calculate the total estimated spending between quarter 1 of 2022 and quarter 4 of 2024. The dark purple areas are where the most investments have gone. As you can see, Kentucky's Congressional District 2 saw the most funding in the region—Rep. Brett Guthrie's district received an estimated $5.7 billion of investments over the last three years. Rep. Joyce Beatty's Ohio Congressional District 3 saw the next largest investment—an estimated $3.6 billion.

Map 1

Clean Investments by Congressional District in KY, OH, PA and WV, 2022-2024

Estimated Actual Expenditures in 2023 USD, Shown in Millions



Map: Keystone Research Center **Source:** Rhodium Group-MIT/CEEPR Clean Investment Monitor | Created with Datawrapper

*See page below for more information on the starred Congressional districts.

To view an interactive map, go to: https://datawrapper.dwcdn.net/r6mmA/20/

14 This data, at the Congressional district level, includes only data on the manufacturing and deployment of greenhouse gas reducing technologies (and does not include the "retail" segment – that is the retail purchases of greenhouse-gas reducing technologies by households and businesses).
15The Rhodium Group-MIT/CEEPR estimate actual investment by distributing the total investment proportionally over the construction window. This is based on either reported completion time when it is available, or modeled completion time based on the average of past investments in that particular technology category. For more on their methodology, see: https://cdn.prod.website-files.com/64e31ae6c5fd44b10ff4058f/674f5a00ea2094069b46661b_The%20Clean%20Investment%20Monitor_Methodology.pdf

ALL CONGRESSIONAL DISTRICTS BENEFIT FROM FEDERAL CLIMATE INVESTMENTS

Most Congressional Districts in map 1 received federal and private clean energy investment from 2022 to 2024 according to the Clean Investment Monitor database. The few districts with light/white shading, however, received little or no funding of the kind captured by that map. Funding and projects not included in that map suggest, nonetheless, that all CDs have benefited and will benefit from those investments. The overall boost to regional economies from clean investments also spreads the benefits beyond the CDs that receive any particular project.

Funding not shown in the first map includes "retail investments" in purchases of greenhouse-gas reducing technologies by businesses and households (EVs, heat pumps, distributed electricity). (These investments could not be included in the first map because researchers had had no data which they could use to break this category down to CDs within states.) Relatively affluent areas, such as the Congressional Districts clustered in the Philadelphia suburbs in Southeast Pennsylvania, likely purchase these technologies at relatively high rates.

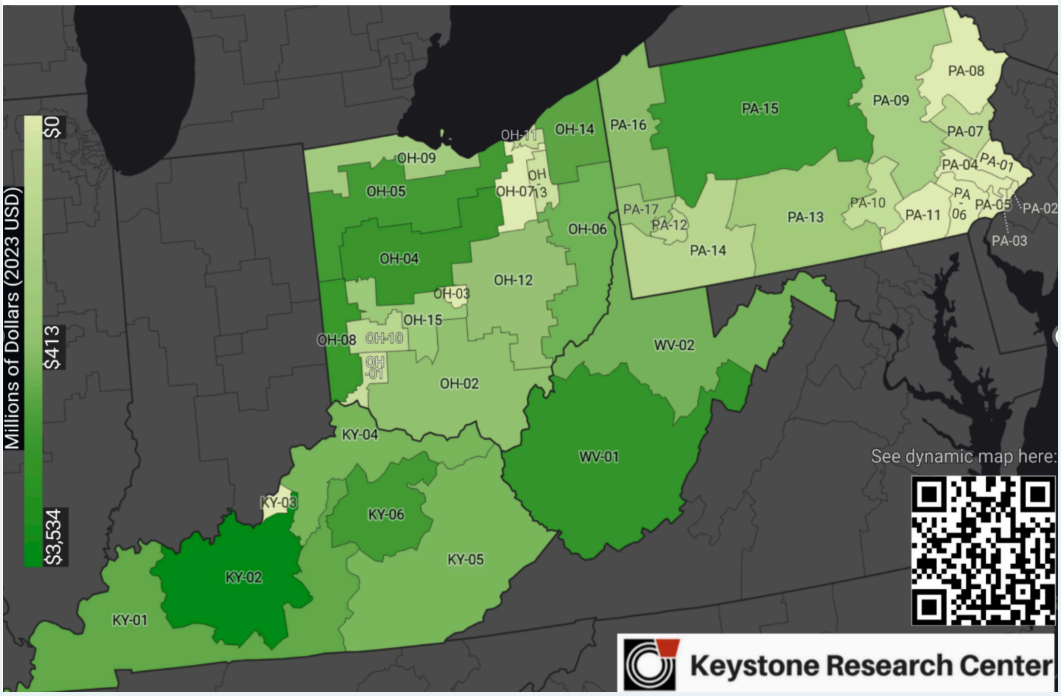
Our second map (below) shows another category of funding not in our first map, "outstanding" clean investments still in the pipeline. West Virginia Congressional District 1 is projected to receive $2.1 billion investment in two hydrogen projects that have been announced but not yet broken ground. This reflects the intent of the federal legislation to target coal country.

