

Advancing America's Agriculture: The Value of Natural Gas to U.S. Agriculture and Agrochemicals



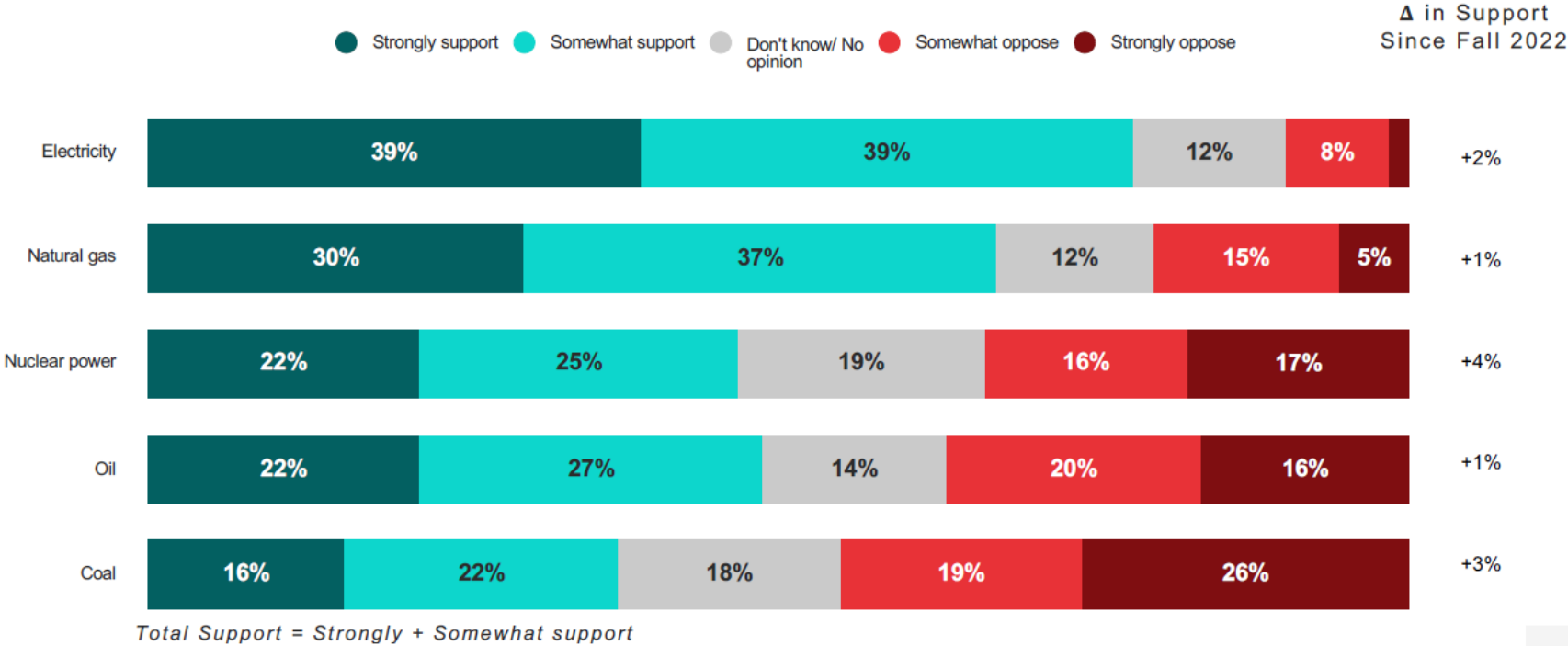
Gas Remains Favorable

NATURAL GAS: BENCHMARKS

MORNING CONSULT[®]

Similarly, support for using more natural gas has remained high since the Fall.

Do you support or oppose using more...



Customer Growth Continues

Customers:

- The number of residential natural gas consumers grew by 1.5 million between 2019 and 2021
- There are 77.7 million natural gas customers in the US:
 - 71.9 Residential Customers
 - 5.6 Commercial Customers
 - 82,000 Industrial
- The industry continues to add more than a customer a minute for every minute of the year.

