
POWERING FORWARD
Powering Up an Inclusive Clean Energy Workforce
Sep. 9, 2020 | 2:00-3:15 pm ET
The Business Council for Sustainable Energy®
THIRD WAY
CLEAN ENERGY BUSINESS NETWORK

POWERING FORWARD

Examines the unique impacts facing clean energy industries during the COVID-19 epidemic, along with the vital role of our sectors in our future economic recovery

And thanks to our series sponsors:

CF CRESFORUM

NATIXIS
INVESTMENT MANAGERS

SPEAKERS

Lisa Jacobson
President, Business Council for Sustainable Energy

Lynn Abramson
President, Clean Energy Business Network

Ellen Hughes-Cromwick
Senior Resident Fellow, Third Way

Timothy Alan Simon, Esq.
Former Commissioner, California Public Utilities Commission

Shaun Garrison
Director of Congressional Affairs, Solar Energy Industries Association

Camille Moore
2020 Jan Schori Fellow, Business Council for Sustainable Energy

BUSINESS COUNCIL FOR SUSTAINABLE ENERGY

a coalition of companies and trade associations

Energy Efficiency

Natural Gas

Renewable Energy

BCSE MEMBERS

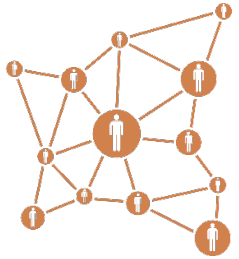
CLEAN ENERGY BUSINESS NETWORK

CLEAN ENERGY BUSINESS NETWORK

the small business voice for the clean energy economy

Policy Support

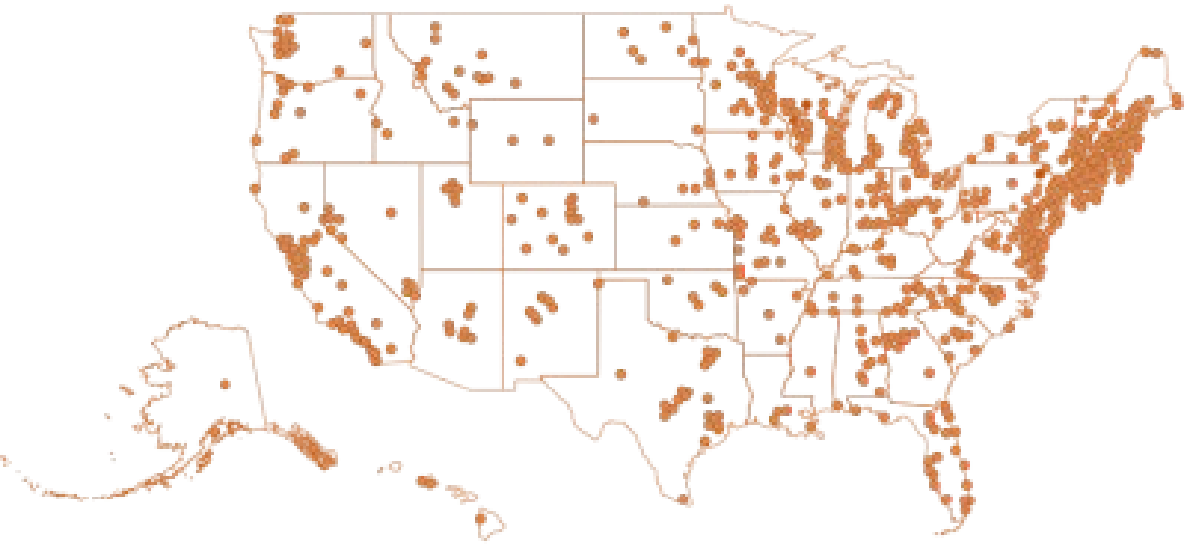
Market & Technology Education



Business Development Assistance

CEBN MEMBERS

4,000+ across all 50 U.S. states
representing diverse technologies



BCSE & CEBN EFFORTS ON RESILIENCE

- BCSE Resilience & Reliability Dialogue
- *Powering Forward* webinar series
- Hill briefings

ANNOUNCEMENTS

- American Made Challenges Program
  - Energy Program for Innovation Clusters (9/10)
  - I AM Hydro (9/30)
  - Solar Prize Round 4 (10/8)
  - Waves to Water (11/30)
- National Clean Energy Week (9/21-25)
- Sign-on letter
  - Support clean energy in economic recovery
- CEBN Funding Database
  - Now open to public

COVID-19 IMPACTS ON CLEAN ENERGY

Source: BW Research

How Clean Energy Businesses Can Survive and Thrive After Covid-19

THIRD WAY

Understanding the impact on the clean energy industry

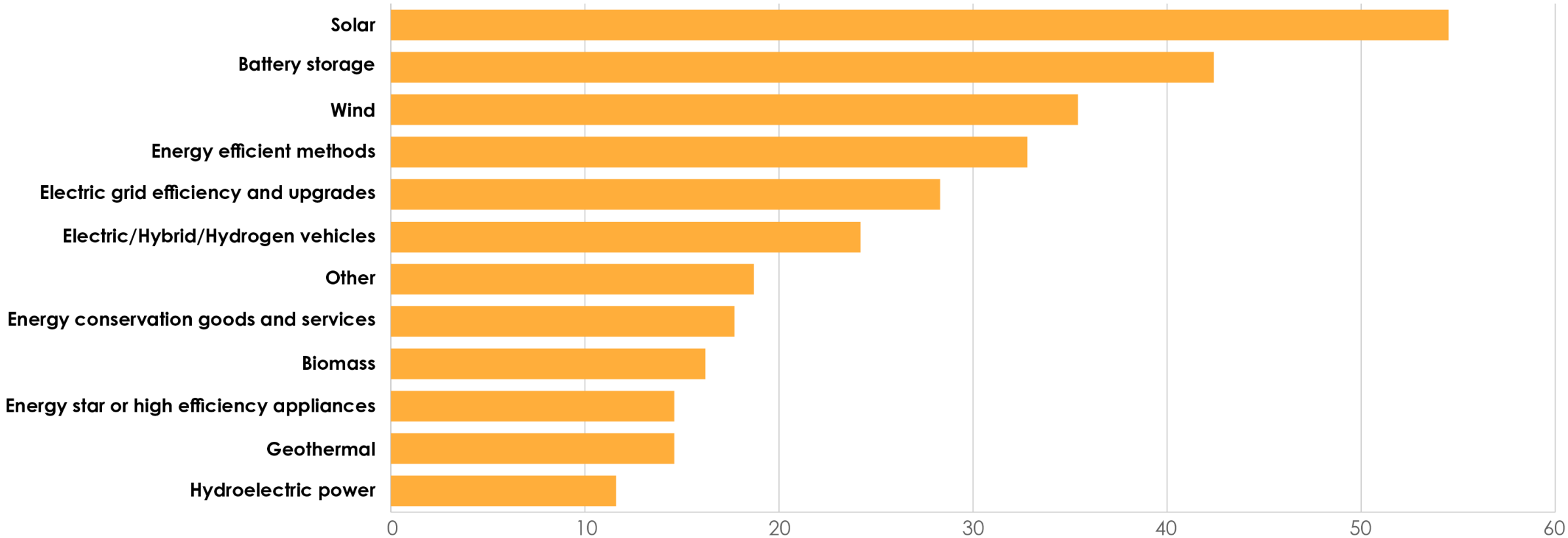
- The clean energy industry employs over 3 million workers and was poised for sustained growth this year.
- We asked business leaders across the industry about the impact of Covid-19 on their workforce, sales, federal programs or other resources they utilized for help, and their views on which policies provide help.
- We received over 250 responses across a range of clean energy sectors, including 170 qualitative policy recommendations.

Key Findings

- The Paycheck Protection Program (PPP) was a success for clean energy: Half of respondents took advantage of the program.
- Dark clouds ahead: If Federal assistance runs out, 46% of respondents said they will have to lay off workers, lower worker wages, cut worker hours, or cease operations.
- Two thirds of businesses said their customers have either delayed or postponed orders.
- Industry needs the federal government to take action with a combination of supportive policies.

