



RURAL INDUSTRIES & CLIMATE CHANGE





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INTRODUCTION



IN EARLY 2019, I asked our staff economists at CoBank to help me better understand the impact of climate change and environmental regulation on the U.S. rural economy. Climate change as a political issue seemed to be increasing in intensity, but I didn't feel I had a fully formed view on the subject or even a strong understanding of how it affected the industries we finance. I asked our analysts to find data on the environmental performance of rural industries – with long-term time series so I could see trends and changes over many years. The charts, anecdotes and other information they produced became the basis for presentations at CoBank industry conferences in the summer of 2019 as well as a companion series published on my LinkedIn feed. We are also republishing the full compilation here.

My key takeaways from this exercise have been twofold:

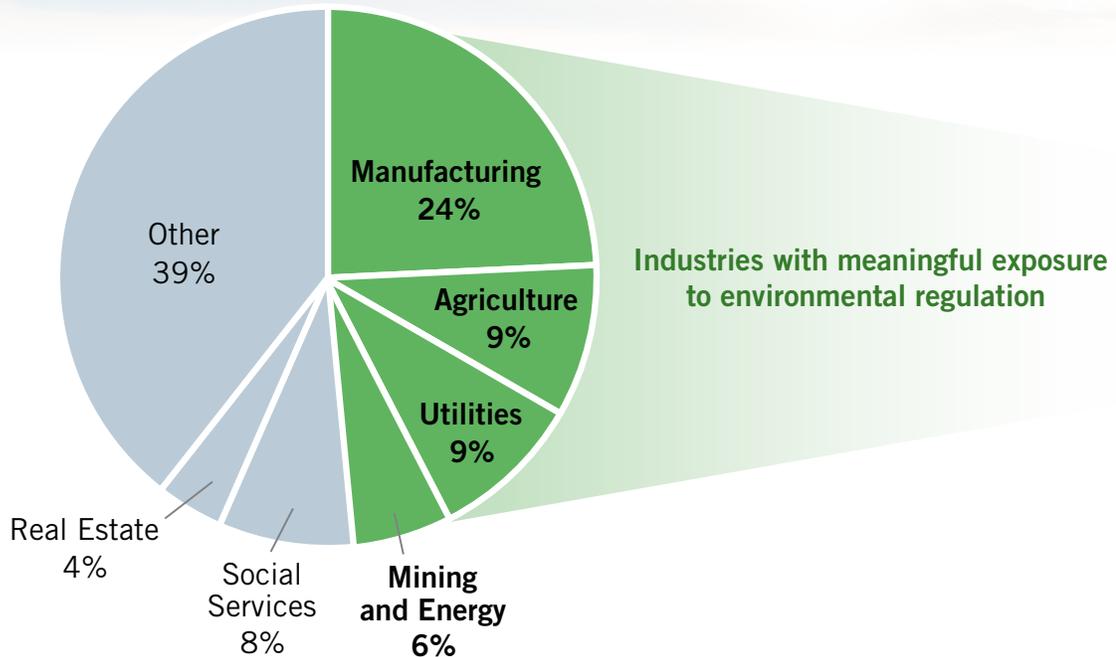
- First, concerns about climate change are now a permanent part of the operating environment for rural America; they are here to stay regardless of which political party happens to be in power at state or federal levels. That's because so many critical stakeholders outside the realm of government – consumers, investors, employees, etc. – are also increasingly committed to environmental sustainability.
- Second, rural industries have a strong track record of improving their environmental performance, even if that track record is under-appreciated. There is every reason to believe that improvement will continue in the future.

Politically, climate change remains a controversial issue, and it is clear we remain far from a national consensus on the appropriate policy responses. Nevertheless, I hope the information provided here is helpful to readers of all political persuasions who have an interest or stake in this important subject.



Tom Halverson
President & Chief Executive Officer, CoBank

INDUSTRY SECTORS AS A PERCENT OF U.S. RURAL GDP



RURAL AMERICA IS DISPROPORTIONATELY EXPOSED to climate change regulation given the unique configuration of the rural economy.

As shown on the chart above, almost 50 percent of rural GDP comes from agriculture, manufacturing, utilities, and mining and energy.

All of these industries have a significant environmental footprint, and they are under varying degrees of pressure from environmental advocates, policymakers, regulators, consumers, socially responsible investors and others for whom climate change is an important priority.

