

# **Potential Reconciliation Climate Policies: An Economic Impact Analysis Report**

## **Pennsylvania**

PRODUCED FOR THE NATURE CONSERVANCY (TNC)



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## Introduction

The Nature Conservancy (TNC) commissioned BW Research to conduct a study identifying the estimated economic impacts of the climate policies being discussed as part of reconciliation legislation. This analysis is an effort to understand how investments into activities that mitigate climate change and advance clean energy can support jobs, increase worker earnings, and generate tax revenues.

Senate discussions on a potential reconciliation framework have focused in part on a sweeping set of climate and clean energy investments passed by the House in November 2021. These provisions would significantly contribute to cutting emissions by 50% below 2005 levels by 2030 and would put the United States squarely on a pathway to meeting its commitments under the Paris Agreement.<sup>1</sup> In addition to pushing forward fast, far-reaching climate action, these investments will also result in significant job gains across many policy groups of the nation's economy, including construction, manufacturing, professional services, and agriculture and forestry.

This research into our nation's climate and clean energy economy analyzes \$412 billion of the \$555 billion total climate investment passed by the House that we were reasonably able to model and that would have a notable impact on reducing greenhouse gas emissions, providing economic benefits, and enhancing equity. The selected investments captured in this analysis focus on renewable energy technologies, energy efficiency, alternative transportation, grid infrastructure, clean fuel and industrial processes, sustainable agriculture and forestry, local community investments, and environmental justice.

As consumers face the worst inflation in decades and skyrocketing fuel prices, concerns have been raised over further government investments fueling inflationary trends; however, evidence suggests that investments into clean energy decrease energy costs, potentially countering some inflationary pressures. A recent report by RMI details how clean energy tax credits, the same measures included in the Power policy group analysis in this report, could help save Americans nearly \$5 billion in electricity costs by 2024.<sup>2</sup> Investments in these climate policies can combat climate change and ease the burden of inflation on consumers.

The following report highlights the specific economic impacts of climate policy investments over the next 10 years through value added, earnings, tax revenues, and

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<sup>1</sup> Larsen et al., Pathways to Paris: A Policy Assessment of the 2030 US Climate Target, Rhodium Group, October 2021, <https://rhg.com/research/us-climate-policy-2030/>.

<sup>2</sup> Bourgoin et al., Accelerated Clean Energy Development Could Save Americans \$5 billion Annually, Protecting against Inflation and Rising Natural Gas Prices, Rocky Mountain Institute, May 2022, <https://rmi.org/clean-energy-development-could-save-billions/>.

employment by industry, occupation, and impact type. In addition to national level outputs, the report includes details on Pennsylvania to illustrate the range of benefits of federal climate investments that could be felt at a more local level over the next ten years.

For more information on the methodology and assumptions used in this modeling effort, please refer to Appendix B: Modeling Methodology, beginning on page 18.

## Executive Summary

This report analyzes the economic impacts of federal investments in climate policies, including clean energy tax credits, infrastructure investments, transportation and building electrification investments, and reforestation and conservation grants. These policies total over \$412 billion in federal investment and about \$422 billion in total investment over a ten-year period. Impacts are analyzed at the national level, and at the state level for Pennsylvania.

Impacts generated by these climate investments across the United States include:

- Nearly 676,000 jobs supported annually for 10 years (a total of 6,758,900 job-years), or 16.4 jobs per million dollars of federal investment.
- About \$58.1 billion in value added annually for 10 years – \$1.41 for every federal dollar invested.
- Nearly \$31.2 billion generated in employee compensation annually for 10 years.
- More than \$6.2 billion in annual local, state, and federal tax revenue for 10 years.

Impacts generated by the \$12.6 billion in federal climate investments in Pennsylvania include:

- Nearly 23,100 jobs supported annually for 10 years (a total of 230,700 job-years), or 18.3 jobs per million dollars of federal investment.
- More than \$1.9 billion in value added annually for 10 years – \$1.52 for every federal dollar invested.
- About \$1.1 billion generated in employee compensation annually for 10 years.
- Nearly \$178.2 million in annual local, state, and federal tax revenue for 10 years.

## Economic Impact Definitions

Employment and economic impacts for both phases are divided into direct, indirect, and induced effects across the local economy. This section provides an overview of the types of economic impacts discussed in the findings.

- **Direct effects** show the change in the economy associated with the initial job creation and or initial economic activity. For the purposes of this research, direct jobs range from construction workers involved in building and improving the manufacturing facility to sales, administrative and production employees in the O&M phase.
- **Indirect effects** include all the backward linkages or the supply chain responses resulting from the initial direct economic activity. An example of an indirect job added to the local economy would be a new worker at a lumber mill hired to handle the increased demand for construction lumber that results from the initial investment.
- **Induced effects** refer to the effects of increased household spending and are the result of direct and indirect workers spending their wages within the local economy. An example of an induced job would be a local restaurant hiring more staff because construction workers during the construction phase and salespeople during the operations phase have new disposable income and eat at this local restaurant.

Other terms used in this economic impact analysis are:

**Employee Compensation** The total value of monetary paychecks and benefits received by relevant parties.

**Value Added** Gross output less intermediate inputs. This is equivalent to Gross Domestic Product (GDP) for national outputs and Gross State Product (GSP) for state-level outputs. This is the net economic activity generated by the construction or operations of developments, less the cost of input materials to avoid double-counting economic activity.

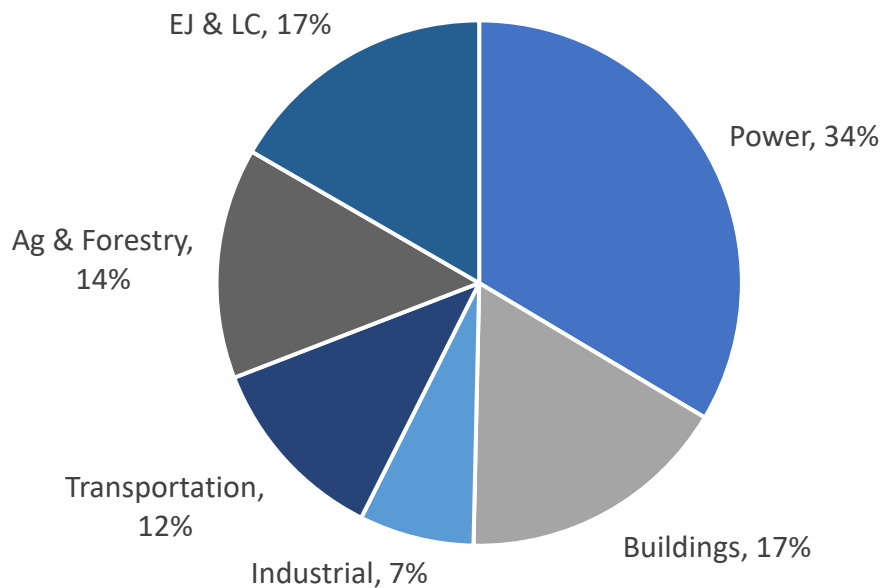
## National Outputs

The climate policies included in the analysis invests about \$412.3 billion in federal funds across the six policy groups included in this analysis: Power, Buildings, Transportation, Industrial, Agriculture & Forestry, and Environmental Justice & Local Communities (EJ & LC). With the addition of leverage funds, the total investment into the United States economy across the ten-year study period comes to more than \$421.6 billion, or \$42 billion annually (Figure 1).

FIGURE 1. TOTAL INVESTMENT BY POLICY GROUP, NATIONAL

Policy Group	Federal Investment (\$billions)	Total Investment (\$billions)
Power	\$137.85	\$141.47
Buildings	\$70.17	\$70.81
Industrial	\$29.80	\$29.80
Transportation	\$45.60	\$49.42
Agriculture & Forestry	\$59.90	\$59.90
EJ & LC	\$68.92	\$70.24
<b>Total Investment</b>	<b>\$412.25</b>	<b>\$421.64</b>

FIGURE 2. TOTAL INVESTMENT DISTRIBUTION BY POLICY GROUP, NATIONAL



This \$42 billion annual investment is estimated to support nearly 676,000 jobs throughout the economy annually for ten years.<sup>3</sup> This is roughly equivalent to the number of jobs in the Telecommunications industry in 2021.<sup>4</sup> Of these 676,000 annual jobs, 323,900 (48%) are a result of the direct investment, and 103,300 jobs (15%) are supported throughout the value chain. The remaining 248,700 jobs (37%) are induced jobs, or jobs supported through the additional economic impact generated by direct and indirect workers spending their paychecks in the local economy. Climate policies included in this analysis also generate more than \$58.1 billion in value added each year for 10 years, or \$581.1 billion total, which represents a 141% return on the original \$412 billion federal investment. This \$58.1 billion in value added is greater than the Gross Domestic Product (GDP) generated by the nation's Clothing and Clothing Accessories Stores industry.<sup>5</sup> Additional impacts generated from the climate policies include \$31.2 billion in annual employee compensation, and \$6.2 billion in annual local, state, and federal tax revenue (Figure 3).

The Agriculture & Forestry policy group shows the strongest response to federal stimulus, with more than 201,200 jobs supported annually for 10 years as a result of \$6 billion invested annually. This is a result of the high job multipliers found in the Agriculture and Forestry industries, a result of lower labor costs and fewer intermediate purchases. The Power policy group follows, with 157,000 jobs supported annually for 10 years by the \$13.8 billion annual federal investment. The Power policy group contributes the most value to the economy, generating about \$16.6 billion in value added each year for 10 years. The Buildings policy group contributes 112,700 jobs annually to the economy as a result of the \$7.0 billion annual federal investment. Combined, these three policy groups represent 70% of annual jobs impacts generated from the climate provisions included in this analysis. The EJ & LC, Transportation, and Industrial policy groups represent the remaining 30%, with 89,300 jobs in EJ & LC, 72,300 jobs in Transportation, and 43,300 jobs in the Industrial policy group annually for 10 years (Figure 4).

**FIGURE 3. ANNUAL IMPACTS BY IMPACT TYPE, NATIONAL, ALL POLICY GROUPS**

	Jobs	Value Added	Employee Compensation	Taxes
<b>Direct</b>	323,895	\$23,052,031,023	\$14,097,253,742	<b>Local</b> \$2,007,705,067
<b>Indirect</b>	103,299	\$14,419,427,179	\$6,984,006,078	<b>State</b> \$1,871,877,590
<b>Induced</b>	248,697	\$20,634,333,371	\$10,099,817,677	<b>Federal</b> \$2,363,544,699
<b>Total</b>	<b>675,891</b>	<b>\$58,105,791,573</b>	<b>\$31,181,077,497</b>	<b>Total</b> <b>\$6,243,127,356</b>

<sup>3</sup> Outputs in this memo are reported in average annual job-years. The 676,000 annual jobs for ten years translates to about 6,758,900 total job-years.