THIRD WAY

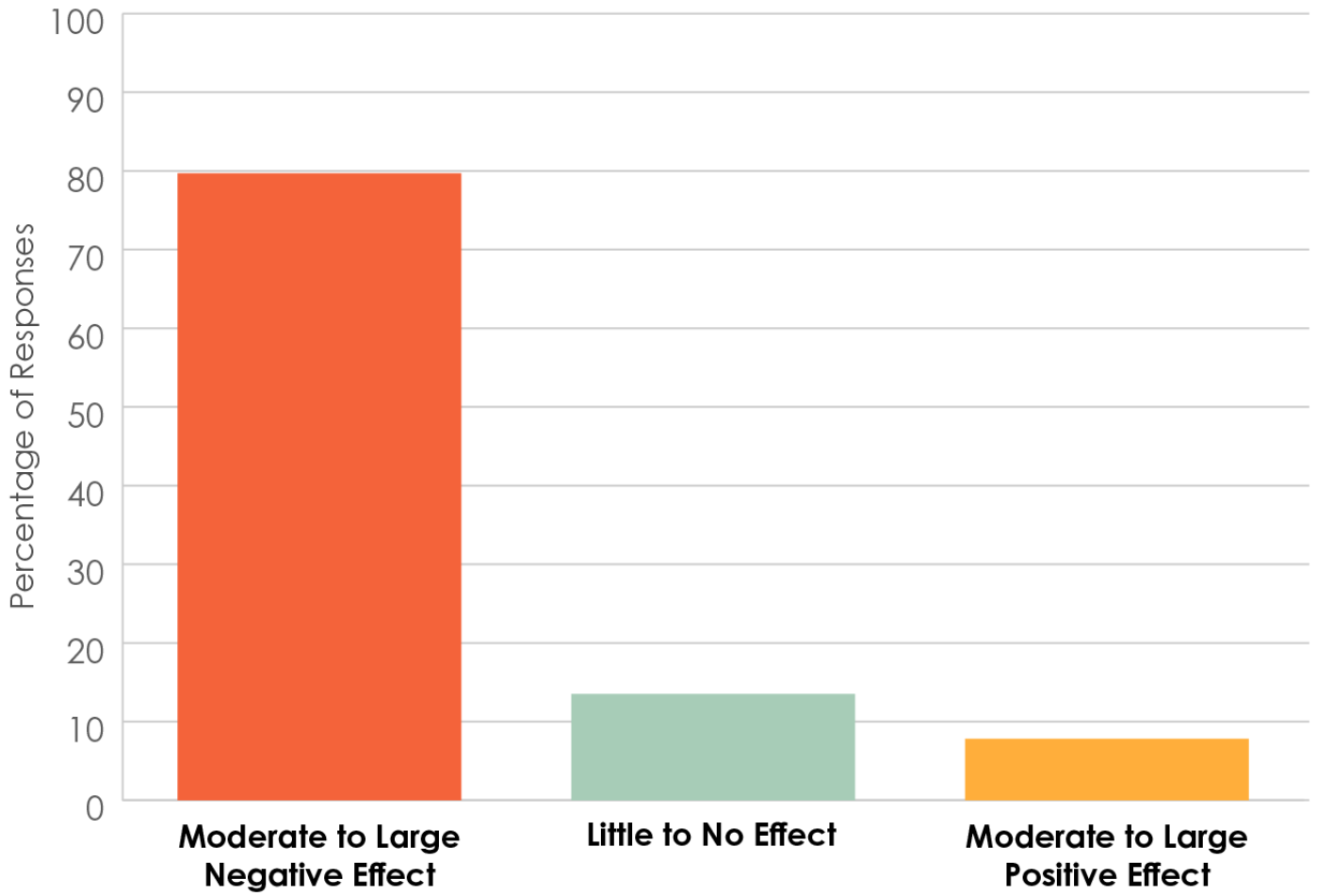
Percentage of Respondents Active in the Following Clean Energy Business Sectors



Source: Third Way Clean Energy Survey and co-author's calculations. Response to Question 9: "Clean Energy Sector: Does your company directly or indirectly support any of these clean energy activities? This includes development, manufacturing, construction, financing, installation, service or maintenance, consulting, supply parts, or other related activities? [check all that apply]."

THIRD WAY

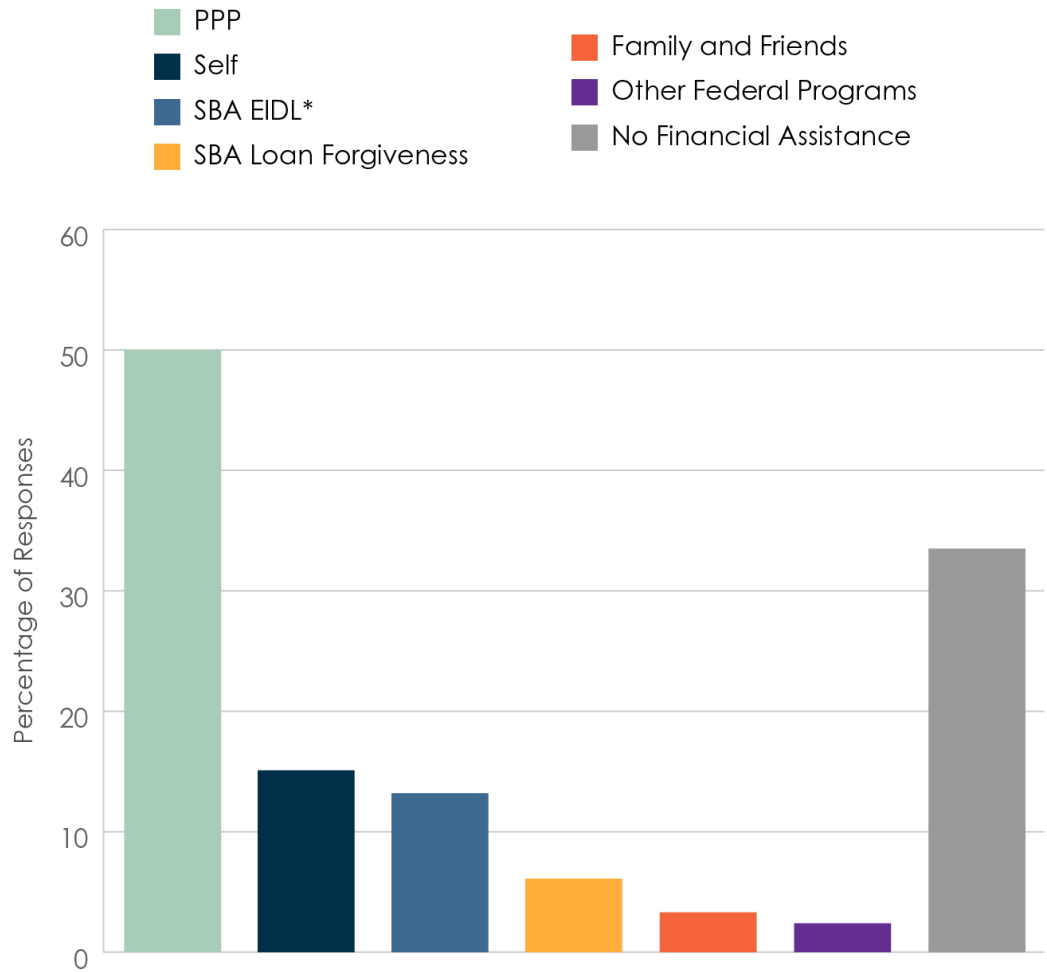
Business Impact From Covid-19 Pandemic



Source: Third Way Clean Energy Survey and co-author's calculations. Response to Question 1: "Overall, how has your buisness been affected by the Covid-19 pandemic?"