In Southeast Pennsylvania, a database created by the Blue-Green Alliance and shared with the authors shows 24 additional projects in SE Pennsylvania (PA CDs 1-6) that should be eligible for IRA tax credits. These include projects at 17 operating private companies, 13 in manufacturing; four public building projects; and three industrial and energy storage projects. Southeast Pennsylvania also has its own hydrogen hub project which could receive up to $750 million in multiple sites in SE PA, New Jersey, and Delaware.[16] In a future report, Keystone Research Center will dig more deeply into all the projects in SE PA eligible for IRA tax credits.

16 Susan Phillips, "Philly-area MACH2 hydrogen 'hub' gets greenlight from Biden administration," WHYY, January 17, 2025; https://whyy.org/articles/philadelphia-area-mach2-hydrogen-hub-federal-funding/. Recent press reports raise questions about Mach2's funding: see, for example, Sophia Schmidt, "Philly area's MACH2 hydrogen hub funding could be on the chopping block, according to a report," WHYY, Mar. 27, 2025; https://whyy.org/articles/philly-mach2-hydrogen-hub-funding/.

Map 2 shows the geographic distribution of the outstanding investments, which are announced or estimated capital investments not yet made as of Dec. 31, 2024 for manufacturing, utility electricity, and industrial facilities. As you can see, some Congressional districts that appear to have received little clean energy and manufacturing investments between 2022-24 (like West Virginia's CD01) have announced or existing projects that are expected to bring substantial investments moving forward.

Map 2



Map: Keystone Research Center **Source:** Rhodium Group-MIT/CEEPR Clean Investment Monitor | Created with Datawrapper

To view an interactive map, go to: https://datawrapper.dwcdn.net/FxGz8/3/

Table 3 contains the underlying data used to create map 1 and 2 above. Map 1 was created from the column titled "Estimated Actual Expenditure." As you can see, clean energy and manufacturing investments have impacted communities across the four Appalachian states. Twenty-seven Republican districts have seen an estimated $18 billion in investments between 2022 and 2024, while 13 Democratic districts saw an estimated $5.2 billion. Overall, the region saw more than $23.2 billion in actual clean energy and manufacturing spending between 2022 and 2024.

Also included in table 3, are "Outstanding Investments;" these are announced or estimated capital investments not yet made as of Dec. 31, 2024. While actual investment between 2022 and 2024 has been substantial, there is even more investment to come for clean energy projects in the pipeline—a total of nearly $23.7 billion, $22.7 billion of which would go to Republican-led congressional districts. Given the boost that these projects provide to state and sub-state regional economies, every district, even those with little or no projects identified to date by Rhodium/MIT, will benefit from the growing clean energy economy.