<sup>4</sup> Telecommunications (NAICS 517) employment is 675,385. Data as of 2021Q4, from JobsEQ.

<sup>5</sup> Clothing and Clothing Accessories Stores (NAICS 448) GDP is \$57.4 billion. Data as of 2020, from JobsEQ.

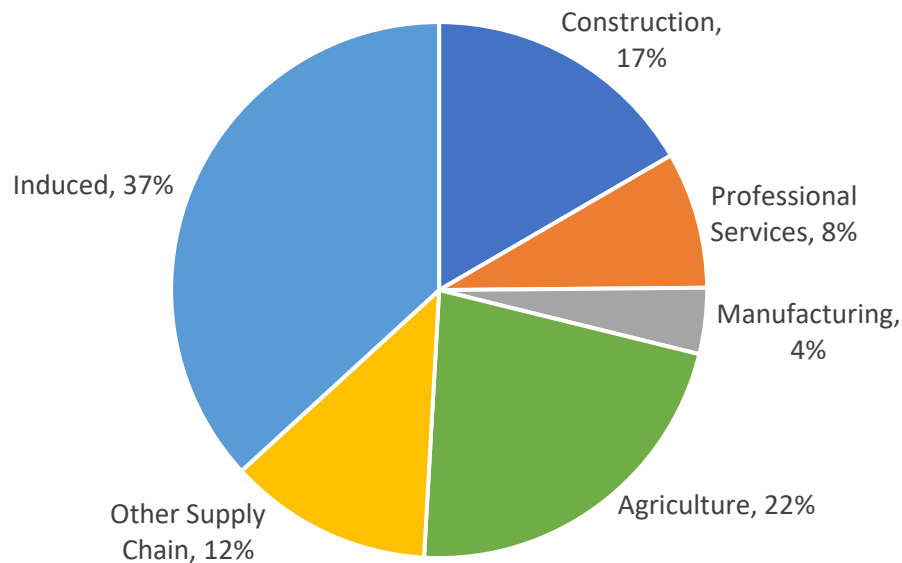


FIGURE 4. TOTAL ANNUAL IMPACTS PER POLICY GROUP, NATIONAL

Policy Group	Jobs	Value Added	Employee Compensation	Taxes
Power	156,995	\$16,578,143,111	\$7,862,997,126	\$2,833,333,729
Buildings	112,725	\$10,532,950,026	\$5,633,856,477	\$619,122,284
Transportation	72,337	\$7,852,158,521	\$4,151,782,268	\$856,581,886
Industrial	43,328	\$4,113,643,318	\$2,283,294,577	\$186,095,961
Agriculture & Forestry	201,193	\$10,157,837,551	\$6,583,074,329	\$635,246,229
EJ & LC	89,313	\$8,871,059,045	\$4,666,072,719	\$1,112,747,267
<b>Total</b>	<b>675,891</b>	<b>\$58,105,791,573</b>	<b>\$31,181,077,497</b>	<b>\$6,243,127,356</b>

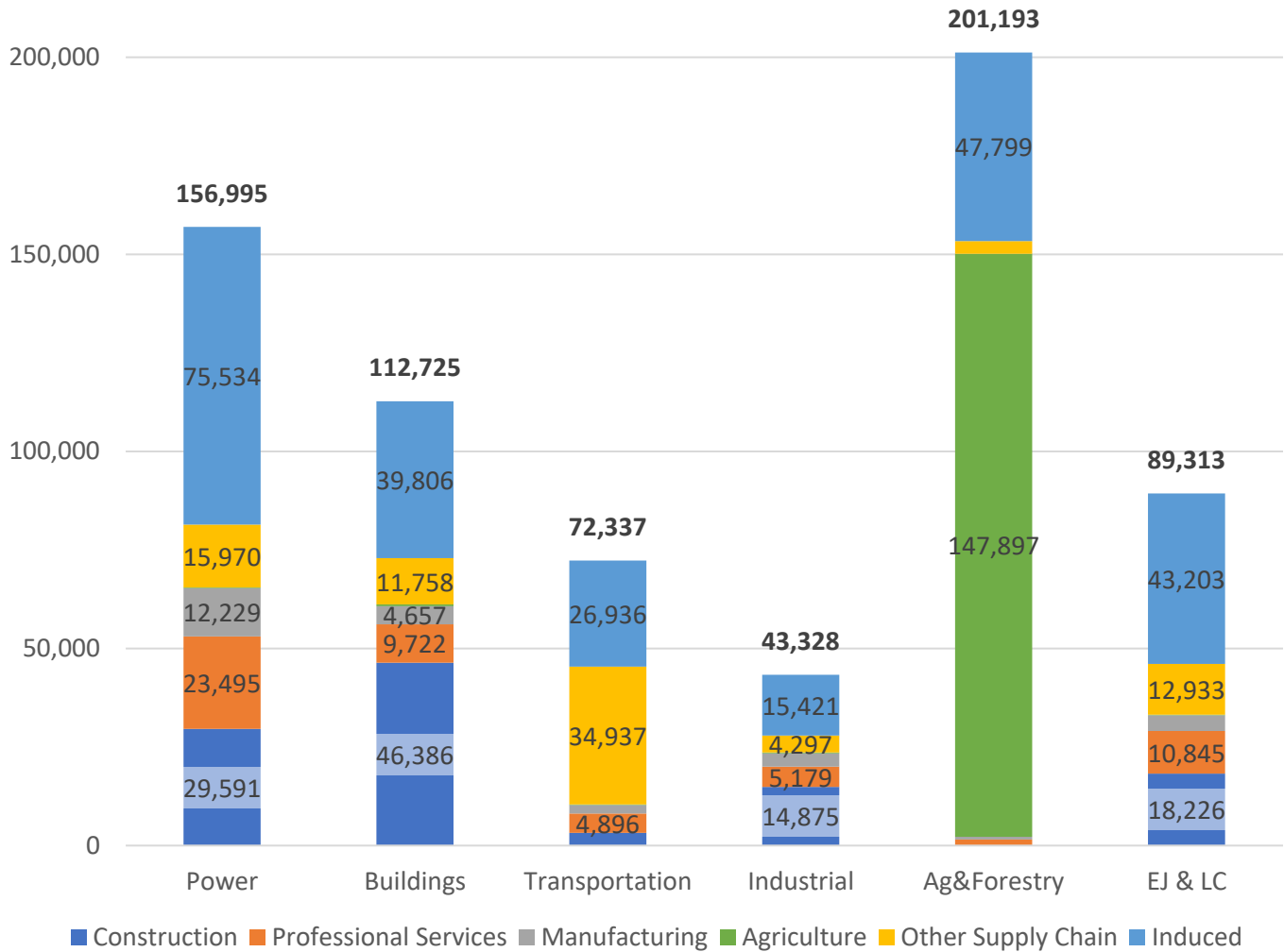
The 676,000 annual jobs are spread across 6 industry categories: construction, professional services, manufacturing, agriculture, other supply chain, and induced.<sup>6</sup> The agriculture industry makes up about 22% of total employment impacts, due to the significant jobs impacts found in the Agriculture & Forestry policy group. Construction follows, representing 17% of total jobs impacts, while other supply chain industries make up 12%. The professional services category represents 8% and manufacturing makes up 4% of total jobs supported. Jobs found in induced industries, or throughout the general economy, represent the remaining 37% (Figure 5). The Buildings policy group accounts for more than 41% the construction jobs created by these policies. The Power policy group accounts for about 42% of professional services and 45% of manufacturing jobs supported from climate policies. The Transportation policy group accounts for about 42% of other supply chain jobs (Figure 6).

FIGURE 5. TOTAL JOBS BY INDUSTRY, NATIONAL



<sup>6</sup> Other Supply Chain includes employment in the Retail and Wholesale Trade, Transportation, and Utilities industries.

FIGURE 6. INDUSTRY JOBS BY POLICY GROUP, NATIONAL



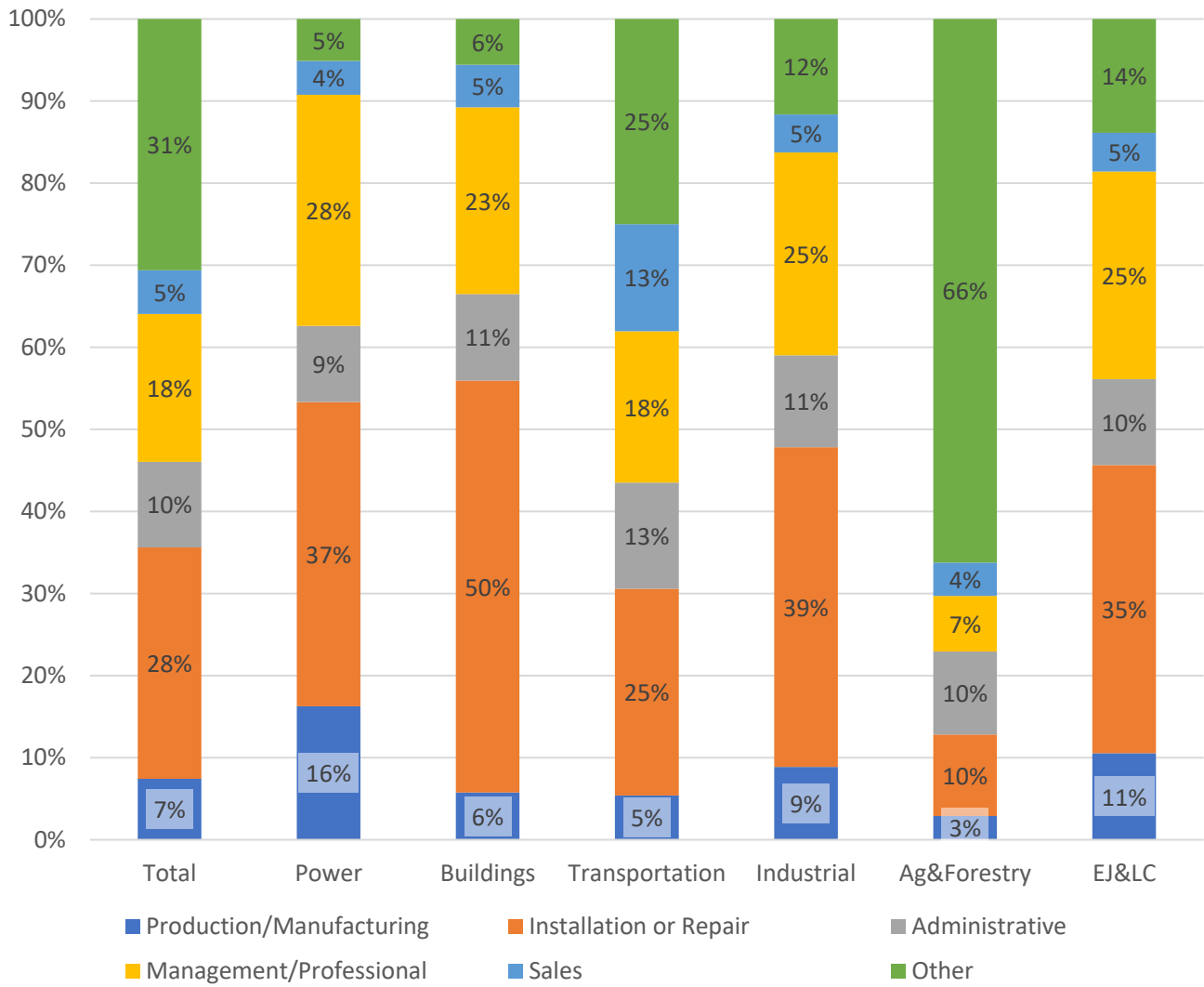
Among the direct and indirect jobs generated by the policies, or jobs created in the construction, professional services, manufacturing, agriculture, and other supply chain industries, job impacts are analyzed across 6 occupational categories: production/manufacturing, installation or repair, administrative, management/professional, sales, and other.<sup>7</sup> These occupational groups are defined by Standard Occupational Codes (SOCs), more detail on these definitions can be found in the

