

GROWING THE ECONOMY OF THE FUTURE: JOB TRAINING FOR THE CLEAN ENERGY TRANSITION

HEARING BEFORE THE JOINT ECONOMIC COMMITTEE OF THE CONGRESS OF THE UNITED STATES ONE HUNDRED EIGHTEENTH CONGRESS FIRST SESSION

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CONTENTS

OPENING STATEMENTS OF MEMBERS

Hon. Martin Heinrich, Chairman, a U.S. Senator from New Mexico	Page 1
Hon. David Schweikert, Vice Chairman, a U.S. Representative from Arizona ..	10

WITNESSES

Mr. Courtenay Eichhorst, Business Manager, UA Local 412 Plumbers and Pipefitters, President, New Mexico Building Trades, Albuquerque, NM	4
Ms. Tracy Hartzler, President, Central New Mexico Community College, Albuquerque, NM	6
Dr. William Beach, Senior Fellow, Economic Policy Innovation Center, Former Commissioner, Bureau of Labor Statistics, Washington, DC	8
Dr. Douglas Holtz-Eakin, President, American Action Forum, Former Director, Congressional Budget Office, Washington, DC	9

SUBMISSIONS FOR THE RECORD

Prepared Statement of Hon. Martin Heinrich, a U.S. Senator from New Mexico	32
Prepared Statement of Mr. Courtenay Eichhorst, Business Manager, UA Local 412 Plumbers and Pipefitters, President, New Mexico Building Trades	34
Prepared Statement of Ms. Tracy Hartzler, President, Central New Mexico Community College	44
Prepared Statement of Dr. William Beach, Senior Fellow, Economic Policy Innovation Center, Former Commissioner, Bureau of Labor Statistics	54
Prepared Statement of Dr. Douglas Holtz-Eakin, President, American Action Forum, Former Director, Congressional Budget Office	62

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WEDNESDAY, SEPTEMBER 20, 2023

UNITED STATES CONGRESS,
JOINT ECONOMIC COMMITTEE,
Washington, DC.

The hearing was convened, pursuant to notice, at 2:16 p.m. in Room 216 Hart Senate Office Bldg., before the Joint Economic Committee Chairman, Martin Heinrich.

Senators present: Chairman Heinrich, Klobuchar, Hassan, Kelly, Welch, Schmitt.

Representatives present: Vice Chairman Schweikert, Beyer, Moore.

Staff: Nicolas Aguelakakis, Christina Carr, Tess Carter, Ron Donado, Michael Farren, Sebi Devlin-Foltz, Tomas Gallegos, Colleen J. Healy, Jeremy Johnson, Brooke LePage, Mirella Manilla, Jessica Martinez, Michael Pearson, Christopher Russo, Jeff Schlagenhauf, Alex Schunk, Douglas Simons, Lia Stephanovich, and Garrett Wilbanks.

Chairman Heinrich. This hearing will come to order. I would like to welcome everyone to today's Joint Economic Committee hearing, titled "Growing the Economy of the Future: Job Training for the Clean Energy Transition."

Today's hearing will begin with my five minute opening statement, a statement from Vice Chairman Schweikert as soon as he arrives, and each of our four witnesses. We will then proceed to questions, alternating between parties in order of Member arrival. Members are reminded to keep their questions to no more than five minutes, and now we'll get to opening statements.

OPENING STATEMENT OF HON. MARTIN HEINRICH, A U.S. SENATOR FROM NEW MEXICO, CHAIRMAN, JOINT ECONOMIC COMMITTEE

Chairman Heinrich. In the last two years, the Biden administration and Democrats in Congress have taken significant action to advance a transition to a robust clean energy economy. We made historic investments in clean energy in the Inflation Reduction Act, as well as the Bipartisan Infrastructure Law.

These investments have directly increased the demand for workers in a range of clean energy occupations. Whether it is manufacturing workers building batteries, building wind turbines, building

solar panels, or plumbers and pipefitters installing heat pumps, there are opportunities here for millions of Americans.

Looking at just a few of these jobs, the Bureau of Labor Statistics predicts that over the next decade, we will need to fill at least 735 job openings for electricians, 425,000 for plumbers and pipefitters, nearly 400,000 for HVAC technicians and 100,000 for utility line workers to meet demand. Some estimates put the increased demand for workers even higher.

This demand for skilled trades people is a once in a generation opportunity to grow the middle class if, if we can train enough workers to meet the demand. These are careers people can build a family around in their home communities, and they don't require a four year college degree or for that matter, the college debt that sometimes accompanies a four year degree.

These jobs feel a lot like my dad's career as an IBEW lineman. His work keeping the lights on in our community was my family's ticket to the middle class. It gave us economic stability. It gave my parents security in their retirement. Right now, we are unlocking that same pathway, that same sort of ticket to the middle class for even more families.

Our current workforce shortages are a real limiting factor in growing the advanced energy economy. That is why we need to invest in proven career training pathways. We need to work collaboratively with labor unions, with community colleges, with private industry. The Bipartisan Infrastructure Law is investing \$72 million in programs to train folks for clean energy careers, by partnering with existing institutions.

Community colleges like Central New Mexico Community College, offer a range of workforce training programs, and one-year certificates that get participants into careers quickly. The Inflation Reduction Act also encourages the use of registered apprentices. These are programs that pay people to learn technical skills on the job and in the classroom, allowing employers to train and invest in their future employees.

By investing in programs that create opportunities and teach the skills necessary for this energy transition, we can ensure that we meet workers where they are. We are already seeing these investments produce results. New Mexicans in these skilled trades have already built some of the largest clean energy projects in the entire nation, and we are currently beginning construction on a regional transmission line and a wind generation project larger than the Hoover Dam.

This one single project will be the largest clean energy project ever built in the western hemisphere, and this same project will also have a substantial economic benefit in the Vice Chairman's State. From wind towers to solar racking hardware to utility-scale solar trackers, we are also manufacturing the components to build out the energy transition.

And in order to continue to lead on this front, we need to invest at the federal level in more research and development. We need to invest in national laboratories and universities that are making fundamental discoveries in challenging sectors like industrial heat and aviation.

Broadening our clean energy research and development will help strengthen our workforce, and it will help workers build the skills needed for the clean energy transition, and it will help us grow America's middle class, while leading the world to a brighter, cleaner future. I am looking forward to hearing more today from our witnesses, including two from my home state of New Mexico, on ways to support and diversify our rapidly growing clean energy skilled workforce.

I am eager to hear more about how we can better invest in educational and apprenticeship pathways to clean energy jobs, and how we can maintain American leadership in the industry across the globe. I will now, since Vice Chairman Schweikert is not here, I am going to hold for his opening statement, and we will begin with our witnesses, and we will start with Mr. Courtenay Eichhorst.

[The opening statement of Chairman Heinrich appears in the Submissions for the Record on page 32.]

Mr. Courtenay Eichhorst is a business manager for UA Local No. 412 and president of the New Mexico Building and Construction Trades Council. UA Local No. 412 represents plumbers, pipefitters, HVAC service technicians and pipe welders in New Mexico, as well as in the El Paso, Texas area.

Members of the union are involved in a range of projects that support the clean energy transition, and prior to serving as the union's business manager, Mr. Eichhorst served as its training director. In his role as president of the New Mexico Building and Construction Trades Council, Mr. Eichhorst leads and advocates for an alliance of craft unions.

I am going to introduce all of our guests, and then we will hear from them with their opening statements in the same order.

President Tracy Hartzler is the president of the Central New Mexico Community College. President Hartzler has held several leadership roles at the college since 2015, and under her leadership the college has implemented a skills to jobs marketplace for students. She continues to expand opportunities to build a skills to workforce pipeline that fosters a partnership among students, national employers and community colleges.

Prior to her time at the college, President Hartzler worked for the New Mexico legislative Finance Committee, New Mexico Interstate Stream Commission and the U.S. Senate Committee on Indian Affairs.

Dr. William Beach is a senior fellow at the Economic Policy Innovation Center, EPIC, and the former Commissioner of the Bureau of Labor Statistics. Dr. Beach is also a Coffin Fellow at the Calvin Coolidge Presidential Foundation. Prior to these roles, he worked at George Mason University, the Senate Budget Committee, the Heritage Foundation and Sprint United.

Douglas Holtz-Eakin is the president of the American Action Forum and the former Director of the Congressional Budget Office. Dr. Holtz-Eakin has also served on the Council of Economic Advisors as the chief economist and the senior staff economist, in addition to directing domestic and economic policy for the John McCain Presidential Campaign, and serving as Commissioner of the Congressionally-chartered Financial Crisis Inquiry Commission.

Mr. Eichhorst, let us begin with your testimony, and then we will go down in the order of introductions. The floor is yours.

STATEMENT OF MR. COURTENAY EICHHORST, BUSINESS MANAGER, UA LOCAL 412 PLUMBERS AND PIPEFITTERS AND PRESIDENT, NEW MEXICO BUILDING TRADES, ALBUQUERQUE, NEW MEXICO

Mr. Eichhorst. Good afternoon, Chairman Heinrich and Committee Members. My name is Courtenay Eichhorst, and I am the business manager for the United Association Local No. 412, which represents just over 2,000 plumbers, pipefitters and HVAC workers in New Mexico and El Paso, Texas.

I also serve as the president of the New Mexico Building Construction Trades Council. I would like to thank the Committee for the opportunity to share my thoughts on how the best in class apprenticeship and pre-apprenticeship programs offered by the United Association of Plumbers and Pipefitters and the Building Trades are empowering our unions to meet the workforce demands driven by the clean energy transition and transforming the lives of workers in the process.

The high tech manufacturing plants and emerging clean energy technologies that have been targeted for support by recent federal legislation requires sophisticated workers with specialized trade knowledge to construct and maintain. At the UA, we see every clean energy job as an opportunity to train workers for the next clean energy job. This is exactly why attaching labor standards that include apprenticeship utilization to federal investments in clean energy is so important.

To meet the demands for skills workers, the UA and North America's building trade unions put our money where our mouth is. Together with our signatory contractors, we invest nearly \$2 billion each year in apprenticeship and journey level training programs. Of this amount, the United Association or the UA, as we commonly refer to our union, alone invests about \$280 million annually.

These training investments consist entirely of private and non-taxpayer dollars. Unlike the traditional four year college program, the five year apprenticeship developed by the UA and other building trade unions provide individuals with the unique opportunity to earn while they learn.

Apprentices in our programs are paid an increasing scale of wages as they progress, receiving health care coverage and becoming participants in retirement plans. They graduate as journeymen and women, debt free and with skills that are in high demand.

In addition to our gold standard apprenticeship programs, the UA and other building trade unions are also increasingly investing in pre-apprenticeship programs that can be designed to help prepare high school students or individuals from under-represented communities and others for a career in the trades. Local 412 has numerous apprenticeship initiatives that have proven to be highly successful in creating a pipeline between the communities we serve and family-supporting careers in our industry. More details about these programs are found in my written testimony.

They include a 12-week accelerated weld program and a partnership with 14 different high schools in remote areas of New Mexico. Local 412 also partners with several local civic organizations to provide apprenticeship readiness training. We invest over 2.7 million each year at Local 412 in our local training programs, which again consist entirely of private dollars.

When I first took over the apprenticeship program in 2014, we had a total of 88 apprentices. We now have over 440 apprentices, including 25 veterans, 32 women and 52 individuals from the Navajo Nation. This large jump in apprenticeships speaks for itself as to the success of our initiatives.

While I am exceptionally proud of the work that we have done at Local 412, there are similar stories to be told throughout the United Association. For example, this past June the UA and Capture Point Solutions committed \$310,000 to a new pre-apprenticeship program in Vernon Parish, Louisiana, which will create a training and employment pipeline between high school juniors and seniors in Vernon Parish, and the new carbon capture hub being developed in Central Louisiana.

The UA has also led the way in partnering with the U.S. military, to train and place veterans into our apprenticeship program through our award-winning VIP or Veterans in Piping Program. This program, which is described in my written testimony, currently operates in seven different military bases, and since its inception has provided apprenticeship opportunities for over 3,170 military veterans.

I would like to end my prepared testimony by sharing my personal experience of coming up through Local 412 apprenticeship program, which I think illustrates the value of earn as you learn. Unlike many of my fellow UA brothers and sisters, I went through a four year college program and obtained a bachelor's degree in Marketing and Sales from New Mexico State University, before beginning my union apprenticeship.

However, when I applied to Merrill Lynch for a job straight out of college, I was told that I needed to get experience first. When I heard this, I thought what was the point of my four year college program if they did not provide me with the experience I needed for a career. So I simply could not find a job in New Mexico that paid well, and would provide me with the training that I apparently still needed.

So ultimately I reassessed the path I was on and joined Local 412 apprenticeship program. The journey that decision has put me on has been immensely satisfying in giving other men and women the same opportunity is what motivates me to focus on expanding our apprenticeship training at Local 412.

In conclusion, the UA and the Building Trades are prepared to meet the workforce demands of the clean energy transition, because we have the best training programs and the best model for delivering that training throughout—through our earn as you learn approach. When programs like ours are linked to federal funding through labor standards that require apprentice utilization, the sky is the limit as to what we can build together during this pivotal moment in the clean energy transition. Thank you all.

[The statement of Mr. Eichhorst appears in the Submissions for the Record on page 34.]

Chairman Heinrich. President Hartzler.

STATEMENT OF TRACY HARTZLER, PRESIDENT, CENTRAL NEW MEXICO COMMUNITY COLLEGE, ALBUQUERQUE, NEW MEXICO

Ms. Hartzler. Good afternoon, Mr. Chairman and Members of the Committee. My name is Tracy Hartzler. I am the president of Central New Mexico Community College or CNM. I also serve on the board of directors for the American Association of Community Colleges that is based here in Washington, D.C.

So thank you very much for the opportunity to be here today to discuss the significant need for a much larger workforce pipeline to support the accelerating growth of the clean energy economy in New Mexico and certainly across the country. CNM serves over 30,000 students annually, in about 200 certificate, degree and training workforce programs that range from our trades, our skilled trades to our arts programs that allow students to transfer on to universities, but also to enter into the workforce directly.

We welcome students from all backgrounds. We are a Hispanic-serving institution, and we serve a significant population of tribal bands and—members from our New Mexico tribal bands and nations. Our students and learners include high school students taking dual credit classes, both in trades programs but also general education programs, and then also we have adult learners who are seeking a quick way to enter the workforce.

I want to share a story about one of our students named Rita, who was struggling to make ends meet working in a restaurant for tips and a low wage. But she realized with two children, she could not really provide for them sufficiently, so she decided to enter the clean energy industry.

She started in our electrical trades program, and within two years completed that program, is now at a local electrical company providing a range of services. She owns a car, she owns a home. She is able to provide for a family, and there is no question, as she would say, that trades was the game changer for her. So that is what we hope for for all of our 30,000 plus students we serve every year.

So when I think about Rita, and I think about all of you who have community colleges throughout your district or your state, most of your community colleges are serving students like Rita. They are individuals who are seeking entry into a good-paying career, not a job. They are looking for a way forward and they come to community colleges particularly because we have the resources, not only the training programs and the academic programs, but we have the resources, those critical student supports that are so helpful in wrapping around that learner, to help them not only enroll but persist and complete their program.

