IMPLAN

Using IMPLAN to Advocate at the State and Congressional District Level within the Energy Industry

April 2025

Interviewer

Candi Clouse, Ph.D.

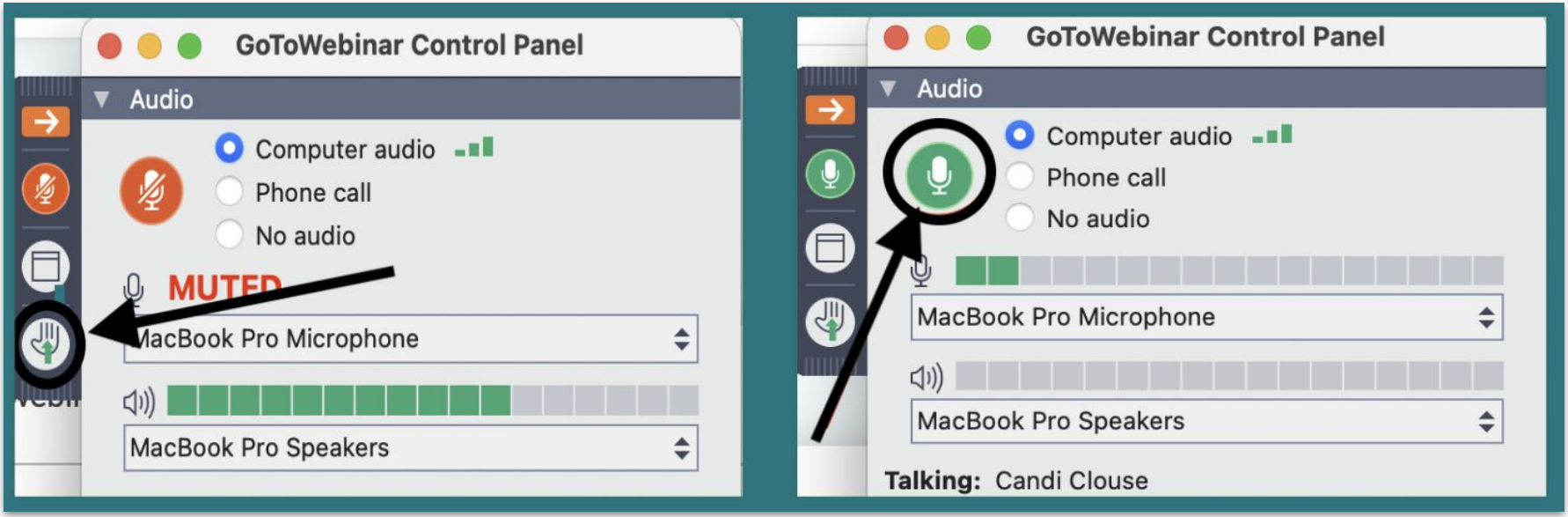
- *Vice President of Customer Success and Education Services at IMPLAN*

Interviewee

Geoffrey N. Brand, Ph.D.

- *Certified IMPLAN Economist*
- *Oil & Natural Gas Market & Policy Specialist*

Have a question?



Overview of Today's Discussion

- Learn from Geoff Brand's expertise in using IMPLAN for policy advocacy and analyzing current economic events.
- Explore how economic impact data supports oil and natural gas industry advocacy at the state and district levels.
- Examine the economic implications of steel tariffs on drilling operations and industry costs.

"...IMPLAN can model the impact of projects in the energy sector like offshore drilling, renewable energy investments, and infrastructure development."

1

Introduction with Geoffrey Brand, Ph.D

Getting to know Geoff

- Geoff, tell me a little bit about your personal and professional background.
- How did you first get involved with API and your use of IMPLAN?
- What types of projects did you analyze?
- We briefly touched on this in the introduction but can you elaborate on your experience with IMPLAN's Certified Economist Program?
  - What has been most beneficial to you as a member?

2

IMPLAN Expertise & Economic Impact Analysis

Leveraging IMPLAN

- What initially led you to IMPLAN and how long have you used the software?
- What questions were you looking to answer with IMPLAN when you originally sought it out? How have those questions evolved over the years?
- Why do you prefer IMPLAN over other economic modeling tools?

3

Application in Policy & Advocacy

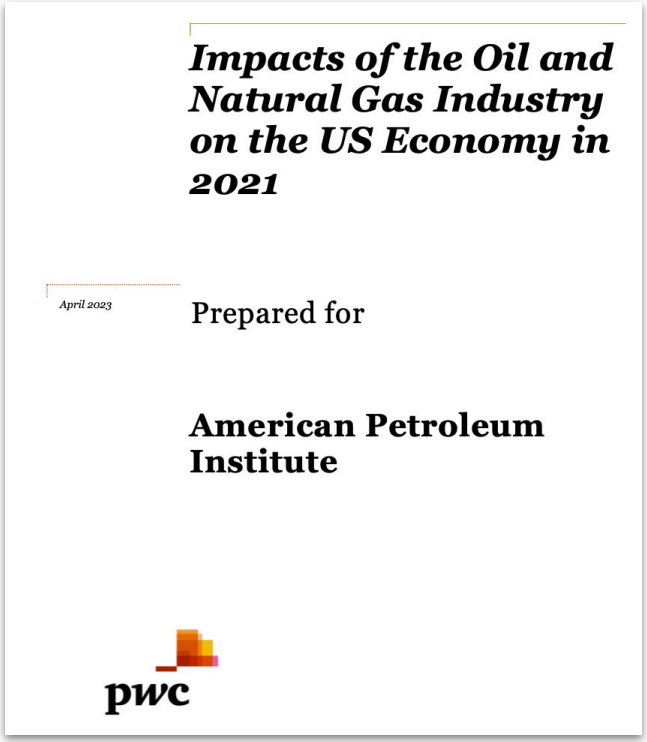
For Policy & Advocacy

- How does your work in IMPLAN help industries advocate for projects or policies?
- Can you give an example of how you have used IMPLAN data has been used in policymaking or public messaging?
- Why is location-specific analysis (state, county, congressional district) critical in economic impact studies?