Table 3

Actual clean energy and manufacturing expenditures by congressional district in PA, OH, KY, WV, 2022 Q1 through 2024 Q4

State and congressional district	US Representative	Party	Estimated Actual Expenditure** (2023 USD)	Outstanding Investments*** (2023 USD)
KY-01	James Comer Jr.	Republican	$905,542,577	$1,130,027,628
KY-02	Brett Guthrie	Republican	$5,742,750,466	$3,534,175,773
KY-03	Morgan McGarvey	Democratic	$0	$0
KY-04	Thomas Massie	Republican	$379,515,750	$801,637,993
KY-05	Hal Rogers	Republican	$194,209,693	$762,787,240
KY-06	Andy Barr	Republican	$753,648,486	$1,585,243,282
OH-01	Greg Landsman	Democratic	$293,451,524	$64,926,768
OH-02	Brad Wenstrup*	Republican	$1,817,737,081	$412,681,975
OH-03	Joyce Beatty	Democratic	$3,641,299,455	$0
OH-04	Jim Jordan	Republican	$1,197,483,527	$1,918,880,521
OH-05	Bob Latta	Republican	$1,250,577,116	$1,580,024,972
OH-06	Michael Rulli	Republican	$5,461,861	$901,285,174
OH-07	Max Miller	Republican	$0	$0
OH-08	Warren Davidson	Republican	$27,540,629	$1,763,456,047
OH-09	Marcy Kaptur	Democratic	$1,074,609,830	$292,748,645
OH-10	Mike Turner	Republican	$323,212,950	$153,951,432
OH-11	Shontel Brown	Democratic	$2,978,635	$90,575,976
OH-12	Troy Balderson	Republican	$847,188,528	$398294704
OH-13	Emilia Sykes	Democratic	$5,650,119	$58,781,868
OH-14	David Joyce	Republican	$802,641,023	$1,214,290,335
OH-15	Mike Carey	Republican	$1,428,595,054	$326,106,959
PA-01	Brian Fitzpatrick	Republican	$0	$0
PA-02	Brendan Boyle	Democratic	$0	$0
PA-03	Dwight Evans	Democratic	$0	$0
PA-04	Madeleine Dean	Democratic	$29,737,470	$0
PA-05	Mary Gay Scanlon	Democratic	$0	$0
PA-06	Chrissy Houlahan	Democratic	$0	$0
PA-07	Ryan Mackenzie	Republican	$6,036,354	$128,456,560
PA-08	Rob Brenahan	Republican	$0	$0
PA-09	Dan Meuser	Republican	$58,286,191	$262,413,391
PA-10	Scott Perry	Republican	$83,044,864	$83,279,676
PA-11	Lloyd Smucker	Republican	$0	$0
PA-12	Summer Lee	Democratic	$75,137,944	$135,137,692
PA-13	John Joyce	Republican	$753,975,484	$313,937,955
PA-14	Guy Reschenthaler	Republican	$106,042,401	$180,672,024
PA-15	Glenn Thompson	Republican	$268,752,082	$1,713,033,050
PA-16	Mike Kelly	Republican	$27,421,551	$558,271,832
PA-17	Chris Deluzio	Democratic	$101,286,404	$338,490,457
WV-01	Carol Miller	Republican	$1,130,299	$2,123,151,460
WV-02	Alexander Mooney*	Republican	$998,372,034	$8,43,061,331
Total Democratic			**$5,224,151,381**	**$980,661,406**
Total Republican			**$17,979,166,001**	**$22,689,121,314**
Total			**$23,203,317,382**	**$23,669,782,720**

***Representative changed in 2025. ****Estimate Actual Expenditures are calculated by the Rhodium Group-MIT/CEEPR researchers based on the estimated real dollars spent during each quarter on retail purchases or new facility construction. *****Outstanding investment is the amount of investment not yet spent as of Dec. 31, 2024, based on announced or estimated overnight capital cost for manufacturing, utility electricity, and industrial facilities. **Source:** Keystone Research Center analysis of Rhodium Group-MIT/CEEPR Clean Investment Monitor, via the bulk data download: https://www.cleaninvestmentmonitor.org/

