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Navigating the world of PFAS developments

Higher standards in oil and gas industry anticipated to reduce methane emissions

MDU Resources celebrates 100 years of operations

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DEL Communications Inc.

MESSAGE FROM THE PRESIDENT OF THE MONTANA PETROLEUM ASSOCIATION

Dave Linn

OIL AND NATURAL GAS jobs and companies are a vital part of our Montana economy. The taxes and salaries of our businesses and employees significantly contribute to our schools and local governments. Our products and services are used by virtually everyone and are essential to all aspects of our modern life.

Today, we are an industry on the forefront of an idealistic battle for change toward a new renewable and carbon-free energy world. For an engineer/project manager like me, it is easy to recognize that the goals and timelines for this change are best driven by technology, well-vetted plans, and the free market, not by politically driven government mandates.

Building reliable infrastructure requires significant funding sources, exhaustive planning, and lots of time. Reducing jobs in the energy sector will negatively affect our communities and consumer opinions about our products and industry.

Making a transition away from oil and natural gas could take a generation or more. You do not have to travel far nationally or internationally to observe that we are a long way from being ready for this change. A transition will not be felt or appreciated if globally others are not, will not, or cannot follow suit.

For those of us working for an operating oil and gas company, it seems that every week there is new legislation or regulations being proposed with hard-hitting impacts to our industry and our sustainability. My favorite saying lately has been, "The good news today is that there isn't any bad news… yet."

A perfect relatable example is the recent Montana court ruling regarding the Child Climate lawsuit. Until settled, rulings like this open the doors for litigation based on subjective interpretation of existing environmental laws that our own legislature and state have in place. Rarely are old laws revised if the new interpretation is contrary to existing policy. Meanwhile, for our industry, it's business as usual as we are required to keep our operations and companies going and the critical products flowing to customers while these legal battles slowly move through the courts.

My biggest concern related to this onslaught of regulatory uncertainty is the negative effect it is having on future investment in our industry. Oil and gas projects require large amounts of capital investment. Without capital investment or reinvestment into drilling, pipelines, and our existing equipment, our industry, revenues, and jobs start to dwindle.

As advocates for the oil and natural gas industry in Montana, it is critical that we be proactive in supporting candidates that, based on their record and values, will stand with and not against us. Voting records matter more than words. If you do not think elections and policy matter, you do not have to look far to see the impacts that previous legislation has had on the logging, mining, and coal industries. Jobs can disappear quickly, with associated impacts hitting our communities and state revenues.

Post-COVID inflation has hit everyone hard. Energy costs are a big part of every family's, farm's, and business's budget. Oil and gas play a key role in keeping our home heating affordable and our daily commutes and travels reasonable. Fuel is directly related to the cost to produce our food and the cost of freight and refrigeration to get it to us. Starting a conversation about the importance of keeping energy prices affordable should appeal to a broad audience, both now and well into the future.

For me, we need to ensure our domestic oil and gas industry is not put to death by an ambush of permitting requirements and rules while we're being taxed to subsidize alternative and competitive ideas and industries through public funds.

The reliability and practicality of electric vehicles is now starting to be more honestly discussed. Ultimately, the consumer voting on which products to spend their dollars on should be the primary decision maker in which products are available, not the government.

As we all know, 2024 is already shaping up to be a wild and historic election year. Now more than ever, it is time for us all in the Montana oil and gas community to be heard. MPA is a great resource for us to leverage our common voices. If you know of a company or business that is not a member, ask them to attend an event or to consider joining. Then, make a commitment to be a vocal advocate for your company and our industry. Start a conversation with your friends, family, and community about voting and actively supporting candidates who will support a sustainable energy transition that includes oil and gas. We cannot afford to be silent any longer if we want a future in which we continue to provide cost-effective energy that supports our everyday Montana life. ■

MESSAGE FROM THE OUTGOING EXECUTIVE DIRECTOR OF THE MONTANA PETROLEUM ASSOCIATION

Alan Olson

THE MONTANA PETROLEUM ASSOCIATION has been and continues to be the voice of the oil and gas industry in Montana. Since its organization following the breakup of the Rocky Mountain Oil and Gas Association almost 25 years ago, the MPA has represented oil and gas interests at the local, state, and federal level on issues regarding oil and gas exploration, production, transportation, and refining with a staff of two people. Needless to say, there are very few boring days in the MPA office. I'm not saying Bobbie and I were totally alone in these endeavors; the help offered and given by many MPA members and friends was greatly appreciated.

I came in as executive director a little over eight years ago on February 16, 2016. Having worked in the industry since 1977, I brought some practical field experience with me. Working on energy and natural resource issues while serving 12 years in the Montana Legislature gave me additional experience in the policy arena. When I was offered the chance to follow Dave Galt as executive director of the MPA, I realized I had some big shoes to fill but was ready for the challenge.

The last eight years have flown by. I have made several great friends and acquaintances – people I will always remember. There have been many good days, successes, and victories but also a few losses and even fewer bad days. The relationships I have made in that time have made me a better person. I have always believed and continue to believe the opposition is not your enemy – they just have a different point of view, and my job was to try and teach them ours.

This will be the last time I write anything as the executive director for this awesome organization. My last day at the MPA was May 31, 2024. It is hard to leave here. It is hard to leave Bobbie Gardiner, who is the one who actually runs this outfit. She has been a rock, but she also had a sharp stick to keep me pointed in the right direction.

I have no doubts the MPA will continue to be the voice of the oil and gas industry. We have a great interim executive director coming in with retreaded tires good for another 100,000 miles. Dave Galt will temporarily lead the organization until a new permanent executive director can be found. Dave did an excellent job before and I'm thankful he has agreed to come back as a bridge to the future.

As I start a new endeavor as director of Montana government affairs for NorthWestern Energy, I truly wish the best to all of you. Thank you for a fantastic eight years at the MPA! ■

MESSAGE FROM THE INTERIM EXECUTIVE DIRECTOR OF THE MONTANA PETROLEUM ASSOCIATION

David A. Galt

I BELIEVE IT WAS Arnold Schwarzenegger in the first *Terminator* movie that made the phrase, "I'll be back" famous. I am positive I didn't say that when I left MPA in 2016, yet here I am! Being back into this position over the last month has been nothing less than intimidating when one looks at the onslaught of federal regulations being hastily passed by the Biden administration. Methane rules will dramatically increase costs for all producers and may be the demise of many of Montana's marginal wells. This will have a huge impact on Montana communities. Recent rule changes of the Bureau of Land Management (BLM) are just as egregious. Past changes in things like allowing leases for buffalo are curious. New BLM policies that will allow a "conservation" to compete with oil, gas, mining, and grazing leases adds a whole new aspect to management of huge swaths of federal lands in Montana. Other than the initial lease payment, I see a huge potential change in recent income from activities on federal lands. If this actually comes to pass, I see a significant impact on Montana's revenue, quality of life, and harm to rural communities.

I have always enjoyed most of my time at MPA. The highlight for me was getting to know so many hardworking people. Getting to know the MPA members is and was an absolute delight. Your dedication to making your business successful, developing your employee base, and making Montana a better place motivates me to do my best to avoid and/or minimize the impact of the regulatory regime.

Doing my job depends significantly on the political environment at the national level and here in Montana. From the President of the United States to your local commissioners, it is important to get to know what your candidates believe in and how they look at your businesses. Clearly, those at the federal level have a much less than stellar view of the oil and gas business. I am always here to offer my opinion and help direct your actions and resources in a manner that strengthens the political climate for our livelihood and the communities that we support.

I look forward to working with you over the next year to address issues and help you find the right person to lead MPA in the future. What a great organization! ■

Keep moving. *If you stop, you die.*

BORN AT CHICO HOT Springs Hospital in 1946, Dexter Busby was among few babies born at that hospital before it became a resort in 1949.

"There were a few of us born there, very few of us, actually… not many of us are still around," Dexter said.

Born to Leslie and Benna Busby, Dexter earned his hardy work ethic by growing up on a small family ranch near Pray, about three miles from Chico Hot Springs. They primarily raised cattle and sheep.

Dexter was always a good student; his mind was drawn to technical subjects, such as math, chemistry, and physics. He graduated from Park County High School and began his studies in chemical engineering at Montana State University (MSU) in Bozeman in 1964.

He earned two scholarships in chemical engineering and juggled as many as two to three jobs at any one time to pay for tuition, rent, and food while attending college, plus summer work.

One summer, Dexter worked at the United States Forest Service in the Shields Valley as a jack of all trades.

"Like Smokey the Bear, we snuffed out campfires at state campgrounds. We also did campground maintenance, fence repair, and timber stand improvements," he said.

He also labored a summer in Wyoming at the Green River Soda Ash Mine and Plant.

"At 19, one can handle a job like that. You just need big arms and a shovel," Dexter said.

He spent the following summer in Missoula as an engineering intern at the Smufitt-Stone pulp mill.

"I spent the summer of my senior year as a technician at the College of Engineering in Bozeman while also bartending at Chico Hot Springs," Dexter said. "Back then, I made a buck an hour, plus maybe $12 to $15 in tips per day. But it was a different time. Gas was only .26 cents a gallon and rent was $35 a month. Tuition was $119 a quarter."

While attending school, Dexter filled in his nights and weekends with farm and ranch work. He also served as a teacher's assistant in chemistry labs and managed MSU's cattle barns for a year, which mostly involved cleaning or organizing.

"In other words, I shoveled a lot of sh**," he joked.

During school, he also bartended at various Bozeman establishments and served as a night watchman at Chico Hot Springs and various other businesses. His job was to stay awake at night and respond to hassles.

"Sometimes, you'd have big groups of kids staying there without much parental supervision," Dexter said.

Dexter graduated with a Bachelor of Science degree in Chemical Engineering and got married six months later in 1969.

He took his degree to Great Falls and worked at the Anaconda Mining Company's Zinc Plant as a hydrometallurgist, a term that rolls off Dexter's tongue without pause.

