
North America's **Building Trades** Unions

*#BuildingTradesWhateverItTakes*

# Construction Job Quality Across the US Energy Industries

July 2020

# Introduction

NABTU has recently commissioned two research studies – one quantitative and one qualitative – to better understand the important role that trades jobs play in the US economy, and the differences in those jobs across various energy sectors. The first study is a comprehensive, qualitative analysis by the Cicero Group, *Perspectives and Comparisons of Job Quality Across the US Energy Industries*. The Cicero Group Study was conducted, including research and analysis, from October 2019 –February 2020 and included both secondary and primary data sources. Secondary sources in the Cicero study included government data from sources including the Bureau of Labor Statistics (BLS), the U.S. Energy Information Administration (EIA), and the United States Environmental Protection Agency (US EPA); 22 in-depth interviews with individuals from varying geographies and energy industries; 8 focus groups with individuals from varying geographies, energy industries, and trades; and an online survey with over 1,600 respondents from varying geographies, energy industries, and construction trades.

The second study is a quantitative analysis by Professor Peter Philips, Professor of Economics at the University of Utah and Research Scholar for the Institute of Construction Economic Research, *The Quality of Jobs in Construction and Oil-and-Gas for High School Graduates*. In his research, Philips drew upon two key government surveys —the American Communities Survey and the Current Population Survey. Other government surveys used in this report including the US Census Bureau's Economic Census, the Bureau of Labor Statistics' Current Employment Statistics, the Quarterly Census of Employment and Wages, the Survey of Occupational Injuries, and the Illnesses and Fatalities and Job Openings and Labor Turnover Survey.

One important note on the energy sector comparisons. Dr. Philips' report used government data to examine job quality for high school graduates in the construction and oil-and-gas industries. However, due to of government labor market data on construction workers in alternative energy sectors, Dr. Philips' report makes no claims about the relative job quality between oil-and-gas and renewable energy and points to the need for further quantitative research on this subject. This was one of the reasons that NABTU commissioned the Cicero Group Study; its purpose, in part, was to analyze how the construction workers themselves perceived the comparisons between job quality and other factors within various types of energy sector construction jobs.

Cicero Group is a premier management consulting firm focused on implementing data-driven strategies for a broad mix of private, public, and social sector organizations across the globe. We use data and experience to generate insights, create actionable strategies, and drive transformation with an overarching purpose of helping people create and continuously deliver extraordinary results. Cicero Group is headquartered in Salt Lake City, Utah, with additional offices in Dallas, Texas, and Washington D.C.

Cicero
Implementing Data-Driven Strategy

# Perspectives and Comparisons of Job Quality Across the US Energy Industries

## Research Methodology:

This study was conducted, including research and analysis, from October 2019 – February 2020 and included both secondary and primary data sources, outlined below:

Secondary sources include:

- Government published data from sources including the Bureau of Labor Statistics (BLS), the U.S. Energy Information Administration (EIA), and the United States Environmental Protection Agency (US EPA)
- Industry reports from organizations including the Institute for Construction Economic Research (ICERES) and the Workers Defense Project

Primary sources include:

- 22 in-depth interviews with individuals from varying geographies and energy industries; each lasting approximately 1 hour. These Interviews included:
  - **3** energy construction employers
  - **10** energy construction workers
  - **7** union leaders, and
  - **2** industry experts
- 8 focus groups with individuals from varying geographies, energy industries, and trades; each lasting approximately 2 hours and including 8-12 people, on average. These focus groups included:
  - 1 group in Pittsburgh, PA
  - 1 group in Baton Rouge, LA
  - 1 group in Lancaster, CA
  - 1 group in San Francisco, Ca
  - 1 group in Houston, TX
  - 1 group in Amarillo, TX, and
  - 2 groups held virtually with participants from various states
- An online survey with over 1,600 respondents from varying geographies, energy industries, trades, etc. These survey respondents included construction workers and employers from the following categories:
  - 25 trades (Pipefitters, Carpenters, Construction Laborers, Heavy Equipment Operators, Electricians, + 19 others)
  - 8 energy industries (Oil, Natural Gas, Coal, Nuclear, Wind, Solar, Hydroelectric, and Biomass)
  - 49 states plus the District of Columbia
  - 728 union workers
  - 830 non-union workers, and
  - 61 former union workers that reported leaving a union at some point in their career

COVID-19 Note: This research analysis was done prior to the COVID-19 pandemic, and while there may be short-term impacts in the construction and oil and natural gas industries, the jobs discussed in this analysis still represent some of the best pathways for individuals without formal post-secondary training. Additionally, we expect these two industries will play an important part in global economic recovery. Those benefits will be greatest to the extent that we overcome or mitigate the health impacts of the pandemic and encourage smart policies and recovery efforts.

## Overall Findings:

- Energy sector jobs and energy sector construction jobs provide Americans without a college education a vital pathway to middle class careers and living standards.

- Tradespeople working in energy construction report that they consider projects in oil and natural gas industries to have better wages, benefits, and opportunities than renewables projects.

- Tradespeople also report that the oil and natural gas industries offer projects with longer durations than those in renewables industries, which means steadier income and more consistent benefits.

- Tradespeople report noteworthy differences between projects in renewable energy and oil and natural gas projects. They report better project variety, trades opportunities, skill development, and project consistency in oil and natural gas construction. Many of the trades that work on oil and natural gas projects are not as prevalent on renewables projects, indicating that skilled trade jobs are not highly interchangeable between industries.

- When it comes to safety, tradespeople perceive that renewables projects are slightly safer than oil and natural gas projects, but oil and natural gas projects are not considered "unsafe" by the average tradesperson. The oil and natural gas industry's reliance on registered apprenticeship and strict industry safety standards and procedures make workers safer in this segment of the construction industry.

- Registered apprenticeships are the primary training program for tradespeople in all energy industries, with nearly 60% of tradespeople completing a registered apprenticeship. Alumni of registered apprenticeship programs (RAPs) have a higher satisfaction rate with their program than the alumni of most Ivy League schools, and those that attended a RAP are more likely to recommend their programs to a family member or friend than graduates of top business school programs, including Harvard Business School.