4

Case Study Deep Dive

API's Key Advocacy Report (since 2008)
Economic Impact of the US Oil and Gas Industry



Executive Summary Table #1

Table ES-1.– Total Operational and Capital Investment Impacts of the Oil and Natural Gas Industry on the US Economy, 2021

Item	Direct Impacts	Indirect and Induced Impacts		Total Impacts	Percent of US Total
		Operational Impacts	Capital Investment Impacts		
Employment (millions)*	2.3	7.1	1.4	10.8	5.4%
Labor Income ($ billions)**	278.5	526.9	103.3	$908.7	6.4%
Value Added ($ billions)	773.6	844.5	156.0	$1,774.1	7.6%

Source: PwC calculations using the IMPLAN modeling system. Details may not add up to totals due to rounding.
* Employment is defined as the number of payroll and self-employed jobs, including part-time jobs.
** Labor income is defined as wages and salaries and benefits as well as proprietors' income.

Statement at the bottom of every API press release:

API represents all segments of America's natural gas and oil industry, which supports nearly 11 million U.S. jobs and is backed by a growing grassroots movement of millions of Americans. Our approximately 600 members produce, process and distribute the majority of the nation's energy, and participate in API Energy Excellence®, which is accelerating environmental and safety progress by fostering new technologies and transparent reporting. API was formed in 1919 as a standards-setting organization and has developed more than 800 standards to enhance operational and environmental safety, efficiency and sustainability.

These are the sectors that API defines as the *"US Oil and Natural Gas Industry"*

Table A-1. Direct Impact of the Oil and Natural Gas Industry on the US Economy by Subsector, 2021

NAICS Code	Subsector Description	Employment[1] (000's)	Labor Income[2] ($ billions)	Value Added ($ billions)
211	Oil and gas extraction (including NGL extraction)	428	$79	$239
213111	Drilling oil and gas wells	44	$5	$6
213112	Support activities for oil and gas operations	210	$21	$26
2212	Natural gas distribution	129	$26	$76
23712	Oil and gas pipeline and related structures construction	137	$14	$16
32411	Petroleum refineries	64	$19	$112
32412	Asphalt paving, roofing and saturated materials manufacturing	29	$6	$11
324191	Petroleum lubricating oil and grease manufacturing	12	$2	$5
4247	Petroleum and petroleum products merchant wholesalers	100	$11	$153
44711, 44719	Gasoline stations	980	$46	$76
45431	Fuel dealers	76	$5	$9
486	Pipeline transportation	49	$43	$45
	Total US Oil and Natural Gas Industry	**2,258**	**$279**	**$774**

Source: Estimates based on 2021 employment data from the US Bureau of Economic Analysis and supplemented by data from the US Bureau of Labor Statistics and US Census Bureau and 2021 input-output relationships from the IMPLAN modeling system.
Note: Details may not add up to totals due to rounding.
(1) Employment is defined as the number of payroll and self-employed jobs, including part-time jobs.
(2) Labor income is defined as wages and salaries and benefits as well as proprietors' income.

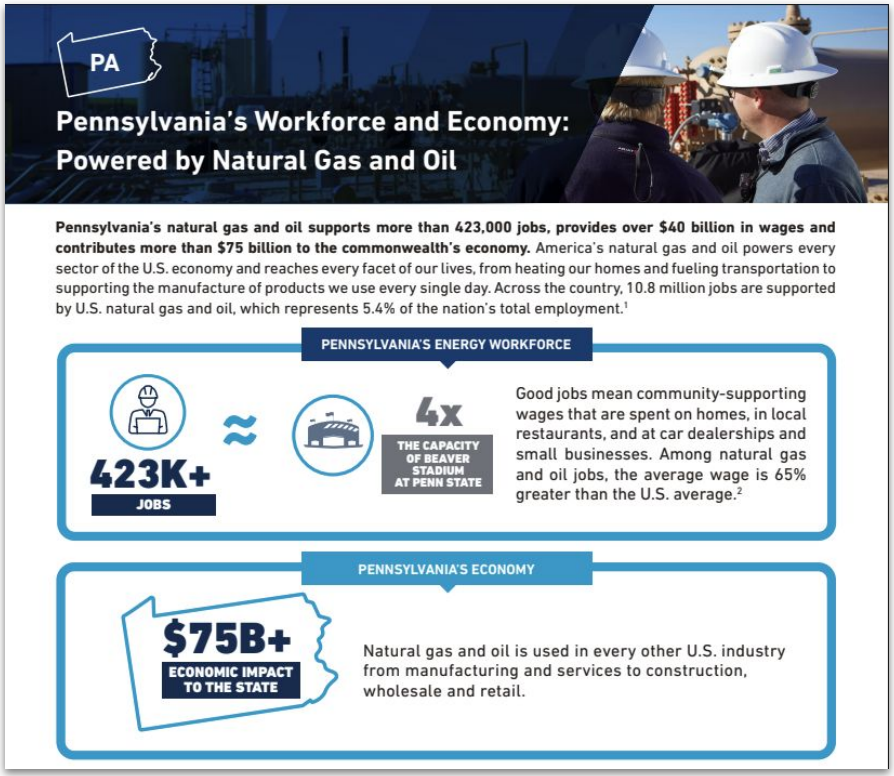
The report includes a comprehensive table detailing the economic impact of oil & gas in each state.