THIRD WAY

Financial Assistance Tapped By Businesses Since March 1st

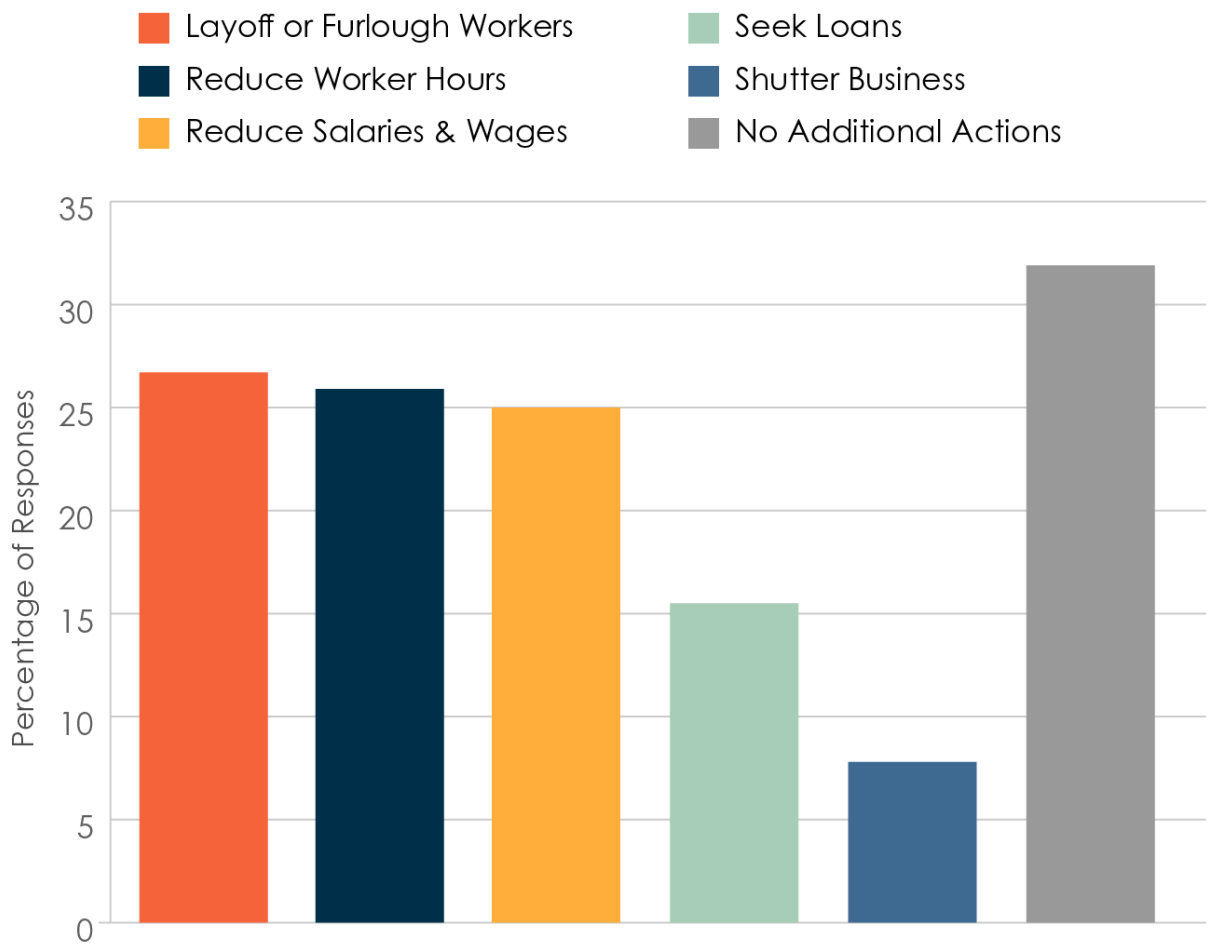


***Small Business Administration Economic Injury Disaster Loans**

Source: Third Way Clean Energy Survey and co-author's calculations. Response to Question 3: "Federal Government or Other Financial Assistance: Since March 1, has your firm RECEIVED or does it EXPECT TO RECEIVE financial assistance from any of the following sources? [Check all that apply]"

THIRD WAY

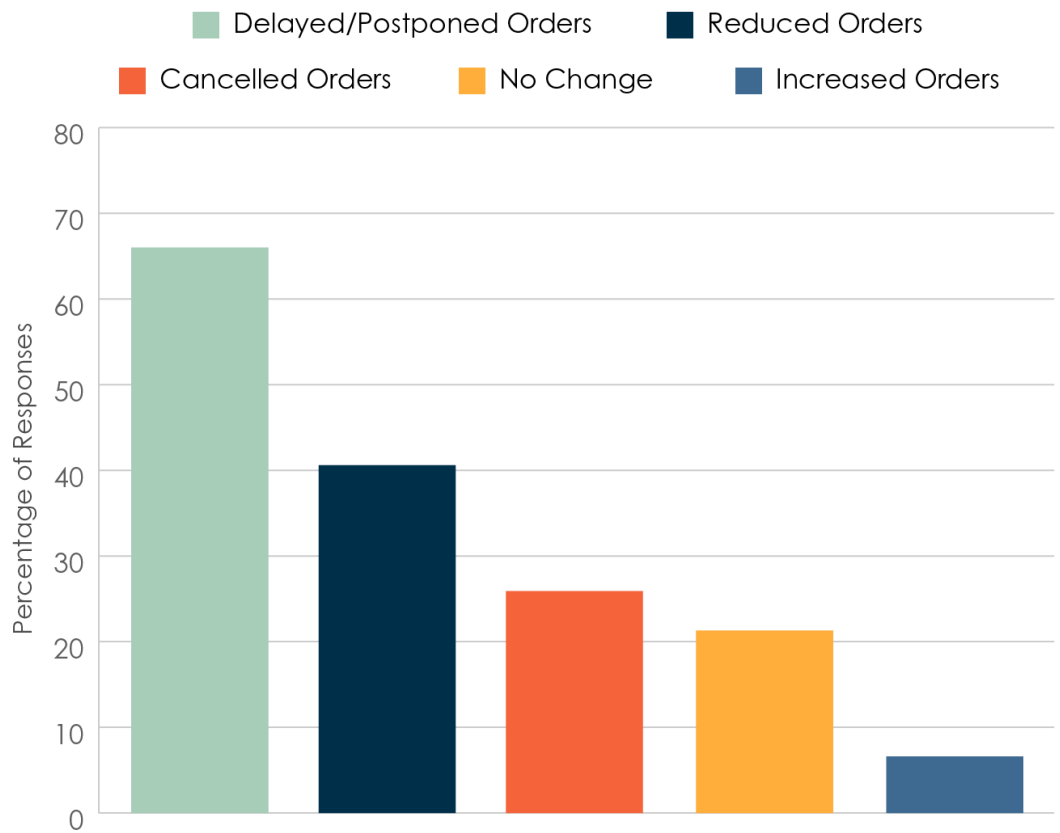
What's Next For Businesses After Federal Support Or Other Sources Of Funding Are Exhausted?



Source: Third Way Clean Energy Survey and co-author's calculations. Response to Question 4: "When funds received under any of these Federal Programs or other sources are EXHAUSTED will your business? [Check all that apply]"

THIRD WAY

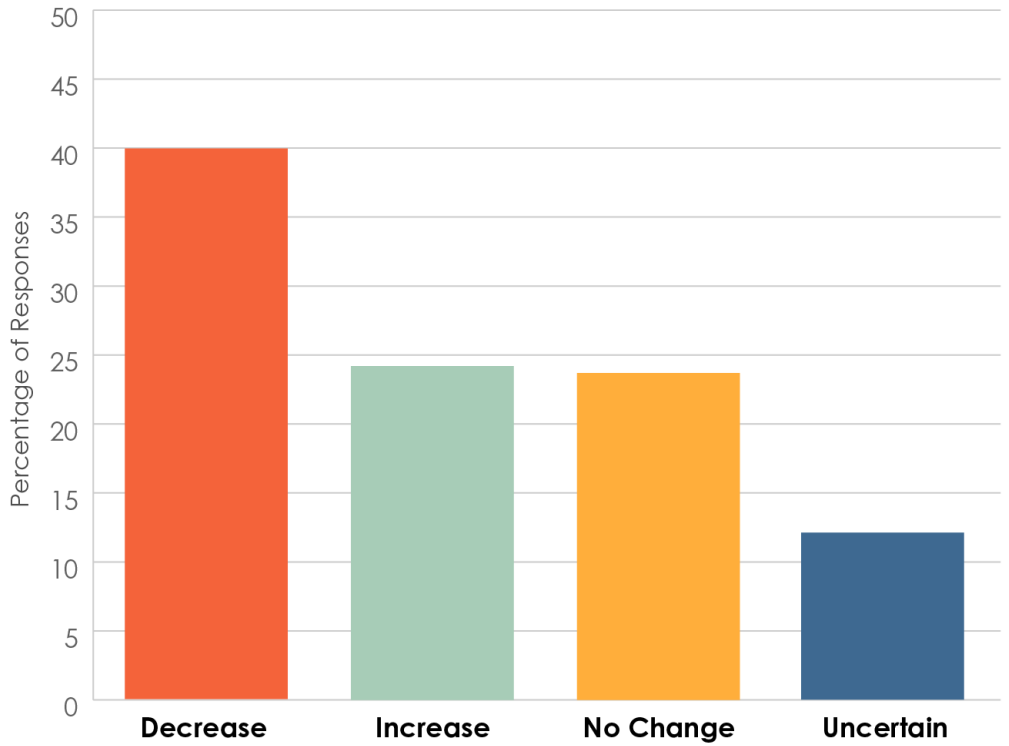
Customer Orders Shifted Due To Covid-19



Source: Third Way Clean Energy Survey and co-author's calculations. Response to Question 14: "Due to Covid-19, OVERALL have your customers: [Select all that apply]"