<sup>7</sup> The “other” occupational group includes employment in farming, fishing, and forestry occupations, transportation and material moving occupations, and community and social service occupations, among others.

Occupational Group **Definitions** section in Appendix B: Modeling Methodology. We omit induced impacts in the occupational analysis to best highlight jobs most directly related to the climate policies.

The other occupational group makes up about 31% of total employment impacts, due to the significant jobs impacts found in the Agriculture & Forestry policy group. Installation or repair follows, representing 28% of total jobs impacts, while management/professional represents 18%. Jobs found in administrative roles make up 10%, while production/ manufacturing and sales occupations make up 7% and 5%, respectively. The Buildings policy group has the largest share of installation or repair jobs of all policy groups, with about 50% of direct and indirect jobs falling under this category. The Power policy group has the largest share of both production/manufacturing and management/professional jobs across the modeled policy groups (Figure 7).

**FIGURE 7. OCCUPATIONAL DISTRIBUTION BY POLICY GROUP AND TOTAL, NATIONAL**



## State Factsheet

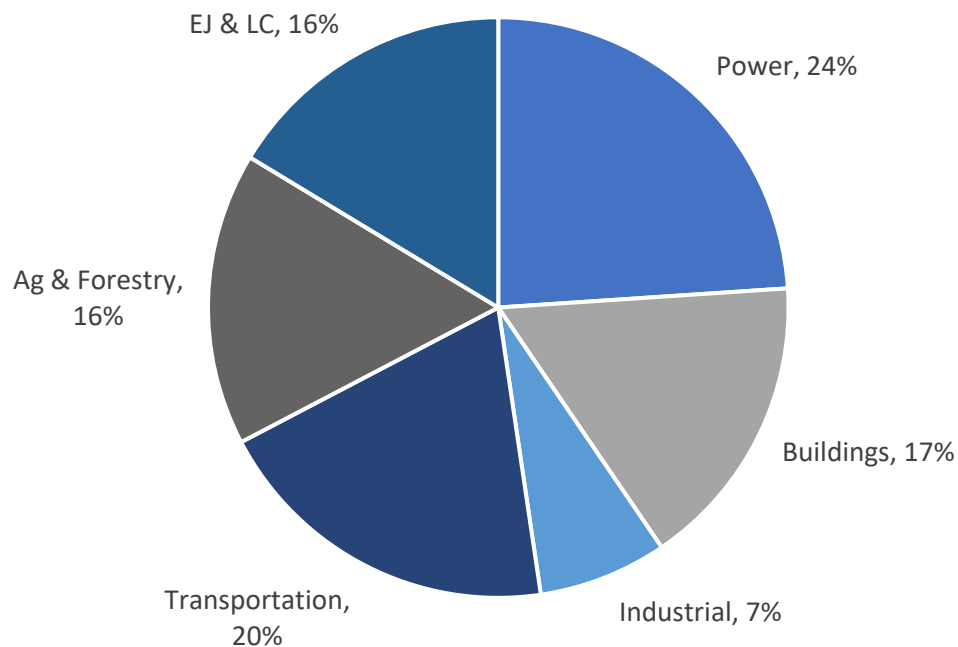
### Pennsylvania

The climate policies included in the analysis invests about \$12.6 billion in federal funds across the six policy groups in Pennsylvania. With the addition of leverage funds, the total investment into the Pennsylvania economy across the ten-year study period comes to nearly \$13.2 billion, or \$1.3 billion annually (Figure 8).

FIGURE 8. TOTAL INVESTMENT BY POLICY GROUP, PENNSYLVANIA

Policy Group	Federal Investment (\$millions)	Total Investment (\$millions)
Power	\$3,046	\$3,150
Buildings	\$2,163	\$2,175
Industrial	\$944	\$944
Transportation	\$2,185	\$2,588
Agriculture & Forestry	\$2,149	\$2,149
EJ & LC	\$2,101	\$2,150
<b>Total Investment</b>	<b>\$12,587</b>	<b>\$13,155</b>

FIGURE 9. TOTAL INVESTMENT DISTRIBUTION BY POLICY GROUP, PENNSYLVANIA



As a result of the climate policies included in this analysis, Pennsylvania sees 23,100 annual jobs supported for 10 years, 14,300 (62%) of which are jobs sustained through direct climate investments and supply chain activities, while 8,800 (38%) jobs are induced through workers spending their earnings in the local economy. This total impact is greater than the number of jobs in Pennsylvania's Paper Manufacturing industry.<sup>8</sup> More than \$1.9 billion is generated in value added each year for 10 years from these policies, with \$1.1 billion in employee compensation and \$178.2 million in local, state, and federal taxes annually for 10 years (Figure 10). The \$1.9 billion in annual value added is greater than the Gross State Product (GSP) generated by Pennsylvania's Spectator Sports industry.<sup>9</sup>

Of these 23,100 annual jobs supported, the Agriculture & Forestry policy group generates 35% of the state's employment impacts, with about 8,200 jobs supported annually. The Transportation, Power, and Buildings policy groups follow, generating 16%, 15%, and 15% of the state's employment impacts, respectively. The remaining 18% of jobs are found in the EJ & LC and Industrial policy groups (Figure 11).

FIGURE 10. ANNUAL IMPACTS BY IMPACT TYPE, PENNSYLVANIA, ALL POLICY GROUPS

	Jobs	Value Added	Employee Compensation	Taxes
<b>Direct</b>	11,098	\$706,118,086	\$435,954,979	<b>Local</b> \$51,255,979
<b>Indirect</b>	3,210	\$430,590,498	\$210,319,422	<b>State</b> \$50,150,450
<b>Induced</b>	8,763	\$773,127,143	\$407,001,363	<b>Federal</b> \$76,773,686
<b>Total</b>	<b>23,071</b>	<b>\$1,909,835,727</b>	<b>\$1,053,275,765</b>	<b>Total</b> <b>\$178,180,115</b>

FIGURE 11. TOTAL ANNUAL IMPACTS PER POLICY GROUP, PENNSYLVANIA

Policy Group	Jobs	Value Added	Employee Compensation	Taxes
<b>Power</b>	3,488	\$364,807,121	\$175,027,594	\$62,758,448
<b>Buildings</b>	3,478	\$331,575,347	\$177,981,313	\$17,662,120
<b>Transportation</b>	3,691	\$382,231,931	\$212,939,309	\$35,053,869
<b>Industrial</b>	1,571	\$142,975,466	\$79,126,171	\$6,065,972
<b>Agriculture &amp; Forestry</b>	8,165	\$422,944,939	\$263,979,133	\$25,624,448
<b>EJ &amp; LC</b>	2,678	\$265,300,923	\$144,222,244	\$31,015,259
<b>Total</b>	<b>23,071</b>	<b>\$1,909,835,727</b>	<b>\$1,053,275,765</b>	<b>\$178,180,115</b>

<sup>8</sup> Paper Manufacturing (NAICS 322) employment is 21,022. Data as of 2021Q4, from JobsEQ.

<sup>9</sup> Spectator Sports (NAICS 7112) GSP is \$1.76 billion. Data as of 2020, from JobsEQ.

The 23,100 annual jobs are spread across 5 industry categories: construction, professional services, manufacturing, other supply chain, and induced.<sup>10</sup> The Agriculture industry makes up about one-quarter (25%) of total employment impacts, due to the significant jobs impacts found in the Agriculture & Forestry policy group. Other supply chain follows, representing 14% of total jobs impacts, while construction jobs represent 13%. Professional services represents 7% of jobs supported and manufacturing makes up 2%. Jobs found in induced industries, or throughout the general economy, represent the remaining 38% (

Figure 12). The Buildings policy group accounts for 45% the construction jobs created by these policies. The Power policy group accounts for about 34% of professional services and 42% of manufacturing jobs supported from climate policies. The Transportation policy group accounts for more than half (56%) of other supply chain jobs (

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<sup>10</sup> Other Supply Chain includes employment in the Retail and Wholesale Trade, Transportation, and Utilities industries.

Figure 13).