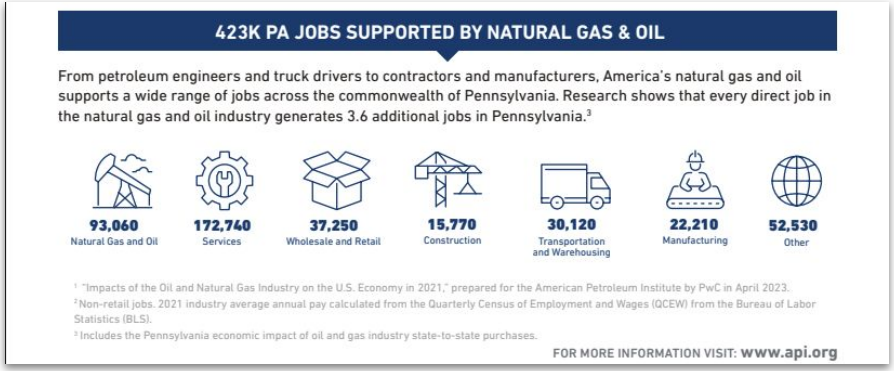
Table B-41. The Economic Impact of the Oil and Natural Gas Industry in Pennsylvania, 2021

Sector Description	Direct	Indirect	Induced	Total	As a % of State Total
Employment*					
Industry Direct Impact	**93,060**			**93,060**	**1.2%**
Indirect/Induced Impacts on Other Industries					
Services		*62,410*	*110,330*	***172,740***	
Finance, insurance, real estate, rental and leasing		*15,020*	*23,240*	***38,260***	
Wholesale and retail trade		*11,180*	*26,070*	***37,250***	
Transportation and warehousing		*20,040*	*10,080*	***30,120***	
Manufacturing		*13,560*	*8,650*	***22,210***	
Construction		*14,430*	*1,340*	***15,770***	
Government		*2,670*	*2,370*	***5,040***	
Information		*2,080*	*2,490*	***4,570***	
Agriculture		*560*	*1,910*	***2,470***	
Utilities		*1,010*	*530*	***1,540***	
Mining		*560*	*90*	***650***	
Total Impact on Employment	**93,060**	**143,530**	**187,110**	**423,700**	**5.6%**
Labor Income** ($ Millions)					
Industry Direct Impact	**$14,285**			**$14,285**	**2.7%**
Indirect/Induced Impacts on Other Industries					
Services		*$5,785*	*$7,345*	***$13,130***	
Finance, insurance, real estate, rental and leasing		*$1,306*	*$1,658*	***$2,963***	
Wholesale and retail trade		*$1,043*	*$1,485*	***$2,528***	
Transportation and warehousing		*$1,299*	*$672*	***$1,971***	
Manufacturing		*$1,218*	*$750*	***$1,968***	
Information		*$629*	*$656*	***$1,285***	
Construction		*$1,108*	*$108*	***$1,216***	
Government		*$252*	*$235*	***$487***	
Utilities		*$198*	*$105*	***$303***	
Agriculture		*$25*	*$73*	***$98***	
Mining		*$46*	*$7*	***$53***	
Total Impact on Labor Income	**$14,285**	**$12,908**	**$13,093**	**$40,286**	**7.5%**
Value Added ($ Millions)					
Industry Direct Impact	**$35,895**			**$35,895**	**4.3%**
Indirect/Induced Impacts on Other Industries					
Services		*$6,533*	*$8,511*	***$15,045***	
Finance, insurance, real estate, rental and leasing		*$3,277*	*$5,676*	***$8,953***	
Wholesale and retail trade		*$1,569*	*$2,429*	***$3,997***	
Manufacturing		*$2,099*	*$1,480*	***$3,579***	
Transportation and warehousing		*$1,460*	*$860*	***$2,320***	
Information		*$1,006*	*$1,159*	***$2,166***	
Construction		*$1,135*	*$125*	***$1,259***	
Utilities		*$609*	*$327*	***$936***	
Government		*$332*	*$312*	***$643***	
Agriculture		*$30*	*$100*	***$131***	
Mining		*$91*	*$15*	***$106***	
Total Impact on Value Added	**$35,895**	**$18,141**	**$20,994**	**$75,030**	**8.9%**

Source: PwC calculations based on the IMPLAN modeling system (2021 database). Details may not add up to totals due to rounding.
* Employment is defined as the number of payroll and self-employed jobs, including part-time jobs.
** Labor income is defined as wages and salaries and benefits as well as proprietors' income.

State data is transformed into concise, easy-to-read one-page handouts for stakeholders and the public.





Economic impacts by Congressional District are also compiled, providing data that can be used for advocacy targeting specific representatives.

Table C-39. Economic Impact of the Oil and Natural Gas Industry in Pennsylvania, 2021

State / Congressional District	Employment (Jobs)[1]			Labor Income ($Million)[2]			Value Added ($Million)		
	Direct	Total[3]	Total as a % of State / District	Direct	Total[3]	Total as a % of State / District	Direct	Total[3]	Total as a % of State / District
Pennsylvania	**93,060**	**423,700**	**5.6%**	**$14,285**	**$40,286**	**7.5%**	**$35,895**	**$75,030**	**8.9%**
PA-1	2,430	22,720	4.5%	$655	$2,336	6.4%	$1,054	$3,747	6.3%
PA-2	1,300	15,900	4.1%	$640	$1,985	6.2%	$666	$2,501	5.1%
PA-3	1,140	20,160	4.5%	$2,342	$4,564	10.3%	$3,230	$6,294	10.1%
PA-4	2,980	23,740	4.8%	$866	$2,752	6.8%	$1,075	$4,103	6.0%
PA-5	2,700	23,830	4.9%	$696	$2,483	6.8%	$2,265	$5,042	8.9%
PA-6	3,580	25,800	5.2%	$547	$2,712	6.5%	$1,468	$5,282	8.3%
PA-7	3,390	23,020	5.1%	$516	$1,997	6.5%	$1,263	$3,369	7.1%
PA-8	3,870	21,590	5.1%	$325	$1,399	5.9%	$947	$2,502	6.7%
PA-9	7,970	25,910	6.3%	$673	$1,956	7.4%	$2,402	$4,201	10.1%
PA-10	4,480	23,560	5.4%	$1,035	$2,474	8.1%	$1,535	$3,608	7.8%
PA-11	3,760	23,000	4.7%	$622	$1,981	6.2%	$1,132	$3,214	6.6%
PA-12	5,220	25,570	5.4%	$345	$1,628	6.1%	$2,663	$4,657	10.6%
PA-13	5,370	21,930	5.2%	$496	$1,492	6.3%	$885	$2,324	6.3%
PA-14	14,100	35,540	8.3%	$1,490	$3,055	10.7%	$5,936	$8,326	17.0%
PA-15	11,650	31,700	7.8%	$750	$1,970	8.8%	$3,878	$5,635	14.8%
PA-16	7,020	25,240	6.2%	$564	$1,715	7.2%	$2,119	$3,839	10.3%
PA-17	12,130	34,480	7.5%	$1,722	$3,787	10.2%	$3,375	$6,384	11.0%

