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A silicon wafer—the thin, circular foundation used to manufacture computer chips—undergoes the photolithography process at a semiconductor fabrication facility.

AI runs on chemistry — and America's competitiveness depends on both

By Chris Jahn

Artificial intelligence (AI) is often framed as a race defined by algorithms and computing power. But beneath every breakthrough, every data center, every semiconductor and every advanced system is something more fundamental: chemistry.

That reality should shape how we think about America's competitiveness in the age of AI. Because while the headlines focus on technology, leadership in AI will ultimately be decided by whether we can build and scale the physical infrastructure that makes it possible.

And that infrastructure runs on chemistry.

From advanced materials used in chips and circuit boards to cooling technologies, energy systems and the composites that enable high-performance electronics, chemistry is the engine behind AI. It allows systems to run faster, operate more efficiently and scale to meet growing demand. It's what enables the innovation pipeline that continues to push technological boundaries forward.

There is no AI leadership without materials leadership, and there is no materials leadership without chemistry.

The United States is well-positioned to lead in both. We have world-class companies, cutting-edge research institutions, an energy feedstock advantage and a highly skilled workforce. Our domestic chemical industry remains one of the most innovative and productive in the world, powering sectors across the economy.

If we want to lead globally, we need a policy framework that reflects the scale and urgency of this moment.

But we are not fully capitalizing on that advantage.

Around the world, foreign adversaries are moving with urgency to dominate supply chains, accelerate infrastructure development and create predictable environments for investment. They understand that speed, certainty and scale will determine who leads in this next phase of global competition.

In too many cases, the United States does not offer the same clarity.

For industries like chemistry — where projects take years to plan and decades to operate — uncertainty is not just a challenge; it's a deterrent. When regulatory processes become unpredictable or timelines stretch, investment doesn't wait. It moves. And when it moves, so does the foundation of emerging technologies like AI.

That has real consequences for American competitiveness.

If we want to lead globally, we need a policy framework that reflects the scale and urgency of this moment.

That starts with a system that is science-based, predictable and efficient. It means ensuring new materials and technologies can be reviewed in a timely way. It means modernizing permitting so critical projects can move forward with greater certainty. And it means aligning policy with the reality that building AI infrastructure requires sustained, large-scale investment.

This is not about weakening standards. Strong protections for health and the environment must remain fundamental. But strength and effectiveness are not at odds with speed and clarity; they depend on it.

When the system works, we don't have to choose between growth and stewardship. We can achieve both. And in doing so, we create the conditions for innovation to thrive.

AI will shape the next era of economic growth and global leadership. The question is not whether demand will grow; it will. The question is whether the United States will be the place where the underlying infrastructure is built, scaled and sustained.