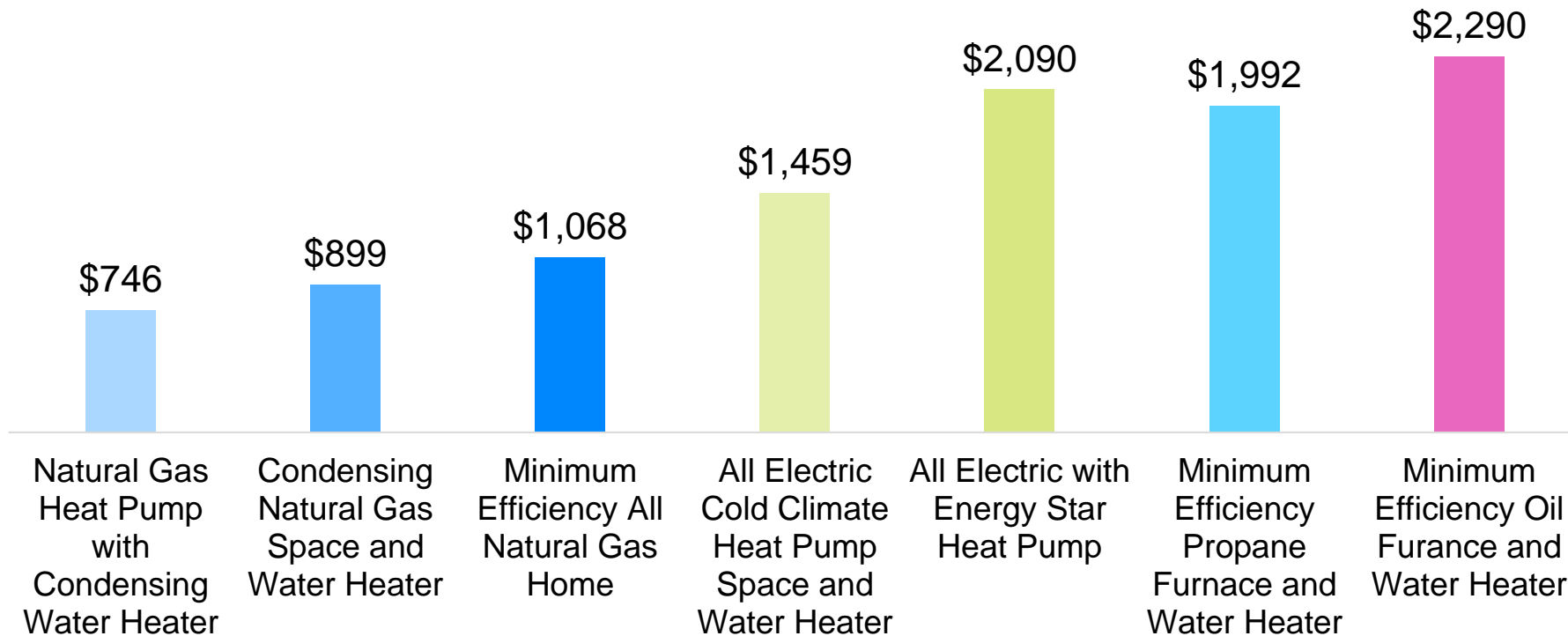
Natural Gas Residential End-Users by State Top 20 Net Additions since 2019 (Thousands)

Rank	State	2019	2021	Net Change
1	Texas	4,787	5,011	224
2	California	11,112	11,233	120
3	North Carolina	1,305	1,368	63
4	New Jersey	2,844	2,904	60
5	Michigan	3,322	3,380	58
6	Ohio	3,370	3,428	58
7	Florida	786	840	55
8	Colorado	1,813	1,867	54
9	Utah	976	1,029	53
10	Arizona	1,277	1,330	53
11	South Carolina	714	758	44
12	Indiana	1,769	1,813	44
13	Pennsylvania	2,821	2,865	44
14	Minnesota	1,560	1,603	43
15	Georgia	1,842	1,882	40
16	Kentucky	747	787	40
17	Nevada	888	923	35
18	Massachusetts	1,548	1,582	34
19	Tennessee	1,180	1,213	33
20	Illinois	3,941	3,973	32
Total		70,431	71,936	1,505

Natural gas typically results in the lowest operating costs for homes

Cost Comparison of Home Energy Use

Average Annual Energy Costs



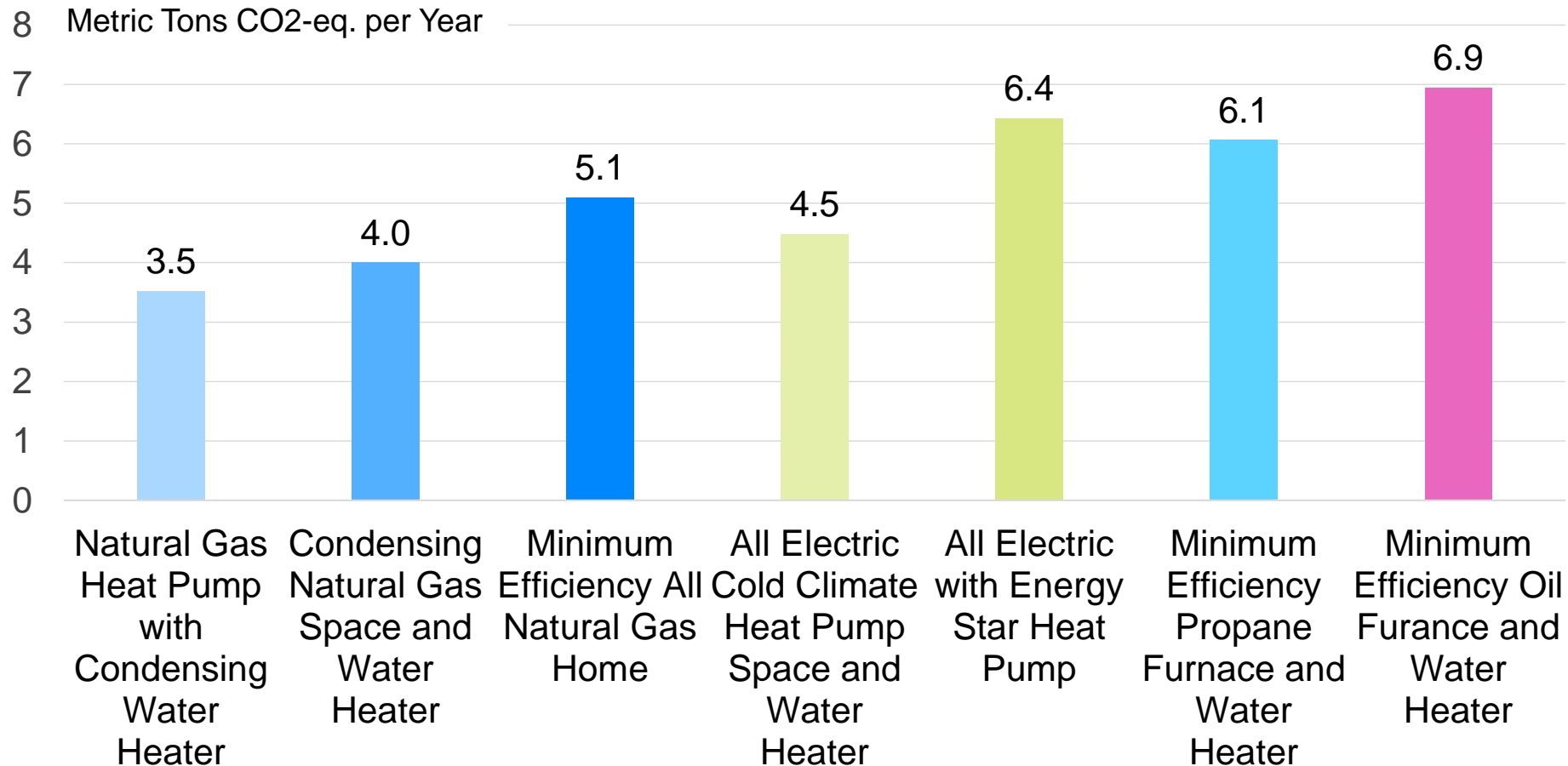
*AGA Comparison
of Home
Appliance Energy
Use, Operating
Costs, and
Carbon Dioxide
Emissions*