# Key Findings:

Quantitatively, tradespeople report some significant differences between oil and natural gas and renewable projects, but they also report many attributes that are shared by oil and natural gas and renewables

- Tradespeople report that they consider projects in oil and natural gas to have better perceived wages, benefits, and opportunities than renewables projects. They also report that the oil and natural gas industries offer projects with longer durations than those in renewables industries *(see pg. 7)*

- Tradespeople report no significant difference in commute time, required time away, and normal and overtime hours per week between oil and natural gas and renewable energy projects (see pg. 8)

- Tradespeople on renewables projects report being injured just as often as tradespeople working on oil and natural gas projects; every energy project has its own inherent risks for tradespeople (see pg. 9)

Qualitatively, tradespeople report noteworthy differences between projects happening in the renewable energy industries and those happening in the oil and natural gas industries

- Tradespeople report better project variety, skill development, and project consistency in the oil and natural gas industries compared to the work being done in the wind and solar industries. Better consistency is often attributed to regular maintenance and upgrades (see pg. 10)

Sources:

1. *Philips, Peter. The Quality of Jobs in Construction and Oil-and-Gas for High School Graduates. Institute for Construction Economic Research (ICERES). Unpublished 2020.*

# Key Findings Continued:

Registered apprenticeships are the primary training program for tradespeople in all energy industries, with ~60% of tradespeople completing a registered apprenticeship

- Registered apprenticeships make up the primary training method for both union and non-union tradespeople (see pg. 11)

- Skill and industry certifications directly impact a tradesperson's ability to obtain work in energy industries; additional training is a priority for all tradespeople (see pg. 11)

- Tradespeople trained in registered apprenticeship work on a higher percentage of projects that require OSHA safety training than tradespeople who were modular-trained (see pg. 11)

Registered apprenticeships contribute to higher wages and fewer injuries on energy projects

- Many tradespeople of the same trade who complete a registered apprenticeship program have higher wages on average, with apprentice-trained pipefitters experiencing the highest difference of +20.5% higher wages than modular-trained pipefitters (see pg. 12)

- Over a career, someone that completed a registered apprenticeship is estimated to earn more in wages and receive more in benefits than similar non-participants (see pg. 12)

- Tradespeople trained in registered apprenticeships experience fewer injuries and require fewer days away per injury when compared to those who have undertaken modular training (see pg. 13)

- Training for tradespeople in energy construction is most often delivered via registered apprenticeships despite modular training programs taking much less time than a registered apprenticeship, on average (see pg. 13)

- Registered apprenticeship training programs have a higher satisfaction rate and NPS score than most Ivy League schools, including Harvard Business School (see pg. 14)

Sources:

1. *Philips, Peter. The Quality of Jobs in Construction and Oil-and-Gas for High School Graduates. Institute for Construction Economic Research (ICERES). Unpublished 2020.*

## Additional Findings:

- Many of the trades that work on oil and natural gas projects are not as prevalent on renewables projects, indicating that skilled trade jobs are not highly interchangeable between industries (see pg. 15)

- For a new project opportunity in the energy sector, tradespeople indicated that wage is the most important consideration, followed by relationships, and then safety (see pg. 16)

- For a current job, safety, career opportunities, and daily commute were the most important drivers of job satisfaction (See pg. 16)

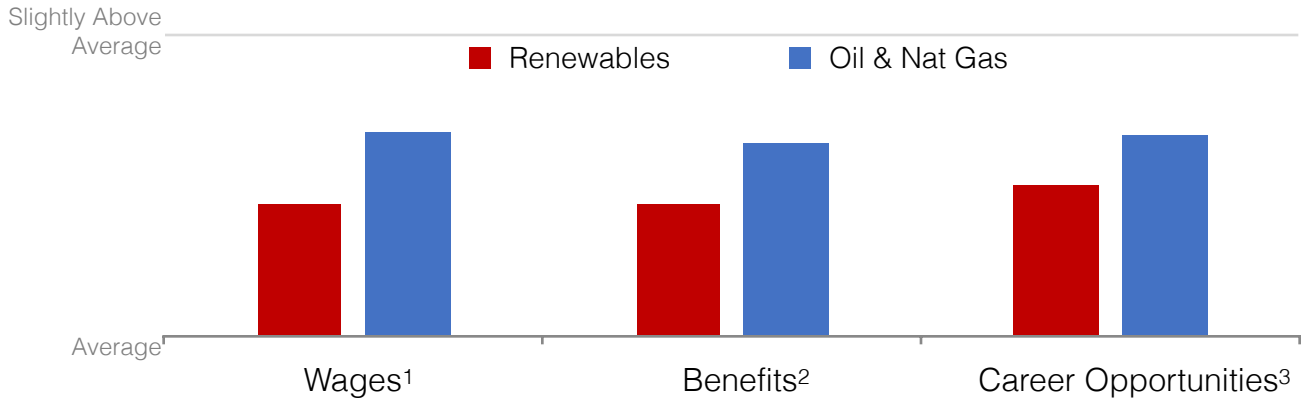
- When it comes to safety, tradespeople perceive that renewables projects are slightly safer than oil and natural gas projects, but oil and natural gas projects are not considered “unsafe” by the average tradesperson (see pg. 17)

- On average, tradespeople agree that oil and natural gas projects offer better benefits to tradespeople than projects in renewable energy industries and other industries (see pg. 17)

- Most tradespeople are constrained to projects within a reasonable driving distance from their homes and families. Tradespeople in every industry report commuting about an hour to the project site. A mature industry infrastructure such as that in oil and gas is likely to allow more skilled tradespeople the opportunity to work in the energy sector while remaining closer to their homes and families (see pg. 18)

***Tradespeople report that they consider projects in oil and natural gas to have better perceived wages, benefits, and opportunities than renewables projects. They also report that the oil and natural gas industries offer projects with longer durations than those in renewables industries***

## Perceived Wages, Benefits, and Career Opportunities *(n=1,619)*

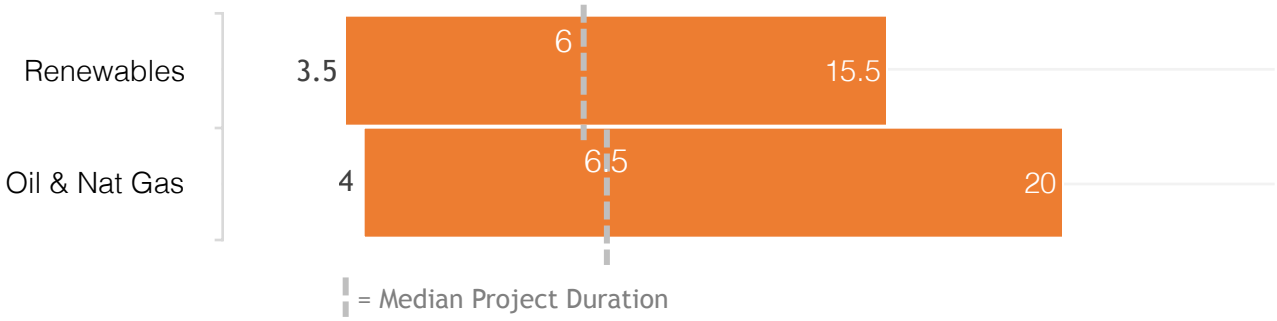



## Supporting Quotes

> *"[I selected natural gas as my preferred energy industry to work for because] they offer better benefits than the other projects I have seen."*
>
> - Operating Engineer, Union (M)