FIGURE 12. TOTAL JOBS BY INDUSTRY, PENNSYLVANIA

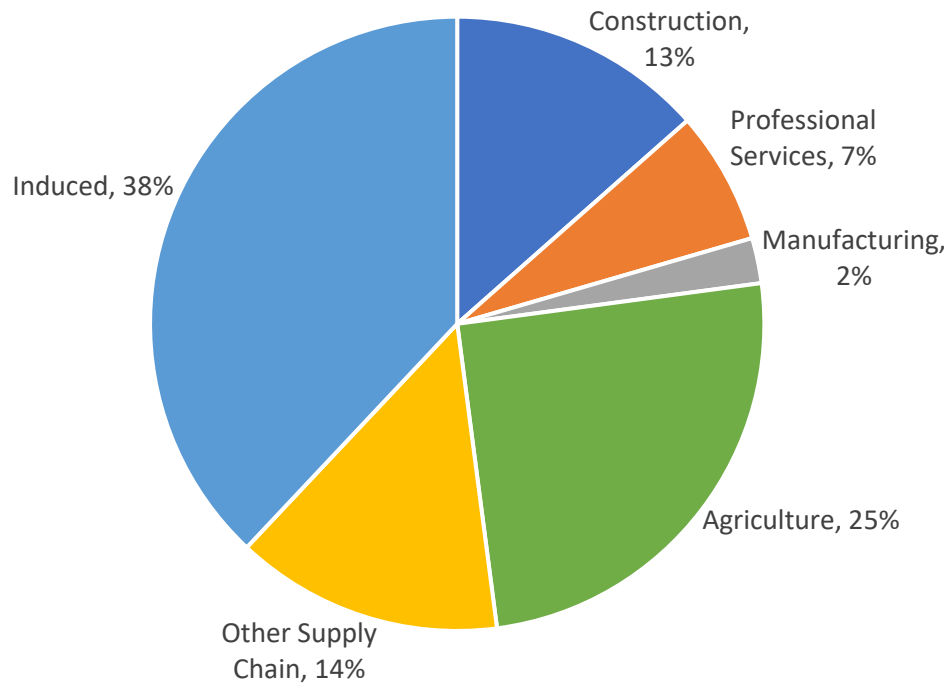
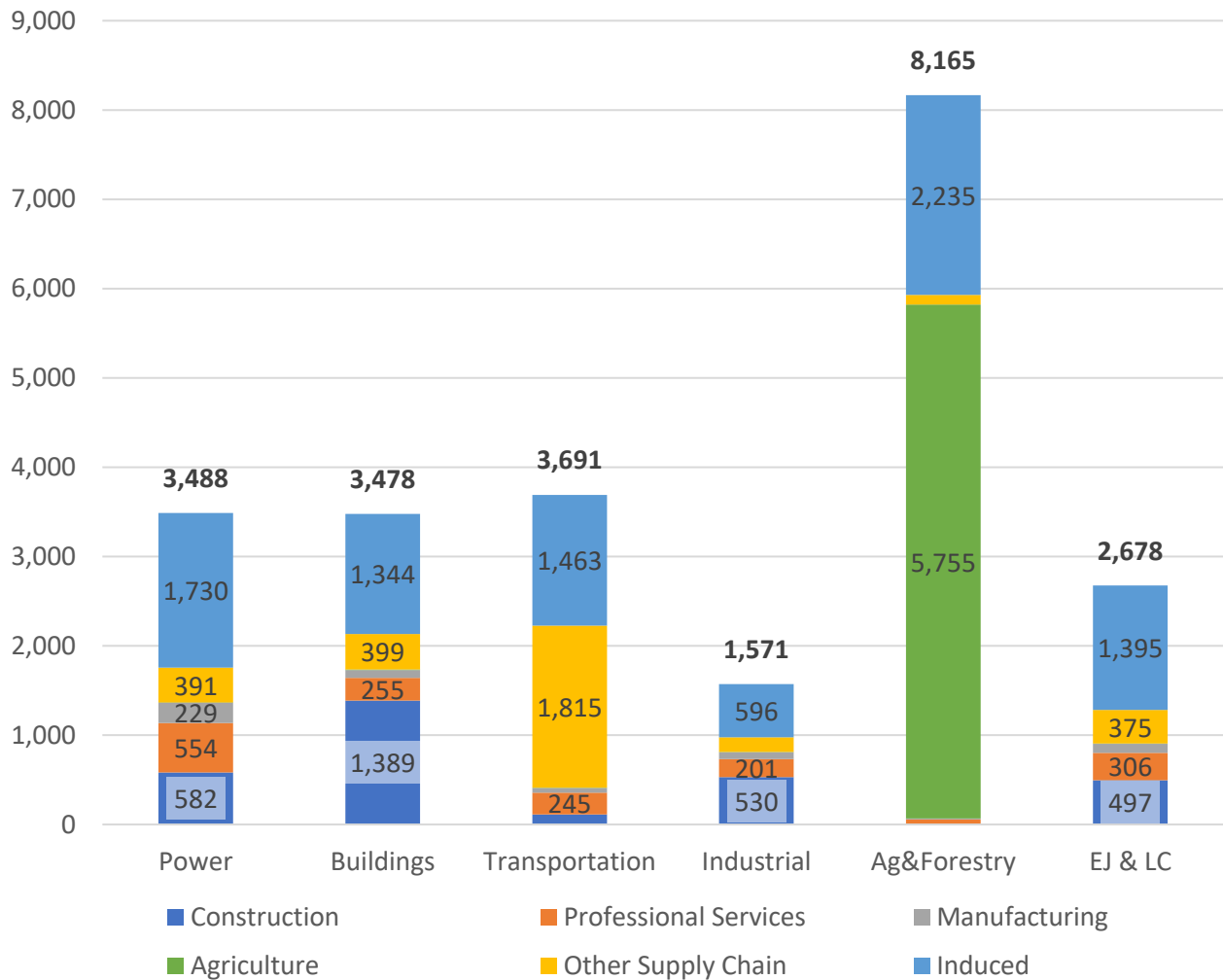




FIGURE 13. INDUSTRY JOBS BY POLICY GROUP, PENNSYLVANIA



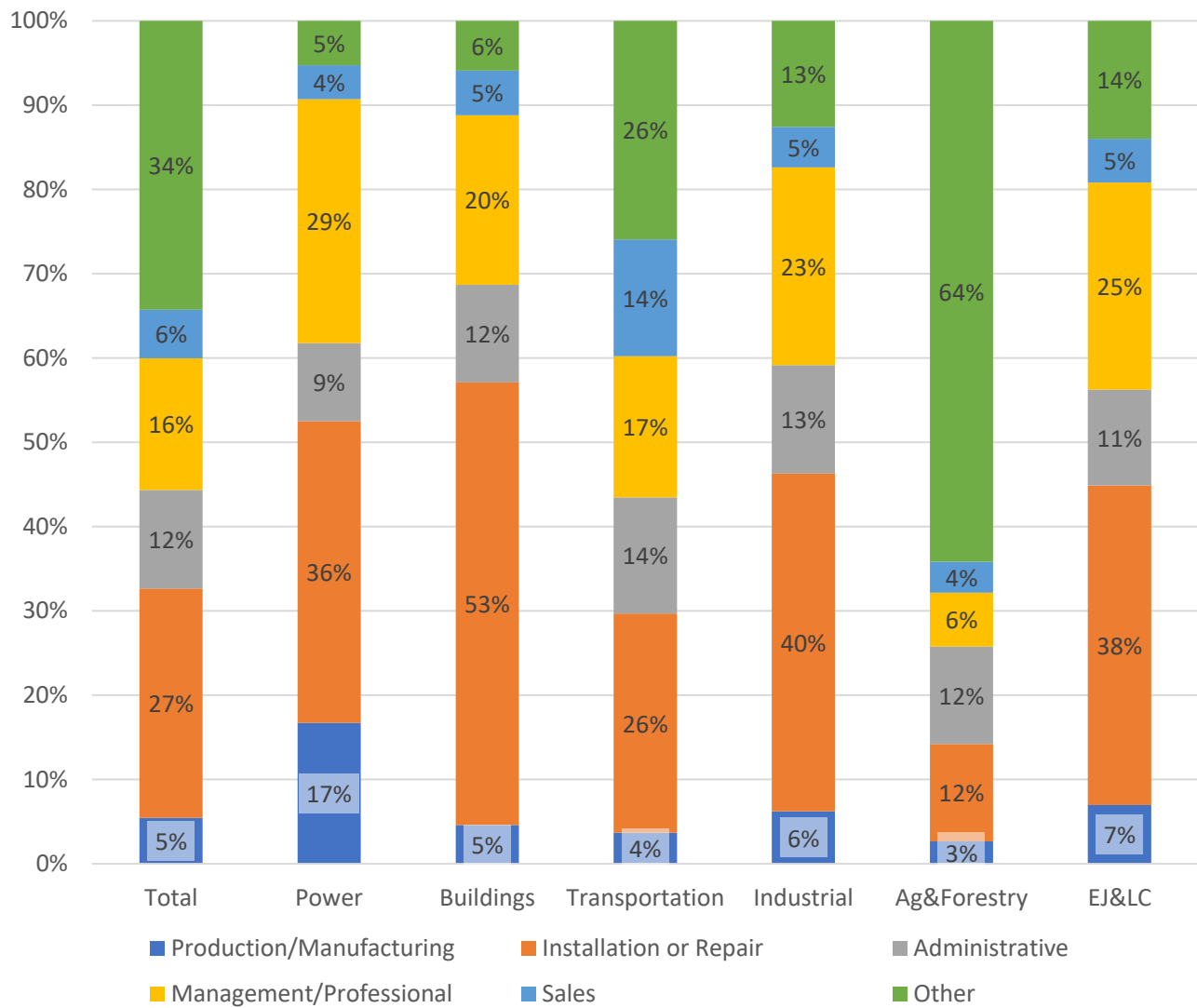
Among the direct and indirect jobs generated by the policies, or jobs created in the construction, professional services, manufacturing, agriculture, and other supply chain industries, job impacts are analyzed across 6 occupational categories: production/manufacturing, installation or repair, administrative, management/professional, sales, and other.<sup>11</sup> These occupational groups are defined by Standard Occupational Codes (SOCs), more detail on these definitions can be found in the

<sup>11</sup> The “other” occupational group includes employment in farming, fishing, and forestry occupations, transportation and material moving occupations, and community and social service occupations, among others.

Occupational Group **Definitions** section in Appendix B: Modeling Methodology. We omit induced impacts in the occupational analysis to best highlight jobs most directly related to the climate policies.

The other occupational group makes up about 34% of total employment impacts in Pennsylvania, due to the significant jobs impacts found in the Agriculture & Forestry policy group. Installation or repair follows, representing 27% of total jobs impacts, while management/professional represents 16%. Jobs found in administrative roles make up 12%, while sales and production/manufacturing occupations make up 6% and 5%, respectively. The Buildings policy group has the largest share of installation or repair jobs of all policy groups, with more than half (53%) of direct and indirect jobs falling under this category. The Power policy group has the largest share of both production/manufacturing and management/profession jobs across the modeled policy groups (Figure 14).