Source: PwC calculations using the IMPLAN model and data from the Census Bureau and the Bureau of Labor Statistics.
Note: Details may not add up to totals due to rounding.
(1) Employment is defined as the number of payroll and self-employed jobs, including part-time jobs.
(2) Labor income is defined as wages and salaries and benefits as well as proprietors' income.
(3) Total impact includes direct, indirect, and induced impacts. Direct impacts are those occurring directly within the oil and natural gas industry. Indirect impacts are those occurring within other businesses as part of the supply chain to the oil and natural gas industry. Induced impacts are those arising from household spending of income earned from the oil and natural gas industry or its supply chain.

5

Current Event Analysis

Steel tariff impacts on well drilling.

How to approach the problem? Key questions to consider.

- **What types of steel products are used in drilling oil and gas wells?**
  - *Primarily well casing – Oil Country Tubular Goods (OCTG)*
- **What is the average cost of OCTG for a typical well?**
  - *Just over $1 million per well, accounting for 15% of the total well cost*
  - *Source:* ***Rystad Energy, ShaleWellCube (2025)***
- **How much OCTG does the U.S. import annually?**
  - *The average over the past two years is $3.6 billion, making up 24% of the market*
  - *Source: U.S. Census Bureau*
- **How can rising OCTG import costs impact well drilling?**
  - *With many capital budgets already set, higher costs will lead to a reduction in the # of wells drilled.*