Source: CoBank Knowledge Exchange

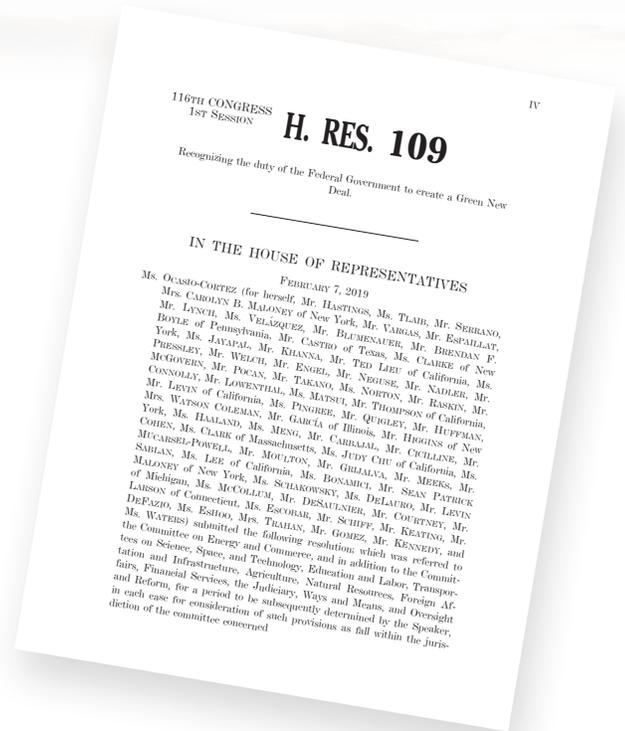
THE “GREEN NEW DEAL”

2020 IS A PRESIDENTIAL election year in the United States, and that is clearly one of the reasons that climate change is increasing in intensity as a political issue.

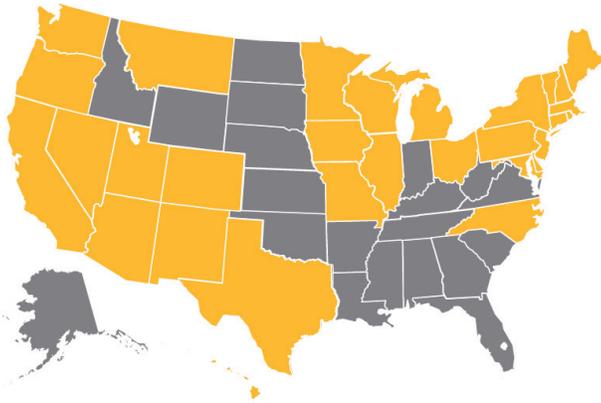
At right is the so-called “Green New Deal” legislation authored by U.S. Rep. Alexandria Ocasio-Cortez. The Green New Deal bill is stunning in terms of the goals it sets forth, including but not limited to:

- 100 percent of U.S. power through renewable, zero-emission energy sources;
- Upgrading all existing buildings in the U.S. to achieve maximum energy and water efficiency;
- Removing pollution and greenhouse gas emissions from agriculture and transportation;
- Massive growth in clean manufacturing.

Even if the Green New Deal never moves forward in Congress, it has already been influential in framing the debate about the environment during the 2020 presidential campaign.



STATES WITH RENEWABLE PORTFOLIO STANDARDS



State	RPS Requirement	Deadline	State	RPS requirement	Deadline
AZ	15%	2025	NC	12.5% **	2021
CA	100%	2045	NH	25.2%	2025
CO	30% **	2020	NJ	50%	2030
CT	48%	2030	NM	100% **	2045
DE	25%	2026	NV	50%	2030
HI	100%	2045	NY	50%	2030
IA	105 MW **	In effect now	OH	12.5%	2026
IL	25%	2026	OR	50%	2040
MA	15% *	2020	PA	18%	2021
MD	50%	2030	RI	38.5%	2035
ME	100%	2050	TX	10 GW	2025
MI	15%	2021	VT	75%	2032
MN	26.5% **	2025	WA	15%	2020
MO	15%	2021	WI	10%	In effect now
MT	15%	In effect now			

* Increases 1% per year after 2020. ** A lower RPS exists for cooperatives.