So just as we support our students like Rita, we also work incredibly closely with our employers. We exist to serve local workforce needs, and to grow our local economies. So we frequently work with employers to spin up programs, to review our programs, revise our programs, to make sure they are continuously relevant

not only in our existing industries that are common, but in our new industries like our clean energy industries.

CNM is not unique to this. All of the community colleges in New Mexico, but again, all of your districts and states do the same thing. We serve our students and then we serve our employer needs to grow our local economies. So in my written testimony, I highlighted the variety of associate degree certificate programs in solar and wind technology that CNM, many of the community colleges in New Mexico provide, including Navajo Tech as well.

They focus mostly on installation and some of our maintenance skills, but again these are entry points into a career in an industry where we again continue to provide upscaling and pathways for individuals once they enter those industries.

So just as CNM's programming is evolving to meet changing demands, that track record led us to a successful conversation with an international company, which is choosing to move their manufacturing facility to the U.S.

That company was able to take advantage of tax credits both from the Inflation Reduction Act, also with many state tax credits to not only build the facility, they are working with federal and state-funded workforce development funds and partnering with CNM to help train their 1,800 employees who will be coming online in the next about 18 months.

Like most community colleges, we are challenged, I am challenged with providing and developing strong, affordable high-quality programming and supporting access to frankly vulnerable students, students who are seeking a great deal of support to enter into a workforce.

I mentioned most of our funding comes from non-recurring sources. We have one-time funds that are critical to jump start this training, and that came through a number of federal bills that many of you supported in the last couple of years.

In addition, the American Association of Community Colleges supports continuing the Strengthening Community College Training Program and Strengthening Institutions Act. Those are included in both the House and the Senate Labor Human Services appropriation bills. We are pleased with those.

But we also seek recurring funding. We use some of that from the federal and state government as well. Again, we also are grateful for the support that the federal government provides to our students who seek access.

So I would encourage the Congress to consider supporting Workforce Pell, so that individuals who are seeking that quick entry into the workforce and that quick start into a career that is going to be successful for them and serve our communities, including our clean energy sector, that they are able to use federal grant dollars, in addition to a lot of the other state supports that we are able to provide.

So with that, I just want to say that it is critical that community colleges receive federal support for jobs programs. There is no question that employers come to community colleges to design and provide responsive programming, and that learners come to us to find a better life, and the resources and the programs they need to help them achieve their goals.

We are trusted, we are valued, we are capable, and that is why employers and students come to us. So Americans clearly understand the important role and value that community colleges provide, and I think with the support that we need, I am confident that we will be able to continue to provide the workforce solutions that our communities and states require to support the booming clean energy economy, not only in New Mexico but across the country. Thank you.

[The statement of Ms. Hartzler appears in the Submissions for the Record on page 44.]

Chairman Heinrich. Dr. Beach, the floor is yours.

STATEMENT OF DR. WILLIAM BEACH, SENIOR FELLOW, ECONOMIC POLICY INNOVATION CENTER, FORMER COMMISSIONER, BUREAU OF LABOR STATISTICS, WASHINGTON, D.C.

Dr. Beach. Very good, thank you Mr. Chairman, Ranking Member, Members of the Committee. It is a real pleasure to be here and be on this panel with my colleagues, to talk about this extremely important topic. I am just really pleased, Mr. Chairman, to hear that you use BLS data.

The occupational series that BLS does is among the most important and popular data that is produced by the Bureau, and I was—when I was Commissioner, I tried to get as much done in the environmental area as possible, because demand is growing by leaps and bounds for that particular kind of data.

So let me talk about three challenges that I mention in my written testimony and that I think are really in front of this Committee and in front of the Congress when we think about how we support that great demand for new labor in this growing sector.

The three are, and I will start with program effectiveness. I think this is a really important one. It is a classic one when we are talking about government training programs. I am sure you are all familiar with this. It turns out that directly funded and managed training programs by federal agencies, job retraining in particular, not so much adult education, which seems to be quite effective, but training for a job or job retraining, they just do not seem to be as effective as we want them to be.

The people who enrolled in this training may be not typical of the class of people that you would normally think needs the training. So there is a self-selection problem, which is a classic issue with the training programs. Not controlling for that particular, what is called “unobserved characteristics” is what makes these appear to be effective, but really not effective.

So how does Congress determine effectiveness, and here is where you need to build this into your, into your legislation if legislation moves forward. You need to have what are called randomized tests. So you pick people who would be in the program at random, rather than having them identify themselves, and you pick people who are in the program and you pick people who are not in the program, and then you follow them over time to see whether these randomized picks actually are different, did they have different outcomes.

When Mathematica did this study for the Department of Labor, I was not at Labor at that time. It was just before I started my term. They looked at a whole host of programs, from job training,

Job Corps, about 40 programs. They did these randomized tests for a number of these programs. Sadly, they did not find too many of them to be effective. What is effective is what is happening in the private sector and certainly in the joint efforts of labor unions and private companies to train.

And so we need to study why are those effective I worked a long time in the telephone industry, and I can tell you there when I picked people to go into the training programs, I always picked the ones who would succeed. So even the training programs in the private sector need to be scrutinized pretty carefully for effectiveness.

A second problem is source data. You are going to want to have a lot of data that tells you what is the demand for these jobs, and these data need to be produced by a statistical organization. BLS stopped producing those data in 2011, and I will be happy to discuss the reasons why.

At that time they—for the green jobs data, which they were producing, they found that there were about 2.1 million green jobs in the United States. That is 2011. I took the liberty of just updating that number, and when you update that number for the larger labor force, you get about five million green jobs in the country.

There are many different ways of figuring out what the green jobs are, but you are going to want to have that detail. I produced a chart in my written testimony that lays out all the occupational characteristics that BLS was able to produce. It is crucial if you are going to pursue the area of green jobs in a systematic way, as Congressional policy, that you have those data in front of you.

But they are costly, and that is my third point. Congress is severely challenged, as you all know. You are working on this right now, to bring its fiscal house in order. You know, we have had a 53 percent increase in publicly held debt. We have had a 42 percent increase in outlays just in the last four years, just unprecedented increases.

And when you—when you—what has paid for your increased outlays? What has paid for that? Recent work by Robert Hall and the Nobel Laureate Thomas Sargent indicates that only seven percent came from tax revenues, 76 percent from bonds and 14 percent from money creation.

So to conclude, you have some challenges in front of you, and I think you need to confront those honestly and directly, and I am sure you will. Then you need to say how can we pay for these jobs programs that we are going to fund? Clearly, given the fiscal challenges, that kind of outlay needs to be offset somewhere if you go forward with it. Thank you very much.

[The statement of Dr. Beach appears in the Submissions for the Record on page 54.]

Chairman Heinrich. Dr. Holtz-Eakin.

STATEMENT OF DR. DOUGLAS HOLTZ-EAKIN, PRESIDENT, AMERICAN ACTION FORUM, FORMER DIRECTOR, CONGRESSIONAL BUDGET OFFICE, WASHINGTON, D.C.

Dr. Holtz-Eakin. Chairman Heinrich, Vice Chairman Schweikert and Members of the Committee, thank you for the chance to be here today. Let me say just a few things briefly, and then I look forward to answering your questions.

The notion of a green energy/clean energy workforce is appealing, but it really lacks any analytic rigor. Granted, there will be jobs, a lot of jobs in production, construction, generation, transmission of clean energy. But those are really just jobs in the economy, and there is nothing special about them.

Sure, they could have some firm-specific or occupation-specific skills that you need to have, but that is true all through the U.S. economy, and it is a standard problem in workforce development to develop and deliver those kinds of skills to workers, so that they can be effective in their careers.

So this is something that by and large we have confronted before, and by and large there are enough private sector incentives for firms to deliver that, to make sure that their workers can be effective in their jobs, or other private sector actors. As you heard from some already, unions and others deliver that training.

So that, that seems to me to be the real lesson of where we are right now, and it suggests several very simple principles for policy going forward.

The first is there is no need to set up a large, new, dedicated clean or green energy workforce development effort. Instead, that notion should be put aside and existing routes of training should be pursued. I would echo what Dr. Beach said about the success of federal training programs.

If you look at things like the Workforce Innovation and Opportunity Act and the Adult Displaced Worker Training Programs there, in our work when we looked at that, what you found is lots of people got trained for jobs that did not exist anymore, and there was lots of demand in new jobs and those people did not have the skills to fill them.

This is an area where there is going to be large demand and new skills necessary. To rely on programs like that, which have a terrible track record of delivering, would be a mistake. Instead, all of the efforts should be on private sector training, supporting these collaborative efforts that we have seen across the country that have been successful for a long, long time in meeting the labor force needs of local businesses and using registered apprenticeships wherever possible, because they have the best record of success there as well.

So I think this is an important topic and a good hearing, and I look forward to answering your questions.

[The statement of Dr. Holtz-Eakin appears in the Submissions for the Record on page 62.]

Chairman Heinrich. Vice Chairman, we held your opening, so the floor is yours.

OPENING STATEMENT OF HON. DAVID SCHWEIKERT, A U.S. REPRESENTATIVE FROM ARIZONA, VICE CHAIRMAN, JOINT ECONOMIC COMMITTEE

Vice Chairman Schweikert. Well you are a glutton for punishment, and Mr. Chairman, I will do this real quick so we can get to questions, because that would be much more interesting.

We are actually happy to see you choose this as the subject, one of the great kindnesses. One of the great kindnesses is we have been going back and forth, and once again I want to compliment

Senator Heinrich's staff for working so well with, you know, our staff on this and that, because there had been some history, for those of you who had been on the Committee before, where sometimes we were cranky towards each other.

But one of the things we tried actually looking at is what is the definition of a green job, and this may go to my friend with the history in BLS. If we actually as a Committee or even for staff, maybe it would be really smart for us to build sort of a universal definition.

The reason for that is you get those of us in the idiot—I mean political class who get up all the time and say this bill will create this many jobs or this many jobs. Would not it be nice to actually have at least a common benchmark, whether it be on the right or left, of what the hell we are talking about?

The second thing is, and we have a couple of things going on in the House and I apologize. We are a little distracted but I am working on it. But and it may be 20–25 years ago there were actually some attempts to do some pretty detailed research of the job training programs of the 1990s.

And the juxtaposition, I remember it was a long study. It was an academic one, and it talked about programs that had reached out, and I love my community college. I'm from Maricopa. I got an AA from my community college, biggest I think it may be in the country.

But the data set that came from that said the government-sponsored training that used these educational facilities, what primarily was happening is when the graduates came out, they had to be re-trained at the business level for the business mechanisms there, that maybe the fastest way we reach productivity and participation in, as you want to call it, the green economy, is not a surreptitious route through a government-sponsored educational foundation mechanisms training, community college, but getting people straight to have that relationship with an employer, and have the training there for that methodology, technology, types of equipment and what their contracts are.

And that—I hope that is where we are going to head, is an understanding. If this is really about workers, how do we help them have a productive life? And I will find that study, because I know—I am a packrat. It is in one of my binders. But I remember even then many years ago the cost per job of the training was outlandish, and a fraction of that might have been a much healthier incentive.

But it has to be carefully designed for the relationship between that employee and employers, to have sort of a modeled apprentice program. You could actually steal some of the brilliance some of the industrial unions have created, saying—that allow it to be an individual contract with an individual employer to learn their skill set, because it turns out if I get my electric certificate on how to put up electric photovoltaic panels, I may be able to go do other types of electrical.

We need to make sure that this job training has the flexibility that our arrogance, which often leads us down a bad path, is green energy, every type of job, is going to probably look different five years from now. Just like it did five years ago, how do we make

our education flexible so we are making people so they have a productive life instead of we wall them off from their future. With that, I yield back.

Chairman Heinrich. Well we will start with questions and alternate back and forth, and I want to start with you, Mr. Eichhorst, and I want to make clear. I actually do not call these “green jobs.” These are just jobs, and the thing I do like about them is that they are the kind of jobs in our state where you can really build a family around these skilled trades jobs.

How important are these types of programs in preparing young people for careers in the trades, the programs that start before you get to the graduation in your high school? Because I think what—one of the things that we hear that changed over the course of the last 30 to 40 years is this idea that if you do not get a four year degree, just forget about it.

And now we are in this position where we really need skilled trades, and the demand signals in New Mexico, I mean some of this has been mentioned, but 1,800 factory workers coming at Maxeon Solar, 250 to 300 at Arcosa Wind Towers.

You have got thousands of people necessary to build the kind of scale of projects like what Pattern and SunZia are doing. A thousand more skilled trades people just building the fab at Intel right now, and you know, every job we do not fill is going to be filled by somebody coming from out of state and we want to build long-term capacity.

So how important is it for us to be working with the high schools, to get this stuff, the career technical education back in the high schools, to create an on ramp for apprenticeships?

Mr. Eichhorst. Thank you for that, Chairman Heinrich. I appreciate the question. When I went through high school in the 90’s, we did have shop classes. We had welding classes, we had automotive. I would not have finished high school if it would not have been for welding classes. I was bored to death sitting through some of those classes, and because I had the ability to go out and weld, go make pig feeders, go make different things, I stuck it out.

And then I went to college just to prove everybody wrong, and I was not going to, I think. But right now, a perfect example, Los Alamos National Laboratories. They are going to demand an additional 1,500 craft workers. That is just the men and women that build the facilities by 2026.

Espanola Valley is a beautiful part of the state. It is one of the most beautiful areas in America as far as I am concerned. But they have issues with dropout rates, they have had issues with drugs, they have had a lot of issues in the past. What this does, when we get to go in and talk to these students before they graduate high schools, we let them know look, you need a high school diploma. You need to keep your record clean. You need to do these specific things.

The minute you are done, we will bring you in. We will start you down the right path. You are going to be making money. You are going to have insurance like nobody else has. You are going to have pension, real retirement plans that nobody else has. All you have to do is keep your act together, keep your nose clean, graduate high

school. We will teach you how to weld. We will teach you the electrical, and everything that you need.

The heat pump technology. That is one of the hardest things, to find individuals right now that want to do that. But what we are finding is we are going out and we are hitting all these little itty-bitty communities and these tribal entities. Once they realize what heat pump technology is, they say oh my gosh, this is awesome. This is like puzzles. This is exciting. This is something we need to do.

So if we can get to them before they drop out or before they choose a job, if we can get to them and explain look, you will have a career that will change you entire family's existence. You will be able to afford a home, you will be able to do what you need to do with a spouse and children, and all the exciting things that, you know, most of us wanted with the American dream.

As we get to these high school students and we can do these apprenticeship readiness programs, we get through the OSHA 10. We get through the first ACPR. We get through the basics that every high schooler should have.

I have had apprentices come in at 18, 19, 20 years old, they have never swung a hammer. They have never used a shovel. They were not lucky like I was to have a dad that forced us to do manual labor and actually made us get outside and clean the stalls and work on the pens and take care of the animals.

I was lucky. But a lot of these kids never had that opportunity. So if we get to them young enough and we explain look, you like working with your hands, you like working on a computer, a lot of our jobs are very technologically advanced.

So we get to them younger, they have a career path, they think oh my gosh, I have something to stay in school for. I have something to look forward to. Maybe I should not go try some drugs. Maybe I should not do something stupid. Maybe I should stick with this.

We get them in these programs and our instructors came from the same place. Maybe they had colorful pasts. Maybe they had a crazy childhood, and they can explain to these young men and women look, you have a heck of an opportunity for a long-term career. So thank you for that question. It is a good opportunity to get these students in as early as possible, and get in front of them and let them know that they have a lot of opportunities.