> *"[I prefer to work in oil because I have] opportunities to get better compensation and benefits."*
>
> - Floor Installer and Finisher, Non-Union, (M)

## Range of Reported Project Duration in Months[4] *(n=1,619)*



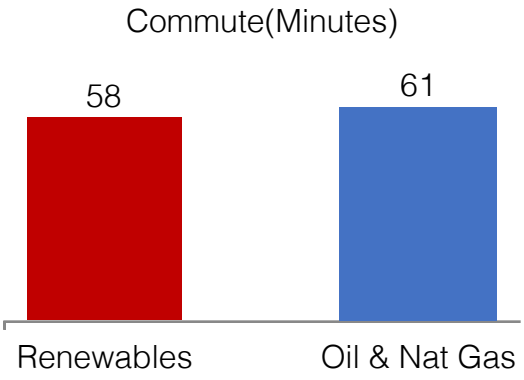

Survey Questions:

1. *In your opinion, do the following energy industries offer wages that are above, below, or at the average wage someone in your role might be offered elsewhere?*
2. *In your opinion, do the following energy industries offer benefits (i.e. health insurance, pensions, etc.) that are above, below, or at the average benefits someone in your role might be offered elsewhere?*
3. *In your opinion, do the following energy industries offer career opportunities (i.e. leadership opportunity, skill development opportunities, etc.) that are above, below, or at the average level of opportunities someone in your role might be offered elsewhere?*
4. *What are the shortest and longest project durations you have experience for each of the following industries?*

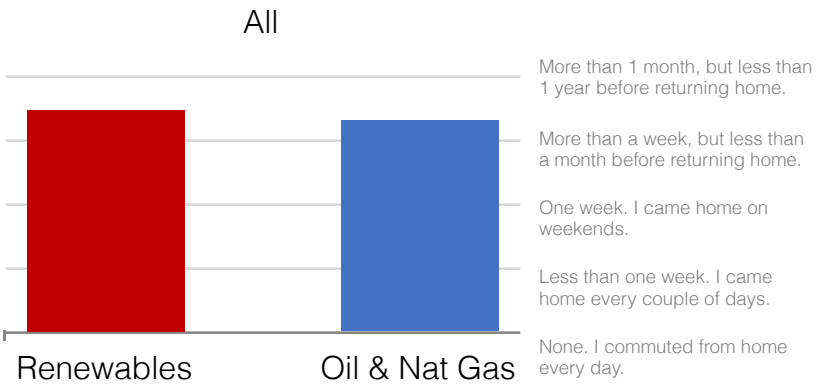
## *Tradespeople report no significant difference in commute time, required time away, and normal and overtime hours per week between oil & natural gas and renewable energy projects*

### Average Daily Commute to the Project Site in Minutes[1]

*(n=1,619)*

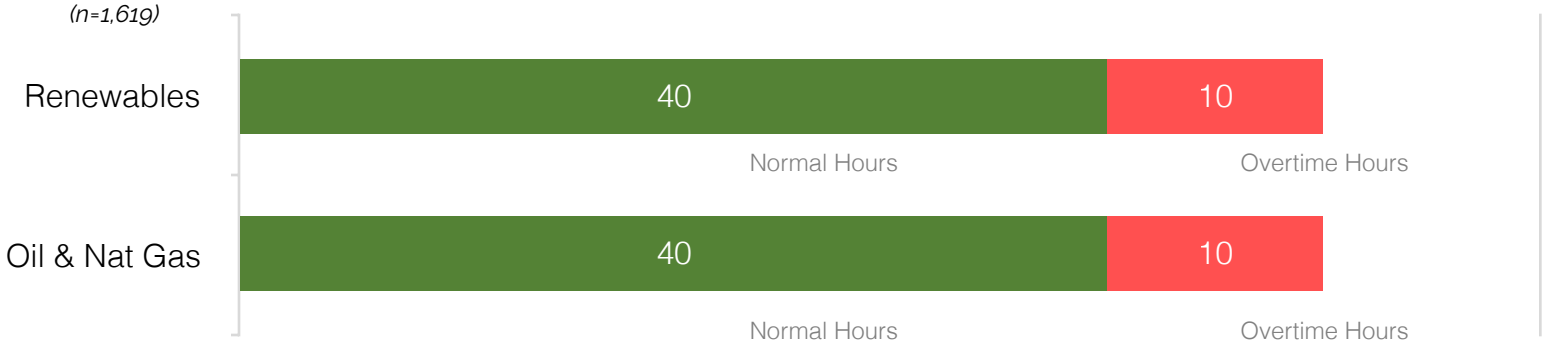



### Average Time spent Away from Home for a Project[2] *(n=1,619)*




### Median Normal and Overtime Hours Worked Each Week[3]

*(n=1,619)*




### Supporting Quotes

> *"…they tell you since day one. You're in a trade, your job is not going to be close to the house. You are going to be traveling."*
>
> - Electrician, Union (M)

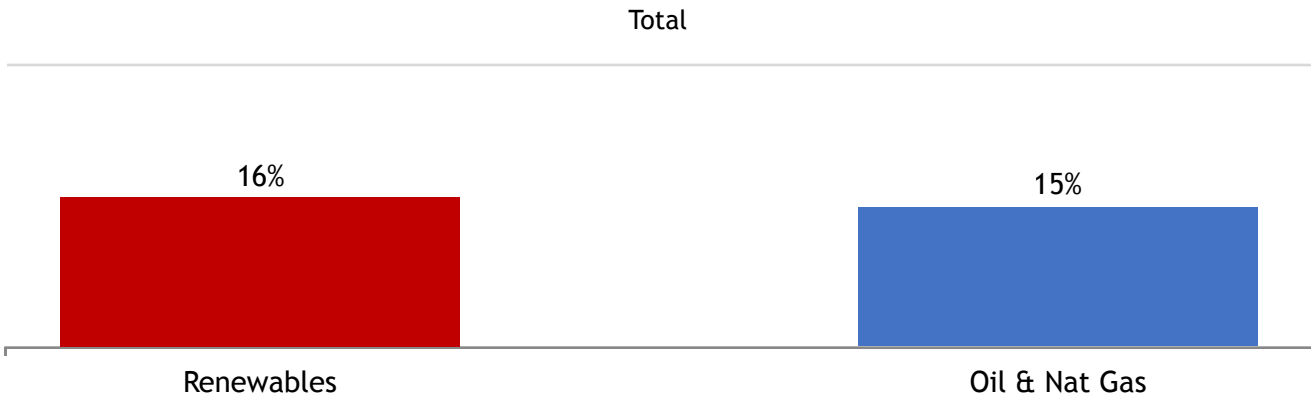
> *"I don't want to be traveling and away from home. I actually had, before I left for this job, I had an opportunity to go off to where I would be away from home for weeks on end… I'm kind of done with that."*
>
> - Operating Engineer, Non-union (M)