**FIGURE 14. OCCUPATIONAL DISTRIBUTION BY POLICY GROUP AND TOTAL, PENNSYLVANIA**



## Appendix A: Detailed Policy Group Output Tables

### National

POWER ANNUAL IMPACTS					
	Jobs	Value Added	Employee Compensation		Taxes
<b>Direct</b>	53,363	\$6,604,762,530	\$3,251,504,338	<b>Local</b>	\$1,249,038,547
<b>Indirect</b>	28,098	\$5,686,019,819	\$2,546,567,855	<b>State</b>	\$1,028,711,079

<b>Induced</b>	75,534	\$4,287,360,763	\$2,064,924,932	<b>Federal</b>	\$555,584,103
<b>Total</b>	<b>156,995</b>	<b>\$16,578,143,111</b>	<b>\$7,862,997,126</b>	<b>Total</b>	<b>\$2,833,333,729</b>

<b>BUILDINGS ANNUAL IMPACTS</b>					
	<b>Jobs</b>	<b>Value Added</b>	<b>Employee Compensation</b>		<b>Taxes</b>
<b>Direct</b>	49,850	\$4,081,435,110	\$2,411,962,373	<b>Local</b>	\$113,982,495
<b>Indirect</b>	23,069	\$2,569,347,662	\$1,335,456,760	<b>State</b>	\$137,675,085
<b>Induced</b>	39,806	\$3,882,167,254	\$1,886,437,344	<b>Federal</b>	\$367,464,705
<b>Total</b>	<b>112,725</b>	<b>\$10,532,950,026</b>	<b>\$5,633,856,477</b>	<b>Total</b>	<b>\$619,122,284</b>

<b>TRANSPORTATION ANNUAL IMPACTS</b>					
	<b>Jobs</b>	<b>Value Added</b>	<b>Employee Compensation</b>		<b>Taxes</b>
<b>Direct</b>	28,841	\$3,319,764,972	\$1,933,959,321	<b>Local</b>	\$159,225,828
<b>Indirect</b>	16,560	\$1,904,714,634	\$941,949,005	<b>State</b>	\$192,011,364
<b>Induced</b>	26,936	\$2,627,678,915	\$1,275,873,942	<b>Federal</b>	\$505,344,694
<b>Total</b>	<b>72,337</b>	<b>\$7,852,158,521</b>	<b>\$4,151,782,268</b>	<b>Total</b>	<b>\$856,581,886</b>

<b>INDUSTRIAL ANNUAL IMPACTS</b>					
	<b>Jobs</b>	<b>Value Added</b>	<b>Employee Compensation</b>		<b>Taxes</b>
<b>Direct</b>	18,590	\$1,499,024,383	\$974,598,555	<b>Local</b>	\$41,552,565
<b>Indirect</b>	9,317	\$1,152,323,500	\$598,559,008	<b>State</b>	\$45,176,587
<b>Induced</b>	15,421	\$1,462,295,435	\$710,137,014	<b>Federal</b>	\$99,366,808
<b>Total</b>	<b>43,328</b>	<b>\$4,113,643,318</b>	<b>\$2,283,294,577</b>	<b>Total</b>	<b>\$186,095,961</b>

<b>AGRICULTURE &amp; FORESTRY ANNUAL IMPACTS</b>					
	<b>Jobs</b>	<b>Value Added</b>	<b>Employee Compensation</b>		<b>Taxes</b>
<b>Direct</b>	142,268	\$4,552,850,658	\$3,806,571,435	<b>Local</b>	\$105,726,787
<b>Indirect</b>	11,127	\$941,951,373	\$511,161,233	<b>State</b>	\$132,992,397
<b>Induced</b>	47,799	\$4,663,035,520	\$2,265,341,661	<b>Federal</b>	\$396,527,046
<b>Total</b>	<b>201,193</b>	<b>\$10,157,837,551</b>	<b>\$6,583,074,329</b>	<b>Total</b>	<b>\$635,246,229</b>

<b>EJ &amp; LC ANNUAL IMPACTS</b>					
	<b>Jobs</b>	<b>Value Added</b>	<b>Employee Compensation</b>		<b>Taxes</b>

<b>Direct</b>	30,983	\$2,994,193,370	\$1,718,657,719	<b>Local</b>	\$338,178,846
<b>Indirect</b>	15,127	\$2,165,070,192	\$1,050,312,216	<b>State</b>	\$335,311,078
<b>Induced</b>	43,203	\$3,711,795,483	\$1,897,102,784	<b>Federal</b>	\$439,257,343
<b>Total</b>	<b>89,313</b>	<b>\$8,871,059,045</b>	<b>\$4,666,072,719</b>	<b>Total</b>	<b>\$1,112,747,267</b>

## Pennsylvania

POWER ANNUAL IMPACTS					
	Jobs	Value Added	Employee Compensation		Taxes
<b>Direct</b>	1,141	\$144,359,512	\$68,228,172	<b>Local</b>	\$27,110,976
<b>Indirect</b>	617	\$121,654,959	\$55,200,155	<b>State</b>	\$22,474,685
<b>Induced</b>	1,730	\$98,792,650	\$51,599,267	<b>Federal</b>	\$13,172,787
<b>Total</b>	<b>3,488</b>	<b>\$364,807,121</b>	<b>\$175,027,594</b>	<b>Total</b>	<b>\$62,758,448</b>

BUILDINGS ANNUAL IMPACTS					
	Jobs	Value Added	Employee Compensation		Taxes
<b>Direct</b>	1,462	\$127,933,484	\$71,365,432	<b>Local</b>	\$3,279,322
<b>Indirect</b>	672	\$76,638,700	\$39,800,520	<b>State</b>	\$3,946,024
<b>Induced</b>	1,344	\$127,003,163	\$66,815,361	<b>Federal</b>	\$10,436,774
<b>Total</b>	<b>3,478</b>	<b>\$331,575,347</b>	<b>\$177,981,313</b>	<b>Total</b>	<b>\$17,662,120</b>

TRANSPORTATION ANNUAL IMPACTS					
	Jobs	Value Added	Employee Compensation		Taxes
<b>Direct</b>	1,429	\$141,247,468	\$90,937,013	<b>Local</b>	\$6,672,469
<b>Indirect</b>	799	\$100,215,140	\$48,227,358	<b>State</b>	\$7,960,475
<b>Induced</b>	1,463	\$140,769,323	\$73,774,938	<b>Federal</b>	\$20,420,924
<b>Total</b>	<b>3,691</b>	<b>\$382,231,931</b>	<b>\$212,939,309</b>	<b>Total</b>	<b>\$35,053,869</b>

INDUSTRIAL ANNUAL IMPACTS					
	Jobs	Value Added	Employee Compensation		Taxes
<b>Direct</b>	650	\$48,868,183	\$32,068,758	<b>Local</b>	\$1,253,730
<b>Indirect</b>	325	\$39,029,544	\$20,026,720	<b>State</b>	\$1,418,870
<b>Induced</b>	596	\$55,077,740	\$27,030,693	<b>Federal</b>	\$3,393,373
<b>Total</b>	<b>1,571</b>	<b>\$142,975,466</b>	<b>\$79,126,171</b>	<b>Total</b>	<b>\$6,065,972</b>

AGRICULTURE & FORESTRY ANNUAL IMPACTS					
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	<b>Jobs</b>	<b>Value Added</b>	<b>Employee Compensation</b>		<b>Taxes</b>
<b>Direct</b>	5,551	\$161,619,911	\$125,323,597	<b>Local</b>	\$4,407,692
<b>Indirect</b>	380	\$34,652,000	\$18,394,974	<b>State</b>	\$5,465,210
<b>Induced</b>	2,235	\$226,673,028	\$120,260,562	<b>Federal</b>	\$15,751,546
<b>Total</b>	<b>8,165</b>	<b>\$422,944,939</b>	<b>\$263,979,133</b>	<b>Total</b>	<b>\$25,624,448</b>

<b>EJ &amp; LC ANNUAL IMPACTS</b>					
	<b>Jobs</b>	<b>Value Added</b>	<b>Employee Compensation</b>		<b>Taxes</b>
<b>Direct</b>	865	\$82,089,527	\$48,032,006	<b>Local</b>	\$8,531,790
<b>Indirect</b>	418	\$58,400,156	\$28,669,696	<b>State</b>	\$8,885,187
<b>Induced</b>	1,395	\$124,811,240	\$67,520,543	<b>Federal</b>	\$13,598,282
<b>Total</b>	<b>2,678</b>	<b>\$265,300,923</b>	<b>\$144,222,244</b>	<b>Total</b>	<b>\$31,015,259</b>

## Appendix B: Modeling Methodology

### Policies Modeled

This section details the federal and total investment for each investment vehicle, each policy group, and overall, as well as the specific legislation each investment vehicle is derived from.

### TOTAL INPUTS BY POLICY GROUP

Federal and total investments for each policy group are detailed in the table below.

Policy Group	Federal Investment (\$billions)	Total Investment (\$billions)
Power	\$137.85	\$141.47
Buildings	\$70.17	\$70.81
Industrial	\$29.80	\$29.80
Transportation	\$45.60	\$49.42
Agriculture & Forestry	\$59.90	\$59.90
EJ & LC	\$68.92	\$70.24
<b>Total Investment</b>	<b>\$412.25</b>	<b>\$421.64</b>

### POWER POLICY GROUP INPUTS

Investment vehicles used in the Power policy group modeling. References to legislative section headings in black refer to [H.R. 5376 as passed by the House in November 2021](#). References in red refer to [legislative text proposed by the Senate committees of jurisdiction](#) in December 2021.

Investment Vehicle	Legislation
S.45 - PTC Ext	SEC. 136101 / <b>126101</b> - Extension and Modification of Credit for Electricity Produced from Certain Renewable Resources
S.48 - ITC Ext	SEC. 136102 / <b>126102</b> - Extension and Modification of Energy Credit
ITC Increase	SEC. 136103 / <b>126103</b> - Increase in energy credit for solar and wind facilities placed in service in connection with low-income communities
Nuclear Tax Credit	SEC. 136108 & 136109 / <b>126107 &amp; 126108</b> – Green Energy Publicly Traded Partnerships / <b>Zero-Emission Nuclear Power Production Credit</b>
Transmission ITC	SEC. 136105 / <b>126105</b> – Investment Credit for Electric Transmission Property SEC. 30461 / <b>70151</b> – Transmission Line and Intertie Incentives
Transmission Investments	SEC. 30462 / <b>70152</b> – Grants to Facilitate the Siting of Inter-state Electricity Transmission Lines

SEC. 30464 / **70153** – Interregional and Offshore Wind Electricity Transmission Planning, Modeling, and Analysis

Rural Electrification Act	SEC. 12003 - Additional Funding for Electric Loans for Renewable Energy
Rural Electrification USDA	SEC. 12007 – Clean Energy Repowering for Rural Utilities / USDA Assistance for Rural Electric Cooperatives

Federal and total investments for each investment vehicle for the Power policy group are detailed in the table below.