Chairman Heinrich. Vice Chairman Schweikert.

Vice Chairman Schweikert. Is it inappropriate to invite him to come hang out with my—if you ever make it to Scottsdale and Phoenix, I have a full welding setup. I was not allowed to marry my wife until I learned how to weld, because like five of her brothers are all master welders.

Chairman Heinrich. For the record, Mr. Eichhorst knows this, but I actually did a DIY on a heat pump over the August break.

Vice Chairman Schweikert. Really?

Chairman Heinrich. Just for the fun of it.

Vice Chairman Schweikert. Oh God, now I need to put my plumbing so you and I can maybe start a video competition. As long as we are not both on a desert island, right. Okay, that is sort of an internal joke.

But now to a point of seriousness, and this is actually—I need my two Ph.Ds to actually bounce on something. First off Dr. Beach, what is my population? Well, sometimes I do not think we start at some of the base discussion. What is my available labor pool right now that actually exists, that has not gone off and done, you know, four year university degrees or, you know, has chosen military this and that?

What is my actual population that is available to become a skilled craftsman, a skilled journeyman?

Dr. Beach. Sure. Every, every year we get about two million people who enter the labor force.

Vice Chairman Schweikert. Okay.

Dr. Beach. Some of those are from foreign countries and some of those are native born. We have got about five and a half million people who have dropped out of the labor force, but tell us each month that they would like a job if a job was available to them. When we ask them why you do not find that job and they say well, it is either training or I have been out too long or my skills are.

So I would say the available labor force at a minimum is between seven and ten million people.

Vice Chairman Schweikert. Really? Okay. I did not have you as high as ten, but we have been reflecting the seven, and looking at. So because one of the misalignments is, you know, seven, but and then we will hear things saying but there is 20 million jobs.

Dr. Beach. Right.

Vice Chairman Schweikert. Tell me, from your expertise, what is my misalignment right now, of just raw population, you know, skilled—but who is not in that labor participation and available labor opportunities?

Dr. Beach. Well first, the biggest one is space. A job may be in New York but the person who is looking for a job might be in California, and so they cannot travel to the job. So that is a big one.

Vice Chairman Schweikert. And Dr. Holtz-Eakin, one of the things that is coming back to us, particularly on this type of labor skills, is particularly, you know, you have great wind assets as New Mexico has one. You build, but then it is over and now you are back into a migration requirement.

It is, it is sort of the urban/suburban issue compared to where so much of green, let us call them green jobs for right now, for lack of a better definition, are often in rural, you know, more difficult areas. The reality of not only having a skilled population, but just the convenience of having a family and those things in those types of locations. What is my misalignment? What am I not understanding?

Dr. Holtz-Eakin. Oh, I think you are understanding the geography perfectly, and you have to develop the economics to make it in the firm's interest to locate there, the firm's interest to hire workers who are willing to work there, and you know, money is a powerful solution to a lot of problems. This will be how this gets solved.

We have had state to state labor migration for a long time in the United States. That I am not worried about. The more difficult part will be the public services, the police, fire, schools in places that did

not have those populations before, getting those up to scale quickly as they are building these projects.

Vice Chairman Schweikert. But then you have the second half. Then those populations disappear. It sort of like the dam economics of there is some great stories like, you know, for my-like doesn't like need populations, and then they crash.

Dr. Holtz-Eakin. Yeah. It is the recurrent criss-cross. They are just doing it in different spots. I am not worried about getting people from place to place, but the fixed costs you are going to incur those places are real.

Vice Chairman Schweikert. If you were to approach this whole subject, what is my most elegant way of building a well-skilled population that is available for at least this and future technology? What would you do?

Dr. Holtz-Eakin. So number one, it is not about the money. First of all, there is not any money. I will just stipulate that, and then you know, we have spent about \$200 billion since 2001 on graduate medical education, and they are not nearly enough doctors, nurses, physicians assistants. It is not about just money.

The second thing I would say, the lesson is do not try to bring something to scale. President Hartzler is doing a great job. Do not replicate that all across the country, because it is a great job in that location, for that demand for labor, with those firms, and we repeat this error all the time. Decentralize this as much as possible. Do it at the local level through the private-public partnerships and/or private firms.

That is going to be the most successful way to do it, and certainly do not try to create green jobs. Create jobs that could be green or blue or yellow. Give people skills that are transferable from sector to sector, because we do not know what this will look like in five years.

Vice Chairman Schweikert. Dr. Holtz-Eakin, thank you. You got to my punchline without me having to say it. Thank you, Mr. Chairman.

Chairman Heinrich. Senator Klobuchar.

Senator Klobuchar. Thank you very much, Mr. Chairman. Thank you for holding this very, very important hearing. It could not be more timely, with everything happening. I guess I will start with you, Mr. Eichhorst. Talk about policies, aside from the apprenticeship requirements with recently enacted tax credits, what else we can do to ensure apprenticeship programs can grow?

I am, you know, I am one on the presidential debate stage that kept saying we are not going to have a shortage of sports marketing degrees. We are going to have a shortage of electricians and plumbers, and of course nurses and doctors and I pissed off everyone that had a kid with a sports marketing degree. But it really worked well for me. But if you could, if you could answer the question.

Mr. Eichhorst. Absolutely, thank you for that. I will answer to the best of my ability. Allowing—so allowing policies to require registered apprenticeship programs, that is one of the things you just talked about. That has been fantastic, and that helps increase the amount of apprentices needed, right?

But making it on a local level helps a ton too. If you go to an area that has predominantly not done anything that could be considered green or energy type, they may not need very many apprentices. So if you go to the areas that need them, you can train there. You can train for what they need, and those skills can be transferred anywhere in the country, and I will give you an example.

What is nice about the unions that I am used to is so the UA. We are across the entire United States, from Seattle to Florida. If you are training for a med gas certification to build hospitals, and I know this is not clean energy, but this is an easy example, you are doing the exact same training in California as you are in New York. You are doing the same training in Seattle as you are in Florida.

So if we are working on a very specific type of alloy or type of welding that we are doing in New Mexico, we built a uranium enrichment plant years ago. They had very specific alloys on there. They had aluminums and they had some different things we were not used to. We developed a training program in Albuquerque. We were extremely successful with it. We did a great job.

We had apprentices welding on this facility because they went through the UA's, our welding standards are extremely stringent. They went through the UA's weld program. They were certified. Those same students went up to Malta, New York to weld on Global Foundries. Some of them are in Phoenix right now welding on Intel.

Some of them have gone up to Seattle. Some of them have gone all over. So as this continues to happen, we will continue to keep up with it. So in Albuquerque, one thing we are doing is making sure we have a brand new state of the art welding training center, to keep up with what is coming, and what is nice, they have the ability to travel the country.

Senator Klobuchar. Yeah.

Mr. Eichhorst. So these young men and women—

Senator Klobuchar. Making sure that they are able to use those skills other places. Okay, quick Ms. Hartzler. So I have worked a lot in this area. Senator Moran and I have a bill on increasing the partnerships between colleges and apprenticeship programs, and Senator Braun and I have one on expanding this certain tax advantage savings accounts to be used for skills training, apprenticeships, as well as some degrees in these areas. Talk about what you think we could be doing better.

Ms. Hartzler. I think the policies you are discussing are exactly what I would say any learner who is coming to your college would want to see enacted. There is no question. I would say building on the prior testimony that pre-apprenticeships are so critical.

We do that with our public school districts through dual credit classes. We work with 135 high schools. What is important about those high schools is that we are training them and we are exposing them, many of the students, to certainly working opportunities while they are in high school and certainly when they come to college, because they are taking these dual credit classes.

We are also helping them earn at the same time. So when you talk about savings, how important that is, not only—and I just

want to say not only for these initial training expenses and experiences. We know that this is lifelong training. This is not a one and done. It is not one in five years and done.

So we know that a third of our learners at the college already have degrees. They may be marketing degree, but they are often nursing degrees and seeking advanced certifications. So I can tell that a savings account that allow individuals to continue to earn would be very beneficial, and save for future training where there might not be other financial aid allowances for.

Senator Klobuchar. Okay, thank you. Both my dad got a two-year community college degree as did my sister, and she got her GED first. So our family would not be around if it was not for a two-year degree. So thank you. Last, Dr. Holtz-Eakin, you touched on it a bit, but the importance of immigration reform right now.

I know our nation has expanded as far as I know with the shrinking workforce, and I do not think we want to be the first to experiment when you look at the numbers. And so just whether it is work permits, visas, dreamers, I am not going to go through the list, but how important that is right now, because in the rural parts of our country, nursing homes, hospitals, doctor's offices, that bill, you know, to allow the doctors to stay when they come from other countries and get their degrees here. I think we have 12 Republicans on it. Talk about that quick.

Dr. Holtz-Eakin. I could talk about that for two hours, but a 30 second version is that there is no more important economic policy than immigration reform, period. The native born population has some replacement with fertility. Our future will be dictated by our immigration decisions. The pace at which the labor force grows, the skills that are embedded in it, everything is about immigration.

The current system is broken, and a comprehensive reform would be great. But if you cannot get that, anything that will provide greater flexibility in the use of skills in the U.S., whether it is spouses, the H1B recipients work, things like that.

Senator Klobuchar. Yes, I would have to wait five years, because if they are all going to Canada because they cannot work—

Dr. Holtz-Eakin. The list goes on and on. So I would encourage you to pursue this in any form you can.

Senator Klobuchar. Thank you.

Chairman Heinrich. Senator Schmitt.

Senator Schmitt. Thank you Mr. Chairman, and thank you all for being here. I guess what I wanted to do in the limited time that I have is just you guys are all dealing with—well especially this side, are sort of you guys are looking at the numbers.

But you guys are kind of dealing with a lot of downstream effects that are certainly beyond your control, but certainly some decisions that have been made. This is my first Congress, my first term in the Senate, but certainly a lot of decisions that have been made have had an impact.

I think it is important for us to acknowledge I think some of the fearmongering that happens, that drives a lot of the dollars that flow out of this place. In March of this year, the U.N. warned of humanity's ticking time bomb, and released a Report of Reports on the dire status of global climate, describing a multi-million dollar plan to implement climate change policies across the globe.

The Secretary General called the report a survival guide for humanity. To him, the era of global warming has ended. The era of global boiling has arrived. These sort of comments to me are totally nuts. They are not new. In the 70's, we were hearing about, you know, global cooling and that there would be food rationing by 1980. The U.N. issued a report in the 1990's essentially saying that environmental catastrophe is irreversible as a nuclear holocaust would take effect by the year 2000.

So it is easy for these folks, in my view, to have lost complete credibility with a lot of these predictions. The issue though is a lot of people bought into this, and the United States has spent five trillion with a T, trillion dollars that now has downstream impacts that some of you are dealing with, whether it is retraining or apprenticeships.

I do want to ask the question, and I do not know who the best person to ask. So Doctor, I'm going to—Holtz-Eakin, I am going to pick on you or ask you this question, and I do—we have spent this amount of money and I think the number is in order to effect temperatures by a third of a degree Fahrenheit, the amount of money that the United States would have to spend to do this, even if you accepted that premise, is nuts.

There is a tradeoff. There is opportunity costs, right? We are talking about money for training programs, and here we are now driving investment in other places, including China where a lot of these rare earth materials are mined. Those are—we have hollowed out the middle class for a lot of these industrial jobs that have gone other places.

But as it relates specifically to whether it is, you know, for wind energy or solar, if you accepted the idea that we are controlling the weather, if China and India are not on board with this, which they are not, I mean they are building coal-fired plants, you know, three a month, what are we doing?

Is this a tradeoff? Is this money in your expert opinion here of how we are spending money, are we—is there a return here other than a loss of jobs that we have to retrain people for?

Dr. Holtz-Eakin. So I am a long-time participant in the debate over climate change and have done this at the CBO in the McCain campaign, and more recently, and I believe the current strategy is not going to be effective. The idea that you can simply subsidize everything and get the U.S. to a clean energy portfolio I think is mistaken.

I am not going to belabor it, but I think that this is not going to work. And the lack of international buy-in means that it will be futile in the end from a greenhouse gas concentration point of view. So it is hard to make the case this is a high rate of return investment of federal dollars. It really is.

Senator Schmitt. Well in—

Dr. Holtz-Eakin. It is terribly inefficient the way it is designed.

Senator Schmitt. There is a study from the University of Pennsylvania that found that fewer than one percent of all workers can transition to a green job, and I think that—and you do not—Mr. Eichhorst, you do not have to comment on this if you do not want to. This is probably more of a statement.

I think what we are seeing play out right now in the auto industry is sort of the tip of the iceberg. Ford Motor Company lost \$4.5 billion on their EV vehicle. I have a Wentzville plant. I have in Wentzville in Missouri, there is a GM plant. \$4.5 billion would go a long way, I think, and having the parties come together, and my big concern here is that this obsession with this agenda is going to continue to bleed jobs and we are going to keep having to have conversations about what sort of retraining makes the most sense, whereas if we were making better decisions here, we would not need to have this hearing. So thank you for being here.

Chairman Heinrich. Mr. Eichhorst, if you want to comment.

Senator Schmitt. Yeah, feel free. I just did not—I know that is not why you are here to testify, but is certainly something near and dear, I know, as a union guy.

Dr. Holtz-Eakin. Can I add one thing?

Senator Schmitt. Sure.

Chairman Heinrich. Absolutely.

Dr. Holtz-Eakin. In terms of downstream consequences, I think the one that should not be forgotten in this setting is a lot of these efforts are making up for failures of the K to 12 education system, and the most important thing we could do would be to take on and improve that system.

I mean the evidence is overwhelming that it had failed for ten straight years, and it got wore in the pandemic. And so having to train someone in a two or four year setting because they did not learn anything in school is a real problem.

Chairman Heinrich. Mr. Eichhorst, I am going to ask you to answer his question. Are you seeing jobs go away in New Mexico because of these policies, or are you seeing demand for jobs?

Mr. Eichhorst. Thank you. I will answer to the best of my ability. We are seeing a higher demand for jobs because of this. One of the nice things is everything that we build, whether it is green technology or coal-burner, requires maintenance. So we have maintenance folks on every facility, whether it is solar, wind, coal, natural gas.

All those plants we have outages. All those facilities we have maintenance individuals. So because of the transition, I am seeing a spike in the need for more training. It is not necessarily green jobs. It is jobs, it is careers. If we do this right, these folks can transition from a natural gas power plant to a solar facility.

I mean there is a lot of transition that can happen over the next 20 years. Hopefully, I will not be in the labor pool in 20 years from now, but I see the transition there. A lot of these folks have developed through the years, and when I first started in the welding industry, it was nothing compared to like it is now.

So in 20-something years, we have learned new technology. We have changed it up, and I see within the next 20 years it will be totally different again. So it is a good opportunity to learn now.

Chairman Heinrich. Thank you, Mr. Eichhorst. Representative Moore.

Representative Moore. Thank you so much Mr. Chairman, and let me just thank all of the witnesses for participating in this very, very important topic.

I was able to peruse some of the testimony that I may have missed, given my late departure (sic). But from what I can gather, Mr. Holtz-Eakin and welcome back to the Joint Economic Committee; you are no, you are not a stranger here.