Total U.S. Well Costs by Category

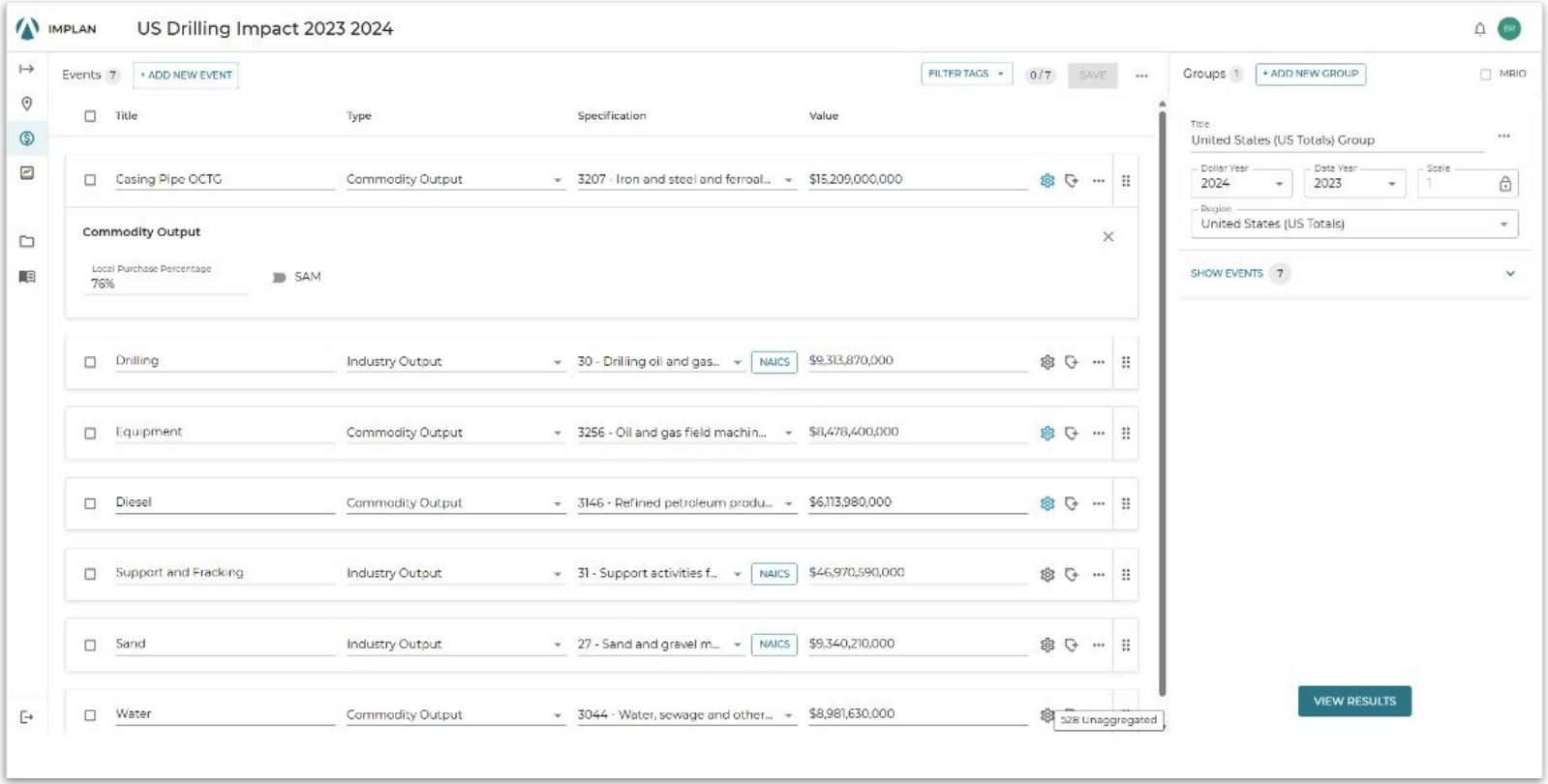
Averages for 2023 & 2024

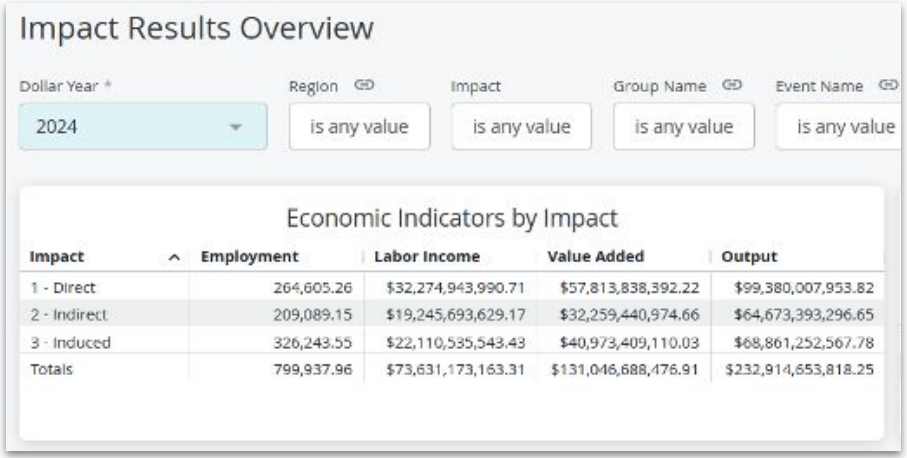
Average number of wells drilled per year: 14,575

Detailed Well Cost	Per well cost ($millions)	Annual Cost ($Billions)	Percent Well Cost	IMPLAN Sector	
OCTG	$1.04	$15.2	15%	3207	Iron and steel and ferroalloy products
Drilling Services	$0.25	$3.6	3%	30	Drilling oil and gas wells
Rig	$0.39	$5.7	5%	30	
Stimulation	$1.94	$28.3	27%	31	Support activities for oil and gas operations
Other Drilling Cost	$0.85	$12.4	12%	31	
Other Completion Cost	$0.43	$6.3	6%	31	
Facilities	$0.58	$8.5	8%	3256	Oil and gas field machinery
Proppant	$0.64	$9.4	9%	27	Sand and gravel mining
Fuel and Power	$0.42	$6.1	6%	3146	Refined petroleum products
Water	$0.62	$9.0	9%	3044	Water, sewage, and other systems
Total average well cost	$7.17	$104.5	100%		

Source: Rystad ShaleWellCube Data (2025)

Impact Screen - Total U.S. Well Costs





Impact	Employment	Labor Income	Value Added	Output
1 - Direct	264,605.26	$32,274,943,990.71	$57,813,838,392.22	$99,380,007,953.82
2 - Indirect	209,089.15	$19,245,693,629.17	$32,259,440,974.66	$64,673,393,296.65
3 - Induced	326,243.55	$22,110,535,543.43	$40,973,409,110.03	$68,861,252,567.78
Totals	799,937.96	$73,631,173,163.31	$131,046,688,476.91	$232,914,653,818.25

Summary Overview Results Total Oil and Gas Well Drilling (Average 2023/24)

Employment Results by Industry

Industries by Impact

	Industry Display	Impact Employment (1 - Direct)	Impact Employment (2 - Indirect)	Impact Employment (3 - Induced)	Total Impact Employment
1	31 - Support activities for oil and gas operations	140,402.96	67.97	4.05	140,474.98
2	30 - Drilling oil and gas wells	51,286.62	0.33	0.02	51,286.96
3	27 - Sand and gravel mining	29,106.61	380.05	12.10	29,498.77
4	516 - Other local government enterprises	15,510.48	604.85	1,469.39	17,584.72
5	256 - Oil and gas field machinery and equipmen...	15,375.39	131.09	1.51	15,507.99
6	207 - Iron and steel mills and ferroalloy manufac...	4,301.25	1,479.88	38.04	5,819.17
7	44 - Water, sewage and other systems	3,485.80	55.78	104.15	3,645.73
8	208 - Iron, steel pipe and tube manufacturing fr...	1,352.59	478.31	11.47	1,842.37
9	513 - Other state government enterprises	1,304.18	51.41	123.44	1,479.03
10	209 - Rolled steel shape manufacturing	1,085.70	370.70	9.31	1,465.71
11	29 - Oil and gas extraction	546.92	2,926.66	454.81	3,928.39
12	146 - Petroleum refineries	533.77	148.18	83.49	765.43
13	254 - Construction machinery manufacturing	57.87	117.08	0.74	175.70
14	255 - Mining machinery and equipment manufa...	49.67	60.35	0.31	110.33
15	234 - Metal tank (heavy gauge) manufacturing	37.31	35.08	2.14	74.53
16	286 - Scales, balances, and miscellaneous gener...	32.69	14.19	1.31	48.19
17	244 - Valve and fittings, other than plumbing, m...	17.13	214.65	23.69	255.47
Totals		264,605.26	209,089.15	326,243.55	799,937.96

How to estimate steel tariff impacts?

A 25% tariff on $3.6 billion in OCTG imports (average for 2023/2024) would result in an additional $900 million per year, assuming quantity and price remain unchanged.