EXAMPLE 3

IMPACT OF FEDERAL FUNDING FOR CLEAN ENERGY PROJECTS IN APPALACHIA

Eos Energy Enterprises, Inc. in Turtle Creek, PA (Pittsburgh)

Project: With the support of a $303.5 million loan guarantee issued by the Department of Energy, Eos will expand its battery manufacturing facility in Southwest Pennsylvania enabling them to produce enough stationary batteries per year to cover the annual electricity needs of approximately 130,000 homes. Two state-of-the-art production lines will produce "Eos Z3™," which is a next-generation utility- and industrial-scale zinc-bromine battery energy storage system (BESS). Eos moved its manufacturing operation back to the U.S. in 2019 and currently employs over 250 people at its Turtle Creek location. With the expansion, the company expects to maintain and create up to 1,000 temporary and permanent jobs, including numerous apprenticeship opportunities through Eos' Clean Energy Careers Program. The program is part of Eos' community benefits plan which strengthens the company's partnership with high schools, trade schools and workforce development programs to grow a strong local workforce.

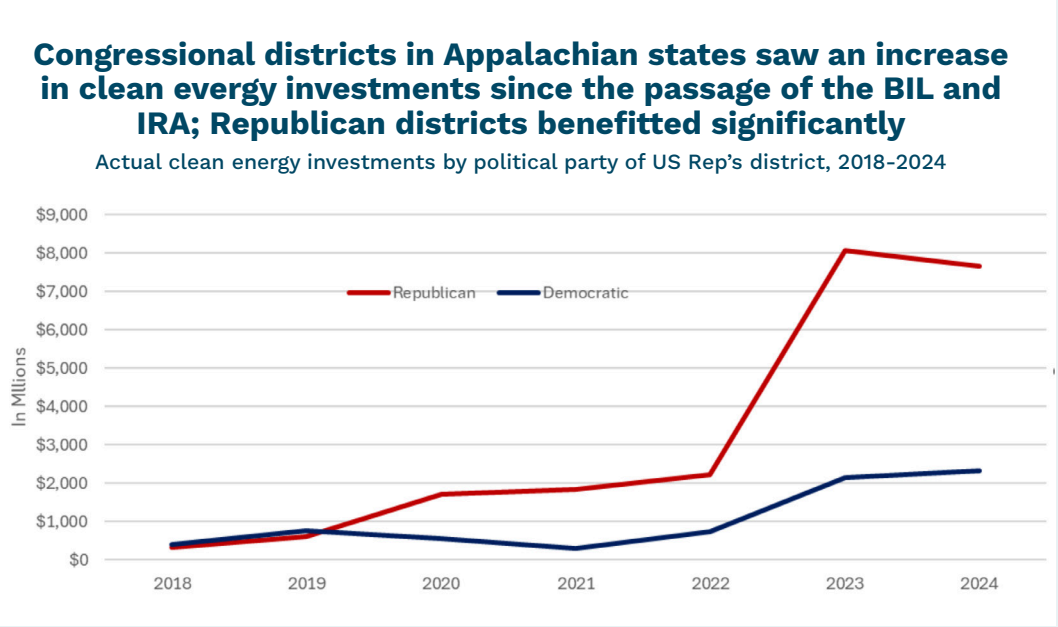
IRA funding: Department of Energy's LPO's Title 17 Clean Energy Financing Program, $303.5 million in loan guarantees
District: 12th PA congressional district, House of Representative member: Summer Lee (D)
Jobs: 1,000 projected new jobs, salaried as well as well-paid manufacturing employment
Union: United Steelworkers