THIRD WAY

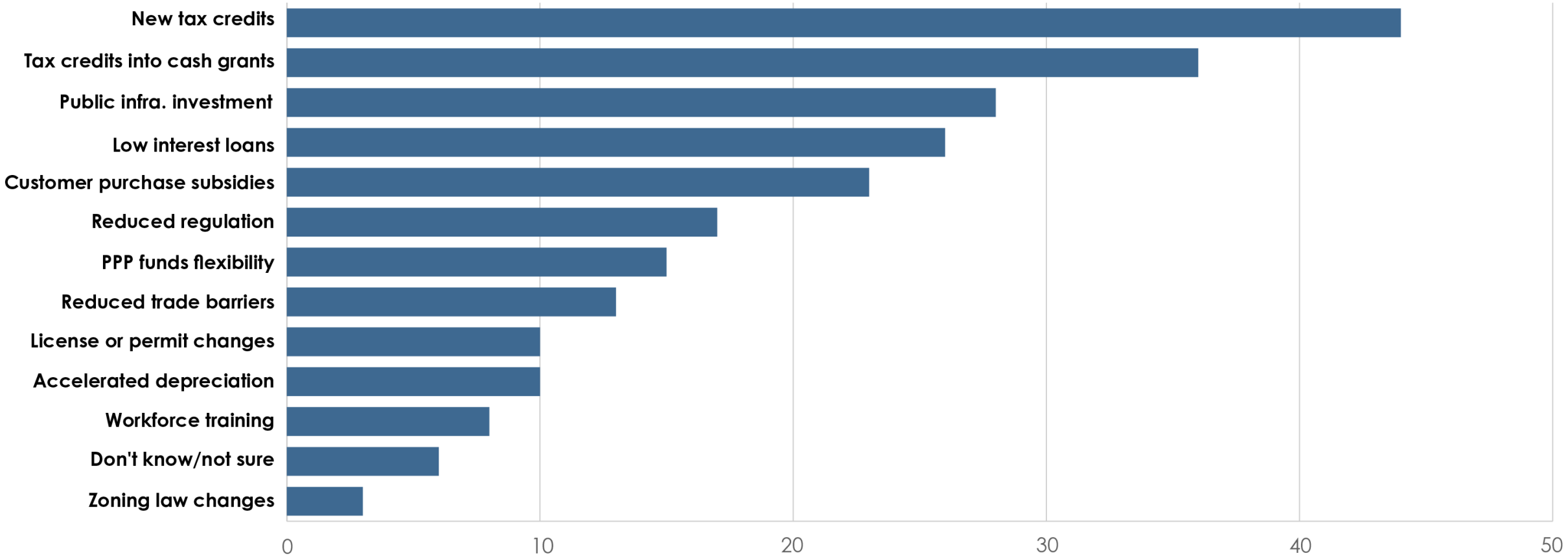
Expected Change In Revenue/Sales Over The Next 3 Months



Source: Third Way Clean Energy Survey and co-author's calculations. Response to Question 11: "Revenue/-Sales Expectations: Over the next 3 months what change do you expect to your REVENUE/SALES?"

THIRD WAY

Name 3 Policy Solutions — Federal, State, Or Local Government — Most Helpful For Recovery And Expansion



Source: Third Way Clean Energy Survey and co-author's calculations. Response to Question 15: "Which THREE of the following policy solutions at the Federal, State, or Local government level would MOST help your company recover and expand? [Check Up To Three]"

Call for more comprehensive climate policies

- A substantial majority of businesses we surveyed voiced support for legislation to combat climate change and promote clean energy.
- We received 170 write-in, open ended comments regarding climate change and policy solutions to address it as well as the transition to clean energy solutions.
- 90% of comments were supportive of policies to address climate change and promote clean energy technologies.

Let’s hear from them directly

- “We cannot keep 'kicking this can down the road'. Carbon sequestering, clean energy tax credits, actual penalties for polluting emitters would all make a difference.”
- “We see how vulnerable our economy is to disruption tiny in scale to climate change. ALL government sponsored programs and stimuli should have some positive impact on achieving sustainability goals.”
- “[Major climate legislation] would allow us to hire more and increase our capital expenditures, resulting in additional U.S. based manufacturing.”

Powering Forward:

Powering Up an Inclusive Clean Energy Workforce

Biography Highlights Of

Timothy Alan Simon, Esq.

- Former CPUC Commissioner
- Former Appointments Secretary for Governor Schwarzenegger
- Former Adjunct Professor of Law, UC Hastings and Golden Gate University
- Former Board Member, California Green Jobs Workforce Development Board
- Former Chairman, the Gas Committee of National Association of Regulatory Utility Commissioners
- Member, National Petroleum Council appointed by Dr. Steven Chu and Dr. Ernest Moniz
- Chairman, California Black Chamber of Commerce
- Board of Trustees, University of San Francisco
- Board of Directors, American Association of Blacks in Energy
- Co-Founder, National Utility Diversity Council

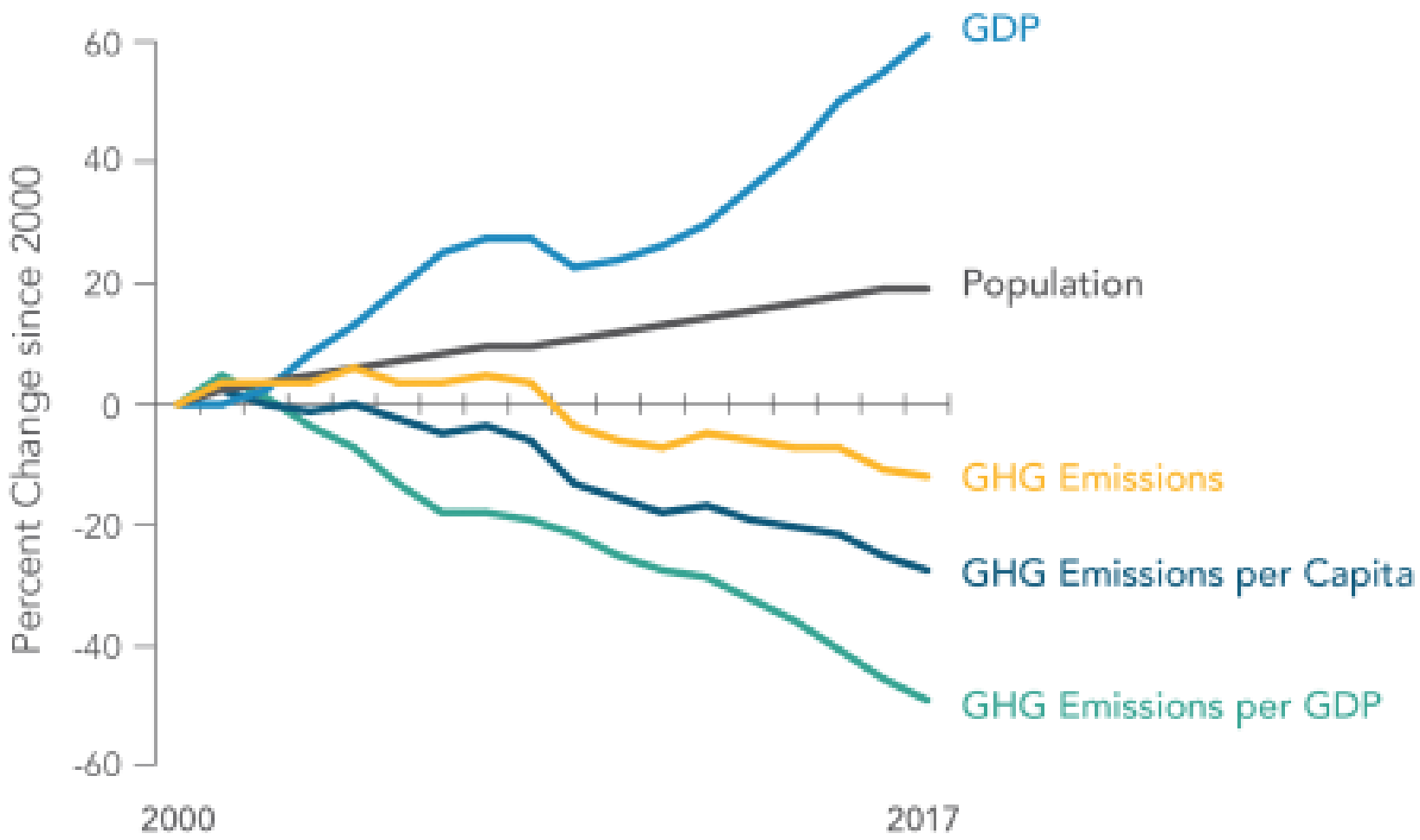
TAS STRATEGIES

Overview

- California's Clean Energy Context
- California Public Utility Commission General Order 156
  - Honorable Gwen Moore
- National Clean Energy Context
  - Washington Clean Energy Transition
  - Maryland, Illinois, Mississippi, Arkansas
  - NARUC Subcommittee on Supplier and Workforce Diversity
- Potential Workforce Opportunities