- **Should the $900 million be added to the OCTG event line?**

  This would increase the OCTG event total from $15.2 billion to $16.1 billion.

  - *Probably not. The model is based on 2023 economic relationships. It would show increases in employment and labor income based. When production quantity has not increased.*

- **Should total well expenditures be reduced by $900 million in the 2023 model?**

  - *Probably not. All OCTG costs for well developers are likely to increase, as domestic suppliers are expected to raise pipe prices to match the cost of marginal supply—foreign imports.*

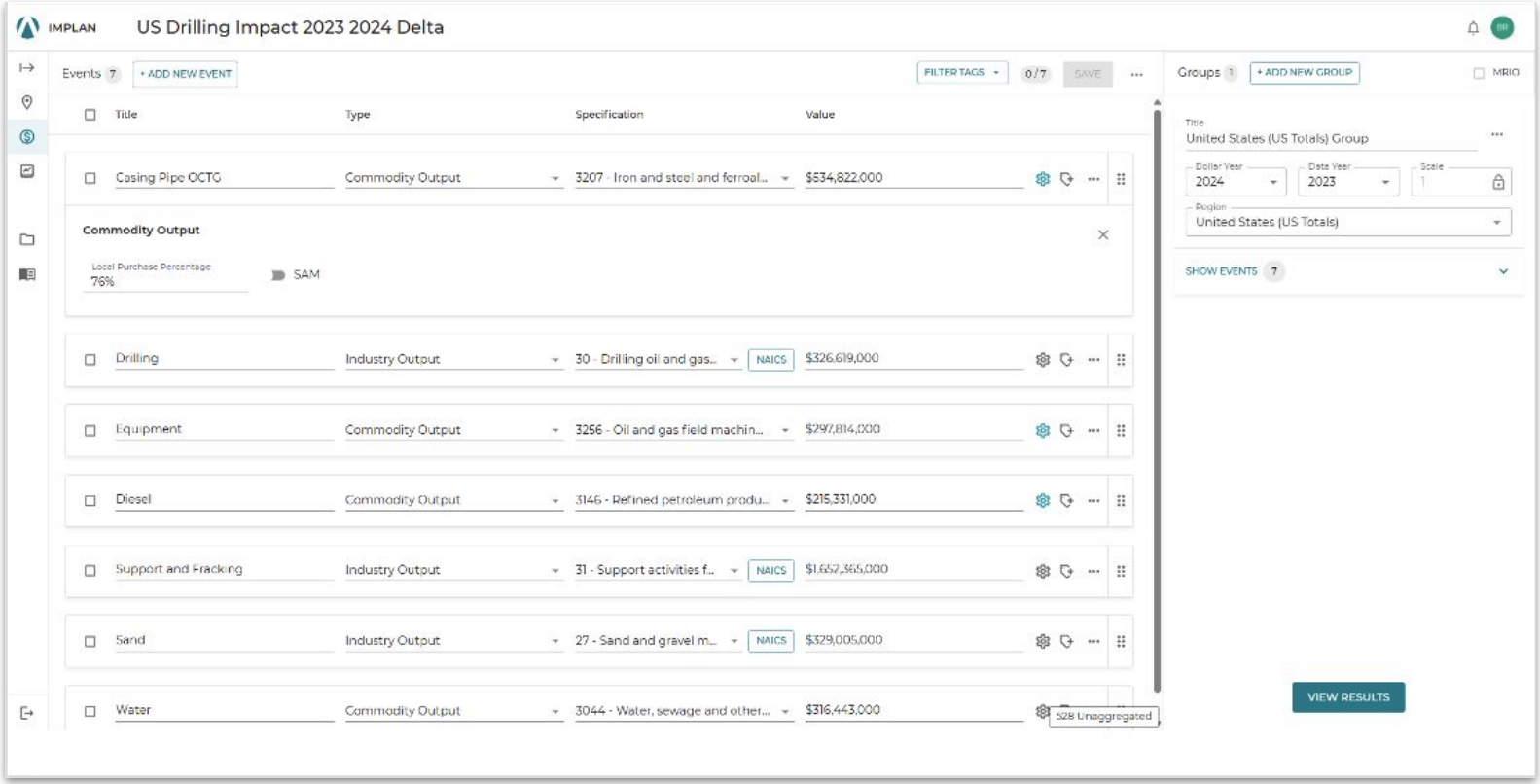
- **Should total well expenditures be reduced by the estimated $3.7 billion increase in OCTG costs (25% of $15.2 billion)?**

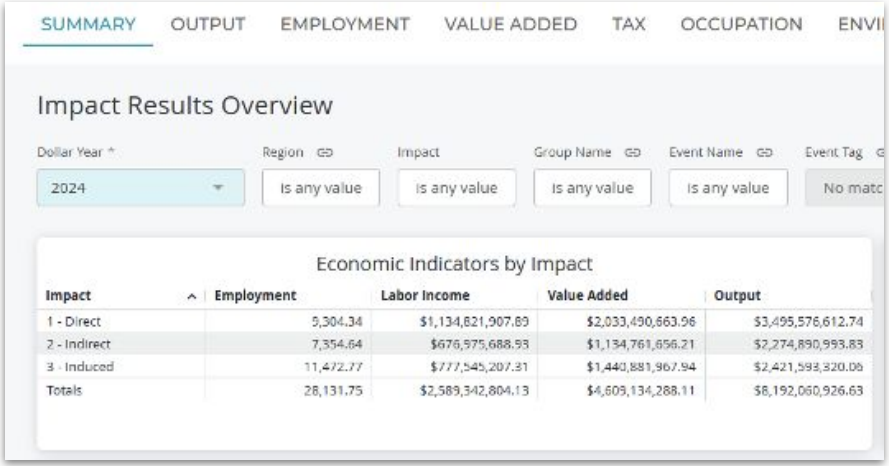
  - *Probably. All OCTG pipe costs are expected to go up. Foreign imports will set the market price.*
  - *A 2023 IMPLAN model run with $3.7 billion would produce a good estimate of employment and labor income impacts. GDP impacts are a little more complicated.*

Modeling the economic impact of rising OCTG costs under a fixed capital budget.