You and Dr. Beach are basically saying that a young person who graduates high school and maybe somehow gravitates into a private business, is no better off or worse off than someone who has gone through say, you know, the community college with Ms. Hartzler and learned some skills or picked up a certificate, or gone through some of the community-based programming.

I just want to be clear. You say all the data and studies have really shown, and I was really disturbed to hear that, you know, maybe some—that intensive services that you give people are great for society, positive benefit to society as a whole, but that training had a negative benefit.

And so that, and then the notion that the private sector is so much better prepared to train people for jobs that are wanted at that time. I am sort of confused as to how people find out about the Gwen Moore Company that wants to, you know, repair solar panels. I am trying to understand where the lack of value is in any kind of training program. But you did say teach them in high school, so I will—I will give you that.

Dr. Holtz-Eakin. I would agree that that is a fair characterization of my testimony, except for one thing. I think the community colleges stand out as the successful actors in this field.

I mean they really have been good at identifying the opportunities in the area, the skills needed for those employers, taking individuals who may have finished high school or may not have, may have left another job and getting them into the labor force successfully and getting them employed. That is the success story.

The failure is the, especially the Workforce Innovation and Opportunity Act, the one-stop shops and where people just walk in and say I need to get a job, I cannot get a job, help me. We do not help them, and you should be upset. I mean that is not a good thing.

Representative Moore. I am not getting upset. What about—we at the National Association of Building Trades unions and stuff like what Mr. Eichhorst is doing, how would you characterize? They are spending like—did you say \$280 million or something a year for training? Is that a waste of money? They are in the private sector.

Dr. Holtz-Eakin. Well no. Again, those are the ones that work, and those should be applauded and supported, and we should not expand the other ones.

Representative Moore. Okay. But so listen, my time is waning. So let me ask. I am very curious because I do not know who said it, but someone was in here talking about providing these kinds of trainings to TANF recipients. Those are the poorest of the poor. Is that an example of people who would be better off served with, you know, you know, trying to improve their self-esteem?

I have heard all kinds of training programs for people who are on TANF. Help them with personal problems that they may have like alcoholism and so forth, but that—but these training programs

which have these benefit cliffs and time limits, this is wasted money. Is that an example?

Dr. Beach. That is not what the—that is not what the literature shows, Congresswoman.

So we have kind of two levels of training programs, and the research on these two levels indicates that what we call adult education, and this would be for TANF and some of the other lower income training programs that the government supports, that the basic skills development, reading, writing, arithmetic, all that sort of thing, is very good and it has a lifetime effect.

The literature on the jobs training programs that—and what we are talking about is scientific studies where they do randomized control tests, indicates that the value of those government programs that are run by the government in government agencies is not positive. Now that does not mean that they do not do some people some good for a while. But over their lifetime, there is not that much of an improvement.

However, studies also indicate that the real bang for the buck comes when you partner with businesses, you partner with labor unions that know what the jobs are—what jobs are needed because consumers are giving them signals, and then we partner with the educational establishment to deploy that training in a cost-effective way.

That is effective. So if you want an effective program, rely on the private sector, rely on that partnership. Get away from programs that are directly run by the government, because I think all the evidence seems to be pretty much coming in with well, it is just not proved out to be as good a thing as we thought it would be. Well-intentioned, but just not—we just not quite deliver.

Representative Moore. My time is expired, but I will extend to myself some personal privileges here, to be able to say that the only kinds of programs I can think of that are really run just exclusively by government are these programs for poor people like TANF, where they have you, you know, raking up the leaves in Central Park and then dump them back on the ground, so the next welfare workers can learn how to have dignity and scrape them up again. So Mr. Chairman, thank you for your indulgence and I yield back.

Chairman Heinrich. Representative Beyer.

Representative Beyer. Mr. Chairman, thank you very much, and Mr. Ranking Member. I appreciate this, and a really important topic and I am fascinated by it. Let me quote our President right now, who said that—said many times that the middle class built America, and unions built the middle class.

What we have seen as union membership has gone down over the last 50 years, the income gap has grown ever larger between the average American and the top, and our middle classes have gotten smaller and smaller, and you hear virtually every article talks about how many people fulfilled the American dream, is it reachable anymore.

So Mr. Eichhorst, how do we stimulate these new green jobs that are going to happen one way or the other, to be union jobs?

Mr. Eichhorst. Thank you Mr. Beyer for that. One way, and this may be a little touchy for certain people, but one way that

grows union jobs well is project labor agreements, to have some of these that include registered apprenticeship programs. I have seen individual companies come from all over the United States, and they will set up shop and they will say we have got an apprenticeship program.

There is no program set in place. There is not standards set in place. There is no way that these students are advancing, but they call it a registered program. The registered apprenticeship programs that are approved by the government, that are actually looked at and are audited quite often, they do require certain steps.

You have to pass certain, either it is an ability test or a written test. There is always methods to this. Once you can pass these, you continue to move on. Having those in place helps a ton. That really does require more apprentices. We can have a million jobs out there, but if these jobs do not have a way to require apprentices, how are we going to train these individuals to fill these jobs.

Our workforce right now in the state of New Mexico and my local union, the average plumber or pipefitter is 50 years old. Who in the heck should still be working hard in the field at 50 years old. We have got start training our replacements. That is one of my biggest issues. When we require the registered apprenticeship programs with these legislations or with these bills, that helps train our—shoot, I would say the next 20, 30, 40 years of workforce.

That will allow us to get into some of these government agencies and say look, you are doing a great job training these kids that might have dropped out from school or these men and women that may not have a job that supports their family well. We jump in there. We help them out. We get them to the basics.

Once they get through the basics, if they choose to get in an apprenticeship program, that is great. The demand will be there. They will need more apprentices. So the more legislation we can include with registered apprenticeship programs, and that is a nice thing. It is both sides.

Registered apprenticeship programs are all across the country. Most of them are great. They follow very stringent standards and they work. That is what is going to grow our new workforce in the next 20, 30, 40 years.

Representative Beyer. So let me follow up. There was a lot of big news last week about Climeworks building three big direct air capture plants in the United States. This is a direct result of the 45(q) tax credit that showed up in the Inflation Reduction Act.

How do you as a union leader, how did the unions react to the federal investment in new technologies, in terms of what you see the jobs are that are coming?

Mr. Eichhorst. So we, we like any jobs. We love to build, whether it is green technology, whether it is old technology. If we are taking an old coal burner down or if we are remodeling an old coal burner plant in the United States, that is still work for us. We love work.

The building trades and especially the UA, we love all construction, and as it turns more green or more environmentally friendly, we are keeping up with those technologies. We love, we love work. We love more and more. The more that happens around the coun-

try, the more plants that are built, the happier we are and the more men and women we can put to work.

Representative Beyer. Thank you, and I pivot to Dr. Holtz-Eakin, who is no stranger here. Doctor, you wrote, you know, that the majority of the occupations listed are not specific to the solar power industry, and that—and certainly my own experience in the retail automobile business is that most of our technicians come with, maybe they had some training in the military.

Occasionally, they had tech school. But mostly the manufacturers put them through years and years of training. You know, every quarter somebody's gone for a week, learning how to do automatic transmissions or whatever. What implication does this have as we struggle with meaningful trade assistance, trade adjustment assistance?

We know that trade agreements and technology have displaced so many workers. We do not seem to have gotten a handle on what to do with all those displaced workers.

Dr. Holtz-Eakin. I would concur with the finding, that we really have not had a successful trade adjustment assistance program in the United States, in part because it is centered on the establishment, and the establishment being, raising its hand and saying we are suffering from trade competition. These workers are going to lose their jobs because of it. They are not eligible for TAA.

That is not looking at the person. That is looking at the current occupation and the current establishment. And in fact, the federal training programs do their worst when they are trying to figure out the specific skills for the future that people need. So this is—has been backward-looking and largely unsuccessful.

Representative Beyer. Thank you very much.

Chairman Heinrich. The Senator from Vermont. Welcome.

Senator Welch. It is good to be here. You know, the frustration I have is that we all know we need training programs, right, and most of us up here do not have a clue about how actually to implement it. You all have real world experience or the benefit of years of studying, and I would like us to have some way where the folks who have to do it and have some skin in the game, which is employers and ambitious young people who want to get trained, can get into a program that is meaningful.

It seems to me that it does take—a design has to include like labor, because there is a real interest labor has in having young people get into the trades. It clearly can involve community college, because that is where our young people who cannot—who have aspirations, but oftentimes lower incomes, go to try to take that next step.

It obviously has to include the employers, because if employers—employers do not want to waste their time. They really need workers. So I just want to ask you if there is some way where we could accomplish the training that is absolutely essential, and do it in a way better than we can prescriptively from here.

And I will go with you, Dr. Beach. By the way, you are in the Coolidge Foundation?

Dr. Beach. I am indeed sir.

Senator Welch. So you have been to metropolitan Plymouth, Vermont?

Dr. Beach. Indeed. I have visited Plymouth Notch with you.

Senator Welch. Population 400, Calvin Coolidge. But it is great to see you. But go ahead. I will let you start with your Vermont credibility.

Dr. Beach. Well I just wanted to do—yeah, okay. Thank you very much for my association now with Vermont. I expect citizenship soon. So there are a couple of things that I think we ought to do. First off, I sponsored a study through the state of Minnesota when I was commissioner, to find out whether state data, which is often richer than federal data, it is surprising, could be used to study people as they go into employment and out of employment and into new jobs, their life cycle.

So we need to build a way to look at a person's whole life of employment. I think that is really—and it is called a longitudinal study. It is not terribly difficult to do, but you have to do it with driver's license records, and we do not have access to that.

And then secondly, the oldest piece of job training legislation still have one program left in it, and it is called the Wagner-Peyser Act. The employment service provision could be more exploited than it is, which is to give information to workers about what is happening in the private sector.

Senator Welch. That could happen like at community colleges, right? I mean I know students are really interested in getting that. But what about this partnership idea, because I—as I mentioned, I just do not see how this happens with—out of partnership. Do you want to start, President Hartzler?

Ms. Hartzler. Sure, if I may. Thank you Mr. Chairman and Representative. So I do not think there is any question that the work that the federal government and the states do that require, and frankly are industry standards, where there are licensed professionals, require all of us, whether it is the trainer, the employer and other partners, which could be state government, could be our unions and certainly our K-12 partners, come together to identify what are the job needs not only today but in the future, because our employers are telling us what they need.

We use BLS data, but frankly that is historic. It is not predicting or telling us where we are going. So you have to have employers, and frankly employers come to us to do the training. So there is always a partnership with employers.

Our employers and industry groups tell us the skills and the competencies are that our learners need at any point in their career. That helps us all come together to apply for grants and to determine how best to use our resources, which could include sharing facilities.

So we—there is a great deal of oversight from our—

Senator Welch. How we make it work better? We have got to get more folks training, I mean including in the trades. You know, there is some money in the Inflation Reduction Act to train on energy efficiency. That was something quite important to a lot of us, especially to me. But you know, if you want to, what they are saying these days, if you want a plumber, you have got to marry one, right? So there is an issue here about getting people who could have a really good well-paying career, that gave them the option of staying where they live. Mr. Eichhorst.

Mr. Eichhorst. Okay. That is probably the thing I focus on the most often. In the state of New Mexico, you know, we are rural and we have got two million people in a great big state. The one thing we have done well is we will partner up with Navajo Tech. They have got two sites on the Navajo Nation.

We get in there, we work with these young people. We bring them in. The UA and Navajo Tech started a plumbing program there, because a lot of these young men and women have no idea what they are going to do once they graduate high school or a community college.

This gives these young people the opportunity. They say you know, I do not want to leave home yet. I am helping mom, I am helping grandma, you know. Once I get a real job I can help them a little further, and if there is some governmental assistance to get them through this program, they go through the community colleges. They come out with a certificate or a degree, which is phenomenal. They get the basic training.

They come to us with direct entry and advanced placement. So instead of starting out as a first year apprentice that does not need to know anything, they come in as a second year apprentice because they have got their basics. They have got their CPR. They have got a bunch of the things needed.

So that model works really well. If at 18 years old, I had no idea what I was going to do with my life. I am 47. I still do not know what I am going to do with my life. I still do not know what I am going to do when I grow up. But at 18, if some of these young individuals, they do not have to be young, anybody, can go to a community college and say maybe I am interested in electrical. Maybe I am interested in welding. Maybe I am interested in plumbing.

They go in the weld shop and they burn the heck of themselves, they are done. They want to become an electrician or a plumber. So this gives them an opportunity to not go into a program and fail. This allows them to think okay, I do not mind getting wet, but I do not like being shocked or burnt.

So I am going to be a plumber. So this gives some of these people a great opportunity to think I had the opportunity to go to CNM. Now I want to be a plumber, and then they get direct entry into several apprenticeship programs. Thank you.

Chairman Heinrich. We are going to try to do a real quick lightening round of second, just because this has been such a great discussion. Dr. Hartzler, Workforce Pell. How would it change things if, if you could—if that were in place tomorrow?

Ms. Hartzler. It would give immediate federal aid to individuals seeking training in high-demand industries that require industry-certified credentials. The Federal aid would allow individuals to access trainings that can be completed in eight to twelve weeks and immediately access a good job. They will be able to begin a career pathway and continue to upskill as they progress in their career.

Chairman Heinrich. Right. One of the things that struck me today is there is a lot of agreement about what works. So raise your hand if you agree with this characterization. One of the places where we should be trying to open the aperture for more training is the partnerships between community colleges and employers.

(Show of hands.)

Chairman Heinrich. One of the places we could open that aperture is the partnerships between the skilled trades and employers? (Show of hands.)

Chairman Heinrich. We should be doing more apprenticeship-based or work-based learning. (Show of hands.)

Chairman Heinrich. This is, this is super-helpful. I am going to turn things over to the Vice Chairman, but thank you all for your time today. I will have a closing statement. But I think you guys have all been very helpful in this discussion.

Vice Chairman Schweikert. And you took all the fun out of it. You basically asked—see, there is slightly a non sequitur, but there is a reason for this. Dr. Holtz-Eakin, if you happen to come across someone who knew their way around the BLS and you could ask them here is my dream. I really need this data set for them to do, what would you ask them to produce?

Dr. Holtz-Eakin. Oh, I think we—he already answered the question, and he is the guy who knows his way around the BLS. So—

Vice Chairman Schweikert. Oh really. Oh, that makes it so much easier.

Dr. Holtz-Eakin. We in all aspects of documenting the labor force, rely on too many one year snapshots and not enough studies of the dynamics of individuals through their careers.

And there are some academic studies that do this, but if we on a more regular basis documented education, entry/exit, job, entry/exit, wage growth, wage growth when changing jobs, wage growth when staying in jobs, we would understand so much better what is already out there in the way of incentives to do things and what the gaps really are. That is what is missing.

Vice Chairman Schweikert. So Doctor, in regards to those gaps—

Dr. Beach. Right, so but I also—

Vice Chairman Schweikert. What could—we have a bunch of freaky smart economists on Joint Economic.

Dr. Beach. You do.

Vice Chairman Schweikert. What can we also research? What I mean, what do we do to understand what is really going on? You know, and part of my is self-serving. I have a fascination right now with demographics, and you know, how many million young or prime age males seem to be missing.

Dr. Beach. Sure.

Vice Chairman Schweikert. What am I—what should I ask for?