"They owned the largest zinc plant in the world and were the

biggest industrial employer in Montana. Big operations… it was the Anaconda Mining Company that built the pit," Dexter said. "They had a copper smelter in Anaconda, that big zinc plant in Great Falls, and a big copper refinery in Great Falls. They also had a large aluminum plant in Columbia Falls and a large sawmill located in Bonner. The Anaconda Mining Company even had their own railroad: the Butte Anaconda Pacific. It was a short line that served Great Falls and ran between Butte and Anaconda. It tied into the Northern Pacific, Union Pacific, and Great Northern railways."

At the Anaconda Mining Company, Dexter was placed on the management track as a management and engineering trainee. The hours were 7:00 a.m. to 5:00 p.m. with a half hour lunch. The job ended when the zinc plant ceased operations in 1972. From there, Dexter walked across the street and took an engineering position at the Phillips Petroleum Refinery in Great Falls.

"It was a totally different style of operation," Dexter said. "I was hired as the assistant stock department superintendent and lab manager. We were in charge of loading, shipping, blending, and quality control. We were also in charge of the wastewater treatment plant. Water quality was the major environmental focus at that time; air quality did not really enter the picture until the 1980s."

After three years, Dexter accepted a transfer and became an economic analyst for the vice president at corporate headquarters located in Bartlesville, Oklahoma.

"Back in the day, Bartlesville was one horse town, with nearly 10,000 Phillips employees," Dexter said.

His employer had six refineries in the U.S. and one in India. He analyzed profit opportunities at those six refineries and examined capital budgets to make sure they were complete, properly organized, and ready for presentation before seeking investment capital from corporate management.

"They called us 'energy economists' because we looked at all sorts of things to improve the profitability of those facilities and recommend prudent, strategic investments at those facilities," Dexter said.

The company transferred Dexter to Kansas City to improve the productivity of that plant. After a year, he was hired as an area operations superintendent by the Sinclair Oil Company in Sinclair, Wyoming. He stayed in that role for about a year and was then asked to take over the construction of a half-built alkylation plant.

"Not an easy feat," Dexter said. "Those parts and times of my life were a bit hectic; we had two young kids and two unhealthy, aged parents at the time."

Once the alkylation plant surpassed a year of successful operation, Dexter was asked to return to Great Falls to become superintendent of the stocks department. Four years later, air quality became a federal issue and Dexter became superintendent of the environmental health department to help keep the refinery operating within the law.

He also operated a 50-year-old, 92-mile crude oil pipeline that ran from Cut Bank to Great Falls. The pipeline was a shoddily built, World War II project that carried 4,500 barrels per day. By the early 1990s, with the addition of new pump stations and engineering controls, it moved 8,000 barrels per day. After Cenex installed its new pipeline from Cut Bank to Laurel, Dexter managed the construction of a short line to the Cenex pump station, which allowed for the decommissioning of the World War II pipeline.

In 1989, Dexter added state lobbying to his portfolio of tasks.

"The lobbying crew in Helena was so helpful when I first started. Fellow lobbyists helped me out a lot. J.D. Lynch was a storyteller from way back, and you could learn a lot from him, Jimmy Keane, and the rest of the Butte delegation," he said.

Federal lobbying was added to Dexter's plate in 2005. By 2012, Dexter became director of state and federal government relations for Calumet.

"As I think about my life, I have one clear motto," Dexter said. "Keep moving. If you stop, you die."

He is still moving and shaking, and in more ways than one. Dexter currently serves on the Cascade County planning board, and he is a member of the Cascade County zoning board. He is also a trustee for the University of Providence in Great Falls. In his spare time, Dexter enjoys fishing, boating, yard work, making upgrades to 20-acres of the original Busby homestead near Pray, and overseeing a small apartment building in Billings. He also takes time for occasional travel, including recent trips to Scotland and Ireland. ■

MONTANA Petroleum Association

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Navigating the PFAS seas: Charting your course amidst the recent wave of PFAS regulations

By Kyle McDonald, CES, Project Scientist, Trihydro Corporation, and
Fritz Krembs, P.E., P.G., Engineering Specialist, Trihydro Corporation

FOR THOSE NAVIGATING THE sea of per- and polyfluoroalkyl substances (PFAS) developments, it may seem like the wave has finally crashed. In recent months, the United States Environmental Protection Agency (USEPA) released a series of significant announcements with wide-ranging implications, including finalizing highly anticipated maximum contaminant levels (MCLs) and hazardous substance designations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; also known as Superfund). Alongside these major rulings, the USEPA has issued additional guidance and policies to clarify their implementation. In this article, we dive into the murky depths to help readers stay afloat amid these recent federal developments.

Anchoring regulations: Finalization of MCLs for PFAS compounds

On April 26, 2024, the USEPA published final PFAS MCLs in the Federal Register, making the rule effective on June 25, 2024. This significant Safe Drinking Water Act (SDWA) development concerns the National Primary Drinking Water Regulation (NPDWR) for six PFAS compounds: PFOA, PFOS, PFNA, HFPO-DA, PFHxS, and PFBS. The final rule aims to place further controls on PFAS as outlined in the USEPA's PFAS Action Plan and Strategic Roadmap, which together aim to better prevent and manage human health and the environment.

The NPDWR includes legally enforceable MCLs and non-enforceable MCL Goals (MCLGs). MCLs set the maximum allowable concentration of a contaminant in public drinking water systems, and MCLGs represent the level at which there is no known or expected risk to human health. While MCLGs are generally set to lower, more stringent levels, MCLs are intended to consider logistical challenges, such as the types and costs of available treatment technologies and analytical detection limits. Promulgated MCLs require public drinking water systems to complete initial monitoring for these PFAS compounds by 2027 and to implement processes to prevent these contaminants from exceeding the MCLs by 2029. Noncompliance can lead to USEPA enforcement actions.

USEPA has set final individual MCLs for five PFAS compounds: PFOA and PFOS at four parts per trillion (ppt) each and PFHxS, PFNA, and HFPO-DA (commonly referred to as Gen-X) at 10 ppt each. Additionally, the MCLs include a Hazard Index (HI) approach to regulate cumulative exposures. This approach requires calculating a Hazard Quotient (HQ) for four

co-occurring PFAS (PFNA, PFHxS, PFBS, and HFPO-DA), with the HI being the sum of HQs for the four constituents. If the cumulative HI equals or exceeds one, MCL compliance conditions are violated, necessitating corrective actions. Notably, PFBS is included only in the mixture HI approach and does not have an individual MCL.

This final ruling marks a significant regulatory development, originating from USEPA's examination of potentially regulating certain PFAS chemicals over two decades ago. Federal health-based standards for PFAS have been a moving target over the past 15 years, fluctuating from sub-parts per billion levels (2009 non-enforceable health advisory levels) down to the parts per quadrillion level (2022 interim updated health advisory level). Stakeholders and state agencies have awaited these criteria, which provide standards for PFAS, though USEPA periodically reviews NPDWRs and may adjust MCLs based on new scientific evidence.

A 2023 US Geological Survey (USGS) study estimates that at least 45 percent of the country's tap water may have detectable PFAS and data from the ongoing Fifth Unregulated Contaminant Monitoring Rule (UCMR5) indicate that 10 percent of the responding public water systems (PWSs) have reported concentrations of PFAS exceeding the newly regulated MCLs. The UCMR5 program requires sampling for 29 PFAS compounds in PWS's across the country with final results expected by 2026. Compliance costs are also anticipated to be substantial with a 2023 American Water Works Association (AWWA) study estimating costs to exceed $3.8 billion annually to treat PFOA and PFOS to four ppt, which is refuted by USEPA in the final ruling as "substantially overestimated."

Casting a wide net: Implications of PFAS designations under CERCLA

Shortly after the issuance of final MCLs, on May 8, 2024, USEPA designated PFOA and PFOS (and their salts and structural isomers), as hazardous substances under CERCLA, effective July 8, 2024. This ruling has broad implications for release notifications, transportation manifesting, and reporting under other regulations like the Clean Water Act and the Toxics Release Inventory. The designation aims to hold "significant polluters" accountable and increase transparency about these compounds' release.

CERCLA grants USEPA authority to require potentially responsible parties (PRPs) to investigate and clean up contaminated sites and to pursue cost recovery and contributions under joint and several liability. In the past, these compounds required USEPA and other authorized agencies to prove "imminent and substantial" danger to public health or the environment before responding to releases. The finalization of this designation eliminates that requirement for PFOA and PFOS, enabling response to a broader range of releases. The designation of a hazardous substances does not, in and of itself, require further investigation or clean up, but the rule is expected to impact existing and closed CERCLA sites via the five-year review process, with the possibility of re-opening formerly closed CERCLA sites and delays for sites nearing closure. Many states adopt CERLCA hazardous substances into their own cleanup statutes, potentially mandating state-level remediation of PFOA and PFOS. While the USEPA's CERCLA listing is separate from the drinking water standards codified with drinking water MCLs, the CERLCA ruling states that the MCLs may be applicable or relevant and appropriate requirements (ARARs) for clean up at contaminated sites.

The designation includes mandatory reporting of releases over the reportable quantity (RQ) of one pound or more over

24 hours to the National Response Center. It also affects real estate transactions and mergers by resuming the suspended rulemaking of the Standards and Practices for All Appropriate Inquiries regulations and requiring covenant warranties for federal property transactions.

The USEPA's PFAS Enforcement Discretion and Settlement Policy, released alongside the CERCLA designations, aims to hold "major PRPs" accountable while exempting "passive receivers" where equitable factors do not support seeking response action or costs. This includes various entities such as community water systems, publicly owned treatment works, municipal facilities, and farmland owners who've applied PFAS-laden biosolids. The enforcement discretion may be extended to additional entities based on factors like governmental status, public service role, involvement in PFAS activities, and manufacturing or industrial use of PFAS. Importantly, the policy is just that – a policy – and it does not hold equivalent weight of a codified regulation allowing for future deviations. Additionally, the USEPA's enforcement policy holds no bearing on preventing private party torts, litigation, or cost recovery actions under the new CERCLA ruling.