Survey Questions:

1. *What are the shortest and longest commutes you have experienced for each of the following industries?*
2. *What is the most time you have had to spend away from home during a project in the following energy industries?*
3. *Please record the number of normal, overtime, and downtime hours that you spend on the job site during an average work week in each of the following energy industries.*

## *Tradespeople on renewables projects report being injured just as often as tradespeople working on oil and natural gas projects; every energy project has its own inherent risks for tradespeople*

% of Tradespeople that Report Being Injured While on a Project[1] *(n=1,619)*




### Supporting Quotes

[Speaking about work experience in the nuclear energy industry]

> *"I like pretty much everything about it. It's a relatively safe environment. It can be dangerous but overall I think it's a pretty good way to go."*
>
> - Pipefitter, Union (M)

[Speaking about work experience in the oil and natural gas industries]

> *"So there is a danger factor involved, there's no question, but I think in our business, especially as electricians, we're always dealing with a danger factor, at least to some degree."*
>
> - Electrician, Non-Union (M)

[Speaking about work experience in the solar energy industry]

> *"If you don't take care of your fingers or your hands or your wrists, at the end of the job, you may end up with arthritis, some carpal tunnel."*
>
> - Electrician, Union (M)

> *"I pride myself on safety. I really do. I think that each individual in whatever trade you're in, you're a leader. We have to set that culture in every job that we go to because you can switch jobs left and right. Within a year, we're at the three or four different job sites."*
>
> - Electrician, Union (M)

Survey Question:

1. *Were you injured while working on projects within any of the following industries?*

***Tradespeople report better project variety, skill development, and project consistency in the oil and natural gas industries compared to the work being done in the wind and solar industries. Better consistency is often attributed to regular maintenance and upgrades***

Oil & Natural Gas


Wind & Solar


## Supporting Quotes Regarding Project Variety

> *"[If I could choose to work in any energy industry, I would choose oil because] it's the bulk of my experience… and there are many different projects and travel opportunities worldwide."*
> - Steamfitter, Union (M)

> *"[Natural gas] has the largest diversity of job openings across the country."*
> - Laborer, Non-Union (M)

> *"[The windmills] are all going to be the same… You go to a different place, it'll be a different tower but, the towers are all going to be basically the same."*
> - Electrician, Union (M)

> *"[Working on a solar farm] gets old. When you're on a long job, it gets old."*
> - Ironworker, Union (M)

## Supporting Quotes Regarding Skill Development

> *"In refineries there's always new technology in production…Wind you only have wind, solar you only have solar. There's not anything really new that you can do with it other than it just runs a cell, or it blows the wind turbine blades. But lots of different things in the petrochemical world change radically. And with those [radical changes] they have to do lots of upgrades to those units."*
> - Electrician, Union (M)

> *"[Windmills] are pretty much a cookie cutter of each other. It can become repetitive."*
> - Electrician, Union (M)

> *"When solar started… we hired so many apprentices to keep up… So when that stops, now you're going to have an influx of more people who are not going to be able to do something else because all they've done was solar…"*
> - Ironworker, Union (M)

## Supporting Quotes Regarding Project Consistency Due to Maintenance

> *"I spent 35 years in oil and gas. We had a tremendous maintenance program. In any of the refineries I worked in."*
> - Pipefitter, Union (M)

> *"There's a lot [of maintenance] that we do with… facilities and piping through the refineries."*
> - Welder, Union (M)

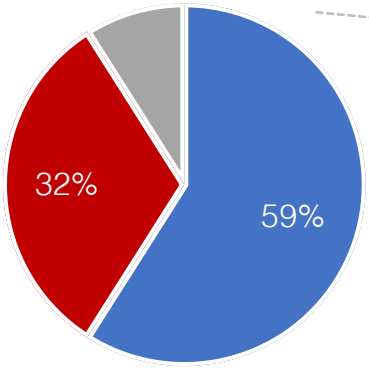
> *"They'll use 40 guys to build a 200-tower wind farm and then they will maintenance with 6 guys."*
> - Electrician, Union (M)

> *"With Solar, you work your way out of a job… Three months duration, [then] you're done."*
> - Electrician, Union (F)

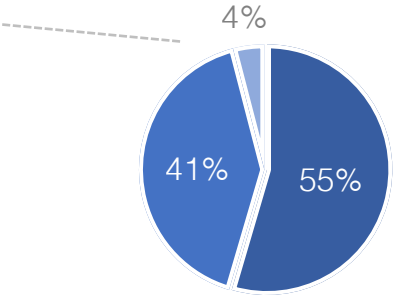
## *Registered apprenticeships make up the primary training method for union and non-union tradespeople*

% of Tradespeople that Reported Participating in each Training Type[1]

*(n=1,619)*



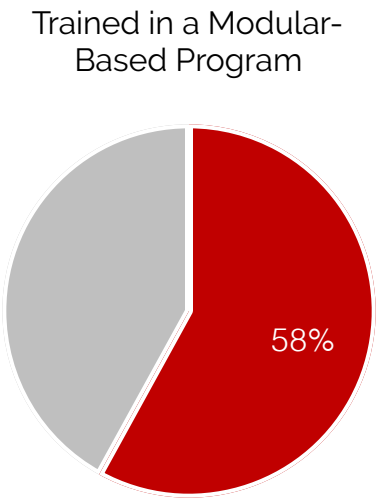

% of RAP Participants Segmented by Union Affiliation



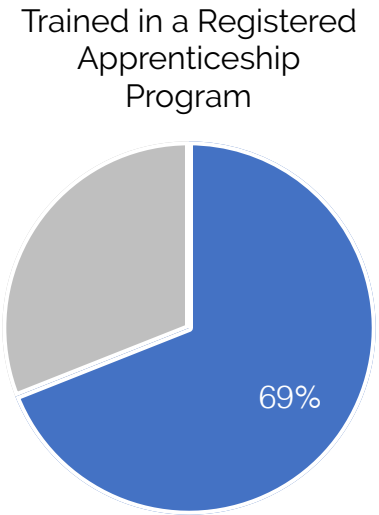

## *Skill and industry certifications directly impact a tradesperson's ability to obtain work in energy industries; additional training is a priority for all tradespeople.*

## *Tradespeople trained in registered apprenticeship program work on a higher percentage (69%) of projects that require OSHA safety training than tradespeople who were modular-trained (58%)*