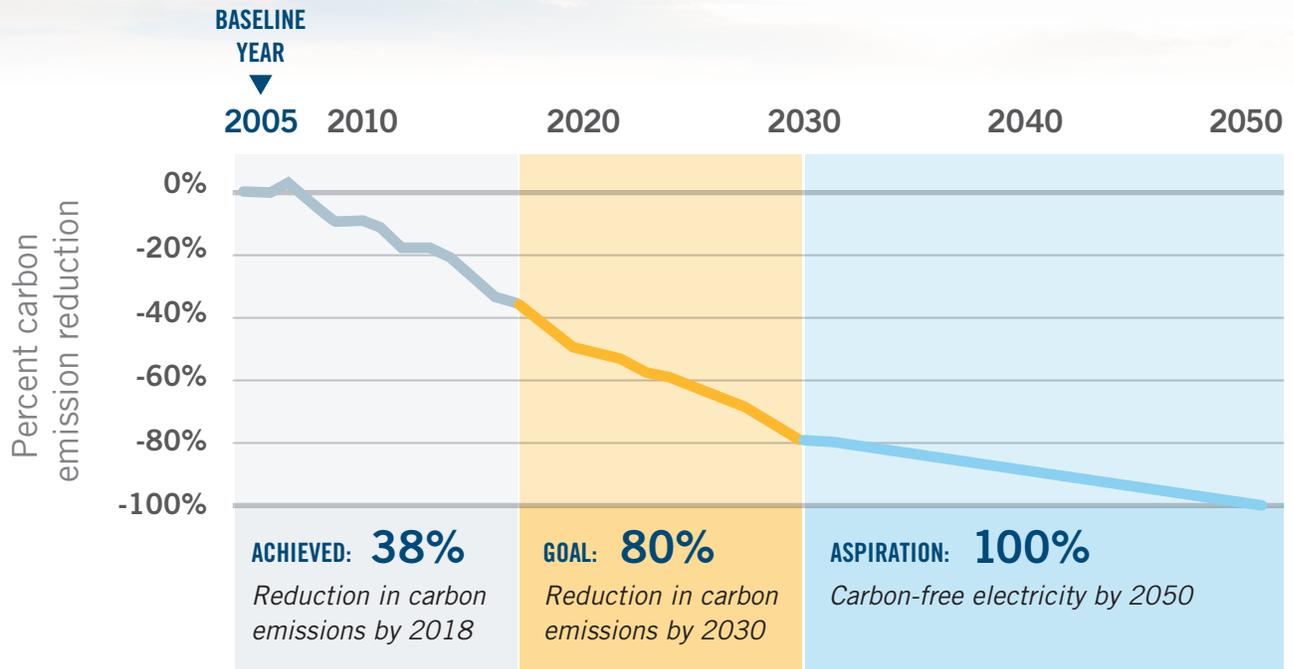
NO SECTOR OF THE RURAL ECONOMY deals with more environmental regulation than the power industry. Currently, 30 states have enacted binding renewable portfolio standards (RPS) requiring electric utilities to deliver a set percentage of their power using wind, solar and other renewable sources.

One thing that is striking is how divergent the RPS standards are. Several states have mandated that over half of their power must come from clean sources. In North Carolina, the requirement is just 12.5% by 2021. Some utility commissions (e.g. California and New York) have also established battery storage targets for utilities to promote renewable generation.

It's a safe bet that more states will adopt renewable portfolio standards over time and that targets in existing RPS states will be raised. California, which has 40 million people and is the world's fifth-largest economy, has set a target of having 100 percent of the state's electricity come from zero-emission sources by 2045.

Source: North Carolina Clean Energy Technology Center

XCEL ENERGY CARBON REDUCTION TRAJECTORY



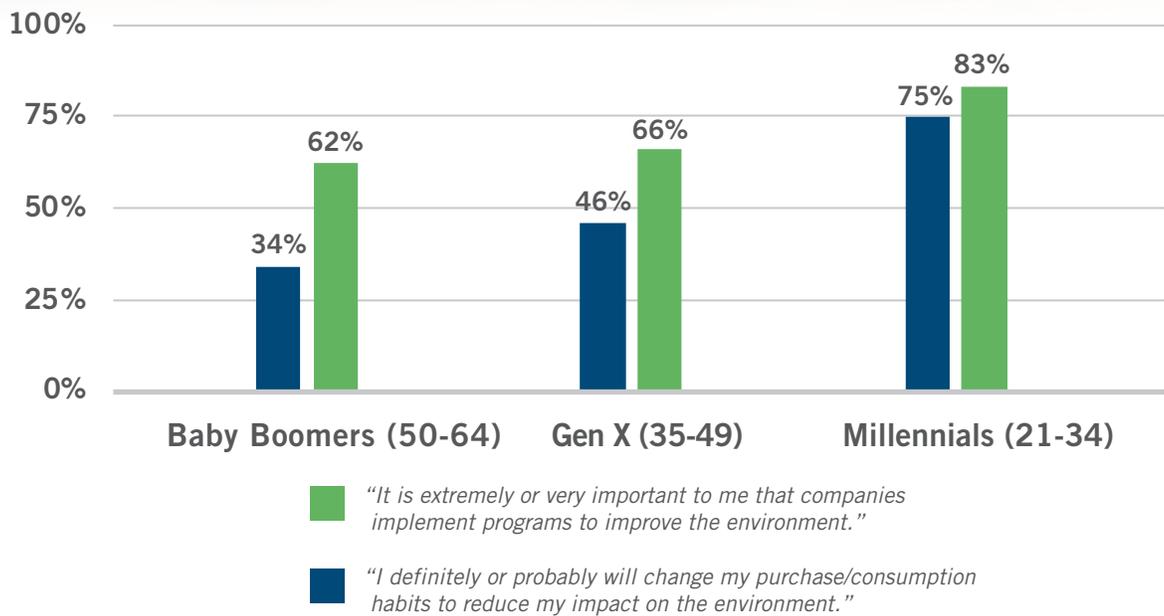
PRESSURE ON RURAL UTILITIES to boost environmental performance isn't just coming from policymakers and regulators; it's coming from industry peers as well.

Take Xcel Energy, one of the country's largest publicly owned power providers, with over 5 million customers in eight states. Xcel has publicly declared its electricity business will be 100 percent carbon free by 2050. By 2030, they've pledged to reduce their carbon footprint by 80 percent compared to 2005 levels.