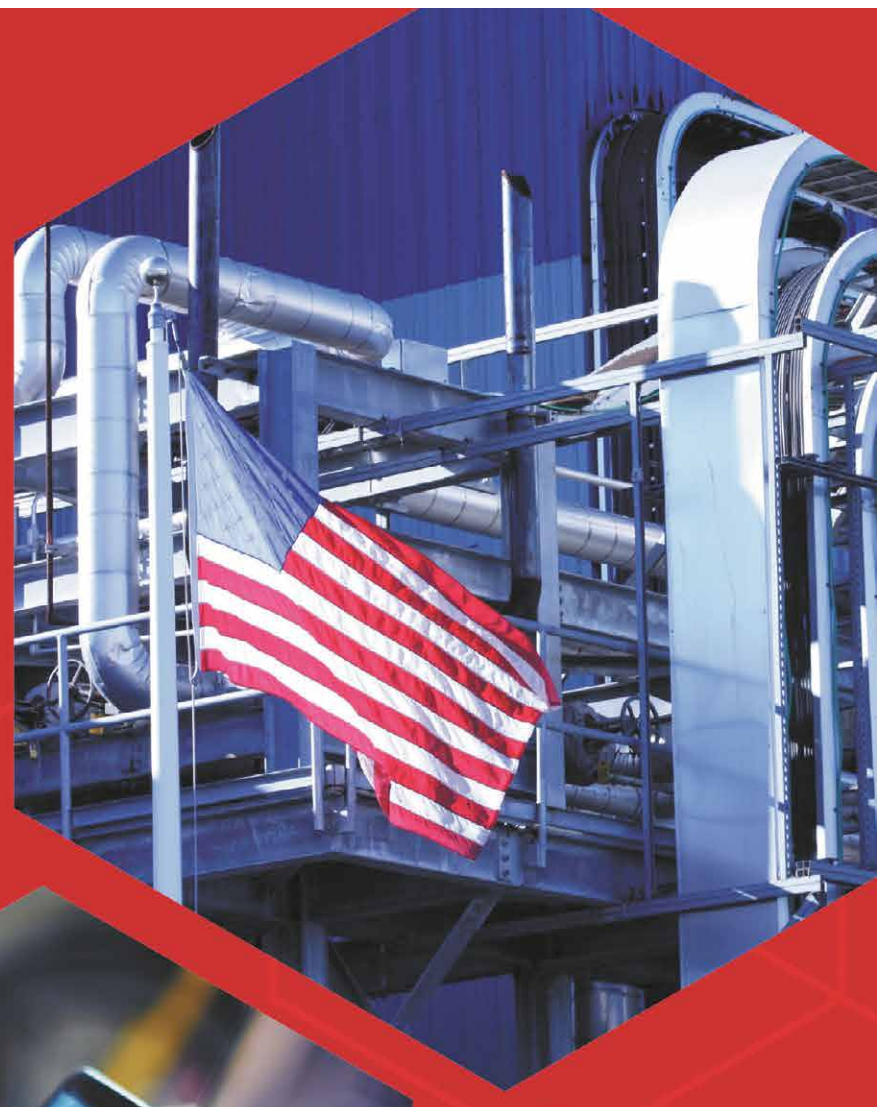
That outcome is not guaranteed. It is a choice.

For America to dominate the AI frontier we must recognize that leadership starts earlier in the value chain — with the materials, systems and policies that make innovation possible.

America's AI future will be written in code, but it will be built with chemistry.

Chris Jahn is the President and CEO of the American Chemistry Council.

AI Runs on Chemistry



America's leadership depends on our ability to build and scale at home.

Chemistry enables the advanced materials, energy, and technologies that power AI, strengthen supply chains, and support modern manufacturing.

But policy uncertainty and delays put that advantage at risk.

Advance smart policy.

Unlock chemistry.

Power AI.

Strengthen U.S. competitiveness.

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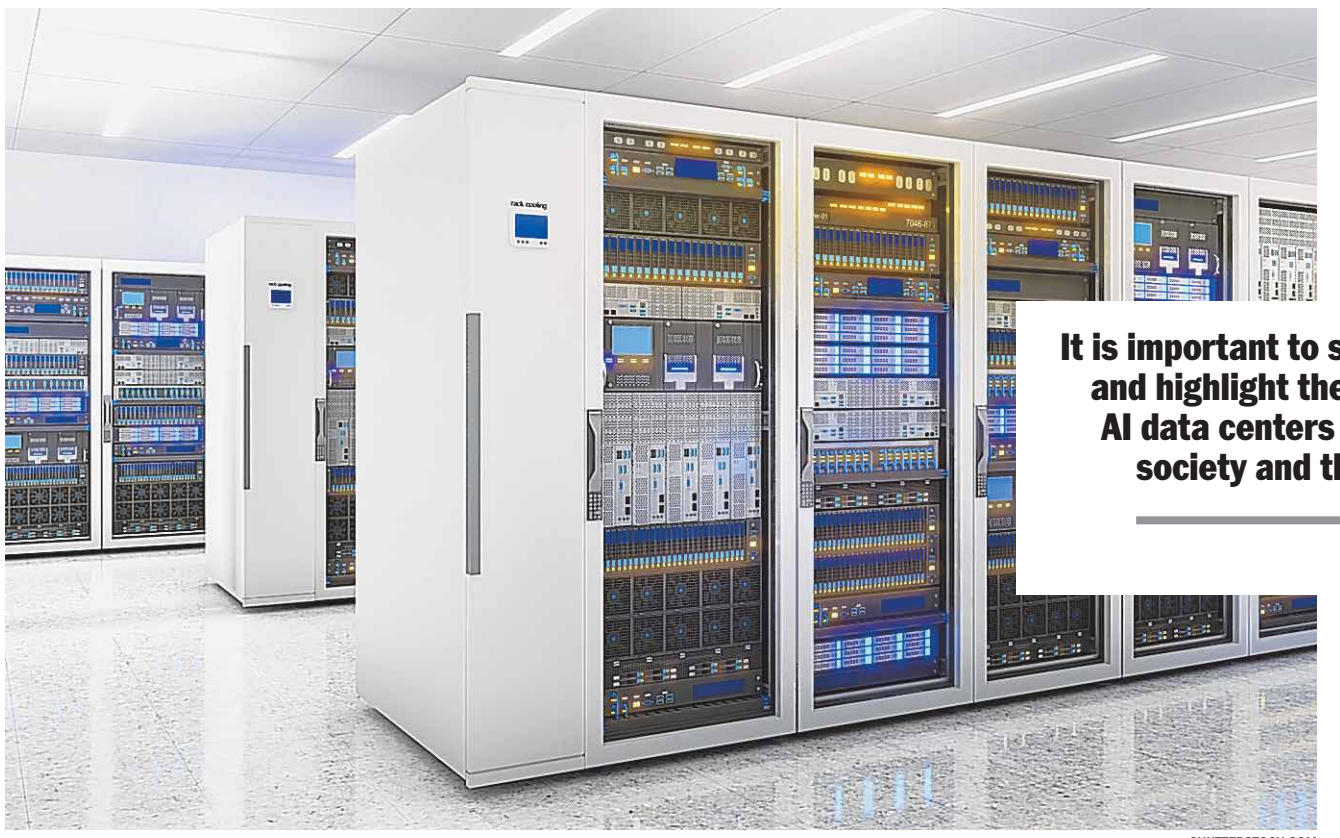
AI ON THE HILL