% of Projects Requiring OSHA Ceritification[2] *(n=950)*




% of Projects Requiring OSHA Ceritification[2] *(n=512)*




Survey Questions:

1. *Which of the following forms of training have you participated in?*
2. *What percentage of your projects is OSHA training required for?*

## *Many tradespeople of the same trade who complete a registered apprenticeship program have higher wages on average, with apprentice-trained pipefitters experiencing the highest difference of +20.5% higher wages than modular-trained pipefitters*

Average Annual Personal Income by Trade and Training Type[1,2]

| | | Pipefitter | Carpenter | Electrician | Construction Laborer |
|---|---|---|---|---|---|
| Registered Apprentice Program | Average Annual Personal Income | $95,296 *n=233* | $74,000 *n=40* | $82,434 *n=114* | $86,009 *n=109* |
| | Average Years of Experience in Trade | *22.58* | *12.25* | *12.17* | *12.93* |
| Modular-Based Program | Average Annual Personal Income | $79,039 *n=26* | $66,786 *n=14* | $84,375 *n=56* | $81,987 *n=78* |
| | Average Years of Experience in Trade | *14.69* | *12.50* | *10.54* | *10.90* |
| | $ Difference | +$16,257 | +$7,214 | -$1,941 | +$4,022 |
| | % Difference | +20.5% | +10.8% | -2.3% | +4.9% |

## *Over a career, someone that completed a registered apprenticeship is estimated to earn more in wages and receive more in benefits than similar non-participants.*

Average Lifetime Earnings Gains for Apprenticeship Completers[3]

# $240,037

Average Lifetime Earnings and Benefits Gains for Apprenticeship Completers[3]

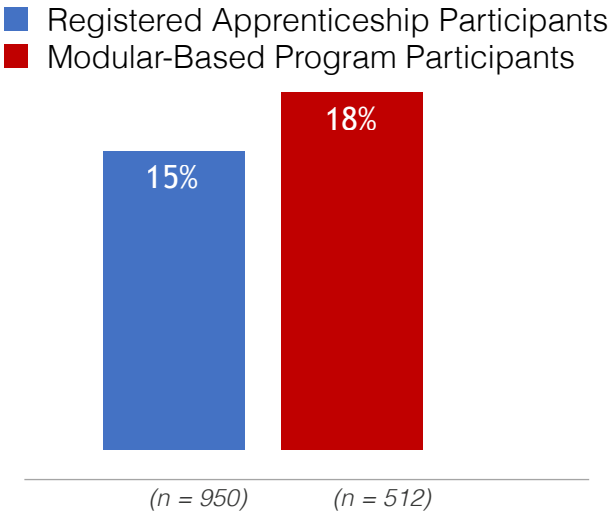
# $301,533

Survey Questions/Sources:

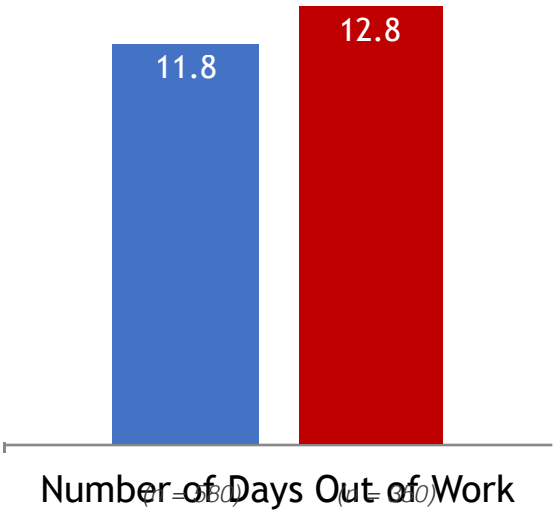
1. *Which of the following best represents your total personal income in 2019?*
2. *How many years of work experience do you have working in your trade?*
3. *https://wdr.doleta.gov/research/FullText_Documents/ETAOP_2012_10.pdf; page xvi, paragraph 3*

## *Tradespeople trained in registered apprenticeships experience fewer injuries and require fewer days away per injury when compared to those who have undertaken modular training*

% of Tradespeople that Report Being Injured while on a Project[1]




Average Days Away from Work Due to Being Injured while on a Project[2]




## *Training for tradespeople in energy construction is most often delivered via registered apprenticeships despite modular training programs taking much less time than a registered apprenticeship, on average*

Average Time Spent in Training to Complete a Registered Apprenticeship Program[3]

**2.87 years**

Range of Time Spent in Training to Complete a Modular-Based Program[4]

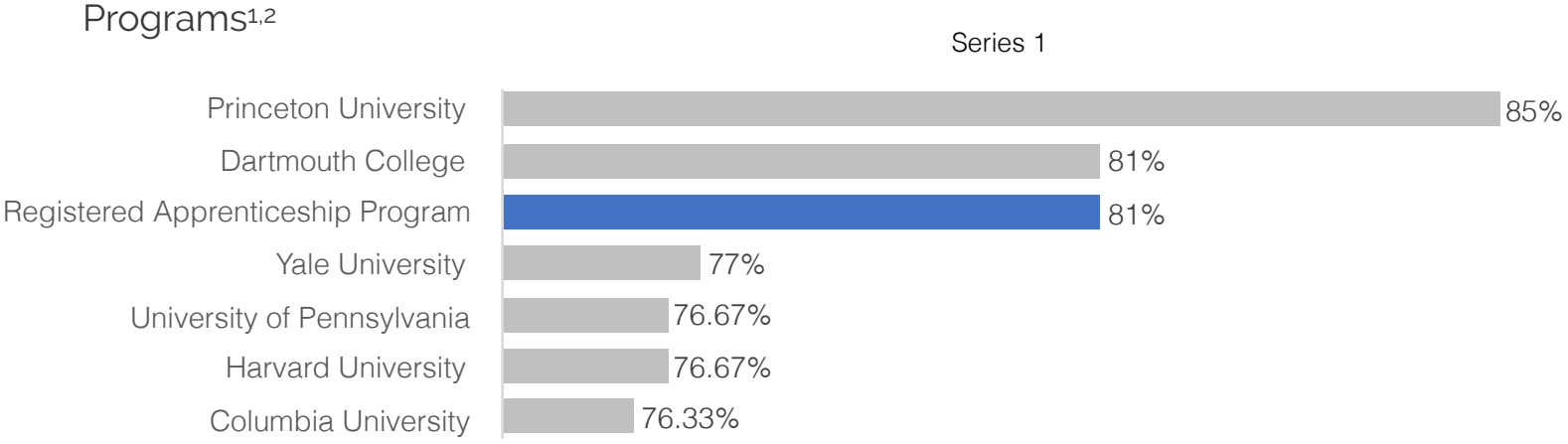
**1-6 months**

Survey Questions:

1. *Were you injured while working on projects within any of the following industries?*
2. *How many days were you out of work due to your injury?*
3. *How long did it take to complete your apprenticeship training to become a(n) [trade]?*
4. *On average, how long has it taken to complete each of your modular trainings?*

## *Registered apprenticeship training programs have a higher satisfaction rate than most Ivy League schools*

Student satisfaction rates from Ivy League Schools and Registered Apprenticeship Programs[1,2]




## *Alumni of a registered apprenticeship programs are more likely to recommend their program to a close family member or friend than the alumni of top business schools, including Harvard Business School*

Registered Apprenticeship Program Net Promoter Score[3,4]


NPS is a customer loyalty metric that measures customers' willingness to not only return for another purchase or service but also make a recommendation to their family, friends or colleagues.