Dr. Beach. We need to do a better job at the state and sub-state level looking at the demand that employers have for specific occupations. That is an area which is a very practical growth area. It is not intellectually hard to do. It is just bureaucratically hard to do. So that is the first thing.

Secondly, when I was Commissioner, I supported 52 Labor Market Information systems around the country. They are state level organizations that collect data, and then propagate that data through the UI system and through state organizations.

They are dying for a little larger mission statement, and many of them I supported through grants to do that larger work, to actually look at how they could expand our knowledge of the demand for labor, the supply for labor, the training requirements, the apprenticeship opportunities.

So I think better supporting the Labor Market Information system, which has existed since the Wagner Act in one form or another, is an area of extremely low cost but high return for all of our labor questions.

Vice Chairman Schweikert. We have had sort of a radical side discussion of how much of some of this base level data could be almost crowd sourced. Not collected in the traditional—

Dr. Beach. A lot.

Vice Chairman Schweikert [continuing]. Survey method, and therefore it would also change the cost of collection models. But the fact of the matter is how much of our lives are on this, and this could be one of our most powerful understanding of in and out labor, where they are geographically, the types of projects they are on.

So, and this is not Democrat or Republican. It is just we often lack a lot of the tools to be intellectually credible on the things we absolutely know are true, except we have no facts to often back them up. And that is as close as I am going to come to giving a closing statement, is I love this Committee. I want us to do good things, and then you and I will fight through the partisan divide later.

But right now, our battle is knowing what the actual Facts are, you know? What is my actual labor shortage, what is my actual shortage of available labor, you know, and then we will do skills sets. But we have to deal with what Dr. Holtz-Eakin said. One of our models is by the end of this decade, we just have a shortage of people, and that is going to make some of this discussion even seem more absurd.

Go back to the 1990's until today, what we have seen in our fertility rates. I am in one of the highest growth areas in America, Phoenix-Scottsdale, and I am seeing my school districts start to shrink. The reality is here. Now we have got to figure out how to deal with it, and with that I yield to you.

Chairman Heinrich. One of the great things about this Committee is the Vice Chairman and I agree that data is a good thing. Representative Moore for the lightning round.

Representative Moore. Lightning round. Let me pick up where Representative Schweikert left off, you know, to say that there is shrinking population. That is in Arizona. There is a very fast-growing population of Hispanics in this country. There are African-Americans, there are people, there are labor shortages not because we do not have people, but because people do not have these skills. Am I wrong about that? There are people, but they need the skill set. What role does government have in helping get people through the pipeline?

Dr. Holtz-Eakin has already said, you know, that they need to—I still have the little clock my boy made in shop. It is kind of raggedy right now, but I still have it. We need to invest more in the K through 12 public education system, because people graduate

from high school. They do not—you know, even though you say there is no such thing as a green job, you know, they might think it is really cool to work on solar if they knew about it. So what role does government have?

Dr. Beach. Let me just back into the immigration question again, because it is such a central part of what you have asked. I will give you a fact. We think it is a fact. Last year, that would be 2022, the labor force grew by around two million, just around there.

900,000 because of natural people born in the United States, 1.1 million because of people coming from other countries to the United States. The U.N. projects that the United States, if it has a reasonable immigration policy in place, we will be one of the fastest-growing countries in the world by 2100. Both China and India are actually shrinking. The United States is supposed to grow, but almost all of that growth is from immigration.

So if that is the case, then the educational system has to radically change, radically change, and we cannot do, you know, the old way of teaching, where we have a curriculum which is focused on a culture which is not going to be dominant in this country.

So I think the challenges here from job training are really much bigger than even this Committee has discussed today, and it is not going to be a government program. It is going to be all local and it is going to be all through colleges and community colleges and our educational system.

Representative Moore. Well, but that is government too. They have got to be funded some kind of way.

Dr. Beach. Well, I think they do have to be funded in some fashion, but you have got to be careful not to direct those programs, because we are a big country with lots of pockets of cultures, that are very different from one another, and but from the standpoint of population, I want to persuade this Committee not to think about the population shrinking.

That is not our problem. That is India's problem, that is China's problem. Our population is going to be—our problem is it is going to be growing like Kenya's. We are going to be among the fastest-growing population in the world by 2100. So yeah, we have got some really interesting challenges ahead of us on that front.

Representative Moore. Thank you all so much. Thank you, Mr. Chairman.

Chairman Heinrich. Senator Welch.

Senator Welch. Well, I was impressed with the three things everybody agreed on. So what are the problems—I did not get a chance to ask you, Dr. Holtz-Eakin. What are the problems with the existing job training programs? You probably went through this, but just very quickly.

Dr. Holtz-Eakin. So I think the—my written testimony has reference to a 2019 study that I did with a colleague, and what really stands out is the mismatch between the skills that are being delivered in those training programs and the things that are needed by employers. We are training for jobs that do not exist anymore, and we are not training for the jobs where, where we see the growth.

And you can be the best teacher in the world. If you are teaching them something that the employer does not want, it is not going to work.

Senator Welch. So does that argue for something like what Dr. Beach is talking about, with decentralized and local administration?

Dr. Holtz-Eakin. It argues to be on that side of the table, where they are paying attention to what the employers need, seriously.

Senator Welch. Yeah. Well thank you.

Dr. Beach. No, that is the future Senator. It is to discover a new way for the federal government to work through partnerships to train the labor force of the future. We really have to be aware also that the labor force is going to radically change, you know, rapidly change because of AI. We have not talked about that today, but there will just literally be many occupations which are now kind of big, that will not be big in the future.

But they will be new ones that we are not even conceiving. Those will be discovered by the private sector before the public sector even has an idea that they are emerging. So building these partnerships, and I mean in a very constructive and non-invasive way, is going to be the key role that the federal government will play in the future.

Its profile in job training will shrink, while the profile of the local organizations will grow, and that is exactly the way it has to be.

Senator Welch. And you feel comfortable with that, at the community college level, at the union level?

Ms. Hartzler. Yes.

Dr. Holtz-Eakin. If I could add just one thing? You asked him sort of what should be in a program, and I just want to emphasize something that was in Dr. Beach's testimony. Every program should have built into it program evaluation. The key is not starting things. The key is stopping things that are not working, and the ones that I reviewed are still there and they are still funded and they are not working. That money should be going somewhere else.

Senator Welch. Thank you. Thank you very much. Thank you, Mr. Chairman.

Chairman Heinrich. I want to say thanks to our witnesses. This has been a great conversation. I think we got a lot out of it. Thanks to our colleagues who came today. Questions for the record may be submitted after the hearing. The record will remain open for three business days from now, and this hearing is now adjourned.

(Whereupon, at 3:44 p.m., the hearing was adjourned.)

SUBMISSIONS FOR THE RECORD

Joint Economic Committee

Chairman Martin Heinrich
Opening Remarks for Hearing, “Growing the Economy of the Future: Job
Training for the Clean Energy Transition”
September 20, 2023

This hearing will come to order.

I would like to welcome everyone to today’s Joint Economic Committee hearing, titled, “Growing the Economy of the Future: Job Training for the Clean Energy Transition.”

Today’s hearing will begin with five-minute opening statements from myself, Vice Chairman Schweikert, and each of our four witnesses.

We will then proceed to questions, alternating between parties in order of Member arrival. Members are reminded to keep their questions to no more than five minutes.

Now, for opening statements.

In the last two year, the Biden administration and Democrats in Congress have taken significant action to advance a transition to a robust clean energy economy.

We made historic investments in clean energy in the Inflation Reduction Act and the Bipartisan Infrastructure Law.

These investments have directly increased the demand for workers in a range of clean energy occupations.

Whether it’s manufacturing workers building batteries, wind turbines or solar panels, or plumbers and pipefitters installing heat pumps, there are opportunities here for millions of Americans.

Looking at just a few of these jobs, the Bureau of Labor Statistics predicts that over the next decade we’ll need to fill at least 735,000 job openings for electricians, 425,000 for plumbers and pipefitters, nearly 400,000 for HVAC mechanics, and 100,000 for utility line workers to meet demand.

And some estimates put the increased demand for workers even higher.

This demand for skilled tradespeople is a once in a generation opportunity to grow the middle class, if we can train enough workers to meet this demand.

These are careers people can build a family around, in their home communities, and they don’t require a four-year college degree or the college debt that sometimes accompanies one.

These jobs feel a lot like my dad’s career as an IBEW lineman.

His work keeping the lights on in our community was my family’s ticket to the middle class.

It gave us economic stability, and it gave my parents security in their retirement.

Right now, we are unlocking that same pathway, that same ticket to the middle class, for even more families.

Our current workforce shortages are a real limiting factor in growing the advanced energy economy.

That's why we need to invest in proven career training pathways. We need to work collaboratively with labor unions, community colleges, and with private industry.

The Bipartisan Infrastructure Law is investing \$72 million in programs to train folks for clean energy careers by partnering with existing institutions.

Community colleges – like Central New Mexico Community College – offer a range of workforce training programs and one-year certificates that get participants into careers quickly.

The Inflation Reduction Act also encouraged the use of Registered Apprentices.

These are programs that pay people to learn technical skills on the job and in the classroom, allowing employers to train and invest in their future employees.

By investing in programs that create opportunities and teach the skills necessary for this energy transition, we can ensure we meet workers where they are.

We're already seeing these investments produce results.

New Mexicans in these skilled trades have already built some of the largest clean energy projects in the entire nation and we are currently beginning construction on a regional transmission line and wind generation project larger than the Hoover Dam.

This one project will be the largest clean energy project ever built in the Western Hemisphere.

This same project will also have substantial economic benefits in the Vice Chairman's state.

From wind towers to solar racking hardware to utility-scale solar trackers, we're also manufacturing the components to build out the energy transition.

And in order to continue to lead on this front, we need to invest at the federal level in more research and development.

We need to invest in national labs and universities that are making fundamental discoveries in challenging sectors like industrial heat and aviation.

Broadening our clean energy research and development will help strengthen our workforce.

It will help workers build skills needed for the clean energy transition.

And it will help us grow America's middle class while leading the world to a brighter, cleaner future.

I'm looking forward to hearing more today from our witnesses – including two from my home state of New Mexico – on ways to support and diversify our rapidly growing clean energy workforce.

I'm eager to hear more about how we can better invest in educational and apprenticeship pathways to clean energy jobs, and how we can maintain American leadership in the industry. I will now turn to Vice Chairman Schweikert for his opening statement.

**Testimony of Courtenay Eichhorst
Business Manager, United Association Local Union 412
President, New Mexico Building Trades**

**Hearing on Growing the Economy of the Future:
Job Training for the Clean Energy Transition**

Before the United States Joint Economic Committee

September 20, 2023

Good Morning Chairman Heinrich, Vice Chairman Schweikert, and Members of the Joint Economic Committee. My name is Courtenay Eichhorst, and I am the Business Manager of United Association of Union Plumbers and Pipefitters Local Union 412, which represents just over 2,000 plumbers, pipefitters, and HVAC workers in New Mexico and El Paso. I also serve as the President of the New Mexico Building Trades. I want to thank the Committee for giving me the opportunity today to share my thoughts on how the best-in-class apprenticeship and pre-apprenticeship programs offered by the United Association of Union Plumbers and Pipefitters (UA) and the Building Trades are empowering our unions to meet the workforce demands driven by the clean energy transition. I will also discuss the power these programs have to transform lives for the better by putting workers who may not have a four-year college degree, or who come from an underrepresented background, on a path to a family-sustaining career.

The high-tech manufacturing plants and emerging clean energy technologies that are targeted for support by the Inflation Reduction Act and Bipartisan Infrastructure Law require sophisticated workers with specialized trade knowledge to construct and maintain. To meet this rising demand for a highly-skilled construction workforce, North America's Building Trades Unions, known as NABTU, and their signatory contractors collectively invest nearly \$2 billion each year in apprenticeship and journey-level training programs. Of this amount, the United Association, or the UA as we commonly refer to our union, alone invests about \$280 million annually. These training investments consist entirely of private, non-taxpayer dollars. The UA is committed to making these investments because we recognize that skills training is the lifeblood of our industry, and because we firmly believe that the quality of our training is what sets a UA craftsperson apart from others in the plumbing and pipefitting industry.

Unlike the traditional, four-year college program, the apprenticeships developed by the UA and other Building Trades' unions provide individuals with the unique opportunity to earn while they learn. Apprentices in these programs are paid an increasing scale of wages as they progress, receive health care coverage, and become participants in retirement plans. In addition to receiving on-the-job instruction, they also attend classes at state-of-the-art training centers. Completion of the five-year apprenticeship program leads to journeyperson status and the

opportunity to continue working in an ever-growing industry with skills that last for a lifetime and are in high demand. Apprentices also typically incur little to no cost for this education and emerge from their apprenticeship program debt free.

In addition to our “gold standard” apprenticeship programs, the UA and other Building Trades’ unions are also increasingly investing in pre-apprenticeship programs that can be designed to help prepare high school students or individuals from underrepresented communities for a career in the trades. These programs help fill the role that used to be filled by the “shop classes” that were found in high schools but have become increasingly rare. Pre-apprenticeship programs also focus on the “soft skills” that are necessary for success in any industry, such as showing up on time and other work etiquette.

Local 412 has numerous apprenticeship initiatives that have proven to be highly successful in creating a pipeline between the communities we serve and family-supporting careers in our industry. I’ll provide you with just a few examples.

Recognizing that welding is among the most in-demand skills for clean energy and other projects, Local 412 offers a 12-week accelerated welding program that enables an average of 12 pre-apprentices per session to obtain UA welding certifications, advanced placement into our registered apprenticeship program, and

immediate work opportunities at zero cost to them. Over the past two years, 60 pre-apprentices with a total of 180 weld certifications graduated from this program.

We also offer an apprenticeship readiness program in 14 different high schools in remote areas throughout the State of New Mexico, along with “Boot Camps” in our more urban areas. As part of the program, students receive instruction specific to the UA trades as well as the NABTU Multicraft Core Curriculum, or MC3, which is a standardized, comprehensive, 120-hour construction course designed to help young people and transitioning adults choose and succeed in apprenticeship programs that are appropriate for them. Like graduates of our accelerated welding program, students who complete the readiness program receive advanced placement into our registered apprenticeship program. We have also worked with the New Mexico Public Education Department to add the MC3 to the state’s supplemental curriculum so that students who graduate from the program also receive high school credit for their work.

At Local 412, we take great pride in partnering with New Mexico’s vibrant Native American communities. Working with the International Association of Plumbing and Mechanical Officials (IAPMO), an expert group which develops model plumbing codes, we launched a plumbing program at Navajo Tech in Northern New Mexico which gives students the opportunity to learn about the

plumbing industry and complete a program that leads to direct entry with advanced placement credit into our apprenticeship program.

In addition to these initiatives, Local 412 partners with a number of other organizations to provide apprenticeship readiness training and access, including: the Barrett House, which serves homeless women and children; Crossroads for Women, which serves women re-entering society after incarceration; the New Mexico Re-Entry Center, which works with formerly incarcerated minorities and people of color; and the New Mexico Department of Workforce Solutions' TANF Support Division, with whom we work to support highly impoverished families and at-risk youth between the ages of 18 and 24.