EPA has stated that the CERCLA ruling does not evaluate costs when designating hazardous substances. However, direct and indirect costs resulting from enforcement of the CERCLA ruling were included in the final regulation. USEPA estimates that nationwide notification of PFOA and PFOS releases may cost $2,658 per release ($1.63 million annually) and indirect costs for response at non-National Priorities List (NPL) sites may range between $327,000 to $18.1 million per year. This is in stark contrast to estimates provided by the US Chamber of Commerce that private sector CERCLA liabilities may cost between $700 to $800 million per year, and could exceed $17 billion in total.

The CERCLA listing does not classify PFOA or PFOS as hazardous constituents or hazardous wastes under the Resource Conservation and Recovery Act (RCRA), but mandates hazardous materials classification of the two chemicals for the purpose of transportation under the U.S. Department of Transportation (USDOT). In response to petitions by the University of California Berkeley, the Public Employees for Environmental Responsibility (PEER), and the governor of New Mexico, RCRA hazardous constituent listings for PFOA, PFOS, and seven additional PFAS compounds were proposed by USEPA on February 8, 2024.

The potential listing of a compound as

Table 1: Final and proposed PFAS compounds under SDWA, CERCLA, and RCRA.

PFAS Abbreviation	Target PFAS Name	SDWA MCLs	CERCLA HSs	RCRA HCs
PFOA	Perfluorooctanoic acid	4 ppt	Final	Proposed
PFOS	Perfluorooctanesulfonic acid	4 ppt	Final	Proposed
PFHxS	Perfluorohexanesulfonic acid	10 ppt, HI=1	Proposed	Proposed
PFNA	Perfluorononanoic acid	10 ppt, HI=1	Proposed	Proposed
HFPO-DA	Hexafluoropropylene oxide dimer acid	10 ppt, HI=1	Proposed	Proposed
PFBS	Perfluorobutanesulfonic acid	HI=1	Proposed	Proposed
PFDA	Perfluorodecanoic acid	--	Proposed	Proposed
PFBA	Perfluorobutanoic acid	--	Proposed	Proposed
PFHxA	Perfluorohexanoic acid	--	Proposed	Proposed

Notes:
PFAS = per- and polyfluoroalkyl substance
SDWA = Safe Drinking Water Act
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
RCRA = Resource Conservation and Recovery Act
ppt = parts per trillion
MCL = Maximum Contaminant Level
HS = Hazardous Substance
HC = Hazardous Constitute

a RCRA hazardous constituent does not by itself immediately impose regulatory requirements; however, RCRA hazardous constituents are cited by reference in several sections of federal hazardous waste regulations. If finalized, a primary near-term impact of the hazardous constituent rule would involve consideration for further investigation and cleanup at more than 1,700 RCRA hazardous waste treatment, storage, and disposal facilities (TSDF) with solid waste management units (SWMUs) currently being addressed under the RCRA corrective action program. Further, the listing as a hazardous constituent sets the stage for potential longer-term reclassification of select PFAS compounds as a hazardous waste, a designation with significant implications across various sectors. The process of reclassification to a hazardous waste requires USEPA to consider several factors specified under 40 CFR 261.11(a)(3), including whether the hazardous constituent represents a substantial hazard if improperly managed. The timing of these subsequent steps remains uncertain and are dependent upon finalization of the currently proposed hazardous constituent rule.

Sailing in a fog: No lifeline in USEPA's destruction and disposal guidance

While the MCL and CERCLA rulings have garnered well-deserved attention, another significant development was recently released by USEPA. On April 8, 2024, the USEPA updated its Interim PFAS Destruction and Disposal Guidance. This update builds on the original December 2020 guidance by incorporating recent treatment efficacy data, addressing public comments, and outlining persisting data gaps. In the document, USEPA prioritizes ongoing research to achieve efficient PFAS destruction and minimize environmental release.

Despite over three years of additional data, a definitive solution for PFAS waste management remains elusive. The 2024 Guidance evaluates three existing technologies (incineration, landfilling, and deep-well injection) and suggests interim storage with controls may be warranted for site-specific considerations rather than use of any of these three existing technologies. It also introduces information on four promising – but not yet commercially available – emerging destructive technologies (mechanochemical degradation, electrochemical oxidation, gasification and pyrolysis, and supercritical water oxidation).

While the 2024 Guidance does not endorse any specific approach, it does outline a methodical process for assessing dispos-

al and destruction options by providing a framework for case-by-case technology evaluation, considering efficacy, available analytical methods, field screening, and impacts on vulnerable communities. The USEPA emphasizes selecting technologies that minimize risk to human health and the environment. Additionally, by identifying key data gaps, USEPA sets the stage for future research, essential given the anticipated volume of PFAS-contaminated waste needing management.

Scanning the open seas: The broader PFAS perspective

There are other state and federal regulatory initiatives making headway beyond those already discussed. For example, in January of this year, the USEPA released three analytical methods to better measure PFAS in environmental samples. Perhaps the most significant is the finalization of Method 1633 for PFAS analysis in non-drinking water samples. Method 1633 is applicable for wastewater, groundwater, surface water, biosolids, soils, and other matrices and will be the go-to method for most compliance sampling purposes. In tandem with Method 1633, USEPA finalized Method 1621 for adsorbable organic fluorine (AOF) in aqueous matrices allowing for broad screening of thousands of PFAS compounds. Additionally, draft Method OTM-50 for analysis of PFAS in air from stationary sources was released in January, marking a significant step towards regulating PFAS in air emissions and better understanding incomplete combustion byproducts from thermal destruction technologies.

Furthermore, in November 2023, USEPA incorporated a new Toxic Substance Control Act (TSCA) provision requiring commercial entities that have manufactured or imported chemical substances and mixtures that contain PFAS compounds, including as byproducts or impurities, to submit one-time reports of their products retroactive to 2011. The TSCA reporting requirement is intended to characterize sources, quantities, and types of PFAS compounds used in the country and represents a significant regulatory obligation to the business community, including many entities previously unaffected by TSCA regulations. The reporting window opens in November 2024 and closes in May 2025.

The landscape of PFAS regulations continues to evolve at a rapid pace and staying ahead of the curve can be a daunting task. Being proactive in assessing how these final and pending regulations may impact your organization could mean the difference between seamless compliance and facing significant regulatory penalties. ■

EPA targets oilfield methane emissions


Davis M. Connelley


Kurt W. Shanahan

By Davis M. Connelley and
Kurt W. Shanahan, Crowley Fleck, PLLP

ON MARCH 8, 2024, the Environmental Protection Agency ("EPA") finalized its much anticipated and hotly debated final rule implementing higher standards requiring the oil and gas industry to reduce methane emissions. Officially titled "Standards of Performance for New, Reconstructed and Modified Sources and Emission Guidelines for Existing Source: Oil and Natural Gas Sector Climate Review," the purpose of the rule is to reduce the emission of methane and volatile organic compounds ("VOCs") by the oil and gas industry, curtailing emissions from the production, processing, transmission, and storage of natural gas. EPA estimates that the rule will eliminate 58 million tons of methane and 16 million tons of VOCs emissions between 2024 through 2038. The rule broadly defines "covered sources," regulating onshore well sites, storage tank batteries, gathering and boosting compressor stations, natural gas processing plants, and compressor stations. The rule is two-fold: (1) it sets new emissions standards for new, modified, or reconstructed sources, and (2) requires states to create implementation plans covering existing sources. Though the vast breadth of the rule makes a brief summary difficult, this article will summarize the primary anticipated impacts on the State of Montana and its oil industry.

The rule will impact Montana's oil and gas industry in several ways. It will significantly increase operating costs, during both the construction of new wells and ongoing monitoring, potentially driving many small operators out of business. It will require significant regulatory resources, first to fashion the state implementation plan required by the rule, as well as the certification and regulation of new inspectors. The rule's burden will be acutely felt in a production state like Montana, while the reduction in emissions will result in modest but broad overall positive environmental impacts.

The rule covers any source constructed, modified, or reconstructed after December 6, 2022. Sources include well sites, centralized production facilities, and compressor stations, as well as pumps and storage vessels at those sites. Broadly, the rule requires significant reductions in emissions regardless of source and leaves little margin for error. EPA divided the sources into categories, each with specific requirements, and further sub-divided in some cases by requiring different rules based on the size of the operation.

Reducing fugitive emissions from well sites, production facilities, and compressor stations through monitoring and repair requirements is the first major section of the rule. Fugitive emissions are leaks or other unintended emissions from a broad range of components. The rule imposes different timelines for monitoring and repair based on the size of the operation.

Single wellhead sites are subject to the least comprehensive monitoring and repair timelines, but the frequency is still a significant imposition on operators. A single wellhead site operator must conduct quarterly audible, visual, and olfactory ("AVO") inspections. These inspections may be performed by the operator's own personnel and consist of physically examining the components and identifying leaks.

Multiple wellhead sites are subject to quarterly AVO inspections, as well as semi-annual optical gas imaging ("OGI") inspections. OGI inspections consist of infrared scans to identify leaks. Well sites with major production and processing equipment must conduct bimonthly AVO inspections and quarterly OGI inspections. Monitoring must continue until the final closure of the well and elimination of any remaining emissions.

If a leak is identified through an AVO inspection, the operator must at least attempt repair within 15 days of discovery and

the repair must be completed within 15 days of the first repair attempt. If the leak is identified through an OGI inspection, the operator must attempt repair within 30 days of discovery and the repair must be completed within 30 days of the initial repair attempt.

Additionally, the rule prohibits gas flaring from new wells. Once a well is complete and begins production, flaring is only permissible for short periods and only when certain circumstances apply. Wells commenced between May 7, 2024 and May 7, 2026 may flare gas only when the operator demonstrates to the EPA that connecting to a natural gas sales line, using the gas for on-site fuel generation, or reinjected into the well or other wells is technically infeasible. Wells commenced after May 7, 2026 can only flare gas if there are extenuating circumstances, such as emergency safety concerns. EPA expects this rule to create a 95 percent reduction in methane and VOC emissions from well sites.