The study modeled the same typical single-family home that included a furnace, water heater, stove, and dryer operated with different primary energy sources. Oil and propane households use an electric option for dryers, and oil households include an electric stove.

Natural gas typically results in a low greenhouse gas footprint

Greenhouse Gas Emissions of Home Energy Use

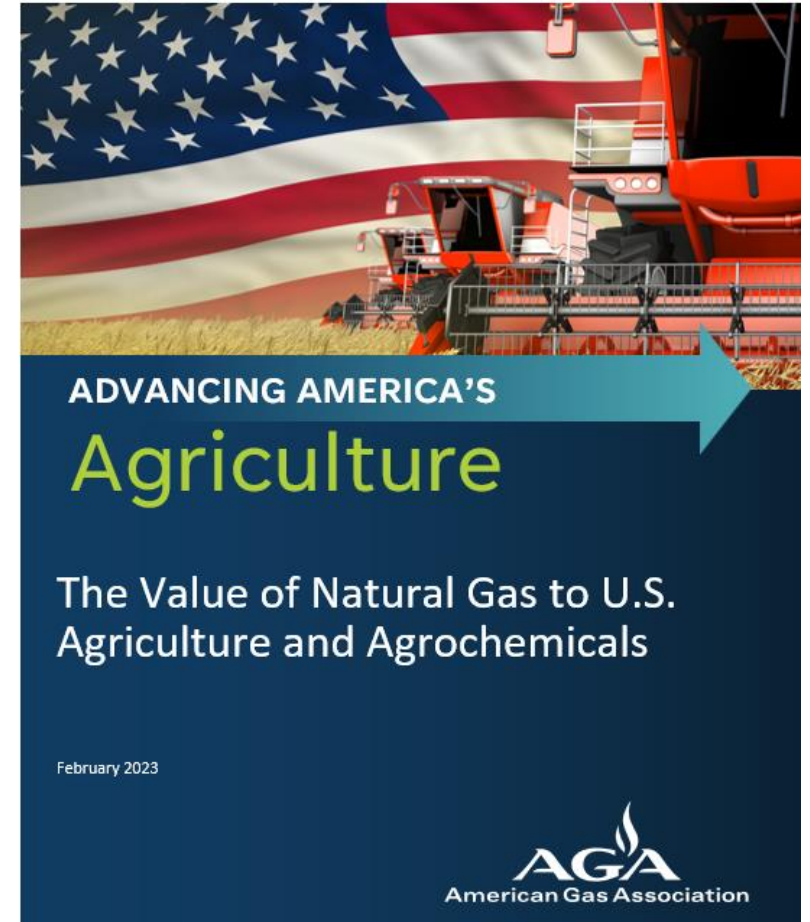


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Advancing America Series

AGA's *Advancing America* series highlights the importance of abundant, affordable natural gas for key US industries:

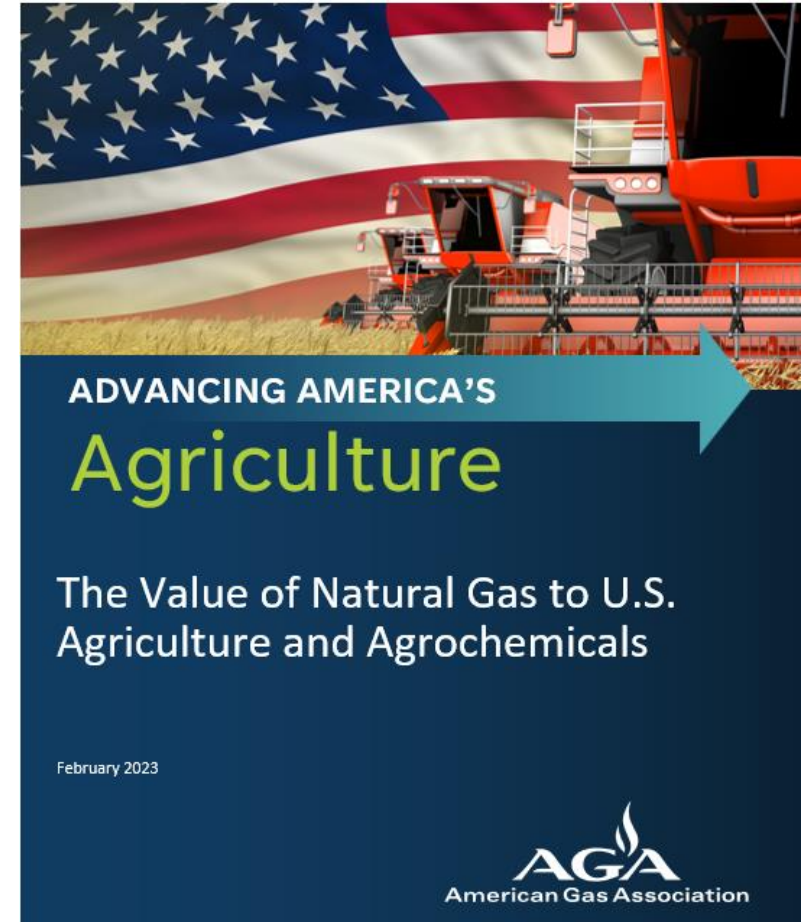
- Agriculture
- Hotels & Hospitality
- Healthcare (Hospitals, universities)
- Pharmaceutical Manufacturing



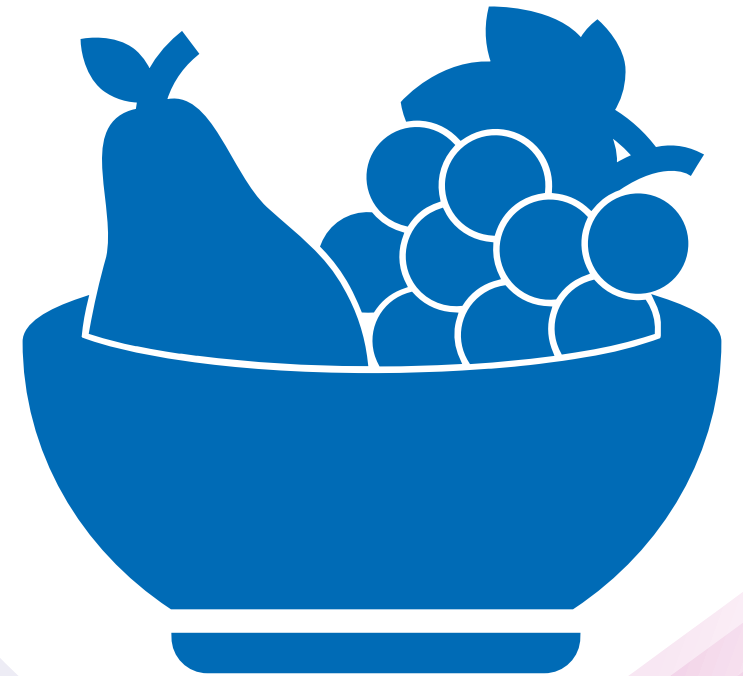
Advancing America Series: Agriculture

The U.S. agriculture sector (defined to include crops, livestock, and food processors) is connected to many other sectors across the economy.

Natural gas helps the U.S. economy produce agrochemicals, the most important of which is the fertilizer used to increase crop yields.



You can draw a direct line from the availability of low-cost natural gas to the cost of food on grocery store shelves globally.