I would be remiss if I failed to mention that these partnerships would not be possible without the support of our signatory contractors and customers, who recognize the ability of our craftspeople to not only deliver top-flight projects for the best cost and value possible, but also leverage each and every project to continue training tomorrow's workforce and uplift the communities in which the project is located.

While I am exceptionally proud of the work we have done in Local 412, there are similar stories to be told throughout the United Association. For example, this past June, the UA and CapturePoint Solutions announced a new pre-apprenticeship

program that is specifically designed to meet the workforce demands driven by the clean energy transition in Vernon Parish, Louisiana. CapturePoint is currently developing the Central Louisiana Regional Carbon Storage Hub, which will safely store and sequester millions of tons of carbon dioxide each year. The UA signed an agreement with CapturePoint and the Vernon Parish School Board to establish a career and technical education program for high school juniors and seniors in Vernon Parish with training in the pipeline and plumbing industries. These are trades that will be required to successfully construct and operate this carbon capture hub.

The UA and CapturePoint have already committed \$310,000 in private funding for this initiative, which will be used to provide training classrooms and workshops, instructors, and transportation for students. These investments will help ensure that the next generation of Louisiana workers receive the training they need to take advantage of the enormous economic opportunities presented by this and future carbon capture projects. It is also significant to note that according to the federal government's Climate and Economic Justice Screening Tool, at least five Census tracts in Vernon Parish, Louisiana are "disadvantaged." This initiative therefore shows how pre-apprenticeship programs can be specifically designed and targeted to support individuals from traditionally underserved communities.

The UA has also led the way in partnering with the U.S. Military to train and place veterans into our apprenticeship programs through our award-winning

“Veterans in Piping” Program, or V.I.P. for short. Under its V.I.P. Program, the UA offers departing service men and women from all branches of the military the opportunity to participate in an intensive eighteen-week training program on base which they receive at no cost to either the government or the student. When this training is successfully completed, the graduates are guaranteed a job and placed in a Local apprenticeship program with advanced credit towards the completion of their apprenticeship. This program currently operates on 7 different military bases, and since its inception has provided apprenticeship opportunities to over 3,170 military veterans, a number of which I am proud to say are Local 412 members.

As the many examples I have discussed illustrate, I have the privilege, as Business Manager of Local 412, of seeing firsthand the power that apprenticeship programs have to change lives for the better. When I was first elected by the membership as Business Manager in 2014, we had 88 apprentices at our Local. We now have 440 apprentices, including 25 veterans, 32 women, and 52 individuals from the Navajo Nation. The large jump in the number of apprentices working out of our Local speaks for itself as to the success of the initiatives I have described.

We invest over \$2.7 million each year at Local 412 in these local training programs, which, again, consists entirely of private dollars. These investments, together with our increased focus on outreach to underrepresented communities in New Mexico and El Paso, will enable us to provide the necessary manpower for the

tremendous amount of clean energy work that is coming to our territory in the coming years. These clean energy projects will include carbon capture systems and a hydrogen hub that will be used to retrofit airplanes with clean hydrogen technology for use around the world.

At the UA, we see every clean energy job as an opportunity to train workers for the next clean energy job. This is exactly why attaching labor standards that include apprentice utilization to federal investments in clean energy is so important. A failure to attach apprenticeship standards to these programs and other federal procurements contributes to a “race-to-the-bottom” among the contractors bidding for the work, which discourages those contractors from making the needed investments in skills training. Simply put, market dynamics and price competition alone will not result in enough training of the highly-skilled construction workers the clean energy transition requires. Instead, proper incentives—such as labor standards that include apprenticeship utilization—are required.

I would like to end my prepared testimony by sharing my personal experience of coming up through the Local 412 apprenticeship program, which I think illustrates the immense value of the “earn as you learn” model used by the Building Trades. Unlike many of my fellow UA brothers and sisters, I went through a four-year college program and obtained a bachelor’s degree in Marketing & Sales before beginning my union apprenticeship. I was excited to start a career in finance after

receiving this degree, but when I applied to Merrill Lynch for a job straight out of college, I was told that I needed to get experience first. After hearing this, I thought to myself, what was the point of my four-year college program if it didn't provide me with the experience I needed to start a career? I simply could not find a job in New Mexico after getting this bachelor's degree that paid well and would provide me with this training that I apparently still needed.

This impasse I reached after receiving my bachelor's degree caused me to step back and reassess the path I was on. Ultimately, I decided to follow in the footsteps of my father and many other family members who had been UA members and joined the Local 412 apprenticeship program as a first-year apprentice. This decision allowed me to earn good wages and benefits while learning the skills I needed to become a journeyman member of Local 412. The journey that decision put me on, including being elected as Business Manager of Local 412 and now having the privilege of sharing these experiences with this Committee, has been immensely satisfying. My personal experience, as well as hearing similar stories from other UA members, is what motivates me to focus intensely on expanding our apprenticeship training and programs at Local 412, and I know this is a sentiment that is widely held across the UA—and the Building Trades as a whole.

In conclusion, the UA and other Building Trades' unions are prepared to meet the ever-growing workforce demands caused by the clean energy transition, because

we know that we have the best training programs and the best model for delivering that training through our “earn as you learn” approach. When these programs are linked to federal funding and procurements through labor standards that require apprentice utilization, the sky is the limit as to what we can build together during this pivotal moment in the clean energy transition. Thank you.

Testimony of President Tracy Hartzler, President of Central New Mexico Community College

**Joint Economic Committee Hearing
 “Growing the Economy of the Future: Job Training for the Clean Energy Transition”
 September 20th, 2023**

Chairman Heinrich, Vice Chairman Schweikert, and members of the Committee – My name is Tracy Hartzler, and I am the President of Central New Mexico Community College, based in Albuquerque. I also serve on the Board of Directors for the American Association of Community Colleges based in Washington, D.C.

Thank you very much for the opportunity to be here to discuss the significant need for a much larger workforce pipeline to support the accelerating growth of the clean energy economy in New Mexico and across the country.

This testimony is intended to inform the Joint Economic Committee on how Central New Mexico Community College (CNM) is striving, along with the State of New Mexico and our fellow community colleges in the state, to address the need for a much larger workforce pipeline to support the accelerating growth of the clean energy economy.

Growing and Supporting New Mexico’s Energy Workforce

With investments in clean energy continually increasing in my state and across the country, it’s more important than ever to address the significant need for skilled workers to fill the growing workforce demand of the clean energy industry. That includes workers directly trained in solar, wind, and EV fields, as well as the more traditional skilled trades workers needed to support the infrastructure development of the clean energy sector. The current skilled trades workforce is ageing and retiring with insufficient numbers of new trades workers to replace them. We also know that we can provide millions of individuals nationally, and thousands in New Mexico, with accessible, affordable, and direct pathways to better careers, better lives and more financial stability for themselves and their families through the growth of the clean energy sector. Growing and supporting the clean energy workforce takes many forms – from employer assistance to direct aid and investments for employment.

In addition to assisting businesses, New Mexico officials are also taking steps to help reskill people for these opportunities. The state’s Department of Workforce Solutions (DWS) has prioritized energy transition and climate resilience as top priorities in the Workforce Innovation and Opportunity Act statewide plan. All partner agencies will be focused on recruiting and training for these industries in the years to come. DWS applied for a \$2 million grant from the U.S. Department of Energy for a project called “Building the EV Bridge.” The goal of the project is to engage in proactive outreach to engage workers currently in fossil fuel industries with apprenticeship and training opportunities in the Electric Vehicle Infrastructure Industry. New Mexico’s Environment Department and Energy, Minerals and Natural Resources Department are partners on this initiative.

New Mexico's Energy Transition Act (ETA) also established a Displaced Worker Assistance Fund for New Mexico residents who were terminated from employment due to the abandonment of a New Mexico facility producing electricity that resulted in displacement of at least 40 workers. My college, CNM, and CNM Ingenuity, a workforce development arm of the college, will be education and training partners in strategic planning for related technical training and classroom instruction for apprenticeship programs, skills training, and customized training in future phases of the statewide ETA plan.

DWS also partnered with the state's Department of Transportation to apply for the \$2 million U.S. Department of Labor Building Pathways to Infrastructure Job Grant. This effort would fund public-private partnerships to develop, strengthen and scale evidence-based training models in occupations critical to meeting the goals of, and maximizing investments in, the Bipartisan Infrastructure Law. This program would train job seekers in advanced manufacturing, information technology, and professional, scientific, and technical services jobs that support renewable energy, transportation, and broadband infrastructure.

Through the Economic Development Department, New Mexico also has one of the most generous training incentive programs in the country. The Job Training Incentive Program (JTIP) funds classroom and on-the-job training for newly-created jobs in expanding or relocating businesses for up to six months. The program reimburses 50 to 90 percent of employee wages. Customized training at a New Mexico public education institution may also be reimbursed. Some clean energy industries are eligible for JTIP.

Apprenticeships are a very important component of training a clean energy workforce. Under the state's Energy Transition Act (ETA), DWS is charged with ensuring that renewable energy projects on the utility side employ apprentices. The Act requires 10% of a project's workforce to be apprentices now; 17.5% by January 2024; and 25% by January 2026. As mentioned above, CNM and CNM Ingenuity will be partners in supporting the growth of apprenticeships.

Community Colleges' Crucial Role in Addressing Skilled Workforce Challenges

Our nation's community colleges serve a key role in this crucial mission to boost our skilled workforce, meet the needs of the booming clean energy economy, and connect more Americans to careers that improve their quality of life. Community colleges provide individuals with quicker and more affordable access than four-year institutions to middle-class clean energy and skilled trades careers through two-year associate degrees, one-year certificates, and even shorter-term workforce training programs that continue to gain popularity among learners and employers. Workforce training programs, which are not considered academic credit programs, are an increasingly important option since there is less of a time commitment to complete the programs, often direct entry into quality careers, and a high return on investment for the learner.

CNM, and our fellow community colleges, are also very experienced and adept at quickly responding to the workforce needs of our regional economy. We take pride in working with

businesses and industries to create new programs or adjust current programs to meet their workforce needs.

In addition to the full range of trades programs that support the clean energy sector, New Mexico community colleges offer specialized associate degree and certificate programs focused on renewable energy technologies. They include:

- CNM: Electrical Trades Associate of Applied Science, Photovoltaic Concentration; Electrical Trades Solar Electric Certificate; Automotive Technology AAS (includes Intro to Hybrid and Electric Vehicles)
- Santa Fe Community College: Solar Technology (AAS and Certificate); SFCC also preparing to launch Renewable Energy Industry Technician program
- UNM-Los Alamos: Applied Technology AAS, Solar Technology Concentration
- NMSU-Dona Ana Community College: Solar Energy Technology Certificate
- NMSU-Alamogordo: Photovoltaic Grid Tie Certificate
- Navajo Technical University: Energy Systems AAS
- Clovis Community College: Industrial Technician, Wind Concentration (AAS and Certificate)
- Mesalands Community College Wind Energy Technology (AAS and Certificate)

Bachelor's Degrees include:

- Northern New Mexico College: Electromechanical Engineering, Concentration in Solar Energy
- Eastern New Mexico University: Electronics Engineering Technology, Renewable Energy Concentration

Since 2019, more than 1,300 New Mexicans have graduated with credentials in renewable energy production, maintenance, and engineering.

Governor Lujan Grisham also established the state's Center of Excellence for Renewable Energy and Sustainability to foster collaboration between New Mexico's public colleges and universities, industry partners, and state, tribal and federal agencies to meet New Mexico's ambitious carbon reduction goals. The center is based at San Juan College – a community college in the northwest part of the state – and is developing curricula to prepare students for careers in the solar and wind sectors, as well as the electric vehicle and hydrogen industries.

CNM is also in the process of building a new facility that will house our Automotive and Diesel Technology programs, including a new Electric Vehicle Technology program.

Last week, we also met with Maxeon Solar Technologies about the possibility of the company using part of our Workforce Training Center in Albuquerque as a training site for some of their solar panel manufacturing processes. Maxeon has committed to a \$1 billion investment to build a 1.9 million-square-foot plant, where it will open the nation's first new domestic factory in over a decade to build both solar cells and panels for sale across the country.

Innovative Short-Term Workforce Training Programs at Community Colleges

At CNM, we also offer shorter term workforce training programs that support the clean energy sector. In addition to the associate degree and certificate pathways into the solar industry noted above, CNM Ingenuity can deliver customized, short-term workforce training programs for current energy-industry employees on topics such as Solar Electric Basics, National Electric Code Updates for Solar Installers, and Solar NABCEP Exam Prep. Shorter-term credentials like these that upskill current workers with clean energy knowledge and skills or reskill those who are transitioning to the industry are increasingly important and beneficial for employees to advance or transition in their careers.

In 2021, CNM completed construction of a 1.3 MegaWatt solar farm at our campus on the west side of Albuquerque. In addition to advancing CNM's sustainability goals by providing 50% of our energy for the campus, it serves as a training lab for our students in the Electrical Trades Photovoltaic Concentration program.

CNM Ingenuity also offers an Electric Lineworker Pre-Apprenticeship program in partnership with the New Mexico Rural Electric Cooperatives Association (NMRECA). It prepares learners over four to five months to become paid apprentices for NMRECA and then fill permanent critical energy and infrastructure jobs for NMRECA across New Mexico. CNM and NMRECA partnered to build an outdoor training facility for its Electric Lineworker apprentices at our Rio Rancho Campus.

And CNM's strong reputation for responsiveness in workforce development was useful during the successful recruitment of Maxeon Solar Technologies to Albuquerque. During visits arranged by the New Mexico Economic Development Department, the solar industry giant was very pleased after meeting with CNM leadership and learning that we would be fully committed to supporting their workforce needs with new programs or existing programs as needed.

Need to Intentionally Recruit More Diverse People for Clean Energy and Trades Training Programs

There is a clear and pressing need to recruit and retain more individuals into programs that deliver the skills needed to fill these jobs, such as solar panel installers, wind turbine technicians, and solar panel and wind turbine manufacturing technicians. In order to meet the demand, we need to draw people from a wide variety of demographics, including women, people of color, and more young people, including high school students.

At CNM, we have received support from state government in efforts to attract more women into the trades. For the past two years, we've hosted a Women in Trades Summit, highlighting the successes of women currently in the trades and providing women considering a career in the skilled trades with information on why it's a wise choice for many women – a minimal investment provides quick access to a middle-class career with financial stability, as well as an alternative to office jobs that some women may not covet. Our first Women in Trades Summit in 2022 drew approximately 100 participants and 17 employer booths recruiting women to

address their workforce needs. In 2023, participants quadrupled to more than 400 and employer booths nearly doubled to 32. We'll host the event again in 2024.

One of our female graduates, Rita Johnson, from our Electrical Trades program recently spoke at a CNM event about how learning a skilled trade transformed her life. A high school dropout, she started working at restaurants but quickly realized she couldn't raise two kids on minimum wage and tips. She was interested in working in the solar industry, so she enrolled in our Electrical Trades program. She's now a journeyman with an Albuquerque-based electrical firm, making enough money to support herself and her two kids, and has full financial independence. "I have my own house, my own car, can afford to go on vacations, provide for my kids, whatever I need," she says. "Getting in the trades has been a game-changer for me."