The rule also requires a 95 percent reduction in emissions from storage vessels using closed vent systems which route emissions to a flare or other control device. Previously, EPA regulated emissions based on individual storage vessels. The rule now groups the storage vessels into tank batteries – tanks adjacent to one another and which receive fluids from the same source. This change in approach requires operators to re-evaluate their current storage methods to ensure they do not trigger the emission requirements now that the requirements apply to the tanks as part of a battery. The rule also updates the definition of modification to cover increases in potential emissions from tank batteries. This includes the addition of storage vessels, the replacing of existing storage vessels resulting in an increased capacity of the tank battery, receiving additional throughput from production wells, or receiving additional fluids which exceeds the established throughput used to calculate the emission potential. Additionally, the rule defines reconstruction to mean the replacement of a least half the storage vessels at an existing tank battery. Operators will have to be aware of this change in approach as many existing storage systems could now trigger the new source standards requirements if the potential methane emissions exceed 20 tons per year.

The rule further requires all equipment to be equipped with covers or closed vent systems to reduce unintentional emissions. The new standard, called no identifiable emissions, leaves almost no margin of error. The closed vent system must capture and route all gases, vapors, and fumes to a process or to a control device. Covers must form a continuous impermeable barrier and be kept in the closed, sealed position whenever the equipment is in use. If an emission is detected, an operator must attempt a repair within five days and complete a final repair within 30 days of detection. While the repair is pending, operators must take steps to reduce the emissions in the meantime.

A unique provision of the rule allows for third-party watchdog aerial or satellite inspections of oil and gas operations for so-called super emitter events. A super emitter event is the emission of methane at a rate of 100 kilogram/hour or higher. These inspections are conducted by third parties, unaffiliated with operators and certified by the EPA, using approved remote sensing technologies such as satellites or aerial surveys. The third parties report the results of their inspections directly to the EPA who will confirm the results and inform the owner or operator directly. The operator must then investigate its operations to confirm the presence of a super emitter event and provide a report to the EPA. If the super emitter event is confirmed, the operator must make the necessary repairs within the same timeline as other fugitive emissions.

Existing sources, defined as those constructed, modified, or reconstructed before December 6, 2022, are not directly covered by the rule; instead, they must comply with the state implementation plan required by the rule. The rule provides the presumptive standards that states can adopt, or a state can make more stringent rules. The state implementation plan cannot be less restrictive than EPA's presumptive standards.

EPA has set a tight timeline for state compliance with the rule. States will have two years to propose an alternate plan or adopt

the presumptive standards. Operators will then have three years to comply with the approved state plan.

As of 2022, Montana had 4,286 producing oil wells and 5,134 producing gas wells. In that same year, the Board of Oil and Gas Conservation issued 54 new well permits and reissued 52 permits. These wells qualify as existing sources under the rule and will fall under the state implementation plan to be adopted in the future. Any wells constructed, modified, or reconstructed after December 6, 2022 will be governed by EPA's rule, as described above.

Montana producers will be particularly burdened by the new requirements. Montana lacks the pipeline capacity and gathering systems to immediately service a new well, meaning the prohibitions on flaring will significantly hamper production. According to the Board of Oil and Gas Conservation's 2022 annual report, the majority of wells in the state are low-production wells, called stripper wells. Stripper wells produce less than 10 barrels of oil per day. Most of the stripper wells are owned by small operators and are located in remote areas distant from other wells. The new requirements will likely prove technically and financially infeasible for these producers, and they will likely shutter their operations and cap the wells. While to some extent the purpose of the rule is to reduce the number of low-production wells and their disproportionate emissions compared to their output, closing these wells will likely have a significant impact on the industry. First, it may drive smaller companies out of business. Additionally, the cost of new exploration may be driven too high for investors, potentially slowing development. Finally, it will likely lead to further consolidation of Montana's oil and gas industry, as the requirements will be more burdensome for all but the largest operations.

Additionally, if the state chooses not to adopt the presumptive standards, fashioning the state implementation plan will require time and resources, as well as legislative attention. It will also require a certification scheme to ensure that Montana producers have access to qualified inspectors to comply with the rule's inspection requirements. In addition, enforcement of the rule will require significant oversight by state regulators to ensure operators are meeting the requirements. The EPA rule already faces legal challenges, and interested parties will need to keep abreast of any impacts from those lawsuits. Furthermore, Montana's state plan must be carefully crafted to avoid the constitutional challenges that have impacted similar state regulations and legislation.

The EPA's final rule will have significant impacts on the state of Montana. The rule requires operators to meet the new performance standards for facilities that are new, modified, or reconstructed after December 6, 2022. The new performance standards impose technological and financial burdens upon the industry within Montana. These burdens will be especially felt by smaller companies, which may curtail exploration and expansion within the state. For existing sources, built before December 6, 2022, the rule sets the presumptive standard that states can choose to adopt. Montana's legislature will have to decide to adopt these standards or propose a new state implementation plan for existing sources to the EPA within the next two years. Both the presumptive standards or the alternative state plan will require legislative and regulatory attention to ensure Montana's oil and gas operators have clear and consistent rules to continue operating. ■

The impacts of the oil and gas industry to the Montana economy

By Bureau of Business and Economic Research, University of Montana

The importance of oil and gas in ww economy

Montana's businesses and households continue to require a substantial amount of energy. Montana ranks in the top quarter of states in total energy consumption per capita, reflecting the state's large open spaces, low population density, extreme temperature variations, and an economy rooted in energy-intensive industries. Industrial activities alone account for 30 percent of the state's energy consumption. Adding commercial uses, commercial and industrial consumers comprise 46 percent of the total energy usage. The state's economy heavily relies on mining, petroleum and coal products, manufacturing, and agriculture. Commercial energy consumption is also significant, driven partly by tourism – hotels, resorts, and restaurants – as well as healthcare and education.

Transportation, essential due to Montana's vast open spaces and lower population density, accounts for about 35 percent of the state's energy consumption. With Montana ranking in the top 10 U.S. states for vehicle miles traveled at 13,514 miles per year, the energy required to move goods within and outside the state is substantial. Energy in the transportation sector continues to be dominated by petroleum-based fuels.

Residential energy consumption makes up 20 percent of the state's total. As the fifth coldest state in the U.S., heating is a significant source of energy use. Over half of Montana homes (50.9 percent) use natural gas as their primary heating source, and another 12.4 percent use propane (liquefied petroleum gas). This proportion decreased gradually as electric heating increased from 22 percent to 28 percent. Overall, natural gas accounts for 26 percent of end-use consumption in Montana.

Despite these high consumption levels, Montana produces less than half of the natural gas it uses, generating only 3.9 billion cubic feet compared to its consumption of 8.9 billion cubic feet. The Bakken region dominates production and includes the largest natural gas storage facility in the U.S. Montana's crude oil production is also notable. Montana produces about one barrel per 200 barrels produced nationally. In 2023, Montana produced 64,000 barrels of crude oil per day.

The price of crude oil, which is set by global markets, significantly impacts the cost of gasoline; between 50 to 60 percent of the cost of final petroleum products comes from the cost of crude oil. The state hosts several small refineries that must respond to those prices, with the capacity to process 214,600 barrels of crude per day. Most of the crude oil these refineries process is imported via pipelines from Canada. Some operations have transitioned to biofuel production, such as Calumet's conversion of roughly half of its refinery to Montana Renewables.

The current contribution of the oil and gas industry to the Montana economy is substantial. In 2023, Montana's oil and gas extraction, processing, and manufacturing supported 27,419 jobs in the state economy, generated $1.7 billion in income received each year by Montana households, and resulted in over $121 million in oil and gas production taxes paid annually to the state of Montana. The industry's impact is broad, extending across various sectors and underpinning much of the economic activity within the state.

Tracking the impacts of oil and gas activity in Montana

The oil and gas industry continues to play an outsized role in the Montana economy. Specifically, its footprint includes:

- Oil and gas production in Montana, including extraction and the drilling and completion of new wells, supports a broad spectrum of industry jobs and vendors and suppliers;
- The transportation of oil and gas at various stages of production through pipeline, rail, trucks, and other means, whether sourced from Montana wells or facilities or otherwise, provide services that support employment and the state and local tax base;
- The construction associated with expansions and maintenance of energy production, processing, and transporta-

tion infrastructure are an essential economic activity that would not exist if it were not for the presence of the oil and gas industry in our state;

- The oil refineries in Billings, Laurel, and Black Eagle are highly capitalized, high-value-added facilities that pay wages substantially above the state average; and
- The services and intermediate goods provided by Montana-based facilities both within (e.g., mining services) and outside (e.g., food vendors, security services, equipment repair) the oil industry in support of oil and gas production in Montana, Wyoming, North Dakota, and elsewhere broaden the footprint of the oil and gas industry beyond production and transportation.

Additionally, oil and gas industry activity has an outsized influence on the economy because of the higher wages earned by industry workers. The 2022 annual salary for oil and gas occupations in Montana was $59,787, above the Montana average of $ $52,220.

Ultimately, the contribution made by Montana's oil and gas activity to the state economy produces further impacts as the employment, wages, investment, and spending by companies and workers propagate through the rest of the economy. The total impact is estimated using an economic model that quantifies those interactions.