Innovating With Purpose

The truth about AI data centers

By Timothy J. Walsh, Assistant Secretary, DOE Office of Environmental Management



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Artificial intelligence (AI) data centers are central to today's technological progress. As companies and governments turn to AI for solutions in healthcare, science and engineering, data centers are expanding rapidly. This growth has raised questions about environmental impacts, particularly water consumption and energy demand. It is important to separate fact from fiction and highlight the positive contributions AI data centers make to communities, society and the American people.

One of the most common misconceptions is that AI data centers use enormous amounts of water. In reality, many modern facilities rely on closed-loop cooling systems, which drastically reduce water consumption. Unlike traditional evaporative cooling — which continually uses and releases water — closed-loop systems recirculate the same water through sealed pipes and heat exchangers.

This design minimizes overall usage and often puts AI data centers among the most water-efficient facilities. Closed-loop systems also operate independently of drought conditions or water restrictions, reducing strain on local supplies and supporting responsible resource management.

Another frequent concern is the potential strain data centers place on local power grids. In response, developers have adopted President Donald Trump's historic Rate Payer Protection Pledge: a commitment to fund new power generation and transmission upgrades themselves. This ensures that electrical infrastructure improvements do not fall on local residents or businesses.

By investing directly in grid expansions, data center companies help ensure reliable power for the entire community. This pledge reflects a broader philosophy of partnership: data centers bring jobs, tax revenue and economic activity while also taking responsibility for their own energy needs.

Real-world examples illustrate how these commitments translate into community benefits.

In Pike County, Ohio, Department of Energy (DOE) land is being revitalized through a combination of Japanese-financed power generation — thanks to President Trump's trade deal with Japan — and privately funded grid improvements. These investments support construction of state-of-the-art AI data centers without burdening local rate payers. The results include lower power bills, a more reliable grid, higher local tax revenue and thousands of high-paying jobs.

In Indiana, a major AI data center funded new transmission lines and substations. These upgrades enhanced grid resilience and lowered electricity costs for nearby communities by improving efficiency and reducing outage risk.

In Georgia, developers paid for expansions to local power generation. These privately funded upgrades boosted grid capacity and reliability, making electricity more affordable for residents.

These examples show that when data centers pay for electrical infrastructure, they not only support their own operations, but also improve quality of life for surrounding communities.

While infrastructure benefits are substantial, the greatest value of AI data centers lies in the breakthroughs they enable. AI accelerates progress in healthcare by helping researchers analyze vast datasets, identify treatment pathways, and develop therapies faster than traditional methods. Hospitals use AI-powered tools to support diagnostics and personalize patient care.