CNM has also forged a groundbreaking partnership with Rio Rancho Public Schools (RRPS) in our region. We have agreed to share a Career Technical Education Complex at the high school, where CNM's trades programs will be embedded into the high school experience. The high school students will be able to take trades courses for free taught by CNM faculty that count for both high school and college credit. RRPS high school students will be able to participate in internships and apprenticeships with local employers. And they'll be able to graduate from high school with CNM certificates or credentials in programs like solar panel installation and immediately enter the clean energy or skilled trades workforce with a middle-class income.

In alignment with our partnership with Rio Rancho Public Schools, we are supportive of the Apprenticeship Pathway Act of 2023, co-sponsored by Chairman Heinrich. It would help increase apprenticeship pathways for high school students, putting them on a fast track to quality careers and productive lives while helping our country address our skilled workforce shortages. CNM also has a strong partnership with a local non-profit called Future Focused Education. We are coordinating programs and leveraging funding across both organizations for work-based learning opportunities, including paid internships for young people across in-demand industries and the development of the first youth registered apprenticeship program in the state.

CNM uses the federal Strengthening Career and Technical Education for the 21st Century Act (Perkins V) for targeted recruiting of underrepresented populations into trades programs each year. We have also received state funding to support our recruitment of women into trades programs and the annual Women in Trades Summit. CNM also manages the statewide chapter of SkillsUSA, a national organization focused on supporting the development of a skilled workforce in high schools and two-year colleges. Last year, CNM received state funding to support high schools that have underserved, low-income populations needing financial support to participate in trades programs and competitions. New Mexico is a minority-majority state and CNM is a Hispanic-Serving Institution. CNM also serves a large population of Native American students. CNM regularly ranks as a national leader in the number of associate degrees and certificates awarded to Native Americans and Hispanics each year.

Providing the Robust Supports Learners Need to Persevere and Complete Training Programs

For many people who have limited means, including adults who have been out of school for years but desire a better career, they are hesitant to commit the time needed to education or training due to various life challenges, ranging from financial concerns to childcare issues to food insecurity.

At CNM, we have extended the same wrap-around support services that have been available to our academic credit students to our non-credit, workforce training learners. Through our work with leading national foundations that are focused on removing barriers that prevent many individuals from taking the leap into community college education and training, we have learned a great deal and are transforming our approaches.

To achieve consistently successful outcomes, we know that a significant percentage of learners need extensive support systems to overcome financial and personal challenges, especially older adults returning for education or training to make a career change or improve their upward mobility. Through partnerships and funding support from partner organizations, CNM provides a free bag of groceries, including fresh fruits, vegetables and non-perishable items, as well as hygiene products, to students in need once every week. We also offer childcare vouchers that can help students pay for up to 100 percent of their childcare costs while attending school.

We have also transformed our advising model, placing even more focus on career counseling from the time they register for a program and continuing regularly throughout their learning journey. While these types of supports are essential for many learners to persevere and complete an academic or training program, we have also learned through our work with foundations and other college partners that learners, especially for workforce training programs, need and want assurances that they will be connected to paid work-based learning opportunities (i.e. internships and apprenticeships) – and most importantly – direct links to quality permanent employment upon completion of their program. CNM is addressing this important factor as well through employer partnerships.

The Need to Expand Paid Work-Based Learning Experiences and Employer Partnerships

While paid internships and apprenticeships have always been a part of the community college experience, they have typically been very limited in numbers for most colleges. At CNM, we recently created a totally new Division of Workforce & Community Success, squarely focused on greatly increasing paid work-based learning opportunities and making them available to all students and learners in all programs, both academic and workforce training. A high percentage of community college learners are low-income and at-risk, and need additional financial support to persevere and complete a program to secure the skilled job they desire. A major part of executing on this effort has been strengthening our connections, partnerships and relationships with employers in our region. Our Division of Workforce & Community Success has made great progress on this front, getting buy-in from many employers who are committing to providing work-based learning opportunities for our students and learners, since it also benefits them to help these individuals complete and fill their workforce needs. We recently launched a HireCNM portal where employers can post jobs and connect with our students and faculty members to identify student workers.

As President of our college, I have personally increased the frequency of my meetings with business and industry leaders to fully understand their workforce needs so our college can adjust curriculum or create new programs as needed to provide workforce solutions. Our community college also has Advisory Committees for our skilled trades programs that are made up of local business and industry leaders. They regularly provide input and guidance to our deans and program directors to ensure our curriculum equips students and learners with the skills and knowledge needed to succeed in the workplace, not just the classroom. A local company called Affordable Solar participates on our Electrical Trades advisory committee.

CNM Ingenuity, through a workforce development training program partnership with the City of Albuquerque called Job Training Albuquerque, has provided four local solar energy employers with short-term trainings in Solar Electric Basics and the NABCEP Exam Prep certification for 30 of their employees. The solar companies include SolAero, Solar Works, Positive Energy Solar and OE Solar. The Job Training Albuquerque program provides the trainings for free to employers and employees through funds from the City's Economic Development Department.

Addressing Funding Challenges for a Clean Energy Skilled Workforce

Another challenge we face in increasing the pipeline of clean energy workers and skilled trades workers, and that we're addressing, is the limitations of traditional federal and state funding models for the shorter-term workforce training programs. The shorter-term workforce training programs are increasingly necessary for Americans looking to quickly obtain a new or improved job, while also laying the groundwork for them to pursue higher level education. However, the lack of Pell Grant eligibility for these shorter-term workforce training programs prevents many potential learners from taking advantage of the programs that would provide them quick access to a quality, high-demand job. Opening up greater access to this type of federal funding would be an important step in addressing our clean energy and skilled trades workforce shortages. The American Association of Community Colleges is advocating for Workforce Pell legislation to extend Pell Grant eligibility to financially needy students in shorter-term workforce training programs.

CNM, however, has been actively seeking alternative and diverse funding sources. We've forged strategic partnerships and we've piloted innovative initiatives to address this challenge. By collaborating with local industries and government agencies, CNM has been securing resources to advance solutions and provide more financial support for learners in workforce training programs. CNM is currently leading New Mexico's first significant investment in workforce training. With a \$20 million, one-time appropriation that was effective July 1, the New Mexico Higher Education Department's High-Demand Workforce Training Investment expands workforce training and work-based learning to prepare individuals to be competitive in the labor market and support workforce needs. CNM's plans for nearly \$5 million of the funding builds on our participation in various efforts, such as the U.S. Department of Education's Experimental Site Initiative to pay work-study wages to students for employment with private businesses and non-profit organizations.

Also, CNM Ingenuity is developing new short-term training programs and revising current training programs in employer-directed, high-demand areas. CNM Ingenuity is expanding tested efforts to provide learners in these programs with direct financial assistance; supplemental financial training assistance for employers to send their employees to upskilling trainings; and providing more non-traditional apprenticeships and work experiences for learners.

These efforts replicate successes we've experienced in our 10-week coding bootcamps. Our coding bootcamp curriculum is built specifically to meet employer needs in high-demand areas. Completers of this workforce training bootcamp are averaging a 47% wage increase; 86% of learners are meeting their employment goals within one year; and more than 300 employers have hired from the program.

Learning Facilities for Skilled Trades and Clean Energy Fields

Skilled Trades facilities that are modernized and outfitted with the latest technology are also an important factor in training the clean energy workforce. CNM recently broke ground on our new Skilled Trades Facility that will replace our current trades facility that was built in the 1970s. We collaborated with the local trades industry, government agencies, public school districts and many others to incorporate the needs of the community and economy into the design of the facility. The new facility will provide much more flexibility in adapting spaces as technology continues to quickly evolve in clean energy and related skilled trades programs. When CNM needs to create a new program to meet new workforce needs – or when we need to adjust current programs to incorporate new technology or changing industry needs – the spaces will allow for easier modification. The modernized and high-tech learning environments will also be a key component in attracting more students into these programs, especially younger generations. The \$58.7 million facility is paid for through voter-approved bonds.

CNM also plans to partner with schools and businesses to offer broader education opportunities in this facility. There will be partnerships designed to create an inclusive pathway for K-12 students through dual-credit opportunities, apprenticeships, and internships, and community partners will be able to use the facility to help their employees upskill so that they can meet evolving industry needs.

In regards to all of the efforts taking place at CNM, we are making strong progress. But all of these efforts need to be scaled up significantly at our college, and colleges across the state and country to realistically meet the fast-increasing workforce needs of the clean energy economy. To accomplish this, community colleges need the support and partnership of government officials at the federal, state and local level.

Background on New Mexico's Energy Transition

While New Mexico ranks second in the nation for the amount of oil and gas produced, our state is also a national leader in moving our country toward a clean-energy future. Upon taking office in 2018, New Mexico Governor Michelle Lujan Grisham identified the clean and sustainable energy sector as a critical target industry for diversifying New Mexico's economy. In

addition to reducing the state's reliance on fossil fuels, the clean energy industry is a source of good paying jobs that require many of the same skills that workers use in oil and gas fields and fossil fuel-based power plants.

Energy Transmission in New Mexico

In 2019, Governor Lujan Grisham signed the New Mexico Energy Transition Act (ETA) into law. This act – widely recognized as one of the nation's most ambitious plans for moving to a clean-energy future – requires New Mexico's investor-owned utilities to produce 50% of their power from renewable sources by 2030; 80% renewables by 2040; and 100% zero-carbon by 2045. And it's working. In 2022, renewable resources provided 42% of New Mexico's in-state electricity generation, a five-fold increase in the state's electricity generation from renewable sources since 2015. According to the U.S. Energy Information Administration, New Mexico currently ranks 5th among states for in-state renewable energy generation.

Renewable Energy Projects and Opportunities in New Mexico

Solar and wind energy currently lead New Mexico's renewable energy transition. However, hydrogen is expected to be a major contributor to this sector moving forward, and funding included in the 2021 Bipartisan Infrastructure Law can support this transition. New Mexico joined Colorado, Wyoming and Utah to form the Western Interstate Hydrogen Hub, recently submitting a \$1.25 billion grant application to the U.S. Department of Energy to create a clean hydrogen hub focused on power generation and transportation. If awarded, the hub will bring more than \$9.1 billion in private capital for 26,000 jobs to the four states. Hydrogen Hub funding is also coming from the Infrastructure Investment and Jobs Act.

Since 2018, New Mexico's solar production has grown 46%. In August of this year, Maseon Solar Technologies announced plans to build a \$1 billion solar cell and panel manufacturing facility in Albuquerque, thanks in part to the tax credits for clean energy manufacturing included in last year's Inflation Reduction Act. This makes New Mexico the first state to attract a company looking to move solar manufacturing back to the U.S.

Pattern Energy's Western Spirit Wind includes four wind energy project sites in central New Mexico. Western Spirit represents the most wind power ever constructed as a single phase in the Americas, totaling 1,050 MegaWatts of installed capacity. It became operational in 2021, with approximately 35 full-time, permanent jobs. Over 1,000 workers were on site during a 15-month construction period.

More renewable energy development is coming to New Mexico. SunZia Wind and Transmission begins construction this year for over 3,500 MegaWatts of new wind power capacity. The SunZia Transmission project – a 550-mile High-Voltage Direct Current line stretching from central New Mexico into Arizona, will supply approximately 3 million Americans with clean power annually.

There are many other renewable projects taking root across the state. New Mexico continues to advance a clean energy economy on many fronts. The state has a Local Economic

Development Act that empowers the New Mexico Economic Development Department to administer grants to local governments to assist expanding or relocating businesses that will stimulate economic development and produce public benefits. Maxeon Solar received \$18 million under this act.

TESTIMONY

Before the Joint Economic Committee of the U.S. Congress
For the Committee's Hearing on

“Growing the Economy of the Future:
Job Training for the Clean Energy Transition”

By William W. Beach, D. Phil.
Senior Fellow in Economics
Economic Policy Innovation Center

September 20, 2023¹

Behind every great public policy stands reliable data that prove the policy's greatness...or lack thereof. It is hard, I think impossible, to execute successful public policies without reliable effectiveness measurements. What would policymakers do after enacting a new law on crime if no data existed to tell them whether crime rose or fell following the law's adoption? How useful would efforts to change food assistance programs be without data on hungry families?

The same obvious but essential relationship exists between environmentally-focused policymakers, who are supporting and leading the private sector's moves to greener production activities and data that show if their efforts are worthwhile. The topic of this hearing, job training for a clean energy transition, is packed with measurement concepts. One might even argue that it would be pointless to make investments in green jobs development without first securing one's data front lines.

However, there is another issue in front of this committee, and it's a threshold one: do investments in federally sponsored job training programs produce the results that Congress intended? Do these programs actually work? Unfortunately, the answer generally is no. Federal agencies have funded numerous studies, most famously by the consulting firm Mathematica, over many years that find little if any value coming from government run training and retraining efforts. The effects are not zero, but certainly not positive enough to justify massive allocation of public funds.

¹ This testimony reflects only the witness's opinions and not those of the Economic Policy Innovation Center or any federal agency, most particularly the Bureau of Labor Statistics.

Why, generally, is this the case? The simple answer is that government is too separated from market activities to know what consumers have shifted toward and what they've abandoned. Government tends to train for yesterday's product portfolio, not tomorrow's. On the other hand, the private sector does train more successfully than not. And why? If private firms failed to follow changing consumer tastes, they would soon be out of business. One can see this very clearly in the ways businesses have shifted their workers more toward environmentally sensitive production and distribution: consumers of those products and services are demanding that shift.

Even if all job training programs worked perfectly, however, Congress would still need to measure progress toward program goals: good policy requires good data. On this front, few appreciate the challenges faced by statisticians and economists in producing those good data, in discovering the reliable, real-world signals that give meaningful feedback to policy stakeholders. For example, during the early crisis months of the Covid-19 pandemic, key Washington policymakers desperately wanted high-frequency data on business closings, layoffs, transportation usage, and, of course, infection rates. After all, the unemployment rate spiked from 4.4 percent in March to 14.7 percent in April, when 22 million people lost their jobs. The monthly reports just did not give policymakers data fast enough, but reliable daily and weekly data just did not exist.

It took the US statistical system about three months to develop and deploy high-frequency indicators on the pandemic's many economic and social effects. We had to find ways of measuring the entire population along that population's many segmentations. Surveys had to be designed, testing had to be done, and experts needed to wade in on how best to take survey results and generalize them for the population as a whole. Thus, by the middle of 2020, higher frequency data began to flow to policymakers that provided invaluable guidance for policy responses to the rapidly evolving pandemic.

Similar challenges face us on producing reliable estimates of green jobs. The remainder of this testimony will review these challenges, describe how the Bureau of Labor Statistics decided to resolve the technical ones ten years ago, and provide estimates of jobs and wages that fall into the BLS category of green jobs.

Let me start with BLS's estimate of green jobs that they based on data from 2011 and that the Bureau published in 2013. While BLS's funding issues prevented them from fielding their green jobs survey (more on this later), which would have

resulted in survey-based estimates of jobs in subsequent years, they did 1) define green jobs and 2) produce estimates of the number of business establishments and wage and salary employees that met the BLS green jobs criteria. I will review both in detail later in this essay.

Before proceeding further, let me caution readers about the estimates contained in this testimony. First, identifying a job as a “green job” presents great difficulties for those producing official statistics for the government. These difficulties stem primarily from the assumptions that economists and statisticians must make when classifying an already classified job as green. Second, the estimates herein of green jobs are outdated, except for those focused on environmental occupations. The principal reason for these estimates being outdated is funding for collection and processing of green jobs data.