Agriculture is a major part of the U.S. econ

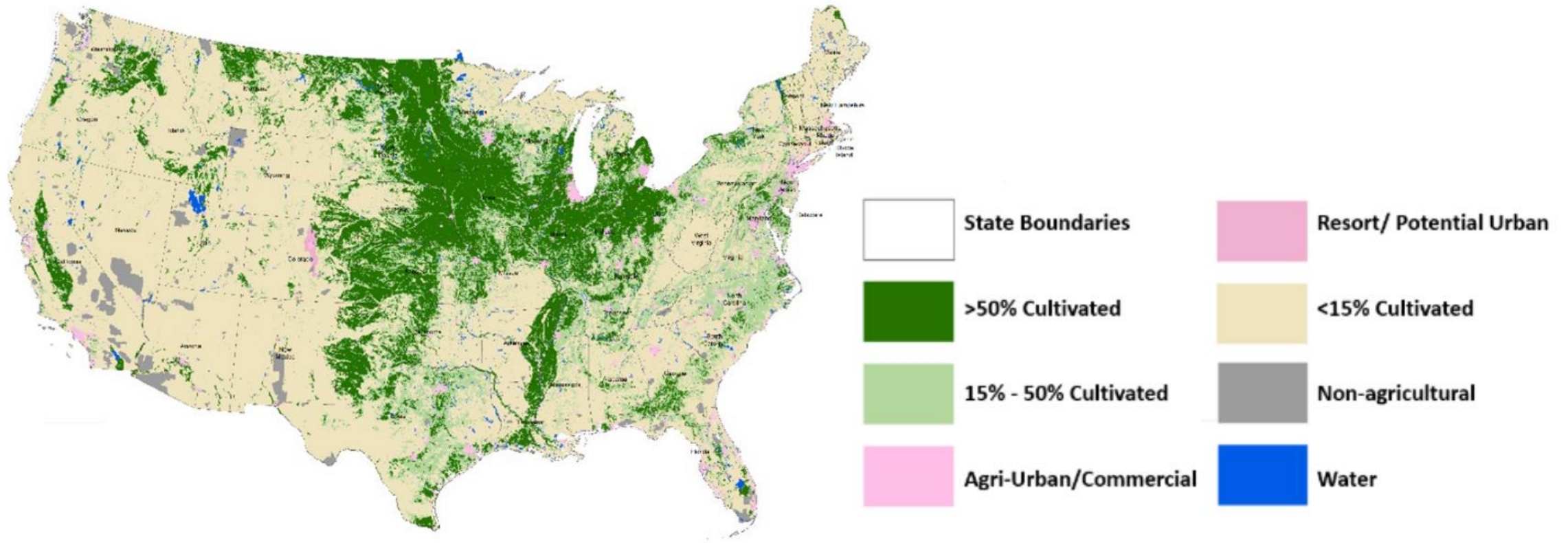
Jobs
17.2
Million

GDP
\$1.75
trillion



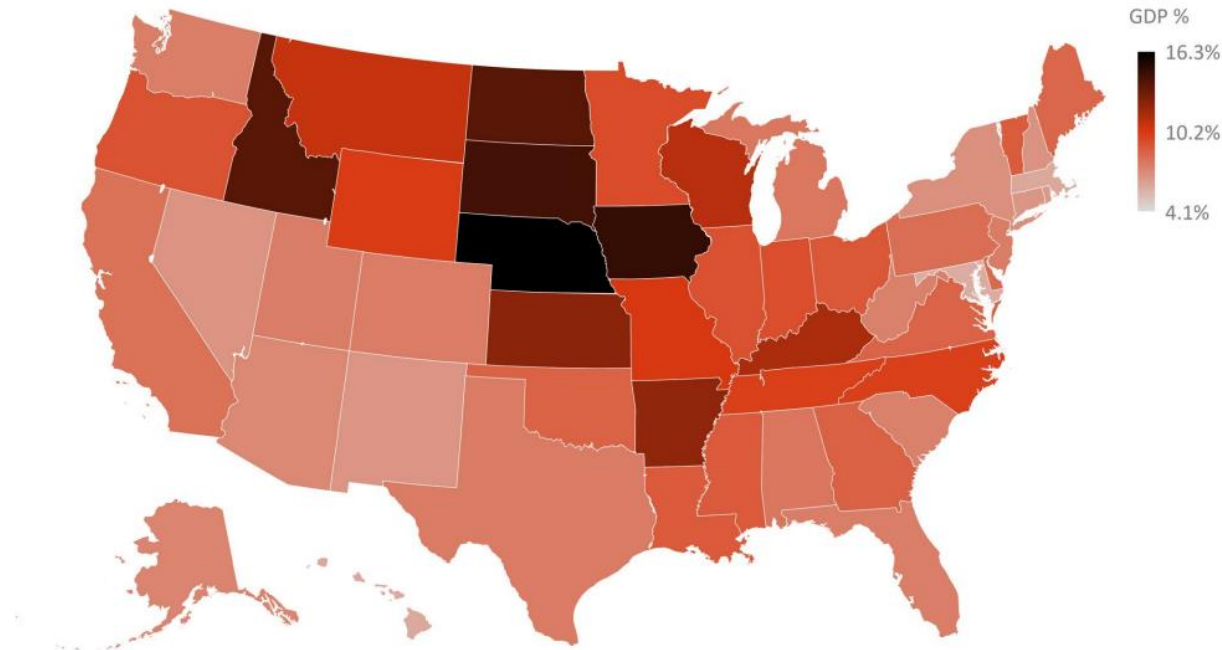
The distribution of agricultural land-use varies greatly across the country

Land-use map of the lower forty-eight states



Agriculture contributes directly to state economies and linked with many sectors

Total share of state GDP supported by agriculture and food processing



Source: FTI analysis

Sectors with the strongest financial linkages to the U.S. agriculture sector (2022 \$ billions)

Rank	Economic Sector	Indirect Output
1	Commercial and industrial real estate	\$126.0
2	Other consumable goods merchant (wholesale)	\$106.2
3	Truck transportation	\$91.0
4	Grocery and related products (wholesale)	\$70.4
5	Management of companies and enterprises	\$57.3
6	Paperboard container manufacturing	\$29.9
7	Support activities for agriculture and forestry ⁴⁷	\$27.9

Agriculture accounts for 15% of U.S. commercial and industrial natural gas demand

Just five of the many subsectors within agriculture consume over 2 trillion cubic feet of natural gas per year, nearly the equivalent consumption as California, the second largest natural gas consuming state.