Xcel's carbon report admits that they aren't sure how these goals are going to be achieved, but they are making the commitment anyway. Fairly or unfairly, initiatives like this are setting a new standard for the industry that policymakers and consumers are going to expect will be followed.

Source: Xcel Energy

ENVIRONMENTAL SUSTAINABILITY AS A PRIORITY FOR U.S. CONSUMERS

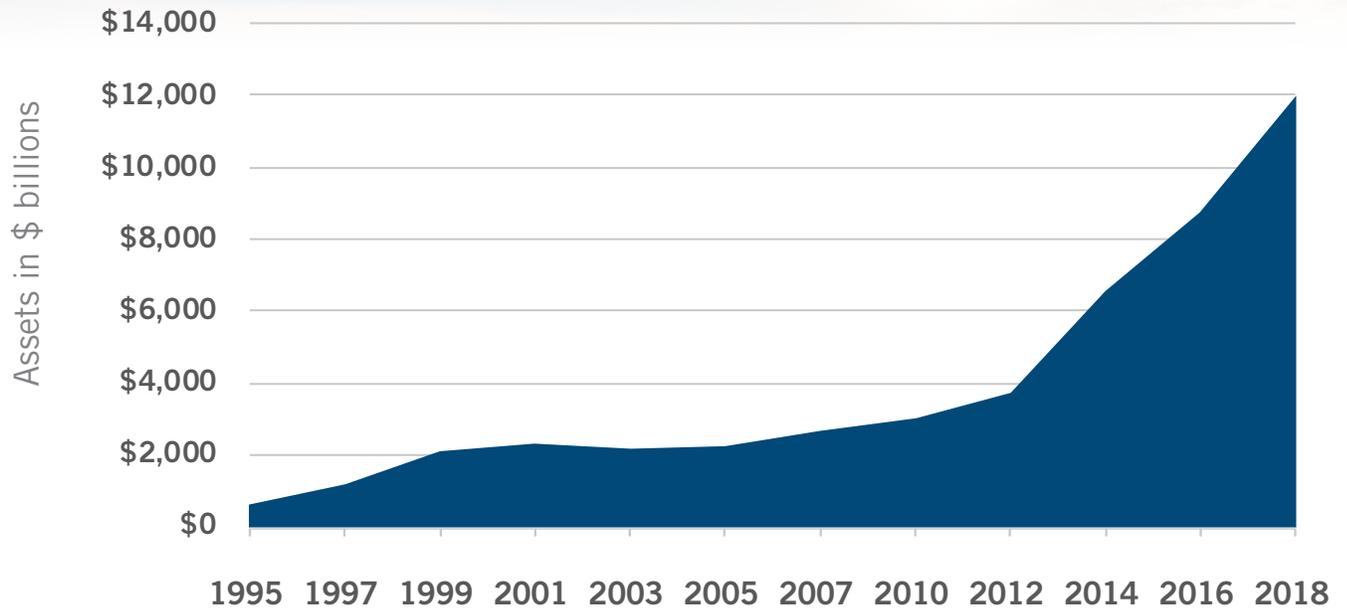


WE NATURALLY TEND TO THINK of environmental regulation as emanating from government. But nothing is a more powerful influence on a company than the preferences of its customers. As the chart above from Nielsen shows, a majority of U.S. consumers of all ages say it is important to them that companies have programs to improve the environment. Three quarters of millennials say they will change their purchasing and consumption habits to reduce their personal impact on the environment.

In the rural economy, this trend has big implications for branded food and beverage companies, utilities and other businesses with consumer franchises.

Source: Nielsen

SOCIALLY RESPONSIBLE INVESTING



SOCIALLY RESPONSIBLE INVESTING is another important source of pressure on industries to improve their environmental performance.

There is now close to \$12 trillion invested in assets deemed socially responsible by U.S. investors today, up from almost zero 25 years ago. That compares to a U.S. economy of \$20 trillion.