Oil and gas production in Montana

Montana remains a significant oil and gas producer in the United States, producing 22.5 million barrels of oil and 19.8 trillion cubic feet of natural gas. In 2023, 82 percent of the oil produced in the state was extracted in Richland, Fallon, Roosevelt, and Powder River counties near Montana's eastern border overlying the

Table 1: Annual salaries of oil and gas occupations in Montana, 2022

Occupation	Average Annual Salary
Petroleum Engineers	$92,390
Geological and Petroleum Technicians	$62,570
Service Unit Operators, Oil, Gas, and Mining	$63,900
Roustabouts, Oil and Gas	$56,240
Helpers--Extraction Workers	$43,440
Petroleum Pump System Operators, Refinery Operators, and Gaugers	$93,870
Pump Operators, Except Wellhead Pumpers	$64,030
Wellhead Pumpers	$51,780
Average Wage	$59,787

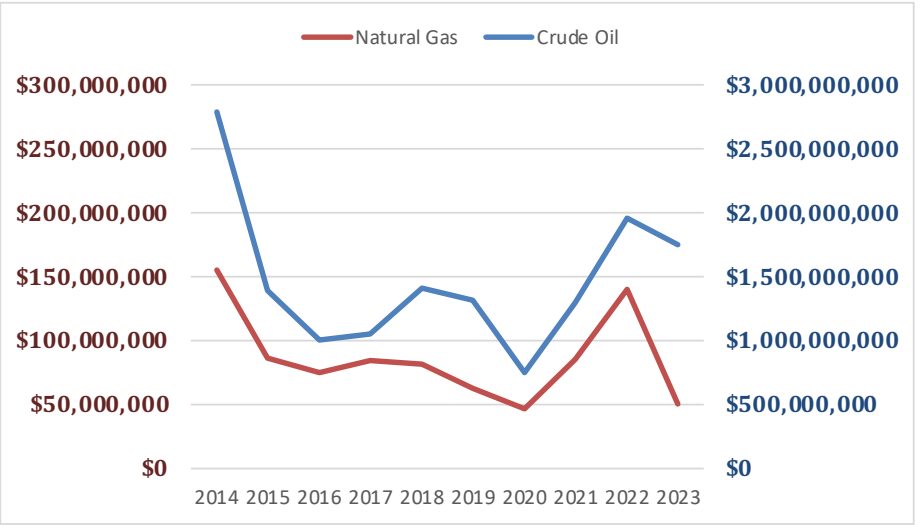
Source: Montana Department of Labor and Industry - Informational Wage Rates By Occupation

Table 2: Montana oil and natural gas production, 2023

OIL			GAS		
County	Oil (Barrels)	Percent of Total	County	Natural Gas (MMCF)	Percent of Total
Richland	9,446,705	44%	Phillips	6,061,537	25%
Fallon	3,613,161	17%	Fallon	4,202,833	17%
Roosevelt	3,053,544	14%	Blaine	2,536,228	10%
Powder River	1,424,981	7%	Hill	2,075,764	8%
Rest of State	4,138,960	19%	Rest of State	4,878,469	20%
Total Production	22,552,100	100%	**Total Production**	19,754,831	100%
Est. Mkt Value*	$1,642,469,443		**Est. Mkt Value***	$49,979,722	

*Source: Montana Board of Oil and Gas, Energy Information Agency. *average domestic crude oil first purchase price ($33.21) and 2020 Henry Hub natural gas spot price ($2.11)*

Figure 1: Montana oil and gas output, nominal $, 2014-2023



Source: U.S. Energy Information Administration

Table 3: Oil and gas production tax collections, 2023

County	Revenue	County Distributions
Richland	$76,366,786	$36,251,314
Fallon	$21,046,469	$8,793,214
Roosevelt	$15,458,292	$7,065,986
Powder River	$10,062,916	$6,128,316
Sheridan	$3,267,291	$1,567,973
Dawson	$3,191,188	$1,525,069
Wibaux	$2,414,414	$1,186,926
Carbon	$1,941,283	$937,057
Rest of State	$23,420,942	$4,736,564
Total	$157,169,581	$68,192,419

Source: Montana Department of Revenue

Table 4: Reported federal revenues, Montana 2023

Revenue Type	Oil and Gas Revenue	Percentage of all Resource Revenue
Royalties	$22,402,931	97%
Rents	$153,454	1%
Bonus	$0	0%
Other	$621,259	3%
Total	$23,177,644	100%

Source: Office of Natural Resources Revenue

Table 5: The economic impact of oil and gas operations in Montana, 2023

Category	Units	Impact 2023
Total Employment	Jobs	27,419
Personal Income	$ Millions	2,036
Disposable Pers. Income	$ Millions	1,732
Output	$ Millions	10,550
Population	People	9,202

Source: BBER Analysis

Bakken Shale. Montana's gas production, however, is centered in north-central Montana, with Phillips, Blaine, and Hill counties accounting for 52 percent of the statewide production, as detailed in Table 2.

Over the past three years, the global oil market has experienced a recovery. Despite the rebound in demand, Bakken oil production, including that in Montana, has struggled to grow substantially. In 2021, Montana's crude oil production fell below 19 million barrels, marking the lowest level since 2002. This decline was mitigated as production increased in response to higher prices, reflecting a more robust market and higher demand.

Montana's natural gas production has steadily declined for over a decade. The strong global demand and supply chain disruptions caused by the Russian invasion of Ukraine led to a significant price increase, which did not translate into higher natural gas production. While higher prices supported Montana's natural gas production in 2021 and 2022, current production levels remain low, and overall output is comparable to pre-pandemic levels.

The fiscal impact of oil and gas production

State and county tax collections reflect the ups and downs of the value of oil and gas production. In 2023, oil and gas production tax collections totaled $157.2 million. It's the highest revenue number since 2015. Of the total state revenue collections, about 45 percent went to the Montana general fund, and about 43 percent went to local distributions. Table 3 shows how the communities with significant oil and natural gas operations benefit from oil and gas collections.

In addition to state revenues, oil and gas produced on Federal land in Montana are subject to royalties, rents, and bonuses. Federal revenues totaled $23.2 million in 2023. Almost all of that revenue originated from royalties paid to the Federal government, as shown in Table 4.

The economic contribution of oil and gas activity in Montana

We consider the economic contribution of the oil and gas industry to the state's economy to consist of two components. The first is the industry's spending, production, and employment. The second component comes about as that spending received by Montana workers, businesses, and governments, who respend a portion of what they receive in

the state economy. Adding these two together measures how much the total economic pie is made bigger by the presence of the industry.

We adopt a narrow definition of the oil and gas industry, consisting of the following activities:

(i) The production of oil and gas;

(ii) The transportation of oil and gas; and

(iii) The operations of the state's four operating oil refineries in Billings, Laurel, and Black Eagle.

This analysis does not include other activities, such as wholesaling and retailing refined petroleum products or mining services jobs in Montana that serve different states. Thus, the oil and gas industry economic contribution estimates presented here are conservative. Nonetheless, the contribution is substantial even with this restricted definition of the industry.

The continued operation of the oil and gas industry in Montana is currently responsible for:

- 27,419 permanent, year-round jobs across a broad spectrum of industries, averaging $59,600 in annual earnings;
- More than $2.0 billion in annual income received by Montana households, of which $1.7 billion is after-tax income available for spending;
- Almost $10.6 billion in annual economic output, defined as gross receipts of Montana business and non-business organizations; and
- More than 9,000 additional people live in Montana, dominated by working-aged families and their children.

The oil and gas industry remains a cornerstone of Montana's economy, deeply interwoven with the state's economic fabric. From production and processing to transportation and refining, the industry's influence is far-reaching, supporting tens of thousands of jobs and generating significant income and tax revenue. Despite challenges such as fluctuating global oil prices and shifting energy consumption patterns, the industry's resilience and adaptability are evident.

Montana's energy-intensive economy, characterized by its large open spaces, extreme temperature variations, and vital industrial sectors, relies heavily on oil and gas. The substantial energy consumption across residential, commercial, and transportation industries underscores the ongoing demand for these resources. The state's strategic position near the Bakken Shale region further solidifies its role as a critical player in the national energy landscape.

Moreover, the economic ripple effects of the oil and gas industry extend beyond direct employment and production. High wages in the sector bolster local economies, and the industry's extensive supply chain supports various secondary businesses and services. The fiscal contributions through state and federal taxes and royalties provide essential public services and infrastructure funding, benefiting Montana's communities.

In conclusion, the oil and gas industry is not just a significant contributor to Montana's economy but remains an engine of economic activity and growth. As the state navigates future energy transitions and market dynamics, the continued importance of oil and gas in Montana's economic landscape will remain substantial. The industry's enduring presence will remain pivotal as Montana progresses towards a balanced, sustainable energy future. ■

Held v. the State of Montana: *Where we are and where we're going*

By Debbie Skibicki

HELD ET AL. V. THE State of Montana was filed in Montana District Court in 2020 by Our Children's Trust ("OCT") with individual Montana youth named as individual Plaintiffs. The OCT is a youth-led litigation effort to force state and federal governments to recognize and mitigate climate change and its impacts. Similar cases have been filed across the country. In the Montana case, 16 young people (the Plaintiffs) claimed that Montana's energy policy and environmental and permitting laws promote fossil fuel extraction in violation of the right to a clean and healthful environment as provided in the Montana constitution. Specifically, the Plaintiffs alleged that the Montana Environmental Procedure Act's prohibition of consideration of climate impacts in environmental review violated their rights. Montana District Judge Kathy Seeley ruled in favor of the youth Plaintiffs on August 14, 2023, in a precedent setting decision for the use of "green amendments" (right to a clean and healthful environment and similar) in state constitutions to challenge policies on climate change.

While initially involving multiple laws, including the State Energy Policy, ultimately, the trial focused solely on the Montana Environmental Policy Act ("MEPA"), a procedural requirement tied to state regulatory actions, which was originally promulgated in 1971. MEPA was modeled after the National Environmental Policy Act (NEPA, 1969), but with differences. As discussed in the Montana Legislative Environmental Policy Office's 2021 MEPA Handbook, the MEPA policy statement states that "each person is entitled to a healthful environment" (sharing the 1972 Montana Constitution language) while NEPA's policy statement describes each person as being able to "enjoy a healthful environment." NEPA also recognizes "the worldwide and long-range character of environmental problems," while MEPA is silent on global effects.

In practice, MEPA requires state agencies to review and consider impacts of a state action (an air quality permit, for example) and includes public comment. MEPA is known as the "look before you leap" statute. As previously mentioned, it is procedural rather than substantive. It cannot stop actions that meet the substantive environmental requirements at hand, only provide information, participation, and possibly mitigation prior to those actions taking place.

MEPA review generally takes the path of an Environmental Assessment (EA, a more simplified review) or an Environmental Impact Statement (EIS, an extensive review that often takes years to finalize). For example, an air quality permit's MEPA analysis may have discussions of cultural and historic, surface and groundwater, and geology and soil impacts. The intent was to disclose and potentially resolve or mitigate impacts that may be considered significant from the MEPA analysis in conjunction with issuing the permit in question. Because of its broad and procedural nature, MEPA has never been a clear path and has been the subject of litigation long before the OCT lawsuit was filed. Between 1971 and June 2021, nearly 35 court cases were filed that questioned whether or not an EIS should have been required for a state action or whether a review was adequate (source: Montana Litigation Report from the Environmental Quality Council, EQC).