	IMPLAN industry or commodity	Base annual expenditures	Same number of wells with 25% tariff	New cost with tariff same capital budget	IMPLAN 2023 Cost Relationships	Delta from Base 2023 Cost Relationships
3207	Iron and steel and ferroalloy products (OCTG)	$15.2	$19.0	$18.4	$14.7	($0.5)
30	Drilling oil and gas wells	$9.3	$9.3	$9.0	$9.0	($0.3)
31	Support activities for oil and gas operations	$47.0	$47.0	$45.4	$45.4	($1.7)
3256	Oil and gas field machinery	$8.5	$8.5	$8.2	$8.2	($0.3)
27	Sand and gravel mining	$9.4	$9.4	$9.0	$9.0	($0.3)
3146	Refined petroleum products	$6.1	$6.1	$5.9	$5.9	($0.2)
3044	Water, sewage, and other systems	$9.0	$9.0	$8.7	$8.7	($0.3)
	Total	$104.5	$108.3	$104.5	$100.9	($3.7)
	Number of wells drilled	14,575	14,575	14,063	14,063	(512)

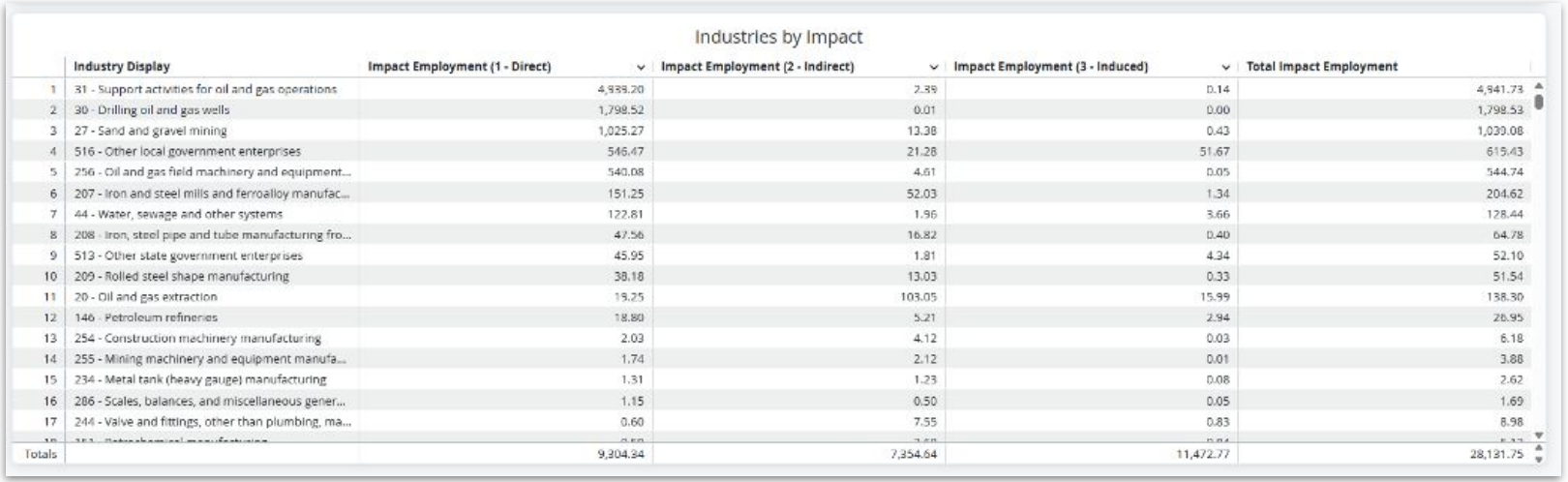
Impact Screen – Steel Tariff Impacts





Summary Overview Results Steel Tariff Impacts (Average 2023/24)

Employment Results by Industry



Steel tariff impacts on well drilling.
Top line results:

- **Economic impact of US oil and natural gas drilling.**
  - *14,500 wells drilled annually (2023/24 avg.) at a $104 billion cost*
  - *Supports 800,000 jobs, generating $74 billion in labor income and $131 billion in GDP*
  - *Direct impact: 265,000 jobs, $32 billion in labor income, and $58 billion in GDP*
- **OCTG Steel Imports & Tariffs**
  - *The U.S. imports $3.6 billion of OCTG pipe (24% of the market)*
  - *A 25% tariff on imported OCTG steel would generate $900 million in revenue*
  - *Domestic OCTG prices could rise 25%, increasing drilling costs by up to $3.7 billion*

Steel tariff impacts on well drilling.
Top line results (continued):

- **Economic Consequences of Higher OCTG Costs.**
  - 3.7 billion less available for drilling if budgets remain constant
  - *500 fewer wells drilled due to increased costs*
  - *28,000 fewer jobs and a $2.6 billion reduction in labor income across the U.S. economy*
  - *GDP impacts (its complicated)*

Caveats and Disclaimers

- Other market factors, especially price, will impact the number of wells drilled.
- Drillers may adjust their capital budgets in response to cost changes.
- Foreign OCTG suppliers might lower prices to remain competitive in the U.S. market. (they probably won't like it, but they still might do it)
- Additional supply chain costs from steel and other tariffs are not included in this analysis.

"IMPLAN's software is a powerful, data-driven tool that provides precise, reliable insights into job creation and economic impact. It allows you to drill down into specific industries, occupations, and locations using trusted government data from sources like the Bureau of Economic Analysis and BLS.