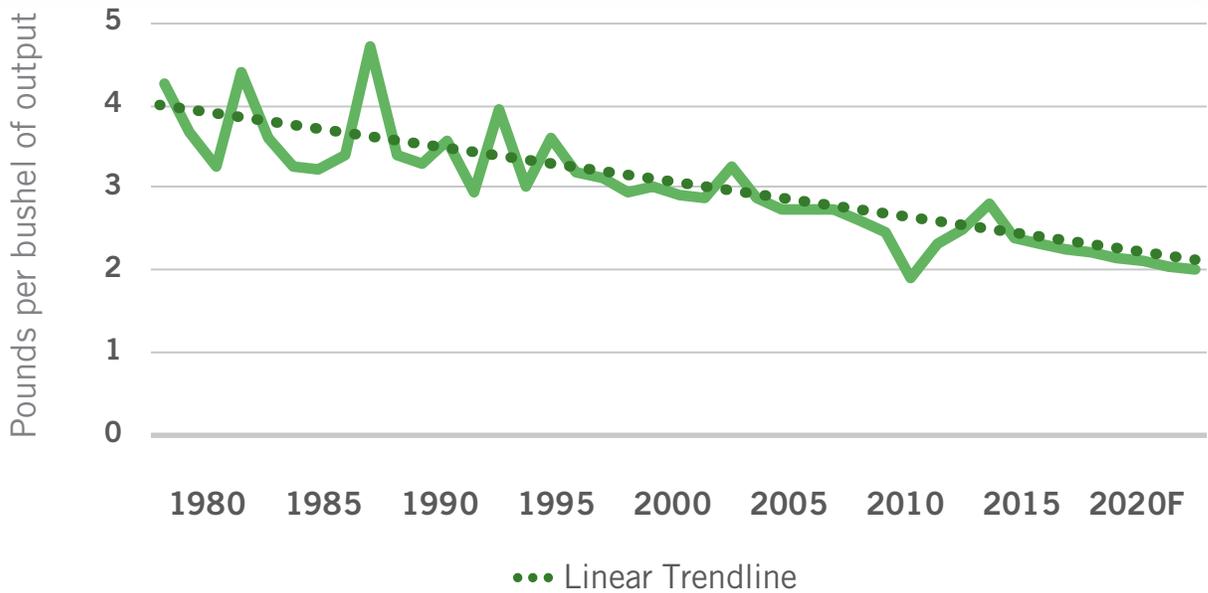
Investor surveys show that climate change is the No. 1 concern of investors deploying capital in this investment category.

Source: U.S. SIF Foundation

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COBANK
COOPERATIVE. CONNECTED. COMMITTED.

NUTRIENTS APPLIED TO U.S. ROW CROPS



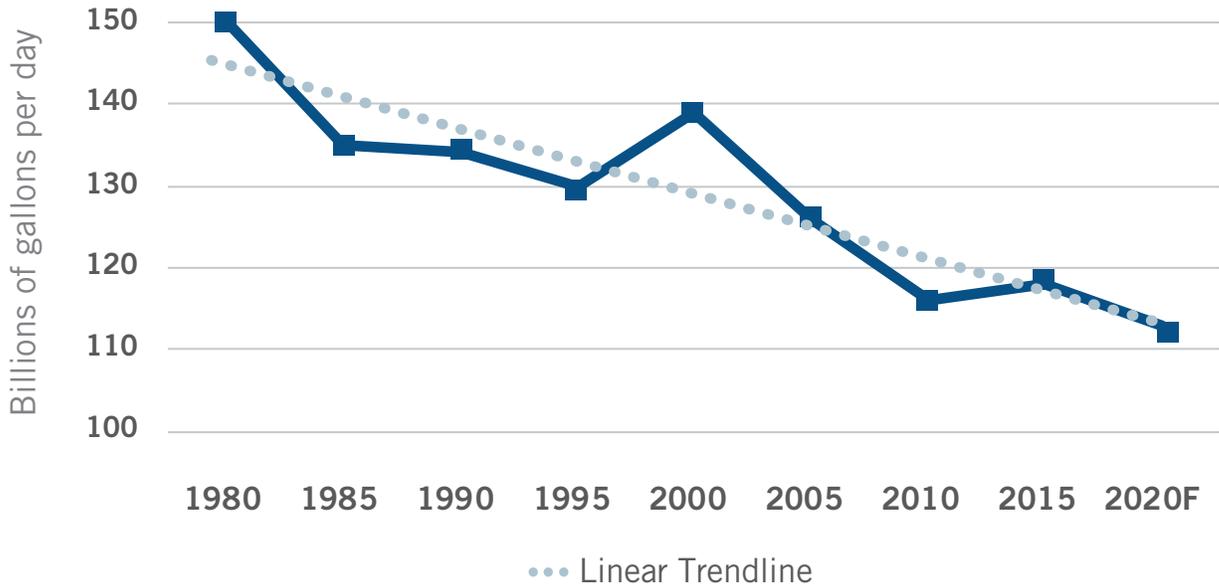
WHEN YOU ACTUALLY LOOK AT the environmental track record of production agriculture, electricity generation, water utilities, energy extraction, etc., it is clear that significant progress has been made in recent years to reduce their environmental impacts.

The chart above is a great example. It shows the level of crop nutrients applied to U.S. row crops on a per-bushel-of-output basis. This measure takes into account both the usage of fertilizer (which impacts the environment) as well as food supply and food cost (an important competing value).

American farmers today use about half as much fertilizer to produce a bushel of corn, wheat or soybeans as they did in 1980.