The Held case specifically challenges two provisions of MEPA referred to as the "MEPA Limitation" and the "MEPA Court Limitation," respectfully. The MEPA Limitation was enacted during the 2011 Montana Legislature (and clarified during the 2023 Legislature) and prohibited state agencies from considering the impacts of greenhouse gas (GHG) emissions or climate change in their MEPA reviews (unless such review was required by a federal agency). In addition, that review was prohibited from extending beyond the Montana state borders into national or global impacts. The 2023 Legislature also passed the MEPA Court Limitation that restricted the authority of courts to address any GHG or climate impacts (or lack thereof) in a MEPA process. The suit claims that because of the MEPA Limitation, the Legislature had failed in its

obligation to provide for a clean and healthful environment and failed to provide adequate remedies. The suit further claimed that state agencies had not considered GHG or climate change impacts in their environmental reviews because they were not allowed to do so. As a result, various state agencies' authorization of fossil fuel extraction, transportation, and combustion activities without that GHG/climate review was argued to have caused substantial GHG emissions into the atmosphere, contributing to climate change. Further, the suit claims that the MEPA Court Limitation also restricted any court action from being able to "vacate, void, or delay" permits or authorizations for proposed projects for reasons related to climate change.

In the Held decision, the District Court confirmed that the right to a clean and healthful environment is a fundamental right protected by Montana's Constitution, and that this right extends to children under the age of 18 (confirming standing of the Plaintiffs). The Court also commented that Montanans' right to a clean and healthful environment requires their government to maintain and improve the environment and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources. With that, the Court declared that the MEPA Limitations' (both versions) prohibition of analysis of GHG emissions, their impacts on the climate, and contribution to climate change was unconstitutional. While not requiring the State to analyze GHGs, the Court ordered that the prohibition on analyzing GHGs could not be enforced. In addition, by enacting and enforcing the MEPA Limitation, the State failed to protect both Montana's natural resources from unreasonable depletion and the Plaintiffs' right to a clean and healthful environment. Further, the Court concluded that the MEPA Court Limitation was unconstitutional because it eliminated remedies to prevent irreversible environmental degradation. (Note: Judge Seeley made it clear long before trial that she does not have the power to order the state to create a remedial plan to address climate change).

The State of Montana appealed that decision to the Montana Supreme Court in February 2024 after the Supreme Court declined the State's request to hold off on enforcing the Held ruling. Oral arguments on the case in front of the Supreme Court are scheduled for July 10, 2024. Arguments with respect to the NorthWestern Energy Laurel Generating Station, caught in the middle of these same issues, were heard in front of the Court in May.

During the appeal process, the Montana Supreme Court also ordered Montana's regulatory decision makers to evaluate the GHG emissions and climate impacts of proposed projects. As previously mentioned, MEPA is a procedural, not a substantive obligation. Agencies cannot deny any permit issuance due to MEPA if the application or project meets the requirements under the substantive requirements (Clean Air Act of Montana, etc.). Given the subjective nature of such an analysis on such a global issue, this creates the real prospect of additional litigation regarding state permitting and other regulatory decisions.

However, as we wait for the appeal resolution, "considering GHG emission and climate impacts" at an agency level is no straightforward task. No legislative guidance exists, and none will exist unless the 2025 Legislature acts on the subject. No funding currently exists for agency staff to internally analyze climate impacts. If funding is granted in the legislature, the timeframe would likely be late 2025 for even partial implementation or hiring. In the meantime, the regulated community lives with the uncertainty and the strong likelihood of litigation on any fossil-fuel or energy-related state actions (appeals were filed by the Montana Environmental Information Center on several minor air quality permit actions late in 2023 related to fossil fuels, none have been acted on at this time).

In response to the Court order and to fill the regulatory gap, the Montana Department of Environmental Quality (DEQ) opened a dialogue with public listening sessions to gather information on MEPA implementation going forward in the fall of 2023. Following that, DEQ formed a dedicated working group in early 2024 with various stakeholders (legislators, industry, environmental groups) to move forward on DEQ's implementation of MEPA. The effort, including public listening sessions and numerous in person meetings, resulted in the May 20, 2024, Draft Recommendations regarding Climate Analysis, Public Engagement, Education and Outreach, and Process and Applicability on which DEQ is requesting feedback. The results of that process will form the basis for an interim study bill asking EQC to look at different approaches to analyze climate impacts and build a statutory framework to move forward regardless of the ultimate decision in Held.

As the regulated community and community at large weigh in on the draft recommendations and await the legislative proceedings, I encourage all of us to follow the process and provide input. We all are aware of the strong feelings on this topic, but we also know that we cannot allow the results of the litigation (in either direction) to halt the regulatory process. For the interim agency needs, I urge industry and their partners to make use of past/current experiences in evaluating GHG and climate and the available information already being generated for other purposes. Examples include GHG emissions calculations and reporting, analyses for NEPA that incorporate the social cost of carbon (or other relevant practices), corporate planning for sustainability/minimizing carbon impacts, energy efficiency projects, and many others that can provide insight into climate impacts and available, known analyses. DEQ is overwhelmed and short staffed in many key areas; moving permits forward as a collective endeavor is becoming increasingly more important. Industry and their partners can also help educate DEQ and the public, moving forward with solutions, and building a regulatory framework for MEPA that meets collective needs. ■

Teaching the teachers of Montana about the oil and gas industry

By Todd Hoffman, Associate Professor/Department Head,
Montana Technological University Foundation

MONTANA TECH IS INCREASING knowledge about the oil and gas industry through a short course offered free of charge to Montana K-12 teachers.

This week-long class showcases various aspects of developing and producing oil and gas reservoirs. Montana Tech joined with industry partners and regulatory agencies to provide relevant and meaningful content. The various aspects of the petroleum industry are discussed, including exploration, drilling, completions, production, facilities, artificial lift, and reservoir management. In addition, topics about sustainability, energy sources and uses, climate change and potential solutions (e.g. CO2 sequestration) are also covered.

The classroom material includes some lectures but focuses more on hands-on demonstrations to illustrate concepts such as geologic layering, porosity, permeability, well control, fracturing, and more. Each demonstration comes with worksheets and explanations so teachers can use them in their classrooms.

"From coring cupcakes to fracking Jello, the teachers are learning in a lively and enjoyable environment," said Todd Hoffman, the department head of Petroleum Engineering at Montana Tech. "The feedback from the teachers is so positive. So many times, I've heard, 'Oh, I didn't realize…' about different aspects of the class. It is great watching the light bulbs turn on."

The workshop includes three field trips. The first one covers geology and field production operations in Cody, WY. The second one is at a CO2 flood operated by Denbury/ExxonMobil at Bell Creek, and the third one is at the CHS refinery in Laurel. The field trips are always a highlight for the participants. The field personnel and operators do a fantastic job of highlighting industry's best parts and why hydrocarbons are so important for society. Their enthusiasm for their work shines through.

A previous version of this course ran from 2006 to 2015 and was supported by the Montana Board of Oil and Gas. In 2022, it was restarted and updated with funding from Hess Corporation. It is hosted on the university campus and educational materials, field trips, and room and board are provided at no cost to the participants. The new short course is an overwhelming success.

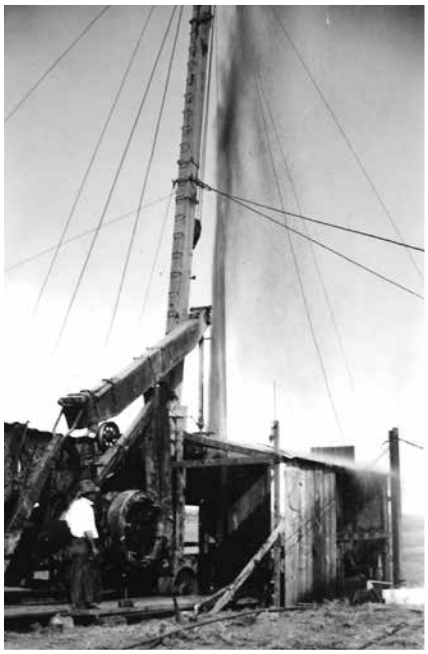
"I learned so much about the petroleum industry and the number of high-paying jobs right here in Montana for people with education ranging from a high school diploma to PhDs. There are so many options," said Erin Lynch, a Grade 4 teacher at Sunnyside Intermediate School in Havre.

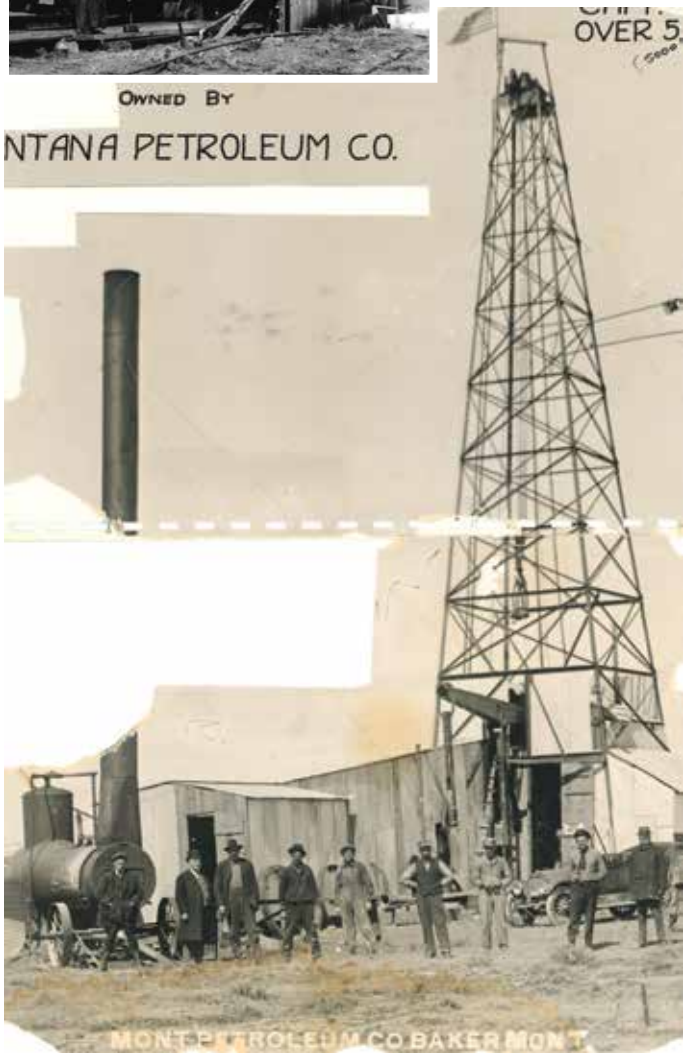
"I'm always looking for ways to incorporate career opportunities into my instruction and delve deeper into fun science concepts," Lynch added. "The field trips and the hands-on activities I can bring back to my classroom were the best part of this workshop."