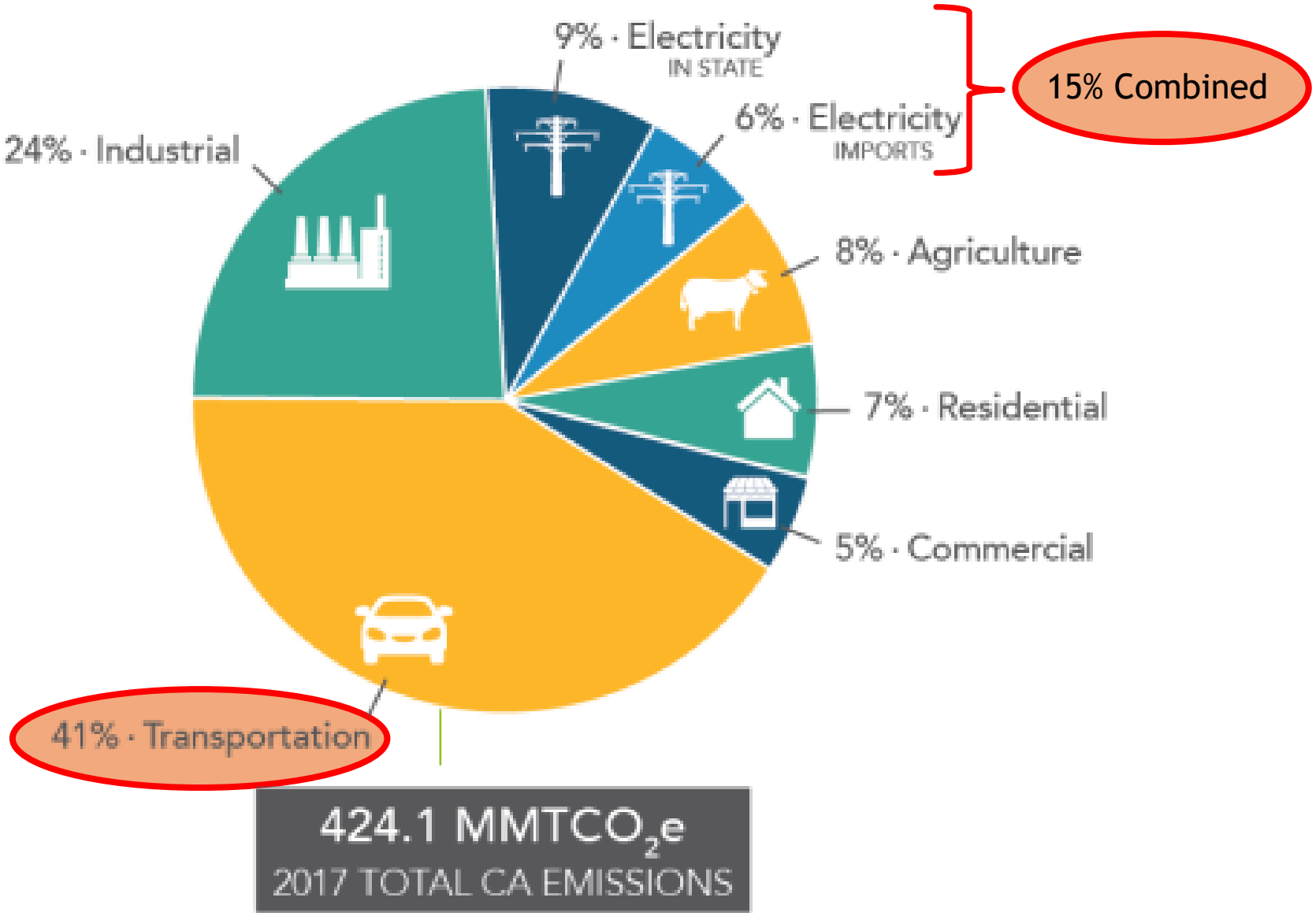
TAS STRATEGIES

CA's Trends by % Change 2000 - 2017



California Air Resource Board: https://ww2.arb.ca.gov/ghg-inventory-data

CA's Greenhouse Gas Emissions



California Air Resource Board: https://ww2.arb.ca.gov/ghg-inventory-data

TAS STRATEGIES

CPUC General Order 156:

Utility Supplier Diversity Program

- Focus on creating an inclusive supply chain
- CPUC General Order requires all investor-owned electric, gas, water and telecommunication utility companies with gross annual revenues in excess of $25 million to develop and implement programs to increase the utilization of women-, minority-, disabled veteran-, and LGBTQ-owned enterprises.
- In 2019, telecommunication and utilities procurement:
  - $12.7 billion from diverse suppliers
  - 33.2% of the total procurement budget
- AB 2758 (Bradford, 2010) expanded GO 156 to renewable energy.
- SB 255 (Bradford, 2019) expanded GO 156 to CCAs, energy service providers, distributed energy resource contractors, and energy storage systems.

TAS STRATEGIES

In Memory of

The Honorable Gwen Moore

(October 28, 1940 – August 19, 2020)

Former California Assemblymember Gwen Moore was the architect and driving force behind the ground-breaking legislation that required the CPUC to issue General Order 156.

TAS STRATEGIES

Balanced Energy - Resource Planning: CA Total System Electrical Generation

2019 Total CA System Electric Generation in Gigawatt Hours

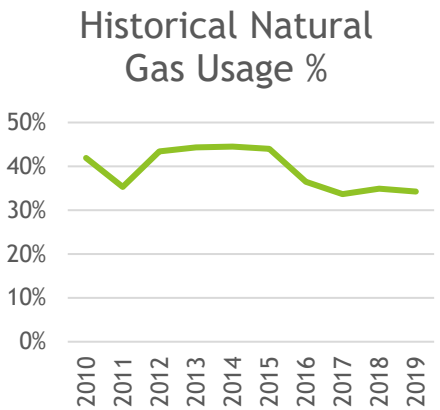
Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Total Imports (GWh)	Percent of Imports	Total California Energy Mix (GWh)	Total California Power Mix
Coal	248	0.12%	7,985	10.34%	8,233	2.96%
Natural Gas	86,136	42.97%	8,921	11.55%	95,057	34.23%
Oil	36	0.02%	0	0.00%	36	0.01%
Other (Waste Heat / Petroleum Coke)	411	0.20%	11	0.01%	422	0.15%
Nuclear	16,163	8.06%	8,782	11.37%	24,945	8.98%
Large Hydro	33,145	16.53%	7,458	9.66%	40,603	14.62%
Unspecified	0	0.00%	20,376	26.38%	20,376	7.34%
Non-Renewables and Unspecified Totals	136,139	67.91%	53,533	69.32%	189,672	68.30%
Biomass	5,851	2.92%	936	1.21%	6,787	2.44%
Geothermal	10,943	5.46%	2,318	3.00%	13,260	4.77%
Small Hydro	5,349	2.67%	296	0.38%	5,646	2.03%
Solar	28,513	14.22%	5,577	7.22%	34,090	12.28%
Wind	13,680	6.82%	14,569	18.87%	28,249	10.17%
Renewables Totals	64,336	32.09%	23,696	30.68%	88,032	31.70%
System Totals	200,475	100.00%	77,229	100.00%	277,704	100.00%

Source: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation

In 2019, 34% of California's electrical generation came from Natural Gas.

