

Job Creation Estimates for Colorado through U.S. THRIVE Agenda

Program to Transform, Heal, and Renew by Investing in a Vibrant Economy—THRIVE

This report presents estimates of the job creation that would result in Colorado if the U.S. Congress passes economic recovery legislation that implements a national THRIVE investment agenda, as described in a September 2020 Congressional resolution.¹ The overall finding we report here is that implementing the 10-year THRIVE investment agenda in Colorado would generate about 163,000 jobs in the first full year of the program. This higher level of employment in Colorado would be sustained throughout the 10 years of the investment program (assuming no other major changes in Colorado's economy were to occur).² Thus, if the THRIVE program were implemented in full in 2021, employment in Colorado would increase by 163,000 jobs and that higher level of employment would continue in the state as the 10-year program continues until 2030.

The Congressional resolution's commitment is to "Transform, Heal and Renew by Investing in a Vibrant Economy"—i.e. "THRIVE"—through a range of investments to rebuild the U.S. economy. To date, the THRIVE Agenda has been endorsed by more than 100 members of Congress, including Senate Majority Leader Chuck Schumer, and hundreds of major union, racial justice, and climate organizations.³ The aims of the THRIVE Agenda are similar to those proposed in the Build Back Better program advanced by President Biden during his 2020 presidential campaign.

1 <https://www.congress.gov/bill/116th-congress/house-resolution/1102/text>

2 Of course, other changes in Colorado's economy will occur over the 10-year period 2021 – 2030, often in ways that cannot be predicted in advance. Still, our estimate of a 163,000 increase in employment under an "all else equal" assumption provides a benchmark for measuring the extent to which the THRIVE Agenda will expand job opportunities in the state, even after we allow that, in reality, economic conditions will undergo changes between 2021- 2030.

3 <https://www.thriveagenda.com>

Robert Pollin

Jeannette Wicks-Lim

Shouvik Chakraborty

Gregor Semieniuk

Chirag Lala

The THRIVE Agenda consists of four major investment areas:

1. Clean renewable energy and energy efficiency: To expand access to renewable energy and improve the energy efficiency of vehicles, buildings, and industries so as to achieve the climate stabilization goals set out by the Intergovernmental Panel on Climate Change (IPCC) of reducing carbon dioxide emissions by 45 percent by 2030 and to reach net zero emissions by 2050.

2. Infrastructure: To expand access to affordable transportation, high-speed broadband, clean water, upgrade parks and other public amenities, reduce pollution, and strengthen the public resources needed to undergird a manufacturing revival.

3. Agriculture and land restoration: To expand opportunities for family farmers, including younger farmers and people of color, and to support regenerative agriculture, local and regional food systems, and climate resilience.

4. Care economy, public health, and the postal system: To significantly expand and enhance the level of service provision in these crucial areas of the economy and to raise job quality standards—including wages, benefits, and workplace conditions—for workers employed in these activities.

For the U.S. as a whole, the THRIVE Agenda is designed as a 10-year investment program, with an average annual budget of \$954 billion.⁴ This would amount to about 4.0 percent of average U.S. Gross Domestic Product over 2021 – 2030, assuming that the U.S. economy grows at about 2.2 percent per year.

Our job creation estimates for Colorado result from the state receiving its share of the overall THRIVE budget based on its share of the U.S. population. Because Colorado accounts for 1.8 percent of the U.S. population, its share of the \$954.2 billion annual U.S. THRIVE budget would be \$16.8 billion per year. The proportions of total THRIVE spending in Colorado will also be equal to their respective shares for the overall U.S. economy. In Table 1, we show Colorado's annual budget allocations by investment area under THRIVE between 2021 – 2030. They amount to: \$6.3 billion for clean renewable energy and energy efficiency; \$5.7 billion for infrastructure; \$3.3 billion for agriculture and land restoration; and \$1.5 billion for the care economy, public health and postal service.

As we noted above and present in detail in the following tables, this level of investment spending in Colorado will generate an average of about 163,000 jobs within the state.

⁴ In our March 2021 report *Employment Impacts of Proposed U.S. Economic Stimulus Programs: Job Creation, Job Quality, and Demographic Distribution Measures*, we describe the components of the overall U.S. THRIVE Agenda and the sources for the budget figures in the program's various investment areas. We also present details on our methodology for estimating job creation figures and related data presented for the national THRIVE program: <https://www.peri.umass.edu/publication/item/1397-employment-impacts-of-proposed-u-s-economic-stimulus-programs>.