Sources: USDA; CoBank Knowledge Exchange

U.S. IRRIGATION WITHDRAWALS



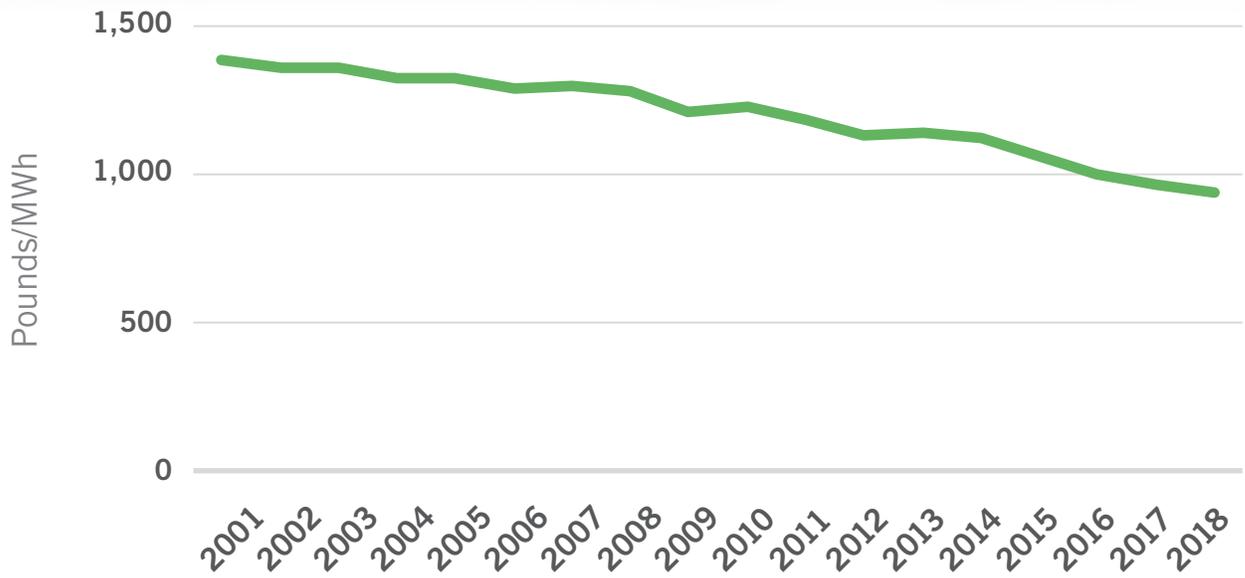
HERE IS ANOTHER COMPELLING CHART showing the improved environmental performance of U.S. agriculture.

Irrigation for farming accounts for over a third of all freshwater consumption in the U.S., and often puts farmers and ranchers in conflict with environmental advocates.

But technological innovation has enabled producers to cut absolute water usage by more than 20 percent over the last 30 years.

Sources: U.S. Geological Survey; CoBank Knowledge Exchange

U.S. POWER SECTOR CO₂ EMISSION INTENSITY

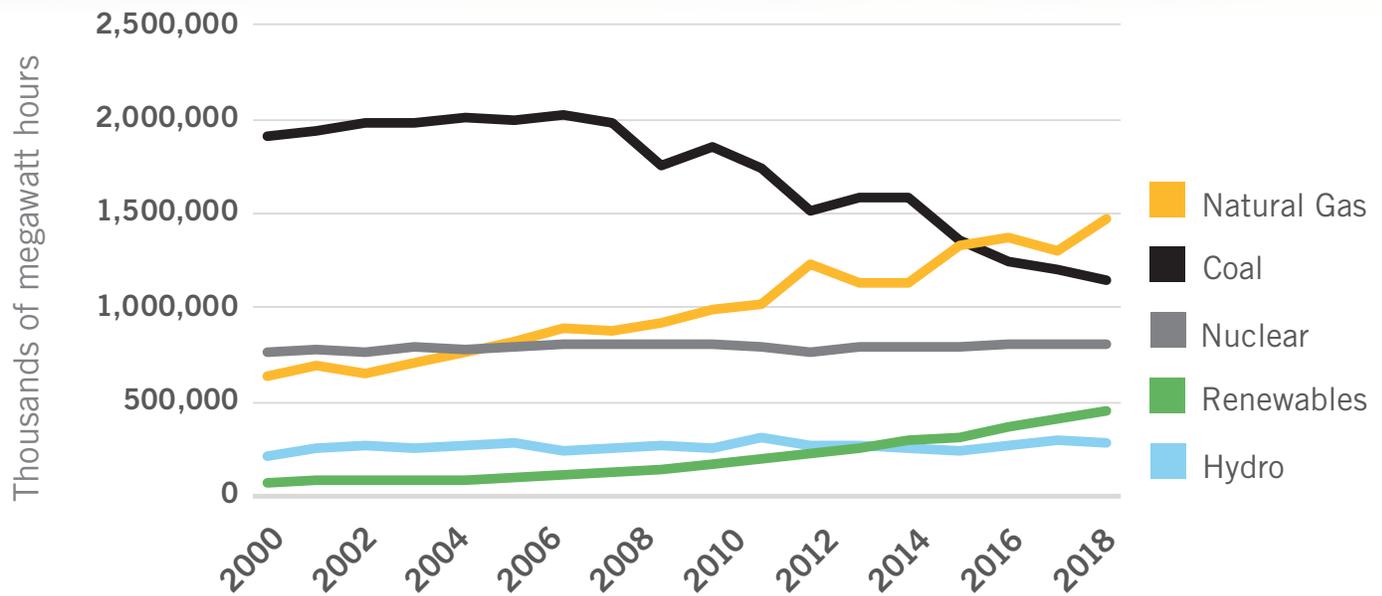


LIKE PRODUCTION AGRICULTURE, the U.S. electric power industry has made substantial strides in reducing its environmental footprint in recent years.