Another benefit for the teachers is that they receive continuing education credits, at no cost, which they need to help keep their teaching certificates current. The value for Montana Tech and the petroleum industry is that young adults entering college or the workforce will have more knowledge about oil and gas operations since their teachers are better informed and pass on their experience.

"It is an enjoyable week," Hoffman said. "School teachers are eager learners with tons of great questions and lots of enthusiasm. I look forward to it every year." ■

MDU Resources *celebrates 100th anniversary*





MDU RESOURCES IS CELEBRATING its 100th anniversary this year. The company was incorporated on March 14, 1924 as a small utility serving rural communities along the Montana-North Dakota border. Over the past century, MDU Resources has grown into a corporation with operations across the United States.

"Celebrating 100 years is a remarkable milestone, made possible by our team of talented employees – past and present," Nicole Kivisto, MDU Resources president and CEO, said. "We are proud of what we've accomplished in our first century and are excited about the next 100 years."

Today, MDU Resources is headquartered in Bismarck, North Dakota and is the oldest publicly traded company headquartered in the state. Its stock, under the symbol MDU, has traded on the New York State Exchange since 1948.

MDU Resources' utility operations, which includes Montana-Dakota Utilities, serve nearly 1.2 million electric and natural gas customers across eight states. Its pipeline business, WBI Energy, has approximately 3,800 miles of regulated natural gas transmission lines and is home to the largest underground natural gas storage field in North America.

The company's success includes growing two businesses to be large enough to be spun off to stand on their own as publicly traded companies.

MDU Resources' construction materials subsidiary, Knife River Corporation, was spun off in 2023. MDU Resources' construction services subsidiary, MDU Construction Services Group, recently rebranded Everus, is expected to be spun off in late 2024.

While MDU Resources branched out into other industries, it has throughout its history remained committed to its core business of regulated energy delivery.

"The company has seen a lot of changes over the past 100 years, but our commitment to safely and reliably serving our customers and communities has remained constant," Kivisto said.

MDU Resources kicked off its 100th anniversary celebration by ringing the closing bell at the New York Stock on March 13. Its celebration will continue throughout 2024, and additional information can be found at www.mdu.com/100th-anniversary.

Among the celebratory events, the MDU Resources Foundation, MDU Resources' philanthropic arm, which has contributed nearly $45 million during its 40-year history to communities and organizations where the company serves, will donate $10,000 each to 10 charities nominated by its employees. ■

Shanghaied

By Robert Bryce

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A NEW IEA REPORT spotlights China's stranglehold on supply chains for EVs, wind turbines, and solar panels.

Transportation Secretary Pete Buttigieg appeared on CBS's "Face The Nation" to promote the Biden administration's electric vehicle mandates and defend the tariffs the administration is imposing on Chinese-made EVs. During the interview, he said, "The most important thing is that the EV revolution will happen with or without us. And we've got to make sure that it's American lead." Buttigieg went on to make some claims that are – I have to use the right words here – complete and utter bullshit.

According to a transcript published by CBS, Buttigieg said:

"That's what the president is focused on. We don't want China – look under the Trump administration, they allowed China to build an advantage in the EV industry. But, under President Biden's leadership, we're making sure that the EV revolution will be a made-in-America EV revolution, that is critically important."

Those claims bring to mind President John Adams' famous line: "Facts are stubborn things." And the facts are clear: Over the past three decades, China has built such a dominant role in the production of EVs – and the supply chains needed to manufacture them – that the U.S. cannot, will not, be able to catch up, not for decades to come. Indeed, China has Shanghaied the supply chains for everything from EVs and batteries to wind turbines and solar panels.

That's not an opinion. It's a stubborn fact. On May 17, just 10 days before Buttigieg appeared on "Face the Nation," the International Energy Agency published a report called "Global Critical Minerals Outlook 2024," which shows that China has a near-monopoly on the metals, minerals, and magnets needed for the overhyped "energy transition."

The IEA's 282-page report details China's dominance of markets for nickel, graphite, copper, lithium, polysilicon, and neodymium-iron-boron (NdFeB) magnets. In a remarkable bit of timing, the report came out almost exactly one month after Biden's EPA published a new mandate in the Federal Register called the "Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles." The mandate, published on April 18, is facing numerous legal challenges. If enacted, it will wreck the U.S. auto sector. As the *Wall Street Journal* explained, the EPA rule will:

"Effectively require that EVs and plug-in hybrids make up roughly 70 percent of auto-maker sales by 2032, up from about nine percent last year. Companies will have to produce one to two electric trucks for every gas-powered one in 2027, and closer to four to one by 2032... The EPA's quotas will also result in higher prices for gas-powered cars, as auto makers seek to offset EV losses."

Those losses are already gobsmacking. Ford Motor Co. lost over $65,000 for every EV it sold during the first quarter. In 2023, Ford lost more money on EVs than it made in net profit. In addition, there's clear evidence that the market for EVs is small. As I explained, "EVs have long been a niche-market product, not a mass-market one. Further, that niche market is primarily defined by class and ideology." I pointed to a study published by researchers at the University of California, Berkeley, which concluded that "about half of all EVs went to the 10 percent most Democratic counties, and about one-third went to the top five percent."

Buttigieg can hype EVs all he likes, but sales are declining. Volkswagen reported that its EV sales in Europe fell by 24 percent during the first quarter, and Mercedes-Benz reported an eight percent drop in EV sales. Ford told its dealers to halt EV-related investments until after the company completes a "review."

The new IEA report shows that U.S. automakers cannot build EVs without depending, wholly or in large part, on Chinese suppliers. The report says demand for "energy transition minerals is set to expand significantly across all scenarios" over the next few years, with demand for commodities like nickel, cobalt, and rare earths showing "robust growth, increasing by 65 to 80 percent by 2040." It continues, noting the market for transition

minerals is:

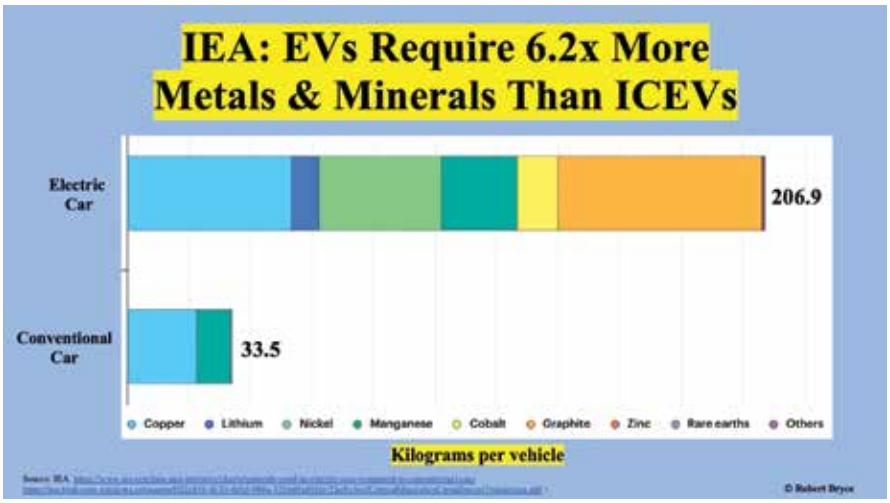
"Concentrated, with China claiming nearly 50 percent of the market value in 2030. China also sees a rise in market value for mined materials as the country's production of copper, lithium, and rare earth elements undergoes rapid expansion… Global mineral supply chains are not well diversified, and recent progress on diversifying supply sources has been limited ... These high levels of supply concentration raise risks of potential supply disruptions due to physical accidents, geopolitical events or other developments in a key producing country, with major potential implications for the speed of energy transitions."

The report underscores China's dominance in EVs, which require six times more metals and minerals than internal combustion vehicles. This chart is derived from an IEA report published in 2021.

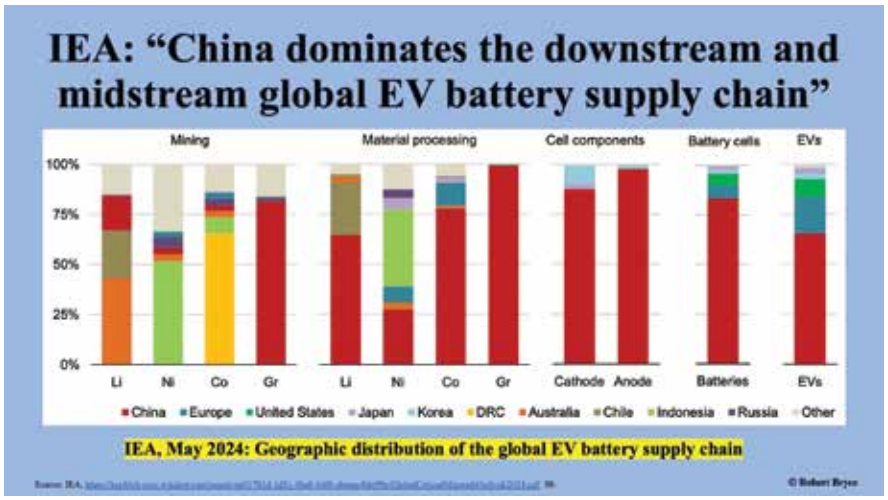
The new IEA report also spotlights China's monopoly over the high-strength magnets in wind turbines and EVs. It said that magnet rare earths – that is, praseodymium, neodymium, terbium, and dysprosium – "have the highest geographical concentration for refining of all energy transition minerals." Those elements are essential ingredients in the NdFeB magnets used in wind turbines, EVs, military weaponry, and a panoply of consumer goods.