Food processors

1,470 BCF



Beef and
dairy cattle

227 BCF



Corn, wheat,
and other grains

179 BCF



Fertilizer and other
agrochemicals

95 BCF



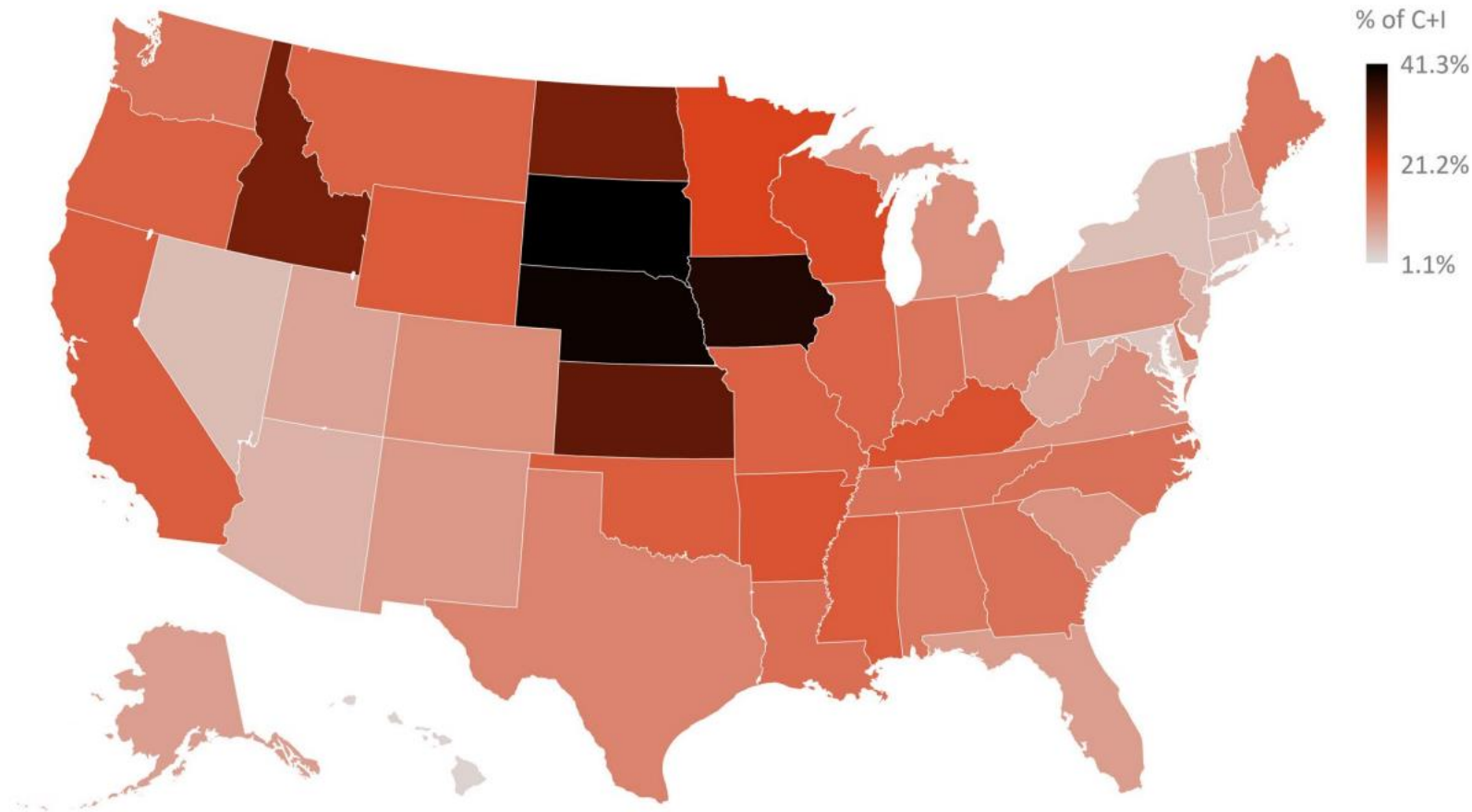
Soybeans and
other oilseeds

85 BCF

BCF = BILLION CUBIC FEET

In six states (Nebraska, Iowa, South Dakota, North Dakota, Idaho, and Kansas) agriculture accounts for 30% of commercial and industrial gas use

Agriculture and food processing share of total commercial and industrial gas consumption



U.S. economic activity supported by agriculture and food processing

Impact	Units	Direct Impact	Indirect Impact	Induced Impact	Total Impact
Employment	Million (#)	5.0	6.2	6.0	17.2
Output ⁴¹	2022 \$ B	\$1,583	\$1,367	\$1,059	\$4,009
GDP ⁴²	2022 \$ B	\$437	\$690	\$621	\$1,748
Labor Income	2022 \$ B	\$238	\$439	\$364	\$1,041
Federal Taxes	2022 \$ B	\$102	\$148	\$104	\$354
S&L ⁴³ Taxes	2022 \$ B	\$123	\$81	\$71	\$275