Photo Credit: Eos Enterprises, Inc. website, retrieved March 10, 2025

Climate Infrastructure Investment Has a Bipartisan Impact

Both parties have benefited from and have a stake in maintaining these clean energy and manufacturing funds. Figure 3 below shows clean investments already made (i.e., these do not include the "outstanding" investments in the previous table) in communities in Pennsylvania, Ohio, Kentucky, and West Virginia with Republican and Democratic U.S. representatives. In 2018 and 2019, clean energy investments similarly benefited Republican and Democratic districts. Between 2020 and 2022, Republican districts benefited slightly more than Democratic districts. In 2023, the first year with the IRA and IIJA both in place (then-President Biden signed the IRA August 16, 2022), Republican districts saw a huge uptick in clean energy investments, increasing from $2.2 billion in 2022 to $8.1 billion in 2023. Democratic districts saw an increase from $741 million to $2.1 billion during the same time period.

Figure 3



Source: Keystone Research Center analysis of Rhodium Group-MIT/CEEPR Clean Investment Monitor, via the bulk data download: https://www.cleaninvestmentmonitor.org/

In fact, 77% of clean investments made in our region since Q1 of 2022 went to Republican Congressional districts in our four Appalachian states. Republicans represent 68% of the four state's Congressional districts (and roughly the same percentage of the population because Congressional districts, by design, have exactly equal populations at the start of the Congressional redistricting at the beginning of each decade).[17]

17 As of 2024 Q3, Republican Congressional districts represented by Republicans are as follows for the four states: PA: 59% (10 Republican districts/17 total districts); OH: 67% (10/15); KY: 83% (5/6); WV: 100% (2/2). [Note: in January 2025, two new Congressional representatives were sworn in, but this did not change the political party distribution.]

EXAMPLE 4

IMPACT OF FEDERAL FUNDING FOR CLEAN ENERGY PROJECTS IN APPALACHIA

Lock 9, 10, 11, and 13 Hydro Partners LLC at various locations, KY

Project: With the support of the Inflation Reduction Act, four hydroelectric plants along the Kentucky River are slated to help make clean energy more affordable for homeowners and business owners in this rural region. The projects are being built by a partnership between the hydropower company Appalachian Hydro Associates and Berea College. Thanks to more than $72 million in federal funding, the four run-of-river hydroelectric plants will be realized in Jessamine County (Lock 9), in Madison County (Lock 10), in Estill County (Lock 11) and in Lee County (Lock 13). Combined, the plants are expected to generate about 12 megawatts of energy, enough to power about 6,400 homes. Kentucky Governor Andy Beshear praised the investment. “Many of the jobs of new energy didn’t go into the places that produced the older energy. We’re turning that around today,” Beshear said. “We are creating energy jobs in eastern Kentucky that are going to be built by Kentuckians.”

IRA funding: $ 72 million through the USDA Powering Affordable Clean Energy (PACE) program
District: 5th KY congressional district, House of Representative member: Hal Rogers (R), 6th KY congressional district, House of Representative member: Andy Barr (R)
Locations: Estill County, Jessamine County, Lee County, Madison County

Photo Credit: Silas Walker, Lexington Herald Leader website, retrieved March 19, 2025

Conclusion

Funding from the Inflation Reduction Act and the Infrastructure Investment and Jobs Act has been making its way into Appalachian coal country over the past three years, bringing much-needed investment and job creation into communities across Pennsylvania, Ohio, Kentucky, and West Virginia. These investments are expanding or creating new factories, deepening local supply chains, and leading to new jobs in the clean energy economy in our region. In communities hard hit by the loss of manufacturing and extractive jobs in the past, these new investments have been providing a much-needed boost to our communities and businesses. They have begun to create a sense of optimism about the possibility of the region becoming a leader in the clean economy of the future just as many parts of the region led the energy and mass manufacturing sectors of the past.

While constituents have already begun to benefit from these investments, federal funding for clean energy is at risk. Bipartisan Congressional support for maintaining the Inflation Reduction Act and Infrastructure Investment and Jobs Act is vital to ensure that new regional momentum won't be lost, and that we can build a brighter future for Appalachian coal country.

Stay tuned for additional research on how federal funding has impacted our region.