AI also transforms scientific and engineering fields by enabling researchers to model complex systems, simulate experiments and address challenges in areas such as energy resilience, genomics, and advanced materials. AI data centers deliver the computational power that drives these advances, supporting innovations that improve safety, productivity and scientific understanding. At DOE, we have already seen the how AI can deliver real results for taxpayers by analyzing decades of data to accelerate legacy nuclear cleanup missions, saving taxpayer dollars and delivering results for communities that have supported America's nuclear security for decades.

It is important to separate fact from fiction and highlight the positive contributions AI data centers make to communities, society and the American people.

AI data centers are far more efficient and responsible than often portrayed. With closed loop cooling systems, they minimize water usage and set a high standard for sustainability. Through President Trump's Rate Payer Protection Pledge, developers privately fund necessary energy infrastructure, shielding hardworking Americans from rising costs.

Examples from Indiana, Georgia, and Ohio show that data centers can lower energy bills, strengthen local grids, and deliver significant economic benefits. Beyond infrastructure, AI data centers enable critical advancements in medicine, science, and engineering — advances that improve lives and expand opportunities.

As AI continues to evolve, data centers will remain essential partners in building a more capable, prosperous, and innovative future.

We must seize this moment and ensure America leads the AI revolution.

Timothy J. Walsh serves as Assistant Secretary for the Office of Environmental Management at the U.S. Department of Energy, providing strategic leadership for the safe and effective remediation of environmental legacies stemming from eight decades of nuclear weapons development and government-sponsored nuclear energy research.

Put AI to work for American farmers

By U.S. Sen. Ted Budd, R-N.C.

America's farmers are facing a labor and financial crisis that artificial intelligence could help solve.

For many producers, in addition to challenges like market volatility and weather, securing enough labor at a sustainable cost to keep operations running is a primary issue. Across rural America, roughly 1.9 million farms are confronting rising labor costs and persistent workforce shortages, placing a real strain on livelihoods and raising broader concerns about the resilience of America's food supply.

As the frontier of artificial intelligence reshapes the American economy, physically demanding and repetitive jobs have become increasingly difficult to fill across nearly every sector. This is exactly why many industries, including healthcare, construction and manufacturing, have increasingly turned to AI-driven systems to streamline operations and augment human labor, shifting their workforce toward more high-value, skilled and sustainable roles.

The reality is, we are living through another technological revolution. The Industrial Revolution mechanized production. The Internet revolutionized communication and commerce. In each case, new technologies disrupted existing systems before businesses adapted, evolved and ultimately became more productive.

Rural America, however, has too often been left behind. Not because of a lack of willingness to innovate, but because they often lack the capital and technical resources needed to adopt new technologies at scale.

That innovation gap carries real consequences.

When technological progress outpaces access, rural America is left to pay the price. Right now, farmers and ranchers are facing persistent labor shortages, rising input costs and shrinking margins while being asked to produce more with fewer workers. In one of the more labor-intensive industries in the country, especially for specialty crop farmers, this is simply not a sustainable model.

Artificial intelligence offers an opportunity to change course. The question is no longer whether AI belongs in agriculture, but whether we will equip American farmers to use it before they fall even further behind.

To remain competitive, we must reduce the barriers to entry that prevent agricultural producers from accessing the tools they need to close labor gaps and improve productivity. That means expanding access to infrastructure, strengthening workforce development in rural areas and ensuring that producers have the capital and technical support needed to adopt new systems at scale.

Given that agriculture is North Carolina's largest industry, this issue hits close to home. I have had countless conversations with farmers across the state, and one theme has emerged consistently: our agricultural industry is eager to innovate but too often lacks the tools and resources to do so. That is why I am proud to be championing provisions from my FARM AI Act in this year's Farm Bill, which will designate artificial intelligence workforce training and precision agriculture as priority research areas under the USDA's Agriculture and Food Research Initiative. By expanding research into implementing artificial intelligence and driving workforce development, we can help ensure farmers have access to the new technologies and skills they need to remain productive, competitive and resilient.

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To be clear, the role of implementing these technologies is not to replace farmers or our rural workforce, but to extend their capacity and increase their production.