TABLE 1: U.S. THRIVE Agenda Budget and Colorado Budget Allocations through THRIVE*Colorado population = 1.8% of U.S. population*

	Overall U.S. THRIVE Agenda Budget		Colorado THRIVE Agenda Budget Allocations
	U.S. THRIVE Agenda Budget Allocations	Shares of U.S. THRIVE Agenda Budget Allocations	
Clean renewable energy and energy efficiency	\$358.8 billion	37.6%	\$6.3 billion
Infrastructure	\$324.3 billion	34.0%	\$5.7 billion
Agriculture and land restoration	\$186.6 billion	19.5%	\$3.3 billion
Care economy, public health, and postal service	\$84.5 billion	8.9%	\$1.5 billion
Totals	\$954.2 billion	100%	\$16.8 billion

Source: <https://www.peri.umass.edu/publication/item/1397-employment-impacts-of-proposed-u-s-economic-stimulus-programs>.

This is equal to 5.1 percent of Colorado’s labor force as of February 2020.⁵ To illustrate the potential impact of this level of job creation in Colorado, let us assume that these investments are undertaken in the state, and all else about the state’s economy were to remain equal. Under such an “all else equal” assumption, this level of job creation would result, for example, in the state’s unemployment rate falling to 1.9 percent from its average level of 7.0 percent between July – December 2020. A reduction in Colorado’s unemployment rate at something approximate to this scale would represent a major expansion in job opportunities throughout the state. Indeed, implementing the THRIVE Agenda in Colorado would likely encourage a large number of people to enter Colorado’s labor force, or to reenter after having dropped out because their prospects for getting hired had been discourag-

⁵ In April 2019, we published a separate study, *A Green Growth Program for Colorado*, which evaluates an investment program for Colorado which is similar to, but smaller than, the THRIVE Agenda for Colorado. This 2019 study focused on investments in energy efficiency and clean renewable energy only, with a focus on achieving CO₂ emissions reduction goals through this clean energy transformation. The overall budget for the investment program in the earlier study amounts to an average of \$14.5 billion per year over 10 years, i.e., about 14 percent smaller than the \$16.8 billion average annual budget for Colorado under THRIVE. Because this program is smaller than THRIVE, and also more narrowly focused in its investment program, our overall estimate of job creation is also lower, averaging about 100,000 jobs created per year over the 10-year program. See: <https://www.peri.umass.edu/publication/item/1168-a-green-growth-program-for-colorado>.

ing. Overall, the rise in the state's employment opportunities will provide a foundation for a broader improvement in living conditions for the people of Colorado.⁶

Of course, this expansion in job opportunities would be in addition to the benefits to the people of Colorado through implementing the THRIVE investment program—i.e. the benefits resulting from building a clean energy system throughout the state; deepening the state's commitment to protecting its environment; enhancing productivity and business opportunities through upgrading the state's infrastructure; widening opportunities in agriculture and land restoration; and raising quality standards in the provision of care economy, health care and postal delivery services.

⁶ In *Employment Impacts of Proposed U.S. Economic Stimulus Programs*, as cited above, we provide evidence on job creation at the national level within five major sectors of the U.S. economy: manufacturing; services; construction; wholesale and retail trade; and agriculture. For example, we report that manufacturing employment through the national THRIVE program will amount to 1.6 million jobs, equal to 10.3 percent of the 15.5 million overall level of job creation. This study of the U.S. economy-wide impact of the THRIVE Agenda also includes data on 1) wages, benefits and unionization rates for workers currently employed in the range of activities associated with the THRIVE Agenda; 2) educational attainment levels of these workers; and 3) shares of women and people of color employed in these activities at present. For Colorado specifically, the separate 2019 study *A Green Growth Program for Colorado* provides extensive details on job quality and the demographic composition of the workforce specifically for an investment program similar to the THRIVE Agenda.