Historical Natural Gas Usage:

2010: 41.90%
2011: 35.30%
2012: 43.40%
2013: 44.31%
2014: 44.49%
2015: 44.00%
2016: 36.48%
2017: 33.67%
2018: 34.91%
2019: 34.23%



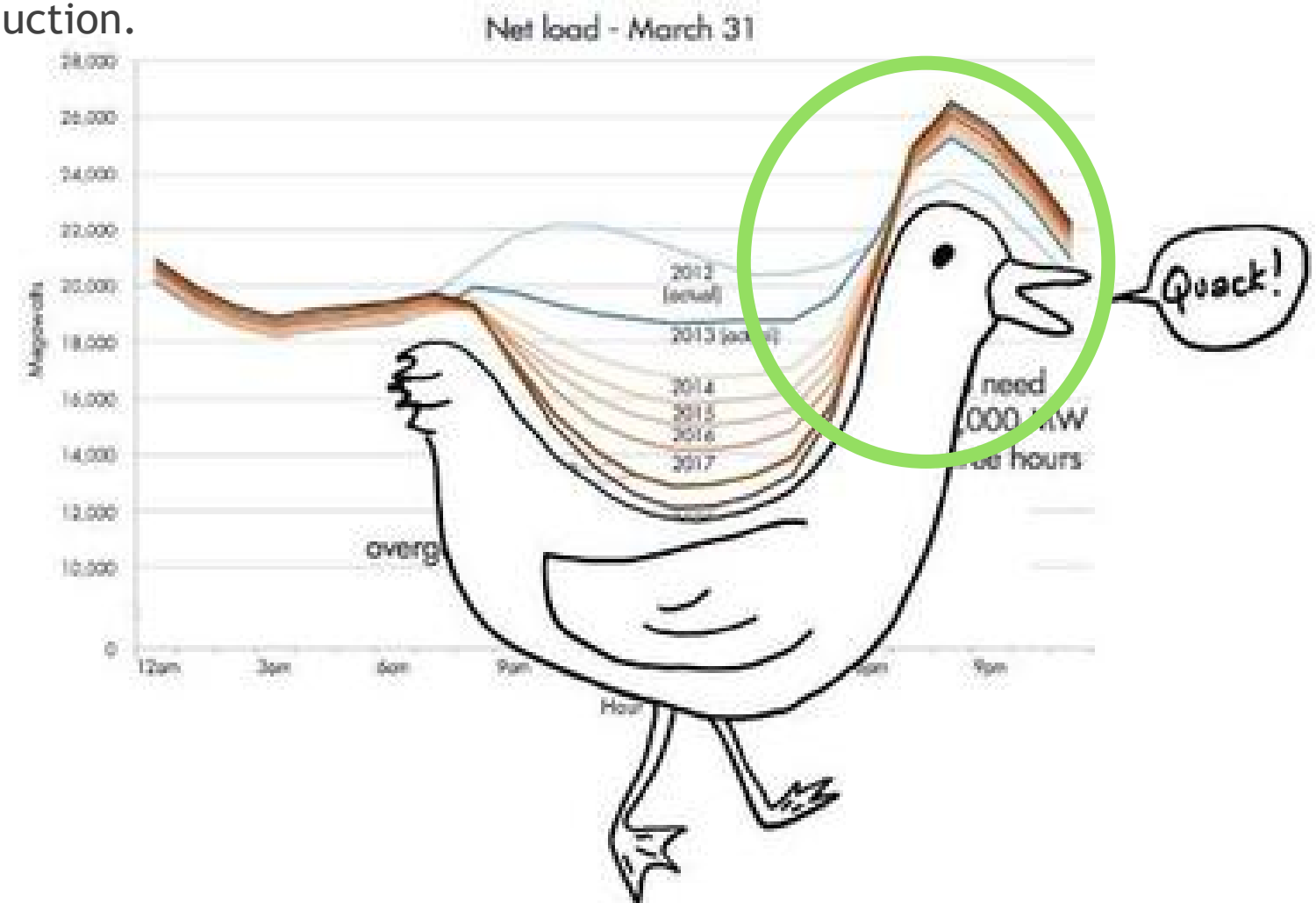
Source: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation

TAS STRATEGIES

PV Impacts on Grid: Duck Curve

The duck curve is a problem statement, not a solution.

The duck curve is a graph of power production over the course of a day that shows the timing imbalance between peak demand and renewable energy production.



TAS STRATEGIES

Potential Workforce Opportunities

- Jobs versus Careers
  - STEM
  - Positions of substance (i.e. contract negotiation, energy management services, architects, electrical & civil engineers)
  - Careers for the future
- Changing Energy Markets
  - Resilience
  - Reliance
  - Balanced Energy – Resource Planning Opportunities
  - Alternative Fuel Vehicle Infrastructure
- Focus on engaging communities in planning distributed energy
- Diversify not only by HB-1 Visas, but also by including historically excluded communities
  - HBCU
  - Outreach to Diverse High Schools

TAS STRATEGIES

Thank You & Contact Info TAS STRATEGIES

https://www.tasstrategies.com/

LinkedIn:
https://www.linkedin.com/in/live4jazz

Facebook:
https://www.facebook.com/timothyalansimon

Twitter: http://www.twitter.com/tasstrategies

TAS STRATEGIES

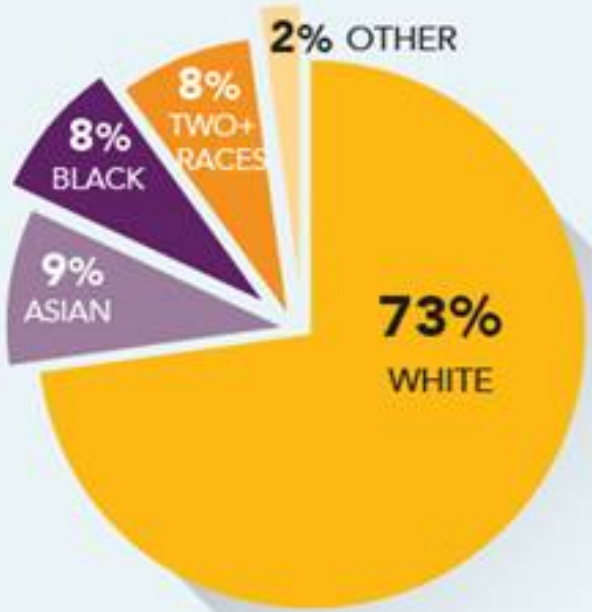
Shaun Garrison

Director of Congressional Affairs
Solar Energy Industries Association

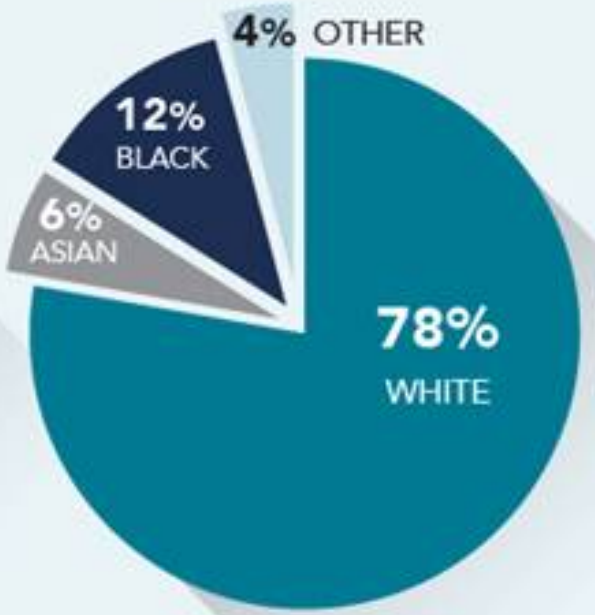
SEIA LINKS:

- Abigail Ross Hopper: Prioritizing Equity in the Clean Energy Transition
- Solar Diversity Study (2019)
- Diversity Best Practices Guide