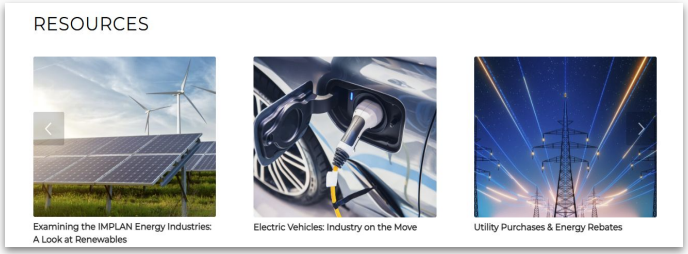
Whether you're analyzing historical trends or exploring 'what if' scenarios, it’s a versatile and trustworthy resource for economic analysis—especially in the energy sector, where it can model the impact of projects like offshore drilling, renewable energy investments, and infrastructure development."

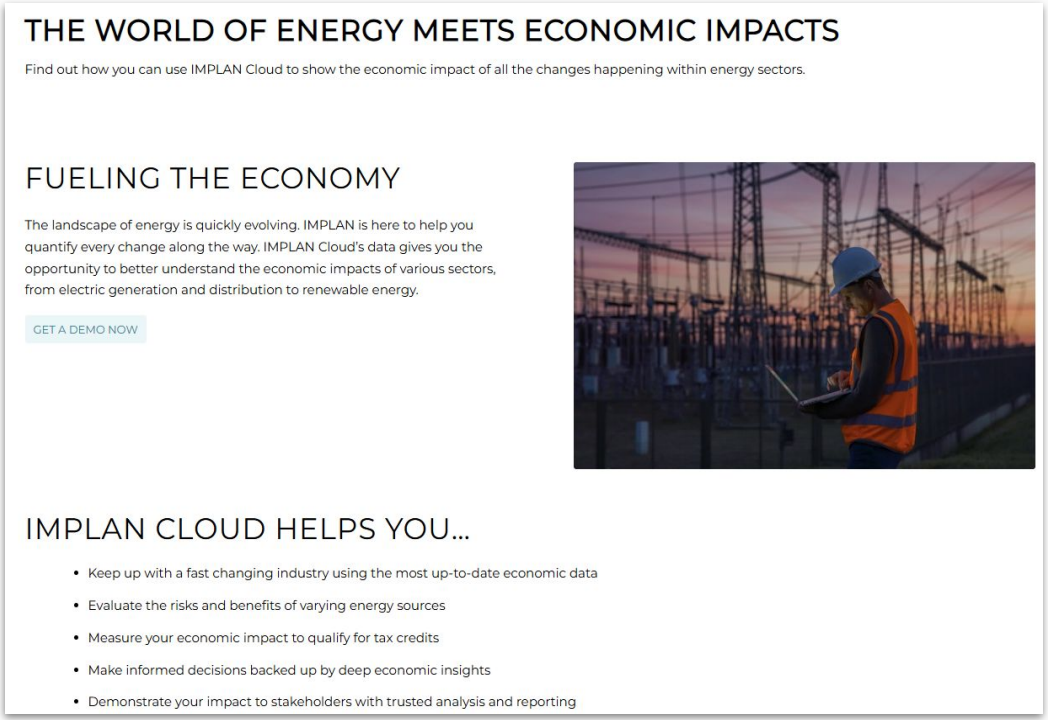
- Geoffrey Brand, Ph.D.

Questions?

Additional Resources

- Check out our energy resource page on the www.IMPLAN.com website.

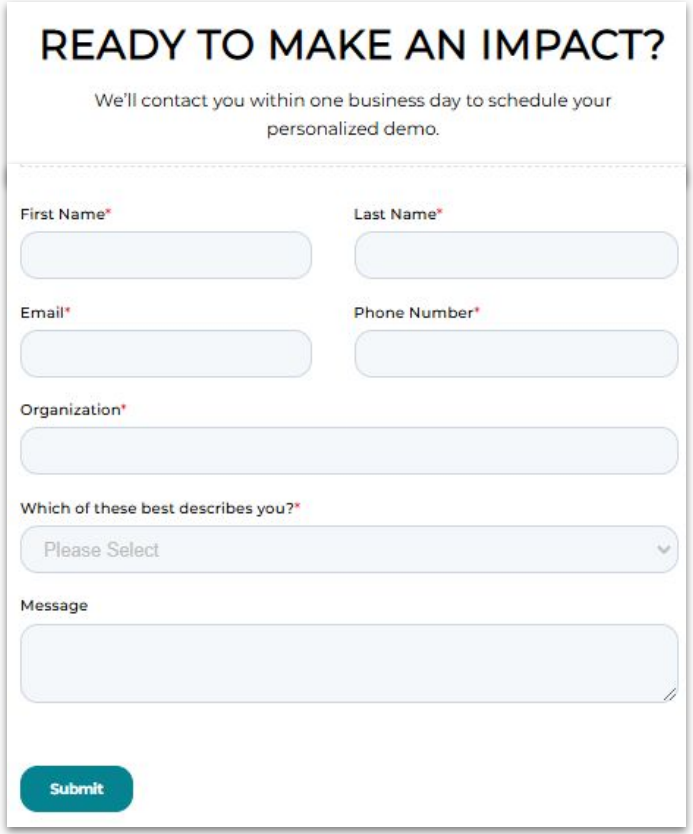




https://implan.com/energy/

Let’s Schedule A Demo

- Contact us at sales@implan.com to learn how IMPLAN can add value to your organization
- After you submit the form, schedule a time that’s most convenient for you



Connect with Geoff

- If you're interested, feel free to connect with Geoff on **LinkedIn** to keep the conversation going
  - linkedin.com/in/geoffrey-brand-phd-379a152
  - geoffrey.brand@gmail.com

Thank You!