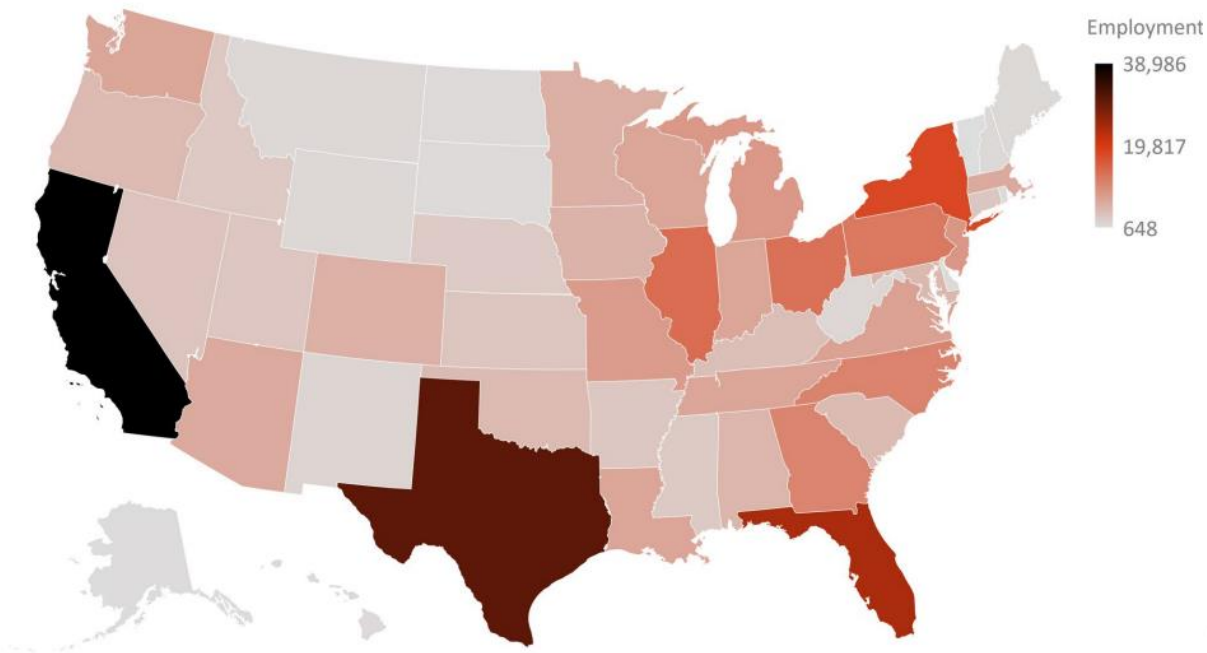
Between 70% and 80% of the energy needs of the U.S. agrochemical sector comes from natural gas

Direct economic impact of U.S. agrochemical sector

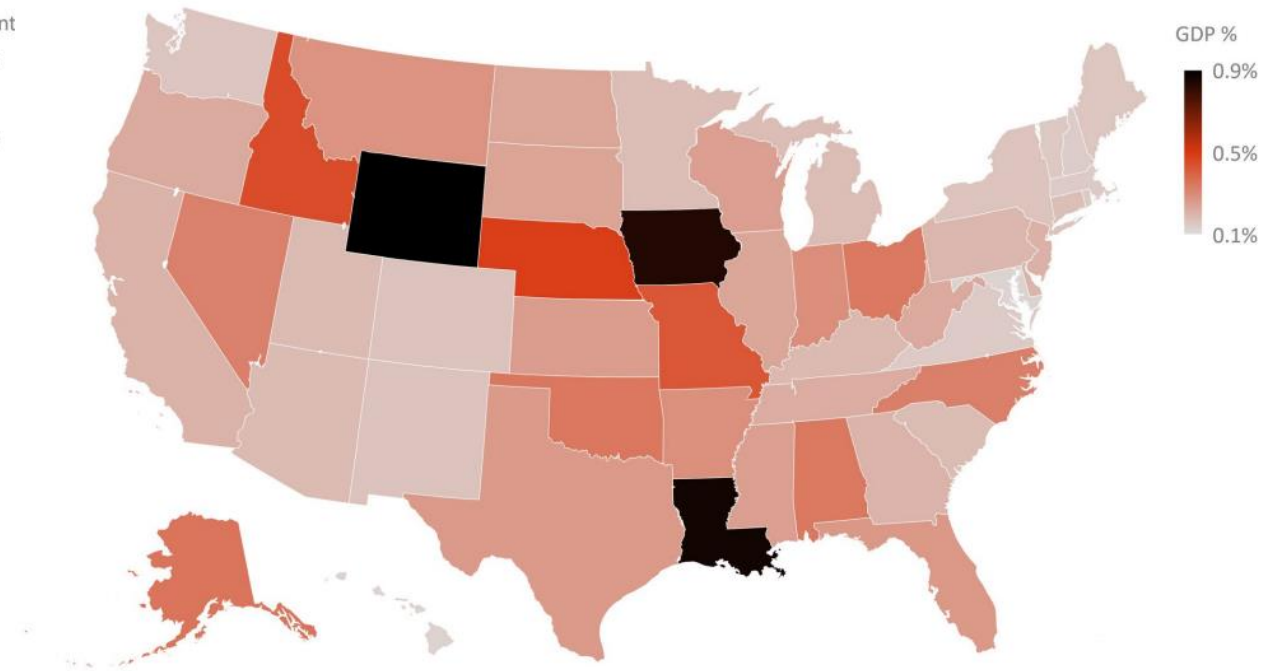
Economic Sector	Employment (thousands)	Output (2022 \$ billions)	GDP (2022 \$ billions)	Labor Income (2022 \$ billions)
Nitrogenous fertilizer manufacturing	9.2	\$12.2	\$3.8	\$1.5
Phosphatic fertilizer manufacturing	6.0	\$5.0	\$1.6	\$0.8
Fertilizer mixing	9.5	\$5.4	\$1.8	\$0.9
Pesticide and other agricultural chemical manufacturing	14.2	\$21.0	\$5.8	\$1.9
TOTAL >>	38.8	\$43.6	\$13.0	\$5.2