Title	Type	Federal Investment (\$billions)	Private Match	Total Investment (\$billions)
S.45 – PTC Ext	Tax Credit	\$56.51	N/A	\$56.51
S.48 – ITC Ext & Increase	Tax Credit	\$53.61	N/A	\$53.61
Nuclear Tax Credit	Tax Credit	\$0.98	N/A	\$0.98
Transmission ITC	Tax Credit	\$11.28	N/A	\$11.28
Transmission Investments	Grant	\$2.90	100%	\$5.80
Rural Electrification Act	Loans	\$2.88	25%	\$3.60
Rural Electrification USDA	Loans	\$9.70	N/A	\$9.70
<b>Total Power Investment</b>		<b>\$137.85</b>		<b>\$141.47</b>

## BUILDINGS POLICY GROUP INPUTS

Investment vehicles used in the Buildings policy group modeling. References to legislative section headings in black refer to [H.R. 5376 as passed by the House in November 2021](#). References in red refer to [legislative text proposed by the Senate committees of jurisdiction](#) in December 2021.

Investment Vehicle	Legislation
Nonbusiness Energy Property Credit	SEC. 136301 / <b>126301</b> – Extension, Increase, and Modifications of Nonbusiness Energy Property Credit
Residential Energy Efficient Property	SEC. 136302 / <b>126302</b> – Residential Energy Efficient Property
Energy Efficient Commercial Buildings Deduction	SEC. 136303 / <b>126303</b> – Energy Efficient Commercial Buildings Deduction
New Energy Efficient Home Credit	SEC. 136304 / <b>126304</b> – Extension, Increase, and Modifications of New Energy Efficient Home Credit
Home Energy Performance-Based, Whole-House Rebates and Training Grants	SEC. 30421 / <b>70121</b> - Home Energy Performance-Based, Whole-House Rebates and Training Grants
High-Efficiency Electric Home Rebate Program	SEC. 30422 / <b>70122</b> – High-Efficiency Electric Home Rebate Program.
Critical Facility Modernization	SEC. 30432 / <b>70131</b> – Critical Facility Modernization



Assistance for Latest and Zero Building Energy Code Adoption	SEC. 30433 / <b>70132</b> - Assistance for Latest and Zero Building Energy Code Adoption
Federal Procurement	SEC. 80001 – General Services Administration Procurement and Technology
Assistance to Federal Buildings	SEC. 110020 - Assistance for Federal Buildings
Improving Affordable Housing	SEC. 40006 - Improving Energy Efficiency or Water Efficiency or Climate Resilience of Affordable Housing
Rural Energy for America Program	SEC. 12005 - Rural Energy for America Program

Federal and total investments for each investment vehicle for the Buildings policy group are detailed in the table below.

Title	Type	Federal Investment (\$billions)	Private Match	Total Investment (\$billions)
Nonbusiness Energy Property Credit	Tax Credit	\$17.55	N/A	\$17.55
Residential Energy Efficient Property	Tax Credit	\$24.76	N/A	\$24.76
Energy Efficient Commercial Buildings Deduction	Tax Credit	\$0.63	N/A	\$0.63
New Energy Efficient Home Credit	Tax Credit	\$2.72	N/A	\$2.72
Home Energy Performance-Based, Whole-House Rebates and Training Grants	Cons Rebate	\$5.94	N/A	\$5.94
High-Efficiency Electric Home Rebate Program	Cons Rebate	\$6.25	N/A	\$6.25
Critical Facility Modernization	Grant	\$0.50	N/A	\$0.50
Assistance for Latest and Zero Building Energy Code Adoption	Grant	\$0.30	N/A	\$0.30
Federal Procurement	Grant	\$3.25	N/A	\$3.25
Assistance to Federal Buildings	Grant	\$1.00	N/A	\$1.00
Improving Affordable Housing	Grant	\$6.00	N/A	\$6.00
Rural Energy for America Program	Grant	\$1.28	50%	\$1.91
<b>Total Buildings Investment</b>		<b>\$70.17</b>		<b>\$70.81</b>

### TRANSPORTATION POLICY GROUP INPUTS

Investment vehicles used in the Transportation policy group modeling. References to legislative section headings in black refer to [H.R. 5376 as passed by the House in November 2021](#). References in red refer to [legislative text proposed by the Senate committees of jurisdiction](#) in December 2021.

Investment Vehicle	Legislation
Sustainable Aviation Fuel Credit	SEC. 136203 / <b>126805</b> – Sustainable Aviation Fuel Credit / <b>Clean Fuel Production Credit</b>
PEV Individual Tax Credit	SEC. 136401 / <b>126401</b> – Refundable New Qualified Plug-In Electric Drive Motor Vehicle Credit for Individuals

Commercial EV Tax Credit	SEC. 136403 / SEC. 126403 – Qualified Commercial Electric Vehicles
Fuel Cell Tax Credit	SEC. 136404 / 126404 – Qualified Fuel Cell Motor Vehicles
ZEV Infrastructure	SEC. 30431 - Zero-Emissions Vehicle Infrastructure Grants <sup>12</sup>
Aviation Tech Program	SEC. 110011 / SEC 81103 – Alternative Fuel and Low-Emission Aviation Technology Program
Diesel Emissions	SEC. 30105 / SEC. 30105 – Diesel Emissions Reductions
Federal Procurement	SEC. 80001 – General Services Administration Clean Fleets
Clean Heavy Duty Vehicles	SEC. 30101 / 30101 – Clean Heavy-Duty Vehicles
High Speed Rail	SEC. 110009 – Passenger Rail Improvement, Modernization, and Emissions Reduction Grants
USPS Clean Vehicle Fleet and Facility Maintenance	SEC. 80003 - United States Postal Service; Clean Vehicle Fleet and Facility Maintenance
Biofuel Infrastructure	SEC. 12006 / 12006 - Biofuel Infrastructure and Agriculture Product Market Expansion
Community Climate Incentive Grants	SEC. 110002 - Community Climate Incentive Grants

Federal and total investments for each investment vehicle for the Transportation policy group are detailed in the table below.

Title	Type	Federal Investment (\$billions)	Private Match	Total Investment (\$billions)
Sustainable Aviation Fuel Credit	Tax Credit	\$0.15	N/A	\$0.15
PEV Individual Tax Credit	Tax Credit	\$9.61	21%	\$11.67
Commercial EV Tax Credit	Tax Credit	\$4.76	21%	\$5.78
Fuel Cell Tax Credit	Tax Credit	\$0.04	21%	\$0.05
ZEV Infrastructure	Grant	\$1.00	N/A	\$1.00
Aviation Tech Program	Grant	\$0.03	N/A	\$0.03
Diesel Emissions	Grant	\$0.06	N/A	\$0.06
Federal Procurement	Grant	\$3.00	N/A	\$3.00
Clean Heavy Duty Vehicles	Grant	\$5.00	N/A	\$5.00
High Speed Rail	Grant	\$10.00	100%	\$20.00
USPS Clean Vehicles	Grant	\$7.00	N/A	\$7.00
Biofuel Infrastructure	Grant	\$0.96	75%	\$1.68
Community Climate Incentive Grants	Grant	\$4.00	N/A	\$4.00
<b>Total Transportation Investment</b>		<b>\$45.60</b>		<b>\$49.42</b>

<sup>12</sup> Section heading refers to [Rules Committee Print 117-17](#)

## INDUSTRIAL POLICY GROUP INPUTS

Investment vehicles used in the Industrial policy group modeling. References to legislative section headings in black refer to [H.R. 5376 as passed by the House in November 2021](#). References in red refer to [legislative text proposed by the Senate committees of jurisdiction](#) in December 2021.

Investment Vehicle	Legislation
Advanced Energy Project	SEC. 136501 / 126501 – Extension of the Advanced Energy Project Credit
Advanced Manufacturing Production	SEC. 126504 – Advanced Manufacturing Production Credit
Zero Emission Facility	SEC. 136106 / 126106 – Zero Emission Facility Credit / Extension and Modification of Credit for Carbon Oxide Sequestration
Clean Hydrogen	SEC. 136204 / 126204 – Clean Hydrogen
Funding for DOE Loan Programs	SEC. 30451 / 70141 - Funding for DOE Loan Programs
Advanced Technology Vehicle Manufacturing	SEC. 30452 / 70142 - Advanced Technology Vehicle Manufacturing
Domestic Manufacturing Conversion Grants	SEC. 30453 / 70143 - Domestic Manufacturing Conversion Grants
Advanced Industrial Facilities Deployment Program	SEC. 70161 - Advanced Industrial Facilities Deployment Program

Federal and total investments for each investment vehicle for the Industrial policy group are detailed in the table below.

Title	Type	Federal Investment (\$billions)	Private Match	Total Investment (\$billions)
Advanced Energy Project	Tax Credit	\$7.65	N/A	\$7.65
Advanced Manufacturing Production	Tax Credit	\$3.52	N/A	\$3.52
Zero Emission Facility	Tax Credit	\$2.13	N/A	\$2.13
Clean Hydrogen	Tax Credit	\$4.95	N/A	\$4.95
Funding for DOE Loan Programs	Loan	\$3.35	N/A	\$3.35
Advanced Technology Vehicle Manufacturing	Grant	\$0.92	N/A	\$0.92
Domestic Manufacturing Conversion Grants	Grant	\$3.48	N/A	\$3.48
Advanced Industrial Facilities Deployment Program	Grant	\$3.81	N/A	\$3.81
<b>Total Industrial Investment</b>		<b>\$29.80</b>		<b>\$29.80</b>

## AGRICULTURE & FORESTRY POLICY GROUP INPUTS

Investment vehicles used in the Agriculture & Forestry policy group modeling.

References to legislative section headings in black refer to [H.R. 5376 as passed by the House in November 2021](#). References in red refer to [legislative text proposed by the Senate committees of jurisdiction](#) in December 2021.