Net Promoter Score is a number from -100 from 100.

Scores higher than 0 are typically considered to be good and scores above 50 are considered to be excellent.

Survey Questions/Sources:

1. *In general, how satisfied are/were you with your apprenticeship/modular training?*
2. *Ivy League student satisfaction rates reported by bestcolleges.com at https://www.bestcolleges.com/features/high-student-satisfaction/*
3. *How likely are you to recommend the apprenticeship training model to a family member or friend?*
4. *HBS NPS ratings found at: https://customer.guru/net-promoter-score/benchmarks*

## ***Many of the trades that work on oil and natural gas projects are not as prevalent on renewables projects, indicating that skilled trade jobs are not highly interchangeable between industries***

Top 5 Trades Most-likely to Work on Natural Gas & Oil Projects[1,2]

| Trade | Wind | Solar | Oil | Natural Gas |
|---|---|---|---|---|
| Pipelayer, Plumber, Pipefitter, or Steamfitter (n=276) | 14% | 20% | 74% | 79% |
| Stationary Engineer (n=25) | 28% | 40% | 64% | 80% |
| Operating Engineer (n=156) | 28% | 46% | 67% | 72% |
| Construction Equipment Operator (n=246) | 36% | 47% | 63% | 73% |
| Boilermaker (n=33) | 24% | 36% | 55% | 76% |

Top 5 Trades Most-likely to Work on Wind & Solar Projects[1,2]

| Trade | Wind | Solar | Oil | Natural Gas |
|---|---|---|---|---|
| Solar Photovoltaic Installer (n=79) | 34% | 91% | 29% | 43% |
| Wireman (n=19) | 47% | 63% | 32% | 47% |
| Roofer (n=14) | 43% | 64% | 36% | 57% |
| Electrician (n=177) | 33% | 66% | 47% | 50% |
| Construction Laborer (n=218) | 38% | 56% | 64% | 66% |

= 60% or more of tradespeople reported having worked in this oil and natural gas industry during their career

= 60% or more of tradespeople reported having worked in this Renewables industry during their career

### Supporting Quotes

> *"If fossil fuels [went away], it would definitely impact trades… A lot of the work would dry up if there wasn't any gas or any coal or any oil. Yeah, it would definitely impact the trade[s] big time… [There would] be a lot less projects to look for. Yeah, solar and wind, they [don't] use very much pipe. So you could pretty much count solar and wind out as me finding a job at a solar or a wind plant where they're building one because they're not going to do much pipe fitting. It'd definitely be harder to find a job if there wasn't any fossil fuel plants that were operating."*
>
> - Pipefitter, Union (M)

> *"The two largest [trades on solar projects] are electricians,… and the iron workers. Iron workers put the racking up. They will also bolt panels down… [building a solar farm] is a simple job… it doesn't require a high level of electrical skill and knowledge. We pour some concrete at the power conversion stations to set the inverters on. We'll have operators to build roads and to grade and to grub vegetation out where it's needed. But those are a lot fewer in number than the iron workers or the electrical workers."*
>
> - Industry Expert, Solar Employer (M)

Survey Questions:

1. *Which of the following best describes your current trade?*
2. *Considering your time working on energy projects, which of the following energy industries have you worked in during your career?*

## *For a new project opportunity in the energy sector, tradespeople indicated that wage is the most important consideration, followed by relationships, and then safety*

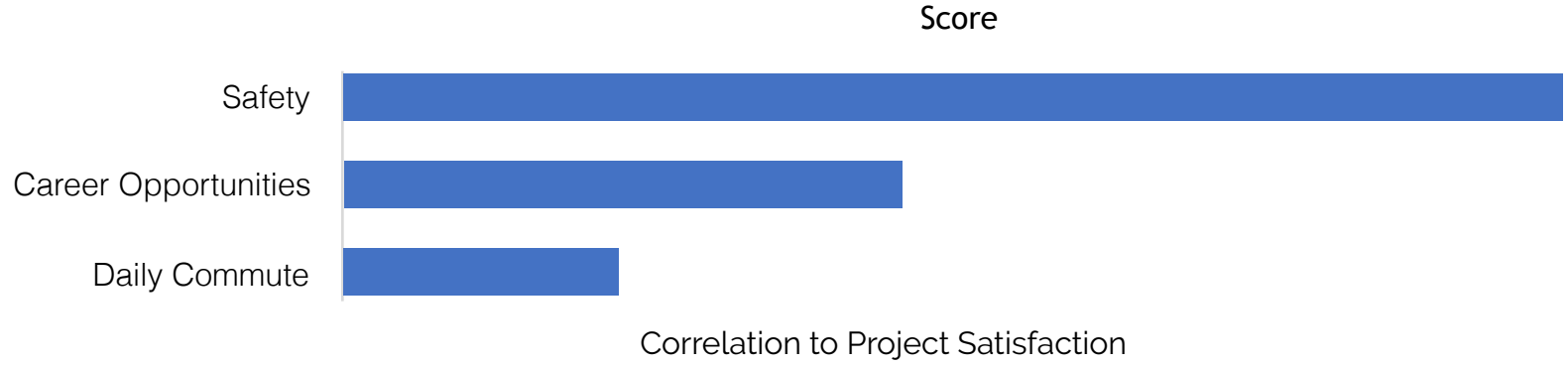
New Project Opportunity Considerations by Industry[1] *(n=1,619)*

| | Oil | Natural Gas | Coal | Solar | Wind | Biomass | Hydroelectric | Nuclear |
|---|---|---|---|---|---|---|---|---|
| 1st Rank | Wage (24%) | Wage (25%) | Wage (26%) | Wage (25%) | Wage (27%) | Wage (26%) | Wage (26%) | Wage (26%) |
| 2nd Rank | Relationships (21%) | Relationships (21%) | Relationships (21%) | Safety (22%) | Relationships (20%) | Relationships (20%) | Relationships (20%) | Relationships (21%) |
| 3rd Rank | Safety (16%) | Safety (16%) | Safety (16%) | Relationships (17%) | Safety (15%) | Safety (15%) | Safety (16%) | Safety (14%) |