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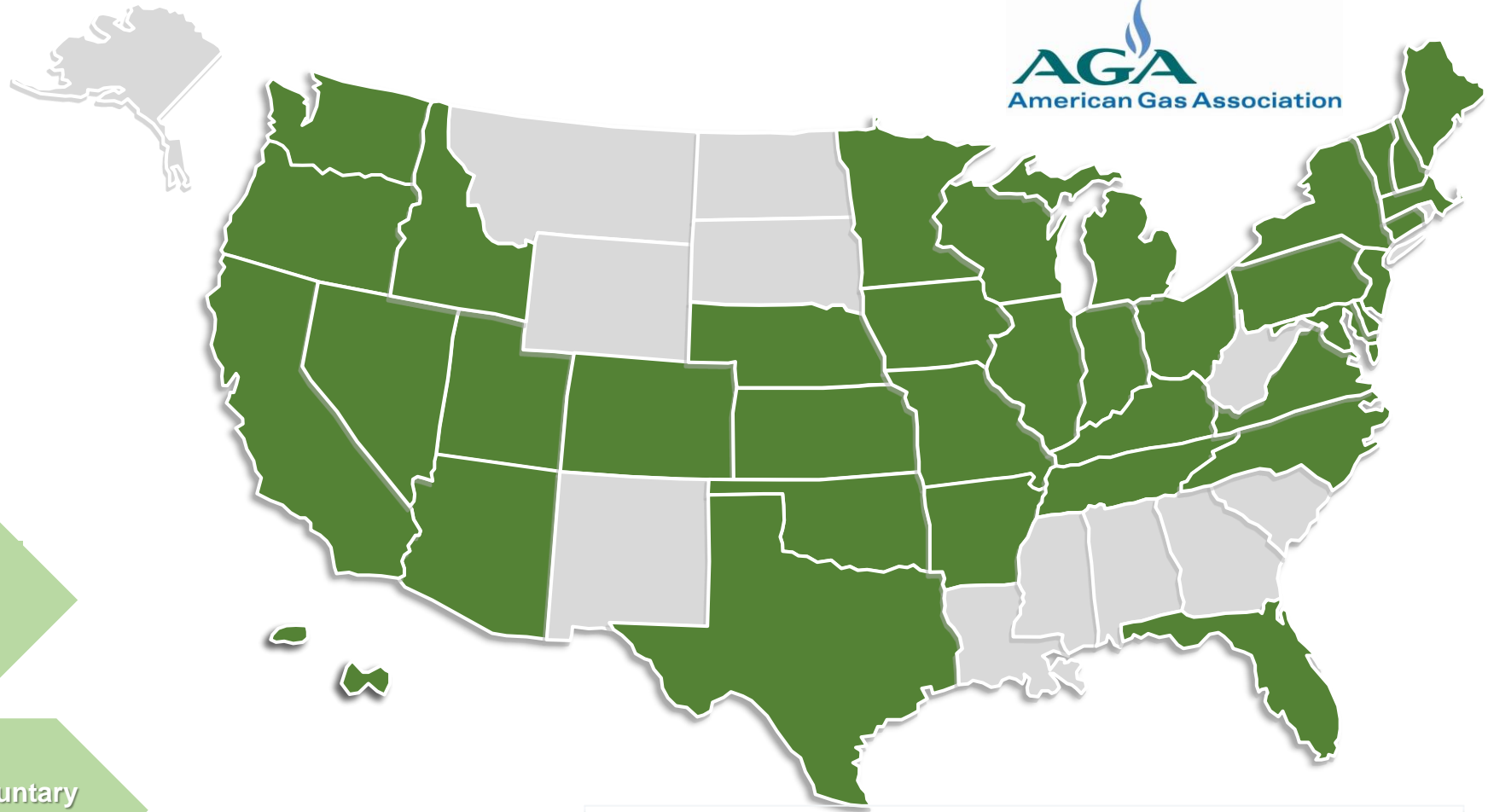
State employment supported by agrochemicals



Share of state GDP supported by agrochemicals



Renewable Natural Gas State Activity



Activity in **37** states to promote the use of RNG in the residential or commercial sector through either legislative, regulatory, or utility led action.

*this data does not include RNG interconnection activity

65 Bills

have been introduced

State Legislative Proposals

28 Bills

have become law

18 Natural Gas Utilities

have begun developing or have implemented Voluntary Green Tariffs

Voluntary Programs

25 Natural Gas Utilities

are engaged in RNG production projects

Utility Led RNG Projects

Resources

New Reports from The American Gas Foundation

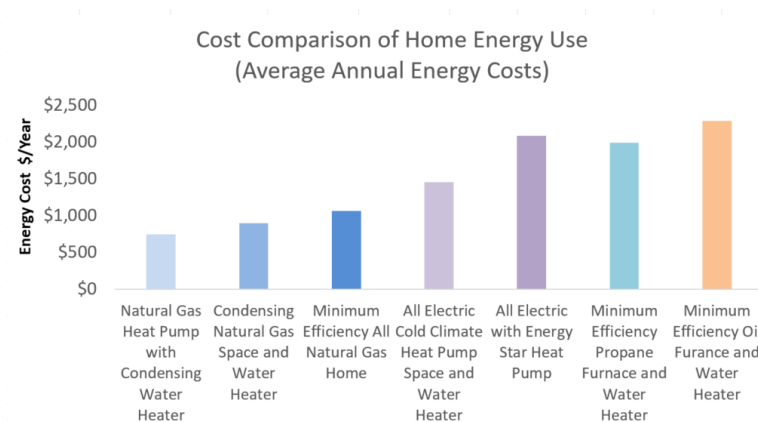


[Gasfoundation.org](https://gasfoundation.org)

AGA Studies and Analyses

Natural Gas Homes are Lowest-Cost and Lowest-Emissions, Even Compared to Homes with Electric Cold-Climate Heat Pumps

High-efficiency natural gas appliances in homes can lower utility bills and emissions.



aga.org