Already, AI-powered agricultural technologies are demonstrating what the future of farming can look like. Precision agriculture systems can optimize irrigation, using real-time weather and soil data, reducing waste and improving yields. Machine learning models can detect crop diseases earlier than the human eye, enabling faster intervention and reduced losses. Automation and robotics can assist with repetitive, labor-intensive tasks such as planting, harvesting and sorting, allowing farmers and laborers to focus their time on the work that adds the greatest value.

While many large-scale operations have begun adopting these technologies, it is important that smaller family farms are not left behind. They are the backbone of rural communities and the foundation of our agricultural economy, yet they often face the greatest challenges to adopting new technologies. If we want family farms to remain viable for generations to come, we must ensure they have the tools, training and resources to embrace the next generation of agricultural innovation before they are competed out of the market.

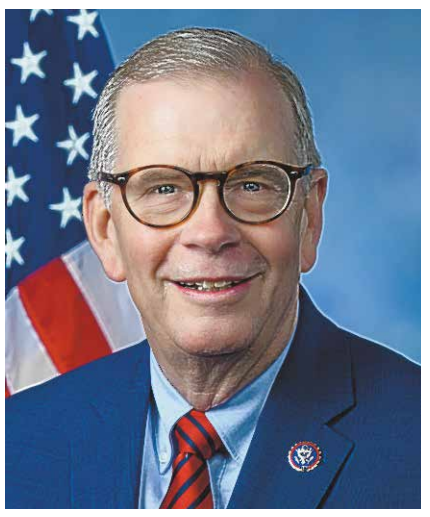
The fact is, AI is actively reshaping how American industries operate. The choice ahead is whether we will ensure that America's agricultural producers have access to AI tools that enable them to evolve with modern technology and remain competitive in the global marketplace.

Sen. Ted Budd represents North Carolina in the U.S. Senate, elected in 2022 after serving three terms in the U.S. House of Representatives. A small-business owner and entrepreneur by trade, Budd brings private-sector experience to his work in Congress. He serves on the Senate Armed Services Committee; the Senate Select Committee on Intelligence; the Senate Commerce, Science, and Transportation Committee; the Senate Small Business and Entrepreneurship Committee; and the Joint Economic Committee, focusing on national security, economic growth, and support for American industry.

AI ON THE HILL

Innovating With Purpose

Teaching, training, transforming: AI's role in America's future



By U.S. Rep. Tim Walberg, R-Mich.

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Artificial intelligence (AI) is changing how Americans learn and work. From classrooms to job sites, AI tools are becoming more powerful and common in our daily lives, redefining how we educate our nation's students and how Americans build careers.

As Chairman of the Education and Workforce Committee, I was honored to recently host the student regional winners of the Presidential AI Challenge on Capitol Hill and see how young innovators are using AI to improve their communities, help their neighbors and improve learning experiences.

Seeing their work was a powerful reminder that AI is not a distant challenge. AI is already changing classrooms and workplaces across the country.

We must ensure that students are prepared, workers can adapt and employers have the talent they need, all while addressing potential risks like job displacement and weakened academic standards. To better understand how AI is currently being used, and how it could be used more effectively in education and workforce systems, the committee has held a series of hearings on "Building an AI-Ready America." These hearings have brought together a diverse group of witnesses, including state education leaders, industry heads from OpenAI and Microsoft, education technology innovators and workforce development experts to discuss how AI is reshaping K-12 education, higher education and the American workforce.

In education, AI is already helping teachers spend less time on paperwork, personalize learning for students' unique needs, and provide real-time feedback. Simply put, teachers get to spend more time doing what they love: teaching. These tools can help students build a strong foundation so they can succeed even after the classroom.

At the same time, schools must navigate challenges such as maintaining academic integrity and preventing overreliance to ensure that AI complements, rather than displaces, the human elements of teaching and learning.

For workers, AI can help build new skills, increase efficiency and expedite learning on the job. These developments can contribute to long-term productivity gains and create new opportunities for workers to advance in their careers. Ensuring that workers have access to training, upskilling, and pathways to emerging fields will be essential.

As AI reshapes job requirements, many existing workforce programs, especially those designed for a different era, face pressure to keep pace. Strengthening skills-based education, supporting employer-driven training and improving the alignment between training providers and industry needs will be essential to preparing Americans for the jobs of tomorrow.