New Project Characteristic (% Share of Preference)

## *For a current job, safety, career opportunities, and daily commute were the most important drivers of job satisfaction*

New Project Opportunity Considerations by Industry[2,3] *(n=1,619)*




### Supporting Quotes

> *"It'll be all about safety, safety is number one… Some people work so hard and sometimes it is about all about money. Sometimes their safety isn't there."*
> - Laborer, Non-union (M)

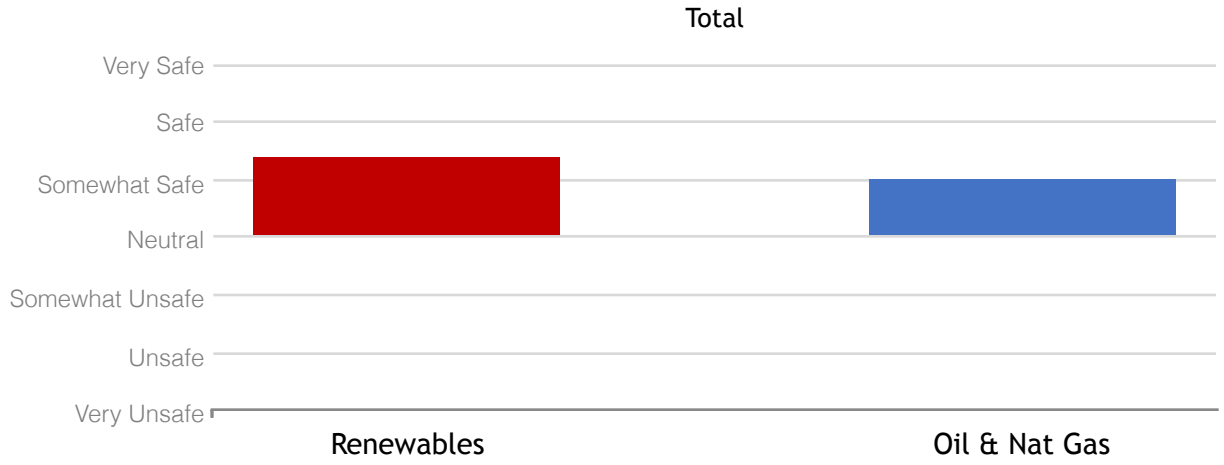
> *"…we take safety to be so serious,… because we want to go home the same way we went to work."*
> - Steamfitter, Union (M)

Survey Questions:

1. *If you were considering working on a new project, which of the following factors would be most important to have on the job? Which would be least important?*
2. *If you were considering working on a new project, which of the following factors would be most important to have on the job?*
3. *Which of the following energy industries have you worked in during your career?*

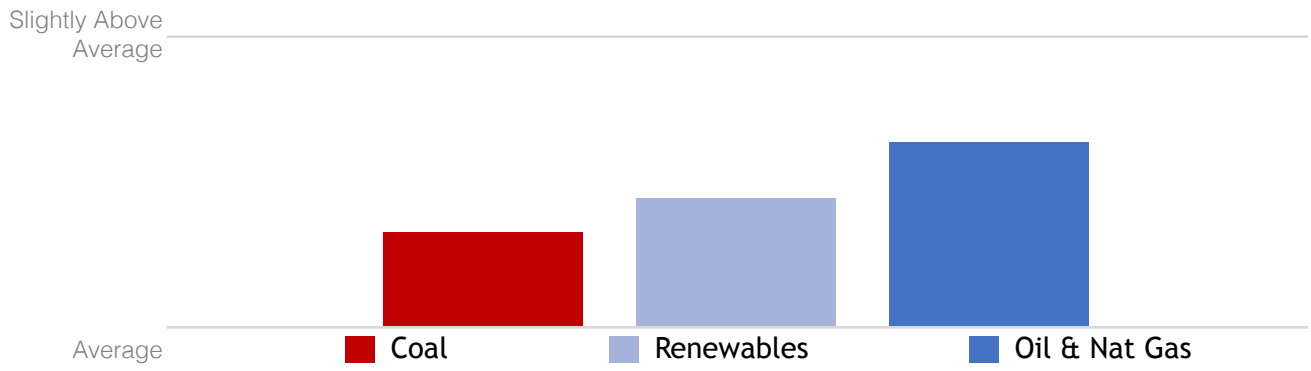
## *When it comes to safety, tradespeople perceive that renewables projects are slightly safer than oil & natural gas projects, but oil & natural gas projects are not considered "unsafe" by the average tradesperson*

Average Reported Perception of Safety by Industry[1] *(n=1,619)*




## *On average, tradespeople agree that oil & natural gas projects offer better benefits to tradespeople than projects in renewable energy industries and other industries*

Perceived Benefits by Industry[2] *(n=1,619)*

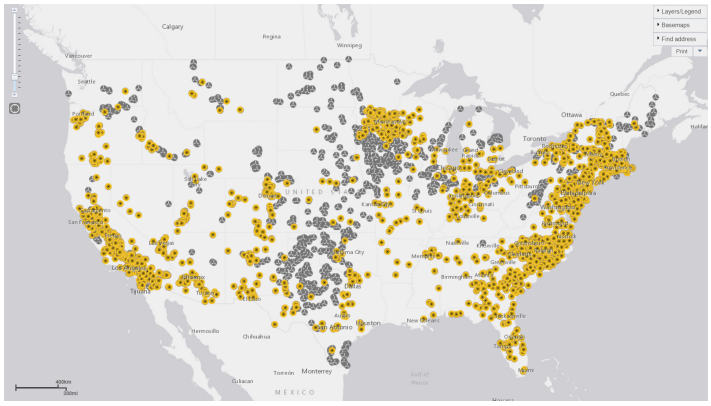



Survey Questions:

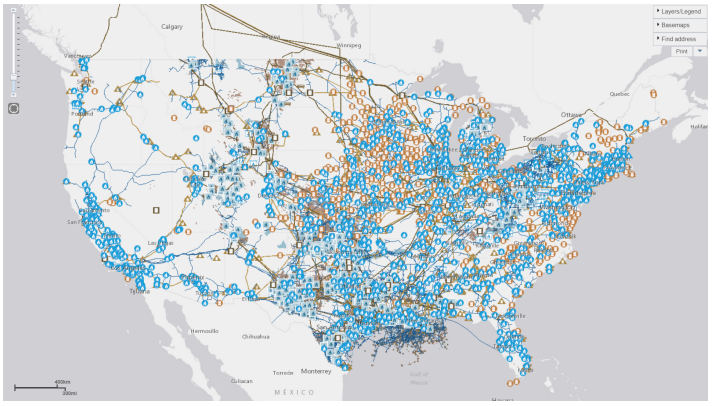
1. *How would you describe your average feeling of safety on projects in each industry compared to all other projects you have worked on?*
2. *In your opinion, do the following energy industries offer benefits (i.e. health insurance, pensions, etc.) that are above, below, or at the average benefits someone in your role might be offered elsewhere?*