The above chart comes from Carnegie Mellon University and shows the evolving carbon intensity of the U.S. power industry over time. Since 2001 it has declined by more than 30 percent thanks to the combination of natural gas and renewables replacing coal in power generation, as well as cleaner output from continuing coal assets.

Source: Carnegie Mellon University

U.S. POWER GENERATION BY SOURCE

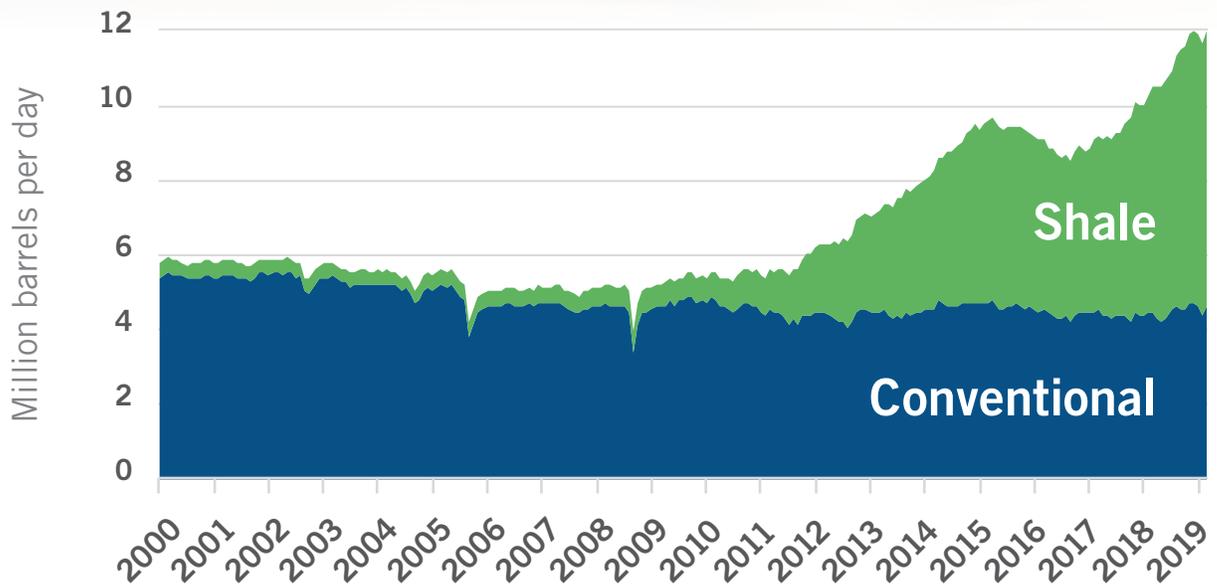


U.S. ELECTRIC UTILITIES have reduced their dependence on coal by an impressive 40 percent since 2001 – yet more evidence of the strong progress that industry in this country has made in improving environmental performance. The difference in generating capacity has been made up primarily from two alternative energy sources – renewables and natural gas, with natural gas being the far bigger contributor.

One of the key questions the industry will need to address is the future of natural gas-fired generation. Natural gas is cheap and abundant, and much less carbon intensive than coal. But it is responsible for greenhouse gas emissions. As a society, will we allow natural gas to have a long-term place in our power generation portfolio? Or will it only serve as a temporary bridge to power solutions that are truly carbon free, including renewables with energy storage? Competing values are involved here – energy reliability on one hand vs. environmental concerns on the other.

Sources: U.S. Energy Information Administration; CoBank Knowledge Exchange

U.S. DOMESTIC OIL PRODUCTION



THE OIL AND GAS INDUSTRY is an important component of the rural economy – and a frequent target of the environmental lobby.