That said, the estimate of green jobs for 2011 (the last estimate made by BLS) stood at 3,401,279, or 2.6 percent of total employment. That was an increase of 157,746 over 2010. The private sector component of this total was 2,515,200, thus putting the public sector total at 886,080.

To arrive at this estimate, BLS counted the number of business establishments that produced Green Goods and Services. I will review how this concept was defined in a moment. The number of establishments stood at 2,112,134 out of a total of 8,900,241, or 23.7 percent of business establishments.² The BLS estimates of in-scope employment was 25,861,335 out of a total of 129,311,080, or 20 percent of payroll employment. These would be workers at GGS establishments, though many would not be explicitly working in green jobs.

If these percentage were applied to today’s total of establishments and payroll employment, the equivalent in-scope establishments would be 2,678,000 and the number of payroll employees would be 32,297,000. Thus, a proportional growth in green jobs would put that number at 3,714,000. However, if we apply the 2010-2011 growth rate to each of the next 12 years, then the percentage of green job out of total employment in 2023 would be 3.3 percent, not 2.6 percent. Thus, the point estimate would be 5,294,000 jobs.³

² BLS defines a business establishment: “An establishment is a single physical location where one predominant activity occurs.” See Akbar Sadeghi, David M. Talan, and Richard L. Clayton, “Establishment, Firm, or Enterprise: Does the Unit of Analysis Matter,” *Monthly Labor Review*, November, 2016.

³ This estimate (5,204,000) never appeared in any BLS publication nor is it sourced from any BLS work product. It is an extrapolation based on 12-year-old BLS work. It is entirely the witness’s work. Also note that other published estimates, particularly those by Bowen, Kuralbayeva, and Tipoe (2014), put the number much higher. See below for details.

Table 1 shows BLS's Table A from the 2013 report, which breaks down private sector green job employment by major sector.⁴

Table 1
2011 Private Sector Green Goods and Services Employment
By Industry Sector

Table A. GGS employment by private industry sector, 2010–11 annual averages

NAICS	Industry	2010 GGS employment	2011 GGS employment	Change in GGS employment, 2010-11
	Total, all private industries	2,342,562	2,515,200	172,638
11,21	Natural resources and mining	63,344	64,689	1,345
22	Utilities	69,031	71,129	2,098
23	Construction	385,777	487,709	101,932
31-33	Manufacturing	492,985	507,168	14,183
42,44-45	Trade	205,567	223,079	17,512
48-49	Transportation and warehousing	242,137	238,755	-3,382
51	Information	33,321	29,412	-3,909
52,53	Financial activities	462	475	13
54	Professional, scientific, and technical services	355,386	381,981	26,595
55	Management of companies and enterprises	62,630	69,310	6,680
56	Administrative and waste services	330,650	335,417	4,767
61,62	Education and health services	28,789	26,123	-2,666
71,72	Leisure and hospitality	20,642	23,696	3,054
81	Other services, except public administration	51,841	56,257	4,416

Let's back away from these estimates and briefly examine how BLS defined Green Goods and Services. Fortunately for us, BLS took great pains to define "green jobs." As is abundantly evident, green jobs are otherwise regular jobs that are characterized "green" by their connection to activities that enhance positive environmental outcomes. I know from interviewing BLS staff who worked on this project that they struggled long to arrive at the all-important definition. Without belaboring this point, BLS's green job definition is:

"Green jobs are either: A. Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources. [or] B. Jobs in which

⁴ BLS News Release, "Employment in Green Goods and Services – 2011", Bureau of Labor Statistics (March 19, 2013): p. 2

workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources."⁵

BLS's implementation of this definition resulted in its creation of in-scope business and, thus, in-scope employment. To illustrate the types of businesses that are "in-scope", the Bureau produced the following exhibit, which is Table 2 of my testimony:

Table 2
Illustration of Green Goods and Services, 2013

Exhibit 1. Categories of green goods and services
<p>Green goods and services are sold to customers and include research and development, installation, and maintenance services. Green goods and services fall into one or more of five groups:</p>
<ol style="list-style-type: none"> 1. <i>Energy from renewable sources.</i> Examples include electricity, heat, or fuel generated from renewable sources. These energy sources include wind, biomass, geothermal, solar, ocean, hydropower, and landfill gas and municipal solid waste. 2. <i>Energy efficiency.</i> Goods and services in this group improve energy efficiency. Included are energy-efficient equipment, appliances, buildings, and vehicles, as well as products and services that improve the energy efficiency of buildings and the efficiency of energy storage and distribution, such as Smart Grid technologies. 3. <i>Pollution reduction and removal, greenhouse gas reduction, and recycling and reuse.</i> These are products and services that <ul style="list-style-type: none"> • reduce or eliminate the creation or release of pollutants or toxic compounds or remove pollutants or hazardous waste from the environment; • reduce greenhouse gas emissions through methods other than renewable energy generation and energy efficiency, such as electricity generated from nuclear sources; and • reduce or eliminate the creation of waste materials and collect, reuse, remanufacture, recycle, or compost waste materials or wastewater. 4. <i>Natural resources conservation.</i> Goods and services in this group conserve natural resources. Included are products and services related to organic agriculture and sustainable forestry; land management; soil, water, or wildlife conservation; and stormwater management. 5. <i>Environmental compliance, education and training, and public awareness.</i> These are goods and services that <ul style="list-style-type: none"> • enforce environmental regulations • provide education and training related to green technologies and practices • increase public awareness of environmental issues.

Three final points about BLS's work ten years ago: 1) the employment estimates are at the 6-digit NAICS level, which is quite detailed as employment estimates go, and 2) BLS produced state-level employment and occupation estimates, including ones for the District of Columbia. Finally, BLS was on the brink of fielding two surveys: one for Green Goods and Services and one Green Technologies and

⁵ Dixie Sommers, "BLS Green Jobs Overview," *Monthly Labor Review* (January, 2013): p. 5.

Practices. These surveys would have provided BLS with the source data from producing annual or more frequent publications on the number of green jobs.

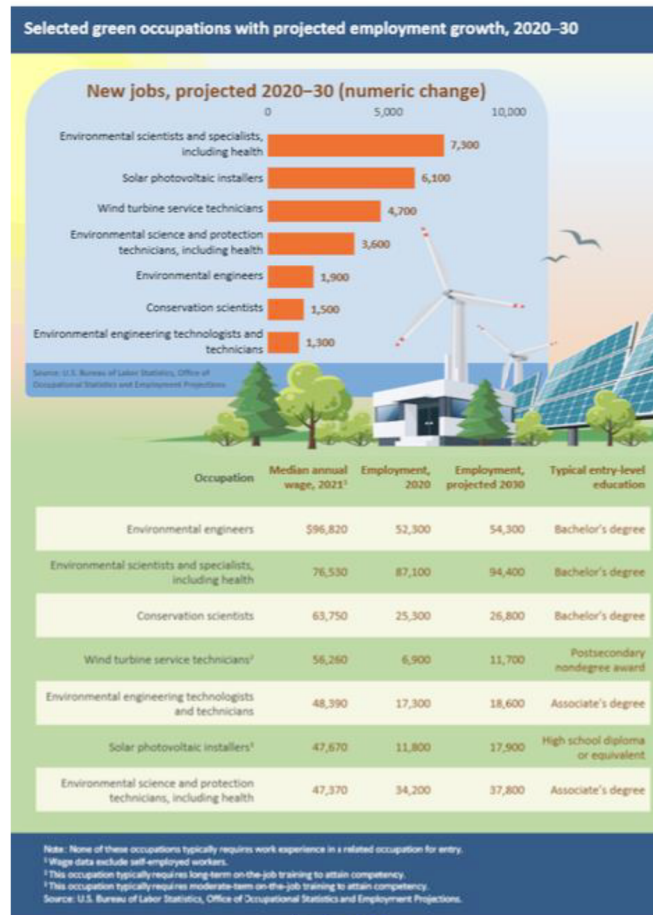
So, why did all this work stop in 2013? The direct answer is the implementation of spending reductions following passage of the Balanced Budget and Emergency Deficit Control Act, as amended (also known as the Bipartisan Budget Act of 2013). Many agencies, including BLS, were asked by President Obama to reduce spending by 5 percent. The Bureau achieved this reduction by cutting all “measuring green jobs” programs.

That said, segments of the US statistical system have continued work on environmental accounting and green jobs at the international level and, most notably, within the Commerce Department’s Bureau of Economic Analysis (BEA). BEA began development in the 1990s of national environmental accounting as a supplement to its National Income and Product Accounts. Indeed, BEA published its Integrated Environmental and Economic Satellite Accounts in 1994. Controversy surrounding the methods used by BEA caused the suspension of this work. Even so, BEA continued to research environmental accounting and to participate in international efforts. Now, in 2023, it appears that this accounting work could well receive support from the administration.⁶

In addition to the ongoing efforts of BEA, BLS continues to publish occupational projections of jobs associated with environmental matters. Its most recent work on this is April of 2022 when it projected ten-year growth estimates for some high-paying environmental jobs. See Figure 1 below.

⁶ See Office of Science and Technology Policy, Office of Manage and Budget, and the Commerce Department, “National Strategy to Develop Statistics for Environmental-Economic Decision,” The White House, January, 2023 at <https://www.whitehouse.gov/wp-content/uploads/2023/01/Natural-Capital-Accounting-Strategy-final.pdf> (accessed September 15, 2023).

Figure 1
Job Growth for Selected Green Jobs, 2020-2030⁷



The data also show that each of these occupations had a median annual wage that was higher than the \$45,760

⁷ Bureau of Labor Statistics, “Green Growth: Employment Projections in Environmentally Focused Occupations,” Career Outlook, April, 2022.

Let me illustrate other approaches by mentioning one well known initiative. An ambitious and promising statistical approach combines BLS's methodology with a more expansive definition of green jobs by the Department of Labor's O*Net database. O*Net counts any job that will be affected by greening as a green job. Several researchers used this broader view of green jobs to construct estimates that built on BLS's work. They found that 19.4 percent of the US workforce worked in green jobs, or a total of 27,200,000 for the year 2014. That same percentage applied to today's larger level of non-farm employment would yield an estimate of 30,300,000.⁸

It should be clearly evident from the range of estimates presented in my testimony (5.3 to 30.3 million green jobs) that achieving consensus on the magnitude of green jobs at any point in time needs to be led by an official statistical agency. There's presently just too great an array of assumptions, definitions, and estimating methodologies. Indeed, the challenges are enormous, and there is no guarantee of success.

However, there's yet another challenge: I do not need to tell this committee that Congress is faced with unprecedented fiscal problems. Indeed, this year and next may be a turning point for better or worse in Congress's commitment to sound financial management, as I've documented in a recent essay for the Economic Policy Innovation Center.⁹ Thus, any funding for job training programs needs a high likelihood of success and, clearly, should be offset through spending reductions elsewhere in the budget.

Whatever direction Congress decides to take, my experience at BLS tells me that the statistical system will rise to the measurement challenges. Indeed, these efforts of the statistical agencies should encourage researchers in the private sector and the academy to expand our understanding of the economy's move toward better stewardship our shared environment.

⁸ Alex Bowen, Karlygash Kuralbayeva, and Eileen I. Tipoe, "Characterising Green Employment: The Impacts of 'Greening' on Workforce Composition," *Energy Economics*, 72 (2018): p. 264.

⁹ William Beach, "The Crisis in Financial Management: The Choice Congress Must Make between Expansive Fiscal Goals and Monetary Stability," Economic Policy Innovation Center at <https://epicforamerica.org/publications/the-crisis-in-financial-governance/> (Accessed on September 16, 2023).

Testimony on:

Building a Green Energy Workforce

Douglas Holtz-Eakin

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Joint Economic Committee

September 20, 2023

*The views expressed here are my own and not those of the American Action Forum. I thank Isabella Hindley for her assistance.

Chairman Heinrich, Vice Chairman Schweikert, and members of the committee, thank you for the privilege of appearing today to discuss issues regarding the development of a green energy workforce. I would like to make three main points:

- The notion that a unique “green energy workforce” requires a federally funded program to train workers in green energy installation is flawed, given that the skills needed to build, operate, and maintain facilities such as wind farms and solar fields are the same skills required across many other industries in the U.S. economy.
- To the extent there are firm-specific or occupation-specific skills needed for this workforce, there are adequate private-sector incentives to acquire them.
- In general, the federal government has an expensive, less-than-stellar track record in workforce development.

Let me discuss these in turn.

What Is a Green Energy Workforce?

The centerpiece of this hearing is the idea of a green energy workforce. But what is that? The design of a renewable energy site will necessitate engineers, electrical engineers, software engineers, and others. Clearing the site for a new solar farm will require backhoe operators, dump truck drivers, and the like. Erecting the panels will require cement masons, welders, crane operators, electricians, and others.

I could go on, but the basic point is simple: The skills need to contribute to a green energy footprint in the United States are largely the same skills used across the economy. As the Bureau of Labor Statistics puts it on its [“Careers in Solar Power”](#) page:

“The majority of the occupations listed here are not specific to the solar power industry—they exist in many other industries as well. Although many of these occupations require special skills unique to solar power, skills can be acquired in other industries in most cases. For many positions, experience in other industries is desired by employers in the solar power industry. For example, solar photovoltaic installers need to have specialized knowledge and training, but many installers have previous experience as roofers, electricians, or construction workers.”

There does not appear to be a unique federal role in staffing the green energy sector.

Specific Skills and the Green Workforce

As highlighted by the quote above, some workers may need to acquire firm-specific skills or occupation-specific skills to gain employment in the green energy sector. But, again, that is hardly a new phenomenon unique to green energy. Firms willingly invest in their workers as a matter of meeting production goals, while workers seek training to qualify for advancement. There is nothing about the green energy sector that is new or different in this regard.

Existing Federal Programs for Workforce Development

To the extent there is a federal role in a green energy workforce, it would appear to be the same role it has traditionally filled. Unfortunately, the track record of federal workforce development programs does not instill great confidence in meeting these needs. Rather than creating any new programs, Congress should concentrate on improving the existing efforts.

Federal training is no guarantee of labor market success; approximately [40 percent](#) of Workforce Innovation and Opportunity Act training participants earn under \$25,000 annually. A 2019 Council of Economic Advisors report indicates that a [cost-benefit analysis](#) showed that intensive services had a positive net benefit to society as a whole but that training had a negative benefit. Similarly, a 2017 Department of Labor [report](#) indicated that primary job-training programs are largely ineffective at raising earnings and are unlikely to meet the needs of job seekers or employers. The availability of federally funded training decreased earnings by \$638 in high-unemployment local areas and increased them by \$246 in low-unemployment areas, but both estimates were statistically insignificant. Finally, a consensus of studies into Adult and Dislocated Worker Programs suggests that training may have small positive effects on earnings in the adult worker program but no significant effect on earnings from dislocated worker training.

One reason may be that federal programs are not nimble enough to stay abreast of training needs, which augurs poorly for meeting new green energy needs. [I](#) concluded that federal programs “are not aligned with the future demands for skills that the economy will place on workers.” While the research indicates that current federal career and training programs effectively place participants into employment, it also reveals potential future challenges. In particular, the training programs are not training workers proportionately in the fields where there will be overall job growth in the future economy. As the economy shifts, federal job training programs could increasingly become less effective and obsolete.

Thank you and I look forward to your questions.