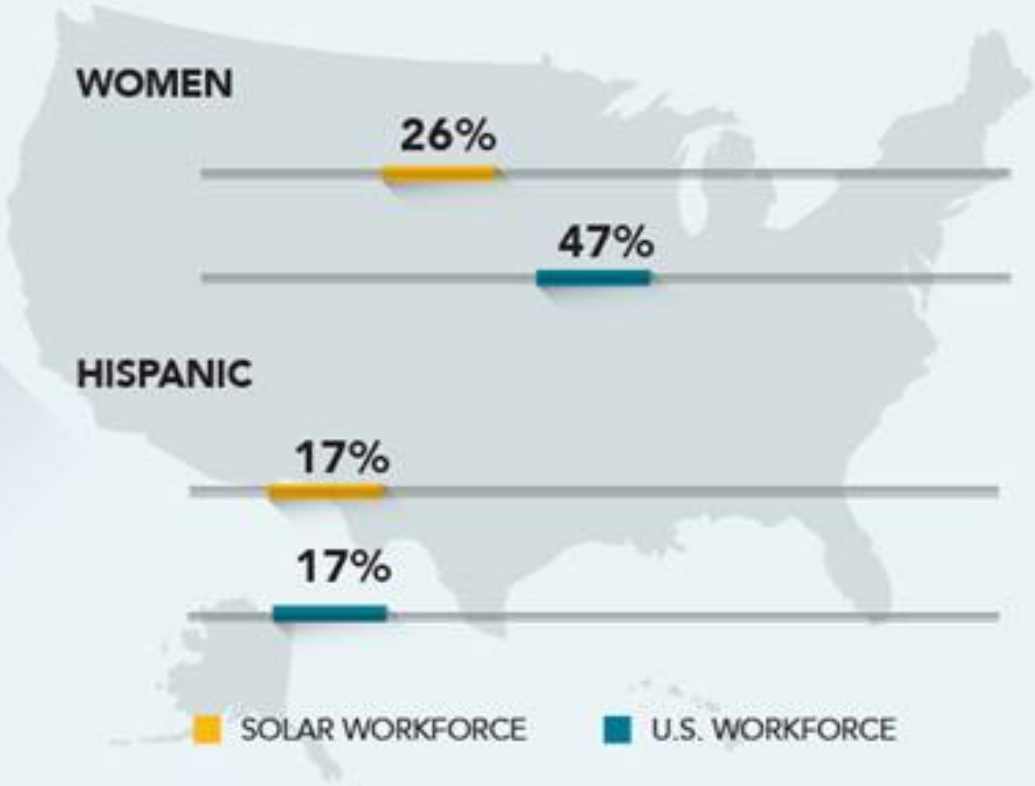
SOLAR INDUSTRY BY **GENDER, RACE AND ETHNICITY**



Solar Workforce



U.S. Workforce

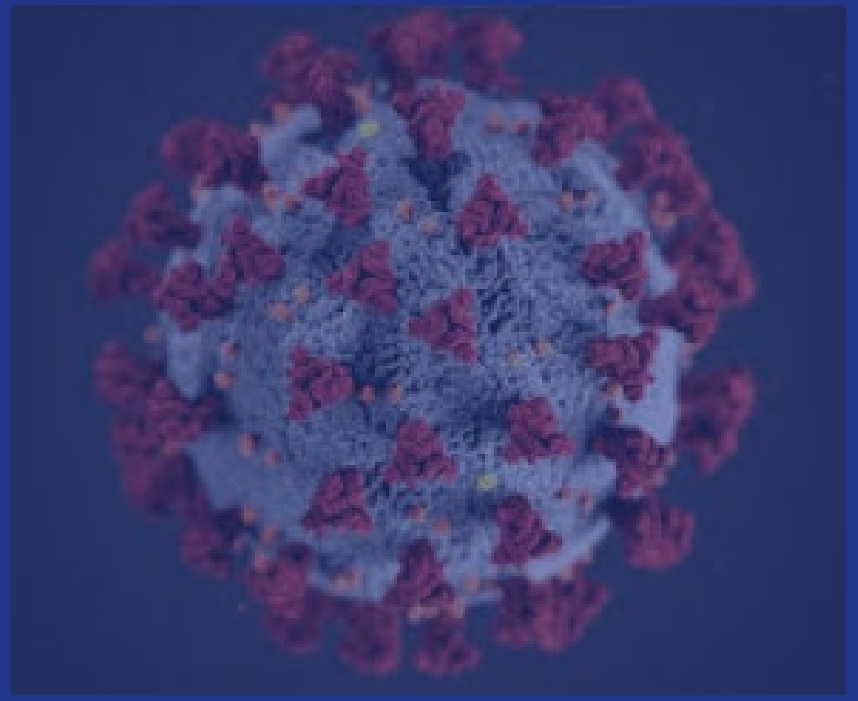


The SOLAR FOUNDATION™ for a bright future

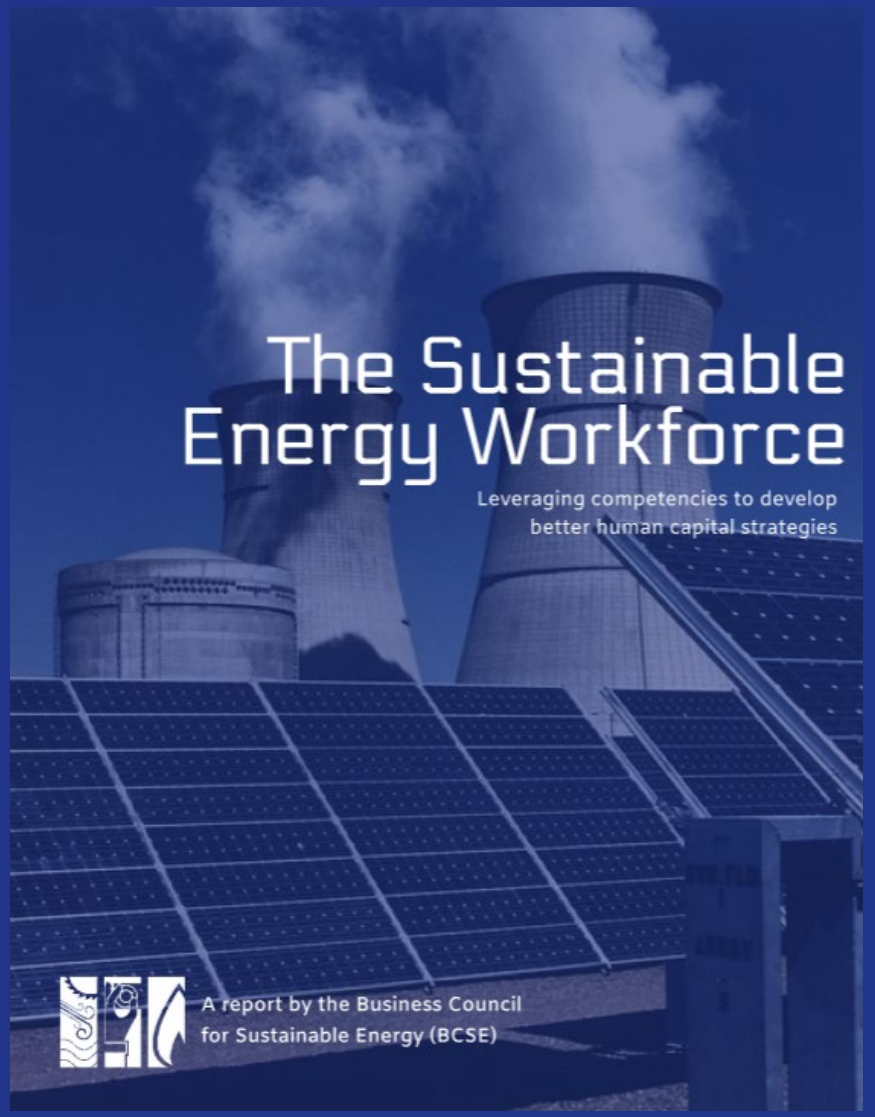
TheSolarFoundation.org/Diversity

SEIA Solar Energy Industries Association®

THE GREAT RESET?



The COVID-19 pandemic cut carbon emissions down to 2006 levels.



5 THE ANALYSIS: EDUCATION, WAGE & COMPOTENCIES

There is no one size fits all solution for workforce development or human capital program due to the subtle differences an industry can encounter across state lines, county borders, and even between neighborhoods. By nature, sustainable energy also dependent on a variety of environmental factors. This means strategies must also adjust at American Job Centers, on regional workforce boards, at local 2-year and 4-year institutions, at vocational schools, at local high schools, on taskforces, and even local middle schools.

Local collaborative decision making is key and should determine the type of training and credentialing pursued. Training and development programs can be the most productive yet costly asset for a corporation. The Workforce Innovation Opportunity Act (WIOA) informs federal workforce strategy and has also historically shifted away from longer-term training towards more job search and placement services. We now live in an environment where "work-first" or "learning by doing" opportunities are rare. Despite this, research shows that longer-term training yields a more lucrative and strategic result, especially when they lead to a credential. Research shows that multi-stakeholder programs tailored towards local talent resulting in a credential yields a stronger ROI on average.