Investment Vehicle	Legislation
Soil Conservation Assistance	SEC. 15001 Soil Conservation Assistance
Agriculture Conservation Assistance	SEC. 15002 Agriculture Conservation Assistance
Conservation Technical Assistance	SEC. 15003 Conservation Technical Assistance
NFS Restoration & Fuels Reduction Projects	SEC. 11001 / 11001 - NFS Restoration & Fuels Reduction Projects
Non-Federal Land Forest Restoration & Research	SEC. 11002 / 11002 - Non-Federal Land Forest Restoration & Research
State and Private Forestry Conservation Programs	SEC. 11003 / 11003 - State and Private Forestry Conservation Programs
Grassland Restoration Program	SEC. 70610 - Funding for the United States Fish and Wildlife Service for Grassland Restoration

Federal and total investments for each investment vehicle for the Agriculture & Forestry policy group are detailed in the table below.

Title	Type	Federal Investment (\$billions)	Private Match	Total Investment (\$billions)
Soil Conservation Assistance	Grant	\$5.05	N/A	\$5.05
Agriculture Conservation Assistance	Grant	\$27.00	N/A	\$27.00
Conservation Technical Assistance	Grant	\$3.15	N/A	\$3.15
NFS Restoration & Fuels Reduction Projects	Grant	\$15.85	N/A	\$15.85
Non-Federal Land Forest Restoration & Research	Grant	\$4.10	N/A	\$4.10
State and Private Forestry Conservation Programs	Grant	\$4.65	N/A	\$4.65
Grassland Restoration Program	Grant	\$0.10	N/A	\$0.10
<b>Total Agriculture &amp; Forestry Investment</b>		<b>\$59.90</b>		<b>\$59.90</b>

## ENVIRONMENTAL JUSTICE & LOCAL COMMUNITIES POLICY GROUP INPUTS

Investment vehicles used in the Environmental Justice & Local Communities policy group modeling. References to legislative section headings in black refer to [H.R. 5376 as passed by the House in November 2021](#). References in red refer to [legislative text proposed by the Senate committees of jurisdiction](#) in December 2021.

Investment Vehicle	Legislation
Civilian Climate Corps	SEC. 22401 / <b>25001</b> - Corporation for National and Community Service and the National Service Trust, AmeriCorps State and National (includes Education Corps, Health Futures Corps, Clean Energy Services Corps, Veterans Corps, Opportunity Corps), and National Civilian Community Corps
	SEC. 22402 / <b>25002</b> - YouthBuild, DOL
	SEC. 22009 / <b>22008</b> - Job Corps, DOL
	SEC. 70702-70705 - Land Corps, DOL <sup>13</sup>
Healthy Ports	SEC. 30102 / <b>30102</b> – Grants to Reduce Air Pollution at Ports
Environmental and Climate Justice	SEC. 30204 / <b>30202</b> – Grants to community-based organizations and partnerships for community-led environmental and climate justice projects
Energy Community Reinvestment	SEC. 30454 – Energy Community Reinvestment Financing
Economic Development Administration	SEC. 110018 – Economic Development Administration
Greenhouse Gas Reduction Fund	SEC. 30103 – Greenhouse Gas Reduction Fund
Low-Income Solar Credit	SEC. 136103 / <b>126103</b> – Increase in energy credit for solar facilities in low-income communities
Rural Energy Savings Program (RESP)	SEC. 12004 / <b>12004</b> – Rural Energy Savings Program
NOAA Grants	SEC. 70501 – Coastal and Great Lakes Restoration and Technical Assistance

Federal and total investments for each investment vehicle for the Environmental Justice & Local Communities policy group are detailed in the table below.

Title	Type	Federal Investment (\$billions)	Private Match	Total Investment (\$billions)
Civilian Climate Corps	Grant	\$15.04	N/A	\$15.04
Healthy Ports	Grant	\$3.50	N/A	\$3.50
Environmental and Climate Justice	Grant	\$5.00	N/A	\$5.00
Energy Community Reinvestment	Grant	\$5.00	N/A	\$5.00
Economic Development Administration	Grant	\$1.68	79%	\$3.00
Greenhouse Gas Reduction Fund	Loan	\$29.00	N/A	\$29.00
Low-Income Solar Credit <sup>14</sup>	Tax Credit	\$0.00	N/A	\$0.00
Rural Energy Savings Program (RESP)	Loan	\$0.20	N/A	\$0.20
NOAA Grants	Grant	\$9.50	N/A	\$9.50
<b>Total Environmental Justice &amp; Local Communities Investment</b>		<b>\$68.92</b>		<b>\$70.24</b>

<sup>13</sup> Section heading refers to [Rules Committee Print 117-17](#)

<sup>14</sup> Investment dollar amount for this provision included in the Power sector S.48 - ITC Ext

## Policy Group Modeling Assumptions

This section details the specific assumptions made in the modeling of each investment vehicle in each policy group. This includes how funds are allocated across states and by activity, match funding, and any other assumptions made in the modeling process.

### POWER

- **Renewable Energy Tax Credit**
  - PTC and ITC extensions – estimated future installed capacity of solar and wind with and without extension of PTC and ITC from NREL’s *Impacts of Federal Tax Credit Extensions on Renewable Deployment and Power Sector Emissions* report, adjusting to current baseline capacity using EIA installed capacity data
  - Use installed capacity in solar, wind, other renewables as input into NREL’s JEDI wind model and BW proprietary solar and other renewables employment models
  - State allocation determined by current renewable energy generation employment from the DOE’s US Energy and Employment Report (USEER)
  - No match funding
- **Transmission Tax Credit**
  - Input value of tax credit into industry mix detailed in State allocation determined by percentage of state identified as low income communities as defined by the EPA EJScreen
  - No match spending
- **Rural Energy Savings Program (RESP)**
  - Input value of investment into overall multipliers from Power policy group
  - State allocation determined by current rural renewable energy employment from USEER
  - No match spending
- **NOAA Grants**
  - Input value of grants into IMPLAN industry codes for port operations, environmental and other technical consulting services, and construction of other new nonresidential structures
  - State allocation determined by current port and harbor operations industry employment from BLS (NAICS 488310)
  - No match spending

- Electrification Industry Mix
- State allocation determined by current Transmission & Distribution employment from USEER
- No match funding
- **Transmission Investments**
  - Input into industry mix detailed in State allocation determined by percentage of state identified as low income communities as defined by the EPA EJScreen
  - No match spending
- **Rural Energy Savings Program (RESP)**
  - Input value of investment into overall multipliers from Power policy group
  - State allocation determined by current rural renewable energy employment from USEER
  - No match spending
- **NOAA Grants**
  - Input value of grants into IMPLAN industry codes for port operations, environmental and other technical consulting services, and construction of other new nonresidential structures
  - State allocation determined by current port and harbor operations industry employment from BLS (NAICS 488310)
  - No match spending

- Electrification Industry Mix
- State allocation determined by current Transmission & Distribution employment from USEER
- 100% match funding based on as a conservative counter to the [following FERC citation](#): "Under ARRA, \$3 billion in public and matching private smart grid investments from 2009 to 2012 generated \$6.8 billion in economic output"
- **Rural Electrification**
  - Input into industry mix detailed in State allocation determined by percentage of state identified as low income communities as defined by the EPA EJScreen
  - No match spending
- **Rural Energy Savings Program (RESP)**
  - Input value of investment into overall multipliers from Power policy group
  - State allocation determined by current rural renewable energy employment from USEER
  - No match spending
- **NOAA Grants**
  - Input value of grants into IMPLAN industry codes for port operations, environmental and other technical consulting services, and construction of other new nonresidential structures
  - State allocation determined by current port and harbor operations industry employment from BLS (NAICS 488310)
  - No match spending



- Electrification Industry Mix
- State allocation determined by current rural renewable energy employment from USEER – rural defined by USDA Rural-Urban Continuum Codes ( $\geq 4$ , non-metro)
- 25% match funding on electric loan amount – from Rural Energy for America Program (REAP) language
- **Nuclear Tax Credit**
  - Production tax credit – money flows directly to existing nuclear facilities
  - Input – total value of tax credit, output – jobs supported from value of tax credit generated using IMPLAN nuclear power generation industry code 41
  - No match spending
  - State allocation determined by current nuclear employment from USEER

## TRANSPORTATION

- **EV Tax Credits**
  - Input value of tax credit into vehicle retailers IMPLAN code 402
  - State allocation determined by population
  - 21% match spending, calculated by using the midpoint of the range of rebate/credit values (\$8.25k, from range of \$4k-12.5k from the House [ways and means](#)) multiplied on an EV sales multiplier of 2.6% per \$1000 credit. A 2018 study *Effectiveness of electric vehicle incentives in the United States* by Alan Jenn, Katalin Springel, and Anand R. Gopal, linked [here](#), gives evidence that for every \$1,000 of tax credit or consumer rebate, sales of EV increase by 2.6%.
- **EV Infrastructure Investments**
  - Allocate infrastructure grant investments by equipment and labor, and thus by IMPLAN industry code, as determined by the table outlined in Transportation Infrastructure Industry Mix
  - Rail grants input into rail transportation IMPLAN industry code 415
  - Vehicle purchase grants input into vehicle retail sales, federal procurement amount decreased to 65% from the Buy American Act [provision](#)
  - State allocation determined by SEP
  - Match spending of 100% for high speed rail grant based on historical DOT TIFIA leverage, no match spending for all others
- **Sustainable Aviation Fuels Tax Credit**
  - Input total value of tax credit, generate output using fuel wholesalers IMPLAN industry code 399
  - State allocation determined by current clean fuels employment from USEER
  - No match spending

- **Biofuel Infrastructure Investments**
  - Input total value of investment, generate output using fuel retail sales IMPLAN industry code 408 and maintenance and repair construction of nonresidential structures IMPLAN industry code 60
  - State allocation determined by current employment in Fuel Dealers (NAICS 45431), Gasoline Stations (NAICS 447), and Petroleum Bulk Stations and Terminals (42471)
  - No match spending
- **Community Climate Investment Grants**
  - Input total value of grants into IMPLAN industry codes detailed by the above policies
  - State allocation determined by selecting a sample of states likely to receive competitive grants based on a 50% greater reduction in 2010-2019 VMT compared to the national average, data from FHWA. Grant funding is then allocated to each select state by the FHWA FY2021 Apportionment
  - No match spending

## BUILDINGS

- **Energy Efficiency Tax Credits**
  - Input into industry mix – Buildings Industry Mix
  - State allocation determined by current energy efficiency employment from USEER
  - No match spending
- **Consumer Rebates**
  - Input into industry mix– Buildings Industry Mix
  - State allocation determined by current energy efficiency employment from USEER
  - No match spending
- **Federal Grants**
  - Input into industry mix– Buildings Industry Mix
  - State allocation determined by current energy efficiency employment from USEER
  - No match funding
- **Federal Procurement**
  - Input into industry mix– Buildings Industry Mix
  - State allocation determined by current energy efficiency employment from USEER
  - No match funding

## INDUSTRIAL

- **Manufacturing Tax Credits**

- Input investment tax credit into IMPLAN code 51 construction of new manufacturing facilities

Input production tax credit into manufacturing industry mix determined from NREL solar and wind technical papers outlined in

- Industrial Manufacturing Industry Mix
- State allocation determined by current renewable energy employment from USEER
- No match funding

- **Carbon Capture & Storage Tax Credits**

- Input investment tax credit into IMPLAN code 51 construction of new manufacturing facilities
- No match funding
- State allocation determined by current clean storage employment from USEER

- **Clean Hydrogen Tax Credit**

- From legislative text, clean hydrogen is defined as steam methane reformation (SMR) with carbon capture, electrolysis, and bioenergy with carbon capture (BECCS). Based on previous studies and technological availability over the ten year time frame, we assume production of clean hydrogen to be split 75% BECCS, 5% electrolysis, and 20% SMR.