We also need better information about what's happening in the job market. Our current workforce data struggles to capture how AI is already changing the way work is being done. This is a concern we've heard from job creators, and workers feel that uncertainty as well. An effective response to AI-driven shifts will require a clearer picture of which skills employers need, how jobs are changing, and where new gaps are emerging.

Last month, the Committee advanced my legislation, AI Workforce Assessment and Research Enhancement Act, or AWARE Act for short, to close this critical data gap. This legislation will provide the clarity necessary to support workers, guide training, and ensure the United States stays at the forefront of technological innovation.

AI is not a distant challenge. AI is already changing classrooms and workplaces across the country.

AI should strengthen, not destabilize, our education and workforce systems, and many educators and employers are already showing how that can be done responsibly. We have an opportunity to help America lead by preparing students for the jobs of tomorrow, encouraging innovation, and making sure AI expands opportunity rather than limits it.

If we get this right, AI won't just change the future—it will create more opportunity for more Americans.

Rep. Tim Walberg, the Dean of Michigan's Congressional delegation, is currently serving his ninth term in Congress as the representative of southern Michigan. He chairs the Education and Workforce Committee and is a member of the Natural Resources Committee.

Reining in the censorship industrial complex in the age of AI

By U.S. Rep. Harriet Hageman, R-Wyo.

Americans emerged from the COVID years rightfully suspicious of a federal censorship regime determined to police American speech. As a member of the House task force assigned to investigate the weaponization of the federal government, I learned just how deep the dystopian censorship regime will go to manipulate the digital public square. The unprecedented size and scope of potential censorship in the AI era is why I introduced the Preventing AI Censorship Act to reinforce Americans' First Amendment freedoms under pressure.

In February 2024, our subcommittee released an interim report exposing how taxpayer dollars at the National Science Foundation (NSF) are funding the development of new AI tools to censor online speech "at scale." University and non-profit research teams received multi-million-dollar grants to design, "AI-powered censorship and propaganda tools that can be used by governments and Big Tech to shape public opinion by restricting certain viewpoints or promoting others."

Worse, records show federal bureaucrats funneling tax dollars to such projects "reveal a years-long, intentional effort by NSF to hide its role in funding these censorship and propaganda tools from media and political scrutiny."

Our subcommittee published a follow-up report in December 2024 warning about "Censorship's Next Frontier." While Americans are forced to fund the creation of a powerful AI censorship regime, the federal government seeks to control AI itself as a form of mass censorship. The previous administration "regulated new AI models directly and indirectly, pressuring private companies to 'advance equity,' stop 'algorithmic discrimination' and 'mitigate the production of harmful and biased outputs.'"

"AI companies," the report adds, "raced to comply with the government's directives, even allowing the government to inspect new AI models before they are released to the public."

In other words, the government exploited American tax dollars to design and deploy powerful new AI tools to censor speech on an unprecedented scale. The First Amendment, however, does not have an AI exemption. Congress must be proactive to ensure Americans' right to free speech remains protected in a digital era radically transformed by the advent of AI.

The Preventing AI Censorship Act, is a first step towards safeguarding one of America's first liberties guaranteed in our binding Constitution. This bill builds on the First Amendment Accountability Act, another piece of legislation I introduced which allows Americans to sue federal employees who infringe on free speech. The Preventing AI Censorship Act similarly empowers citizens to sue bureaucrats who violate speech rights but use AI to do so.

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The adoption of AI in courtrooms also warrants heightened attention from Congress to safeguard Americans' civil liberties. As an attorney for over three decades, I know our justice system demands precision and security. Congress must protect the integrity of our courts with vigorous oversight that remains up to date with emerging technologies. I therefore introduced the Research and Oversight of Artificial Intelligence (AI) in Courts Act of 2026 to assess civil liberty implications, privacy issues and concerns over the accuracy of AI technology in federal courts.

Artificial intelligence is on the cusp of transforming everything, but we cannot allow the AI revolution to transform the Constitution into a mere suggestion. I am, however, still optimistic about AI's potential for humanity despite these concerns about use in courts and censorship. The AI boom may prove as transformative as the first wave of the industrial revolution, accelerating miracle advancements in medicine, engineering and manufacturing. The rapid innovation in technology has ignited a similarly rapid increase in demand for affordable, reliable energy. Wyoming's abundant coal, oil, gas and uranium reserves hold the keys to unlocking the full potential of this digital future. I believe the wise embrace of AI will continue to steer America to rely on Wyoming energy and minerals to pioneer the 21st-century digital frontier as the nation's number one producer of coal and uranium.