COLORADO Energy Efficiency and Clean Renewable Energy Investments through THRIVE Agenda

TABLE 2A: Energy Efficiency and Clean Renewable Energy Investments: Job Creation—Direct, Indirect, and Induced Jobs

	Job Creation per \$1 Million in Spending			
	1) Direct Jobs	2) Indirect Jobs	3) Induced Jobs	4) Total Jobs
Energy efficiency				
Building retrofits	4.6	2.6	2.6	9.8
Industrial efficiency	3.8	1.3	2.1	7.2
High-efficiency autos	0.1	0.0	0.0	0.1
Renewable energy				
Wind energy	1.9	0.9	1.1	3.9
Solar energy	2.1	1.0	1.3	4.4
Geothermal energy	5.1	2.1	3.1	10.3

TABLE 2B: Energy Efficiency and Clean Renewable Energy Investments: Total Jobs Created with Budgetary Figures

	1) Total Jobs/ \$1 Million	Annual Job Creation		Job-Years Created, All Years		
		Annual Budget	Job Creation per Year	# of Years	Total Budget	Total Job Years
Energy efficiency						
Building retrofits	9.8	\$1.0 billion	9,800	10	\$10.0 billion	98,000
Industrial efficiency	7.2	\$111.0 million	800	10	\$1.1 billion	8,000
High-efficiency autos	0.1	\$1.0 billion	100	10	\$10.0 billion	1,000
Renewable energy						
Wind energy	3.9	\$1.9 billion	7,400	10	\$19.0 billion	74,000
Solar energy	4.4	\$1.9 billion	8,400	10	\$19.0 billion	84,000
Geothermal energy	10.3	\$423.0 million	4,400	10	\$4.2 billion	44,000
Total		\$6.3 billion	30,900	10	\$63.0 billion	309,000

COLORADO Infrastructure Investments through THRIVE Agenda

TABLE 3A: Infrastructure Investments: Job Creation—Direct, Indirect, and Induced Jobs

	Job Creation per \$1 Million in Spending			
	1) Direct Jobs	2) Indirect Jobs	3) Induced Jobs	4) Total Jobs
Surface transportation	9.6	1.4	2.3	13.3
Water/wastewater	4.8	1.7	2.5	9.0
Electricity	1.6	0.5	0.8	2.9
Airports	2.8	1.0	1.6	5.4
Inland waterways/marine ports	2.4	0.8	1.2	4.4
Dams	7.0	2.1	3.6	12.7
Hazardous and solid waste	6.4	2.4	3.2	12.0
Levees	7.1	2.2	3.7	13.0
Public parks and recreation	11.4	2.8	3.9	18.1
Rail	2.5	1.3	1.7	5.5
Schools	9.8	1.6	3.2	14.6
Gas distribution pipelines—leak repairs only	0.8	1.5	2.7	5.0
Broadband	1.9	2.0	1.3	5.2

TABLE 3B: Infrastructure Investments: Total Jobs Created with Budgetary Figures

	1) Total Jobs/ \$1 Million	Annual Job Creation		Job-Years Created, All Years		
		Annual Budget	Job Creation per Year	# of Years	Total Budget	Total Job Years
Surface transportation	13.3	\$1.9 billion	25,300	10	\$19.0 billion	253,000
Water/wastewater	9.0	\$567.6 million	5,100	10	\$5.7 billion	51,000
Electricity	2.9	\$752.7 million	2,200	10	\$7.5 billion	22,000
Airports	5.4	\$74.0 million	400	10	\$740.0 million	4,000
Inland waterways/ marine ports	4.4	\$26.4 million	100	10	\$264.0 million	1,000
Dams	12.7	\$68.7 million	900	10	\$687.0 million	9,000
Hazardous and solid waste	12.0	\$5.3 million	60	10	\$53.0 million	600
Levees	13.0	\$123.4 million	1,600	10	\$1.2 billion	16,000
Public parks and recreation	18.1	\$179.8 million	3,300	10	\$1.8 billion	33,000
Rail	5.5	\$368.4 million	2,000	10	\$3.7 billion	20,000
Schools	14.6	\$669.8 million	9,800	10	\$6.7 billion	98,000
Gas distribution pipe- lines—leak repairs only	5.0	\$322.6 million	1,600	10	\$3.2 billion	16,000
Broadband	5.2	\$616.9 million	3,200	10	\$6.2 billion	32,000
Total		\$5.7 billion	55,560	10	\$57.0 billion	555,600