***Most tradespeople are constrained to projects within a reasonable driving distance from their homes and families. Tradespeople in every industry report commuting about an hour to the project site. A mature industry infrastructure such as that in oil and gas is likely to allow more skilled tradespeople the opportunity to work in the energy sector while remaining closer to their homes and families***

All Wind and Solar Plant Sites in the United States[1]



All Natural Gas and Oil Upstream, Mid-stream, and Downstream Sites in the United States[1]



Supporting Quotes

> *"I raised two kids by myself. So there was a radius I couldn't go outside of for safety. If there's something happened with those kids, I had to get there."*
>
> - Ironworker, Union (M)

> *"Many refused to consider work that was happening outside their local area and would only consider moving their permanent residence in extreme circumstances where very little work existed nearby and an abundance of work existed else where."*
>
> - Researcher Note, Union Focus Group

> *"It's cleaner and in my area, it is the most abundant and will continue to be for some time hopefully allowing me time at home with my family."*
>
> - Carpenter, Non-Union (M)

Survey Questions/Sources:

1. *Source: U.S. Energy Information Administration (EIA) website*

ICERES
Institute for Construction Economic Research

*The Quality of Jobs in Construction and Oil-and-Gas for High School Graduates*

Peter Philips, Professor of Economics at the University of Utah and a Scholar for the Institute for Construction Economics Research

## Key Findings

- This report examines the nature and quality of jobs in construction and oil & natural gas focusing on jobs held by workers with high school educations. The analysis looks at four dimensions of job quality: 1) remuneration, 2) safety, 3) job security and 4) career advancement—and benchmarks these characteristics in the construction and oil & natural gas against the overall economy. This report describes the data that fleshes out these patterns of remuneration, safety, security and advancement. We begin with an overview that tells the story of workers in these two industries.

- In some industries, the road to a productive and rewarding career need not go through college. Thirty percent of all employees and 25 percent of the workers 25 years and older in the US labor market are high school graduates with no college education. The construction and oil & natural gas industries rely heavily on high school graduates to staff about 45 percent of all the jobs in these two industries. Relative to many other high school graduates with no college education, high school graduates in construction, oil & natural gas are paid better while receiving more health insurance and pension coverage. This is both true for blue-collar and white-collar high school graduates in these two industries. It is especially true of union workers in construction and oil & natural gas.

- Three out of every four apprentices in the US are in construction. In electrical and plumbing apprenticeship programs, half of the apprentices are in nonunion shops. In the rest of construction, 90 to 95 percent of the apprentices are in joint union-management programs.
- In construction, while unemployment is typically higher than other industries, spells of unemployment are typically shorter. In unionized construction, health insurance and pension benefits that follow the worker from signatory contractor to signatory contractor helps soften the blow of leaving one union contractor after a project is completed to follow the work elsewhere. In oil & natural gas boomtowns, unemployment is low and overtime abundant.

- Inside and outside of the construction and oil & natural gas sectors, a substantial majority of union workers with high school degrees receive company sponsored health insurance and pension coverage. Nonunion workers with high school degrees receive less health and pension coverage, particularly nonunion blue-collar workers in construction. Industry sponsored training including apprenticeship programs contribute to the higher wages and better benefit coverage in oil & natural gas and particularly construction.

- Because these industries rely upon on-the-job training, industry specific short courses and apprenticeship training, effectively high school workers in these two industries go on to higher education through their work, earning while they learn. There is no student debt, and no one is too poor to go on with their schooling even if that schooling is not college, takes place at a workshop, or at a job site, or at an apprenticeship facility.

- Working in the oil & natural gas industry is quite safe, though, like construction, it can be punctuated by catastrophic events that cause fatalities. Good jobs in these industries are safer jobs because the joint factors of lower inherent risk and better management of those risks. The oil & natural gas industry through its various industry associations including the American Petroleum Institute partner with the Occupation Safety and Health Administration (OSHA) and the National Institute of Occupational Safety and Health (NIOSH) to develop safety standards and procedures to make workers safer in this industry. Injury rates are unusually low in oil & natural gas due in part to the online, face-to-face and on-the-job training that follows from the development of these standards and procedures. In addition, membership in a union improves safety outcomes for two main reasons: 1) apprenticeships promote safety skills and culture, and 2) there is a cooperation around safety management that comes from a labor-management safety partnership. Collective bargaining fosters both.

- Because these industries rely upon on-the-job training, industry specific short courses and apprenticeship training, effectively high school workers in these two industries go on to higher education through their work, earning while they learn. There is no student debt, and no one is too poor to go on with their schooling even if that schooling is not college, takes place at a workshop, or at a job site, or at an apprenticeship facility.

- Because of this industry located higher education, wages for high school graduates in construction, oil and natural gas rise more quickly and farther than compared to high school graduates in the overall economy. Also, due to the relevance of industry specific training and experience, the path for a high school graduate to become a foreman, supervisor or manager in these two industries is relatively more open than in the overall economy. As the overall economy shifts from goods production to a service economy, and as work shifts from blue collar production work to white collar service work, most young people are urged to go to college. Those who stopped at high school are seen as trapped in low paying jobs. But those who go into construction and the oil and natural gas industries can, in fact, reach the middle class.

- Wages for electrical apprentices were lower than those for solar installers at the start of their careers, but by the end of their apprenticeship the electrical apprentices were earning much higher wages. The new electrician apprentice begins earning less than the average solar installer, but after two to three years in an electrical apprenticeship, these apprentices match the earnings of the average solar installer. Towards the end of the five-year apprenticeship, the electrical apprentice earns about one-third more than the solar installer. Once the apprentice turns out as a journey worker, that electrician will take home about 50 percent more than a solar installer. Given the lack of government data on wages and benefits in different sectors of the construction industry, additional research is needed to see if this trends is apparent across the various trades.

- The Institute for Construction Economics Research (ICERES) supports high quality research with the goal of finding and disseminating pragmatic solutions to these and other construction issues. ICERES Construction Economics Research undertakes non-partisan research on issues facing the industry, collaborating with existing construction researchers and attracting new investigators into the field of construction research. The Institute also works to develop a network of researchers with ongoing programs on construction issues.