Congress must be proactive to ensure Americans' right to free speech remains protected in a digital era radically transformed by the advent of AI.

Rep. Harriet Hageman serves as the U.S. Representative for Wyoming's at-large congressional district. She serves on the House Natural Resources committee where she is Chair of the Subcommittee on Water, Wildlife, and Fisheries. She also serves on the Judiciary Committee and Subcommittee on the Constitution and Limited Government and the Subcommittee on the Administrative State, Regulatory Reform, and Antitrust.

AI ON THE HILL

Innovating With Purpose

Smart use of AI can improve American healthcare

By U.S. Rep. Morgan Griffith, R-Va.

Revolutionary ideas and technologies continue to fuel success stories in health care.

As a senior member of the House Committee on Energy and Commerce, and Chairman of the Health Subcommittee, I regularly hear perspectives on medical advances that bring newfound hope to patients, families and communities.

Telehealth is one such technological breakthrough. By saving patients time, money and peace of mind, many Americans enjoy more convenient and accessible care.

While the demand for health care convenience and access soars, so too does the demand for new cures and treatments.

The Health Subcommittee has championed policies to help create new classes of treatments for rare diseases.

The Mikaela Naylon Give Kids a Chance Act which became law in February strengthens federal efforts to review and approve therapies for rare diseases like pediatric cancer.

The ACT for ALS Reauthorization Act of 2026 which I reported out of the Health Subcommittee directs millions of dollars to research for ALS and other neurodegenerative diseases.

Congressional actions like these, among others, to support American patients are meaningful steps to strengthen the future of the American health care landscape.

What else bears fruit for our medical future?

I believe much of our health care success will hinge on the blossoming potential of artificial intelligence (AI) and machine learning (ML).

This Congress, I led a Health Subcommittee hearing to explore ways our American health care system can keep pace with the speed of science through applications of AI and ML.

AI presents new opportunities to detect disease sooner, deploy improved medical guidance and deliver more precise care to patients. The sooner that the patient receives care, the lesser the risk of severe illness or death that the patient faces.

Not only does this approach prevent delays in care; it also helps prevent future cost increases that impact patients, government programs and health care providers.

In addition to benefitting our health care system, a boost in early detection efforts will ease the burdens on health care providers!

Additional resources are made available, thanks to AI advances.

Medical device companies analyze how their products can better administer care. Insurance companies process claims to help patients access more timely care. Doctors and health care professionals streamline operations to complete required medical paperwork at a faster clip.

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A balanced embrace of AI applications can lower health care costs, save finite taxpayer dollars and provide breakthrough treatments to American patients.

The recently passed Virginia State budget reflects the building momentum for AI in health care. The legislative blueprint directs the Department of Medical Assistance Services (DMAS) to strengthen call center operations through the application of AI technologies.

Even with the potential to achieve an abundance of favorable health outcomes through AI, we must be cautious about the current challenges facing AI application.

AI is not perfect. A blanketed embrace of AI technologies without appropriate guardrails would be irresponsible policy and grounded in fantasy.

What reality shows is unlocking AI's full potential in health care requires human supervision. We need responsible administration and active oversight of AI tools, while also placing an emphasis on safety. A human component working with these technologies ensures safer success and allows the patient-physician relationship to truly thrive.

Where patients rely on AI chatbots for mental health resources, a medical professional should review the conversations.

Where a patient request for treatment is denied coverage, a human must oversee that decision.

Congress has a moral obligation to ensure these AI tools are used to assist — not replace — the clinical workforce of today.

Therefore, a balanced embrace of AI applications can lower health care costs, save finite taxpayer dollars and provide breakthrough treatments to American patients.

Taken together, AI promises a new wave of success stories. Human judgment will preserve these stories for generations to come.

As the representative for Virginia's Ninth Congressional District, Rep. Morgan Griffith serves as chairman of the Subcommittee on Health for the House Committee on Energy and Commerce.