COLORADO Agriculture and Land Restoration Investments through THRIVE Agenda

**TABLE 4A: Agriculture and Land Restoration Investments: Job Creation—
Direct, Indirect, and Induced Jobs**

	Job Creation per \$1 Million in Spending			
	1) Direct Jobs	2) Indirect Jobs	3) Induced Jobs	4) Total Jobs
<i>Agriculture</i>				
Regenerative agriculture	7.7	2.4	2.1	12.2
Farmland conservation	8.6	2.5	3.1	14.2
Organic farming	7.7	2.4	2.1	12.2
Resources for marginalized farmers	9.3	2.2	2.6	14.1
Agricultural R&D	5.6	2.5	2.7	10.8
<i>Land restoration</i>				
Pollution cleanup	7.5	2.3	3.6	13.4
Closing orphaned wells	1.3	1.8	3.1	6.2
Ecosystem restoration	13.0	2.8	4.0	19.8

TABLE 4B: Agriculture and Land Restoration Investments: Total Jobs Created with Budgetary Figures

	1) Total Jobs/ \$1 Million	Annual Job Creation		Job-Years Created, All Years		
		Annual Budget	Job Creation per Year	# of Years	Total Budget	Total Job Years
<i>Agriculture</i>						
Regenerative agriculture	12.2	\$722.7 million	8,800	10	\$7.2 billion	88,000
Farmland conservation	14.2	\$440.7 million	6,300	10	\$4.4 billion	63,000
Organic farming	12.2	\$26.4 million	300	10	\$264.0 million	3,000
Resources for marginalized farmers	14.1	\$1.6 billion	22,600	10	\$16.0 billion	226,000
Agricultural R&D	10.8	\$44.1 million	500	10	\$441.0 million	5,000
<i>Land restoration</i>						
Pollution cleanup	13.4	\$222.1 million	3,000	10	\$2.2 billion	30,000
Closing orphaned wells	6.2	\$211.5 million	1,300	10	\$2.1 billion	13,000
Ecosystem restoration	19.8	\$17.6 million	300	10	\$176.0 million	3,000
Total		\$3.3 billion	43,100	10	\$33.0 billion	431,000

COLORADO Care Economy, Public Health, and Postal Service Investments through THRIVE Agenda

**TABLE 5A: Care Economy, Public Health, and Postal Service Job Creation—
Direct, Indirect, and Induced Jobs**

	Job Creation per \$1 Million in Spending			
	1) Direct Jobs	2) Indirect Jobs	3) Induced Jobs	4) Total Jobs
Care economy	16.8	2.0	4.3	23.1
Public health	6.3	2.3	3.1	11.7
Postal service	6.6	1.0	3.3	10.9

**TABLE 5B: Care Economy, Public Health, and Postal Service Investments:
Total Jobs Created with Budgetary Figures**

	1) Total Jobs/ \$1 Million	Annual Job Creation		Job-Years Created, All Years		
		Annual Budget	Job Creation per Year	# of Years	Total Budget	Total Job Years
Care economy	23.1	\$1.4 billion	32,300	10	\$14.0 billion	323,000
Public health	11.7	\$79.3 million	900	10	\$793.0 million	9,000
Postal service	10.9	\$44.1 million	500	10	\$441.0 million	5,000
Total		\$1.5 billion	33,700	10	\$15.0 billion	337,000

TABLE 6: COLORADO Job Creation Estimates through all THRIVE Agenda Investments

	Annual Budget and Job Creation Figures		Total Budget and Job-Years Figures	
	Annual Budget	Annual Job Creation	Total Budget	Total Job Creation, Job Years
Infrastructure investments	\$5.7 billion	55,560	\$57.0 billion	555,600
Clean energy investments	\$6.3 billion	30,900	\$63.0 billion	309,000
Agriculture and land restoration investments	\$3.3 billion	43,100	\$33.0 billion	431,000
Care economy, public health, and postal service investments	\$1.5 billion	33,700	\$15.0 billion	337,000
Total	\$16.8 billion	163,260	\$168.0 billion	1,632,600

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About the Authors

Robert Pollin

Distinguished University Professor of Economics and
Co-Director, Political Economy Research Institute (PERI)
University of Massachusetts Amherst

Jeannette Wicks-Lim

Associate Professor,
Political Economy Research Institute (PERI)
University of Massachusetts Amherst

Shouvik Chakraborty

Assistant Professor,
Political Economy Research Institute (PERI)
University of Massachusetts Amherst

Gregor Semieniuk

Assistant Professor,
Political Economy Research Institute (PERI)
University of Massachusetts Amherst

Chirag Lala

Economics Ph.D. student,
University of Massachusetts Amherst

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