Input total value of tax credit into hydrogen spending industry mix, detailed in

- Hydrogen Production Industry Mix.
- State allocation determined by current clean fuels employment from USEER
- No match spending
- **RD&D and Emissions Reductions**
  - Input total value of DOE loans into overall multipliers from Power, Buildings, and Transportation policy groups. DOE loan investment split between policy group multipliers determined by total investment in each policy group
  - State allocation of DOE loans determined by current clean energy employment from USEER
  - Input total value of Advanced Technology Vehicle Manufacturing grant and Domestic Manufacturing Conversion Grants into IMPLAN code 51 construction of new manufacturing facilities and IMPLAN code 340 automobile manufacturing.
  - State allocation of Advanced Technology Vehicle Manufacturing grant and Domestic Manufacturing Conversion Grants determined by current vehicle manufacturing employment from USEER
  - Input total value of Advanced Industrial Facilities Deployment Program into Industrial Manufacturing industry mix.
  - State allocation of Advanced Industrial Facilities Deployment Program determined by current clean energy manufacturing employment from USEER
  - No match spending

## AGRICULTURE & FORESTRY

- **Agriculture & Forestry**
  - Use national cost estimates to allocate funds dispersed by policies identified in TNC policy data by state and policy group (reforestation/restocking, agroforestry, and fire risk management) derived from WRI's *The Economic Benefit of the New Climate Economy in Rural America* report
  - Input funds into industry mix derived from same report
  - No match funding

## ENVIRONMENTAL JUSTICE & LOCAL COMMUNITIES

- **Healthy Ports**
  - Input value of grants into IMPLAN industry codes for port operations and construction of new commercial structures
  - No match funding

- State allocation determined by current port and harbor operations industry employment from BLS (NAICS 488310)
- **Civilian Climate Corps**
  - Input total value of investments into labor income output multipliers to generate induced impacts.
  - State allocation determined by SEP as a proxy for Civilian Climate Corps employment
  - No match spending
- **Environmental and Climate Justice Block Grants**
  - Input 50% of value of grants into IMPLAN industry code 522, Grantmaking, giving, and social advocacy organizations, input other 50% into overall multipliers from Power, Buildings, and Transportation policy groups. Investment split between policy group multipliers determined by total investments in each policy group
  - State allocation determined by current clean energy employment from USEER
  - No match spending
- **Investment in Workers and Communities**
  - Input total value of grants into EDA industry mix detailed in EDA Industry Mix, derived from EDA spending patterns from 2 most recent EDA state allocations from [annual reports](#) 2019-2020
  - State allocation determined by the 2 most recent EDA state allocations from [annual reports](#) 2019-2020
  - 79% match spending determined by the 2 most recent EDA state allocations from [annual reports](#) 2019-2020
- **Greenhouse Gas Reduction Fund**
  - Input total value of investment into overall multipliers from Power, Buildings, and Transportation policy groups. Green bank investment split between policy group multipliers determined by NY Green Bank 2020-21 Impact Report [portfolio summary](#)
  - State allocation determined by current clean energy employment from USEER
  - No match spending
- **Low-Income Solar Credit**
  - Input value of tax credit into overall multipliers from Power policy group
  - State allocation determined by percentage of state identified as low income communities as defined by the EPA EJScreen
  - No match spending
- **Rural Energy Savings Program (RESP)**
  - Input value of investment into overall multipliers from Power policy group

- State allocation determined by current rural renewable energy employment from USEER
- No match spending
- **NOAA Grants**
  - Input value of grants into IMPLAN industry codes for port operations, environmental and other technical consulting services, and construction of other new nonresidential structures
  - State allocation determined by current port and harbor operations industry employment from BLS (NAICS 488310)
  - No match spending

## ELECTRIFICATION INDUSTRY MIX

Share	Grouping	IMPLAN	
		Code	Description
10%		47	Electric power transmission and distribution
30%		52	Construction of new power and communication structures
5%		56	Construction of other new nonresidential structures
5%		60	Maintenance and repair construction of nonresidential structures
30%	Manufacturing	302	Broadcast and wireless communications equipment manufacturing
		315	Totalizing fluid meter and counting device manufacturing
		316	Electricity and signal testing instruments manufacturing
		339	All other miscellaneous electrical equipment and component manufacturing
20%	Computer Engineering	428	Software publishers
		436	Data processing, hosting, and related services
		459	Custom computer programming services
		460	Computer systems design services
		461	Other computer related services, including facilities management

## TRANSPORTATION INFRASTRUCTURE INDUSTRY MIX

Cost data are derived from *Levelized Cost of Charging Electric Vehicles in the United States*.<sup>15</sup>

	Equipment	Installation	Total Cost
<b>Residential L1</b>	\$0	\$0	\$0
<b>Residential L2</b>	\$550	\$1,286	\$1,836
<b>Public L2</b>	\$3,500	\$2,500	\$6,000
<b>Public DCFC 50kW</b>	\$38,000	\$20,000	\$58,000
<b>Public DCFC 150kW</b>	\$90,000	\$60,000	\$150,000

Equipment costs are input into IMPLAN code 329 – Power, distribution, and specialty transformer manufacturing. Residential installation is input into Maintenance and repair construction of residential structures (IMPLAN code 61), while commercial installation is input into Maintenance and repair construction of nonresidential structures (IMPLAN code 60).

<sup>15</sup> <https://www.sciencedirect.com/science/article/pii/S2542435120302312>

## BUILDINGS INDUSTRY MIX

Share	IMPLAN	
	Code	Description
2%	50	Construction of new health care structures
4%	51	Construction of new manufacturing structures
1%	52	Construction of new power and communication structures
1%	53	Construction of new educational and vocational structures
1%	55	Construction of new commercial structures, including farm structures
2%	56	Construction of other new nonresidential structures
6%	57	Construction of new single-family residential structures
4%	58	Construction of new multifamily residential structures
4%	59	Construction of other new residential structures
29%	60	Maintenance and repair construction of nonresidential structures
8%	61	Maintenance and repair construction of residential structures
38%	457	Architectural, engineering, and related services

## INDUSTRIAL MANUFACTURING INDUSTRY MIX

Share	Grouping	IMPLAN	
		Code	Description
30%		51	Construction of new manufacturing structures
55%	Manufacturing	193	Other plastics product manufacturing
		236	Fabricated metal structure manufacturing
		307	Semiconductor and related device manufacturing
		329	Power, distribution, and specialty transformer manufacturing
		333	Storage battery manufacturing
		336	Other energy wire manufacturing
15%	Computer Engineering	428	Software publishers
		436	Data processing, hosting, and related services
		459	Custom computer programming services
		460	Computer systems design services
		461	Other computer related services, including facilities management



## HYDROGEN PRODUCTION INDUSTRY MIX

Hydrogen Type	IMPLAN Code	IMPLAN Industry
Electrolysis	307	Semiconductor Manufacturing
	236	Fabricated metal structure manufacturing
	336	Other energy wire manufacturing
	52	Construction of new power structures
BECCS	16	Commercial logging
	160	Industrial Gas Manufacturing
	479	Waste management and remediation services
	47	Electric power transmission and distribution
	51	Construction of new manufacturing structures
SMR	457	Architectural, engineering, and related services
	160	Industrial gas manufacturing
	286	Air and gas compressor manufacturing
	242	Metal tank (heavy gauge) manufacturing

## EDA INDUSTRY MIX

IMPLAN Industry	IMPLAN Code	Share
Construction of new highways and streets	54	7%
Construction of other new nonresidential structures	55	7%
Maintenance and repair construction of nonresidential structures	60	7%
Employment services	472	14%
Junior colleges, colleges, universities, and professional schools	481	18%
Business and professional associations	523	14%
Labor and civic organizations	524	15%
Other local government enterprises	534	18%

## Occupational Group Definitions

<b>SOC</b>	<b>Occupation Description</b>	<b>Occupation Group</b>
11-0000	Management Occupations	Management/ Professional
13-0000	Business and Financial Operations Occupations	
15-0000	Computer and Mathematical Occupations	
17-0000	Architecture and Engineering Occupations	
19-0000	Life, Physical, and Social Science Occupations	
23-0000	Legal Occupations	
21-0000	Community and Social Service Occupations	Other
25-0000	Educational Instruction and Library Occupations	
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	
29-0000	Healthcare Practitioners and Technical Occupations	
31-0000	Healthcare Support Occupations	
33-0000	Protective Service Occupations	
35-0000	Food Preparation and Serving Related Occupations	
39-0000	Personal Care and Service Occupations	
45-0000	Farming, Fishing, and Forestry Occupations	
53-0000	Transportation and Material Moving Occupations	
37-0000	Building and Grounds Cleaning and Maintenance Occupations	Installation or Repair
47-0000	Construction and Extraction Occupations	
49-0000	Installation, Maintenance, and Repair Occupations	
41-0000	Sales and Related Occupations	Sales
43-0000	Office and Administrative Support Occupations	Administrative
51-0000	Production Occupations	Production/ Manufacturing