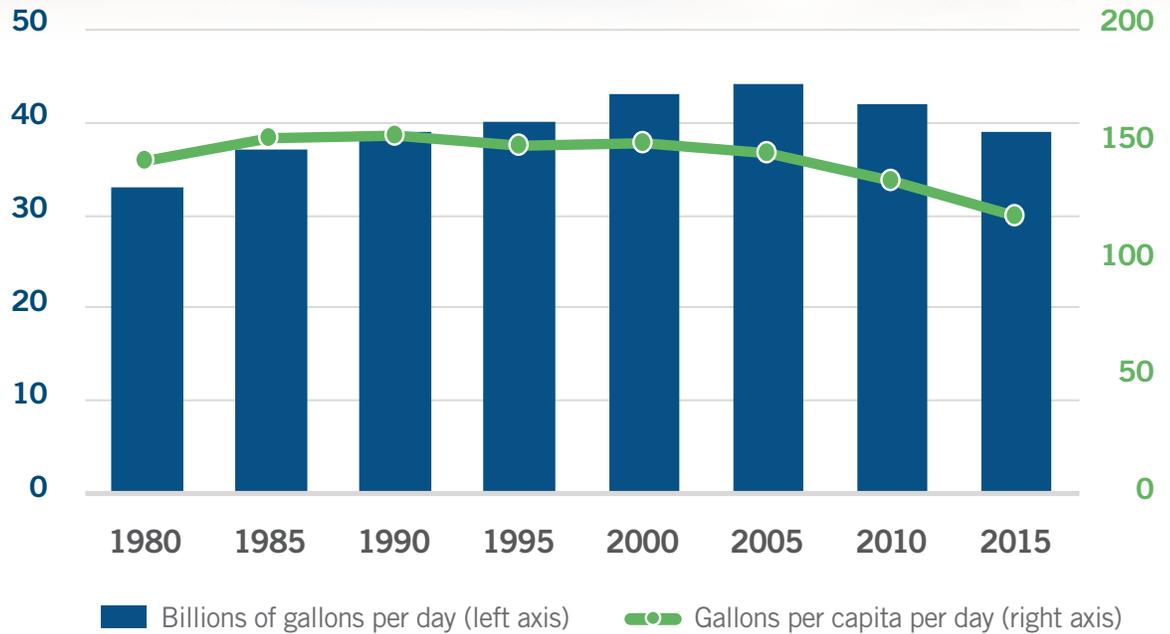
Hydraulic fracking involves a variety of environmental impacts, including groundwater pollution. But fracking is what has enabled us to move away from coal, and it has also significantly reduced U.S. dependence on foreign oil.

As the chart below shows, shale exploration now accounts for 60 percent of all domestic oil production in the U.S. Twenty years ago, over 90 percent of our domestic oil came from conventional drilling. Oil imports have declined by more than 10 percent over the same time period, even as the economy has gotten larger.

Policy discussions about climate change need to take these benefits and tradeoffs into account, rather than simply occurring in a vacuum around a single variable.

Source: U.S. Energy Information Administration; CoBank Knowledge Exchange

U.S. PUBLIC SUPPLY WATER WITHDRAWALS



THE RURAL WATER INDUSTRY has not been in the crosshairs of the environmental lobby nearly as much as power, energy exploration and agriculture. Still, it's reasonable to expect an increased level of scrutiny for the rural water sector going forward given the importance of water supply and water quality.

Per capita domestic water consumption has declined by about 15 percent over the past 30 years. A big portion of the credit for that decline goes to water utilities, who have helped drive public awareness of the importance of water conservation.

Source: U.S. Geological Survey; CoBank Knowledge Exchange

MOVING FORWARD

AS THE DATA AND ANALYSIS on the preceding pages show, it's unlikely that rural industries will be able to avoid addressing the issue of climate change altogether given its heightened status as a priority issue for a growing number of political, community and business stakeholders. For that reason, engagement rather than avoidance is likely to be the most successful approach over the long term.

This is easier said than done, of course, but I believe a combination of the following strategies offers the best opportunity for success going forward:

- **Planning:** If they are not already, boards and management teams at agricultural cooperatives, RECs, water companies and other rural enterprises should be actively thinking about where they have risk exposure to climate change and environmental regulation and proactively building a plan for the future.
- **Participating:** The political debate about climate change is being framed primarily in urban and suburban America. As always, rural America is at risk of being overlooked if it does not proactively participate in the dialogue around this topic. Rural industries need to be actively promoting the very real progress they are making in terms of environmental sustainability – and also emphasizing the important competing values that need to be taken into account when devising environmental policy (e.g. food and energy security).
- **Partnering:** The industries CoBank finances – agriculture, energy, water, communications – help to form the backbone of the rural economy in this country. And they have a lot of commonality in this area. They will increase their chances of successful outcomes by working together rather than staying inside their individual industry silos.

CoBank's mission is to serve as a dependable, knowledgeable financial partner for our customers. We are committed to playing that role for you as you navigate your way forward on this issue and position yourselves for continued success in the years ahead.

ABOUT TOM HALVERSON

TOM HALVERSON IS president and chief executive officer of CoBank, one of the nation's largest agricultural lenders.

As a member of the Farm Credit System, CoBank has \$136 billion in assets and provides loans and financial services to agribusiness borrowers in all 50 states. The bank also serves as a wholesale lender to 21 affiliated Farm Credit associations serving approximately 70,000 farmers and ranchers around the country. In addition, the bank has a substantial portfolio of loans to rural infrastructure providers in the power, water and communications industries.

Halverson was appointed CEO in January 2017 after serving as CoBank's chief banking officer for four years. Previously, he spent over 15 years with Goldman Sachs in a variety of executive positions in Europe, Asia and North America. Before that he worked at the European Bank for Reconstruction and Development, which was founded to help former Soviet bloc countries transition to free market economies.

Halverson holds a bachelor's degree from Wabash College and a doctorate in war studies from the University of London.

Follow Tom Halverson on LinkedIn at:

<https://www.linkedin.com/in/thomas-halverson/>