The Analysis

The Department of Labor (DOL) Employment and Training Administration (ETA) maintains a resource entitled the Occupational Information Network (O*NET) which has a list of green economy sector jobs. This list is a mixture of new and existing jobs with new or enhanced tasks, skills, knowledge, or credentials. Fifty-five percent are described as having "green enhanced skills" or "green increased demand." This includes Power Plant Operators, Maintenance and Repair Workers, and Financial Analysts. The "new and emerging" jobs include Wind Energy Engineers, Geothermal Technicians, and Weatherization Installers.

Amongst the ten industries, we found fifty-two jobs that primarily belong to energy efficiency and renewable energy generation. Although sustainable rather than "green," natural gas is not part of this sector. For the purposes of this report all natural gas affiliated occupations can be found in the renewable energy generation field. Service Unit Operators, Geoscientists, and Mining Machine Operators are just some of the occupations the doubly qualify as natural gas and renewable energy jobs.

The Competencies: Knowledge, Skills & Abilities

Occupational data offers the level of detail that we can use to build responsive and intelligent workforce development initiatives. We have performed a knowledge, skill, and ability inventory for the fifty-two sustainable energy workforce occupations. Cooperation with regional partnerships – educational institutions, public entities, workforce boards, and federal agencies – will be more impactful with in-depth analysis. The ten highest ranking KSAs are displayed on the table below.

Knowledge is an organized set of principles and facts applied in thirty-three general domains. The knowledge on this list affirms the need for STEM training programming, technology courses, and management training. Unlike the other categories, knowledge is more likely to be a acquired before a role starts. Mathematics, engineering, and technological knowledge like design and computers and electronics show a clear desire for workers with a STEM background. Physics would have been eleventh on the list. Sustainable energy is ultimately a service sector, so the importance of customer service, personability, and administrative know-how is unsurprising. These learned principles can be taught through training experiences.

TOP 10: KNOWLEDGE

Mechanical
English
Mathematics
Engineering
Customer & Personal Service
Administraton & Management
Building & Construction
Computer & Electronics
Production & Processing
Design

TOP 10: SKILLS

Critical Thinking
Active Listening
Speaking
Reading Comprehensive
Monitoring
Judgement/Decision Making
Complex Problem Solving
Coordination
Operation & Control
Time Management

Skills are developed capacities that facilitate learning or more rapid acquisition of knowledge through six categories: basic, complex problem solving, resource management, social, systems, and technical skills. The top four highest-ranking capacities of critical thinking, active listening, and speaking are basic skills.

Globalization has driven the discussion around the future of work with many being led to believe that new technologies will soon take their livelihoods. Our data show that the most valued skills in the sustainable energy workforce depend on problem solving, time management, and critical thinking.

3 THE SUSTAINABLE ENERGY WORKFORCE

The sustainable energy workforce can be characterized by its essential critical nature and consistent growth potential. All workers in the energy sector are "essential critical infrastructure workers," according to recent guidance from the U.S. Department of Homeland Security's Cybersecurity and Infrastructure Security Agency (CISA). Clean energy employment comprises over 40 percent of the entire energy workforce in the U.S. and consistently punches above its weight by producing jobs 50 percent faster than the rest of the economy. Before the COVID-19 pandemic, clean energy employment was expected to soar both domestically and abroad. The International Renewable Energy Agency (IRENA) still expects renewable energy employment to quadruple by 2050 and energy efficiency to create another 40 million jobs by 2050.

Clean and sustainable energy occupations can be hard to identify because there is no formal category for "energy" within federal industry classifications. Fortunately, the 2020 U.S. Energy and Employment Report provides estimates of energy and energy-related tasks within sixteen industries and a total of 18.8 million employees and 1.3 million employers. For example, natural gas is formally classified within the North American Industry Classification System (NAICS 21): Mining, Quarrying, and Oil and Gas Extraction but the exact number of natural gas workers can be hard to identify. Through these estimates in 2018, 78 percent of the mining and extraction occupations were energy or energy-related leaving us with 532,974 occupations.

IRENA estimates
Global Renewable Energy Employment

2018
11 million

2050
44 million

THE SIXTEEN ENERGY & ENERGY-RELATED NAICS CODES
totaling
28.8 million jobs by 2018
30.6 million jobs by 2028

SUSTAINABLE ENERGY WORKFORCE OCCUPATIONS

SUSTAINABLE ENERGY SECTORS
Natural Gas | Renewable Energy | Energy Efficiency

SUSTAINABLE ENERGY SUBSECTORS
Storage & Carbon Capture | Governmental & Regulatory Administration
Environmental Protection | Research, Design, and Consulting Services
Manufacturing | Agriculture & Forestry | Transportation

	JOB ZONES	AVERAGE SALARY, 2019	PROJECTED GROWTH, 2018-2028	(SUB)SECTOR
General and Operations Managers	4	$100,780	Faster than average (7% to 10%)	
Power Plant Operators	2	$81,990	Decline (-2% or lower)	
Electrical Power-Line Installers and Repairers	3	$72,520	Faster than average (7% to 10%)	

COMPETENCIES OF THE SUSTAINABLE ENERGY WORKFORCE

KNOWLEDGE

STEM
English
Customer Service

SKILLS

Critical Thinking
Active Listening
Complex Problem Solving

ABILITIES

Problem Sensitivity
Oral Comprehension
Deductive & Inductive Reasoning

COOPERATION IS KEY.

EDUCATIONAL INSTITUTIONS (MSIs & HBCUs)
LABOR-MANAGEMENT ORGANIZATIONS
WORKFORCE DEVELOPMENT BOARDS
PUBLIC ENTITIES

PUBLIC-PRIVATE PARTNERSHIPS (P3s)
CREDENTIALS & CERTIFICATIONS
DATA COLLECTION
TRAINING CENTERS
TASKFORCES

REPRESENTING THE UNDERREPRESENTED

KNOWLEDGE CAN BE **ACQUIRED.**

SKILLS CAN BE **DEVELOPED.**

ABILITIES CAN BE **SHARPENED.**

THANK YOU!

A BCSE Snapshot

- Summer 2020 survey of BCSE members
  - Energy efficiency, natural gas and renewable energy members.
  - Balanced responses from across 3 sectors, 1/3 of BCSE membership
- Responses are from a broad and diverse set of businesses
  - 53% of respondents have a workforce development policy in place
  - 71% of respondents have a diversity and inclusion policy in place
- Workforce Development and Diversity and Inclusion policies are two different issues, with different objectives

Workforce Development

- Top current workforce development activities:
  - Apprenticeship or training programs
  - Educational partnerships
- Top federal government workforce-related programs utilized: Military veterans, Department of Labor Apprenticeship program
- Top areas for additional federal government support:
  - Educational partnerships
  - Trainings for underrepresented groups

Barriers to Implementation

- Limited staff and financial resources
- Internal awareness, adoption, and employee involvement
- Lack of training tied to real projects
- Lack of qualified and diverse labor pools. Geographic limitations.
- Challenge to perform day-to-day job and train for future job
- Pandemic cut off pipeline, need for more virtual/online opportunities
- Finding qualified individuals and diverse candidates

Opportunities Ahead

- Advocacy that highlights well-paying clean energy jobs and career paths, especially to displaced and underrepresented communities
- Knowledge sharing among industries: benchmarking and best practices of companies.
- More virtual trainings and learning opportunities, industry-specific
- Educational programs for children & students
  - Encourage STEM and technical fields
  - 6-12th grade programs that introduce energy and energy careers,
  - Targeted outreach to expand inclusion and diversity of students.

Applying for PPP Loan Forgiveness?

- PPP program has been a lifeline to many businesses, but requirements are complex and confusing.
- The loan forgiveness process is evolving and sophisticated.
- Weaver can help! For example, we can:
  - Determine the amounts and expenses eligible for forgiveness
  - Compute average FTEEs across multiple periods
  - Estimate forgiveness amounts under various dynamic scenarios
  - Review required forgiveness documentation before you submit to your lender

Contact us to learn about Weaver's Forgiveness Calculator and a free initial consultation:

Beau Butler
beau.butler@weaver.com
832.320.7985

Ryan Irby
ryan.irby@weaver.com
972.448.9274

QUESTIONS

Lisa Jacobson
President, Business Council for Sustainable Energy
ljacobson@bcse.org

Lynn Abramson
President, Clean Energy Business Network
labramson@cebn.org

Ellen Hughes-Cromwick
Senior Resident Fellow, Third Way

Timothy Alan Simon, Esq.
Former Commissioner, California Public Utilities Commission

Shaun Garrison
Director of Congressional Affairs, Solar Energy Industries Association

Camille Moore
2020 Jan Schori Fellow, Business Council for Sustainable Energy