The rare earth elements, also known as the lanthanides. Pr, Nd, Tb, and Dy are particularly important for their use in magnets.

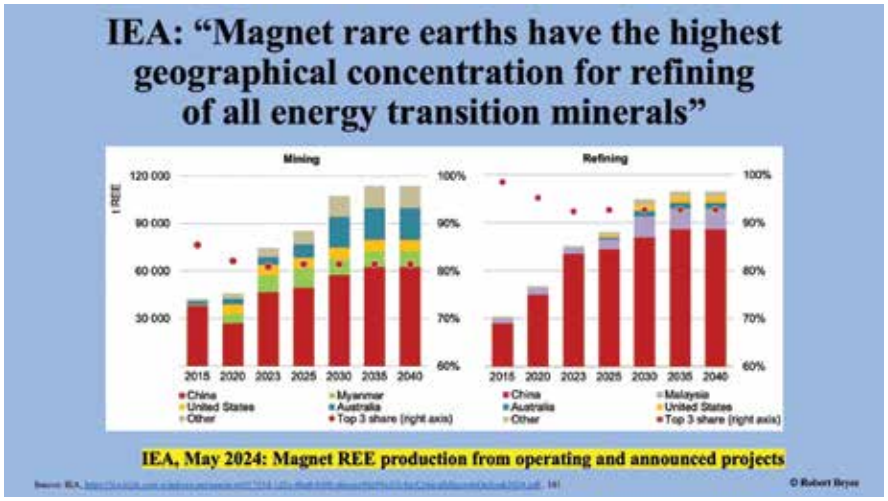
According to a report on critical materials published by the Department of Energy, about 30 percent of new wind turbines use NdFeB magnets. A three-megawatt wind turbine can contain up to two tons of the magnets. The DOE also noted that NdFeB motors are *found in about 98 percent of all EVs, and those*

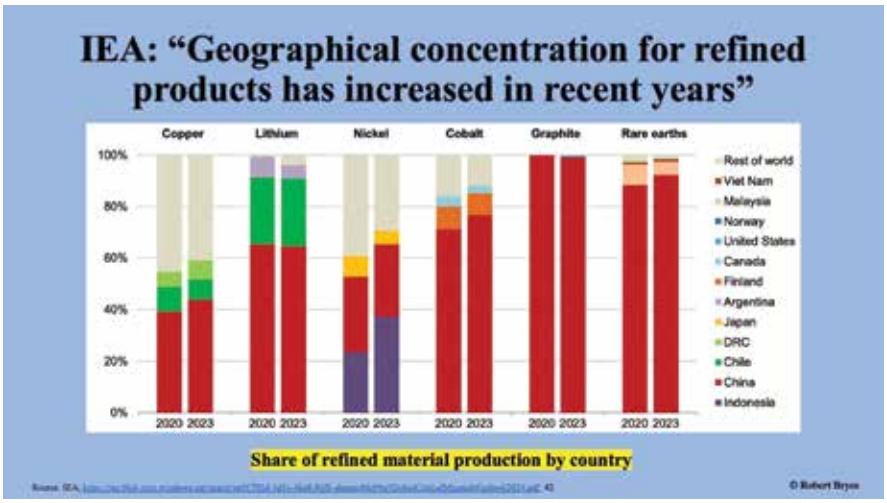


The chart below includes a screen grab from the IEA's May 17 report.

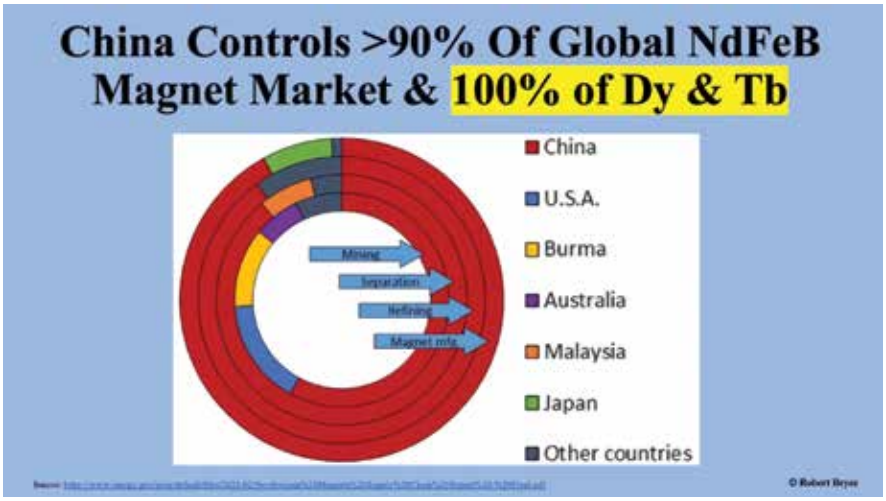


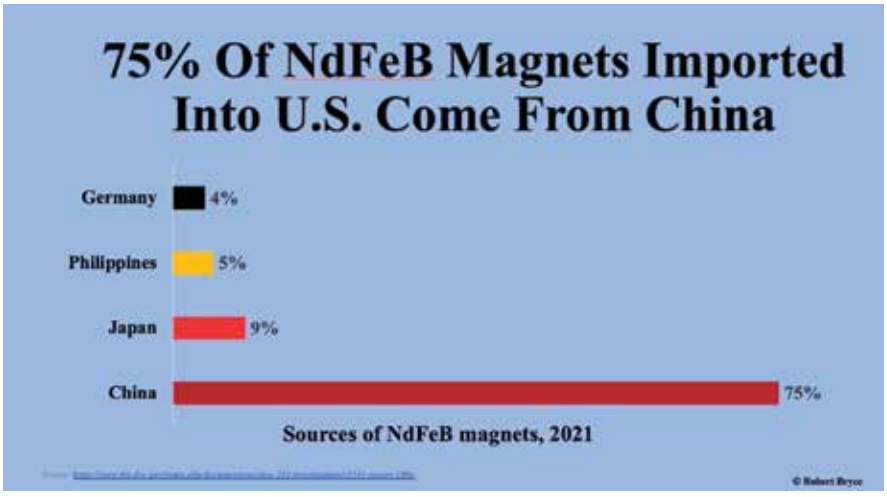
Lanthanum	Cerium	Praseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium
57	58	59	60	61	62	63	64	65	66	67	68	69	70
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
138.91	140.12	140.91	144.24	[145]	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.05





If the chart below looks familiar, you may have seen it in a piece I published called "The EPA's China Syndrome." The graphic is derived from a 2022 DOE report on NdFeB magnets.





"percentages [are] likely to stay above 50 percent through 2040." (Emphasis added.) And as the chart below shows, the IEA expects China's share of the refining market for magnet rare earths to increase between now and 2040.

Although the U.S. and other countries are talking about reducing their dependence on China, the IEA report shows that China's dominance of the alt-energy supply chain isn't declining, it's increasing.

As I explained in that piece, our vulnerability to Chinese supplies of NdFeB magnets must be seen as a national security concern. In 2022, the Commerce Department published a heavily redacted report that contains this key sentence: "Based on the findings in this report, the Secretary concludes that the present quantities and circumstances of NdFeB magnet imports threaten to impair the national security as defined in Section 232 of Trade Expansion Act of 1962, as amended." It continued, noting that the U.S. "has extremely limited capacity to manufacture NdFeB magnets and is nearly one hundred percent dependent on imports to meet commercial and defense requirements. In 2021, the United States imported 75 percent of its sintered NdFeB magnet supply from China, with nine percent, five percent, and four percent coming from Japan, the Philippines, and Germany, respectively."

Environmentalism in America is dead. It has been supplanted by climatism and renewable energy fetishism. And no object in the alt-energy kink closet has been fetishized more than the photovoltaic solar panel. (As Ken Girardin of the Empire Center recently noted, offshore wind probably runs a close second.)

Solar PV fetishism depends on Chinese suppliers. The new IEA report says, "China's share of solar-grade silicon grew from 27 percent in 2010 to over 80 percent today." I created the chart below us-

ing numbers from a 2022 IEA report on solar supply chains.

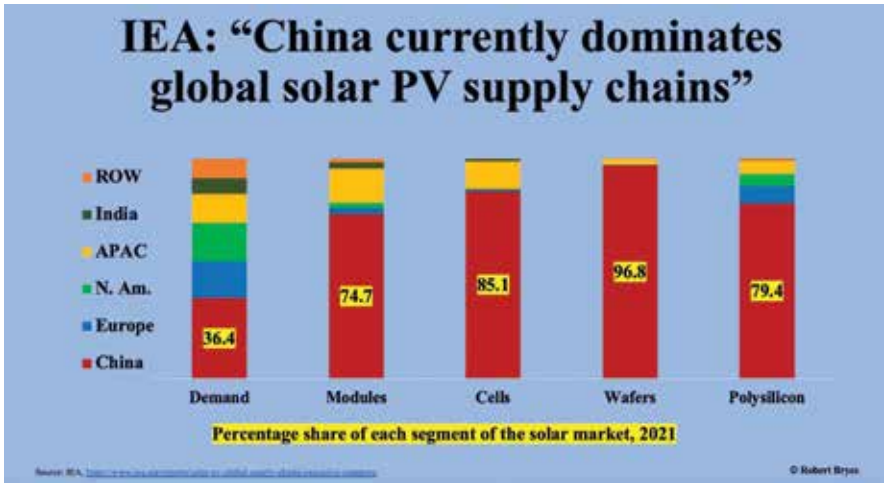
Recall that the Biden administration determined that China's solar sector was connected to the repression of Uyghurs in Xinjiang province. The Biden administration issued an addendum to the 2021 advisory on doing business in Xinjiang, saying it contains new information "about the ongoing, widespread, and pervasive risks in supply chains posed by state-sponsored forced labor and other human rights abuses in Xinjiang." The State Department updated Congress on the sanctions imposed on Chinese suppliers under the Uyghur Human Rights Policy Act.

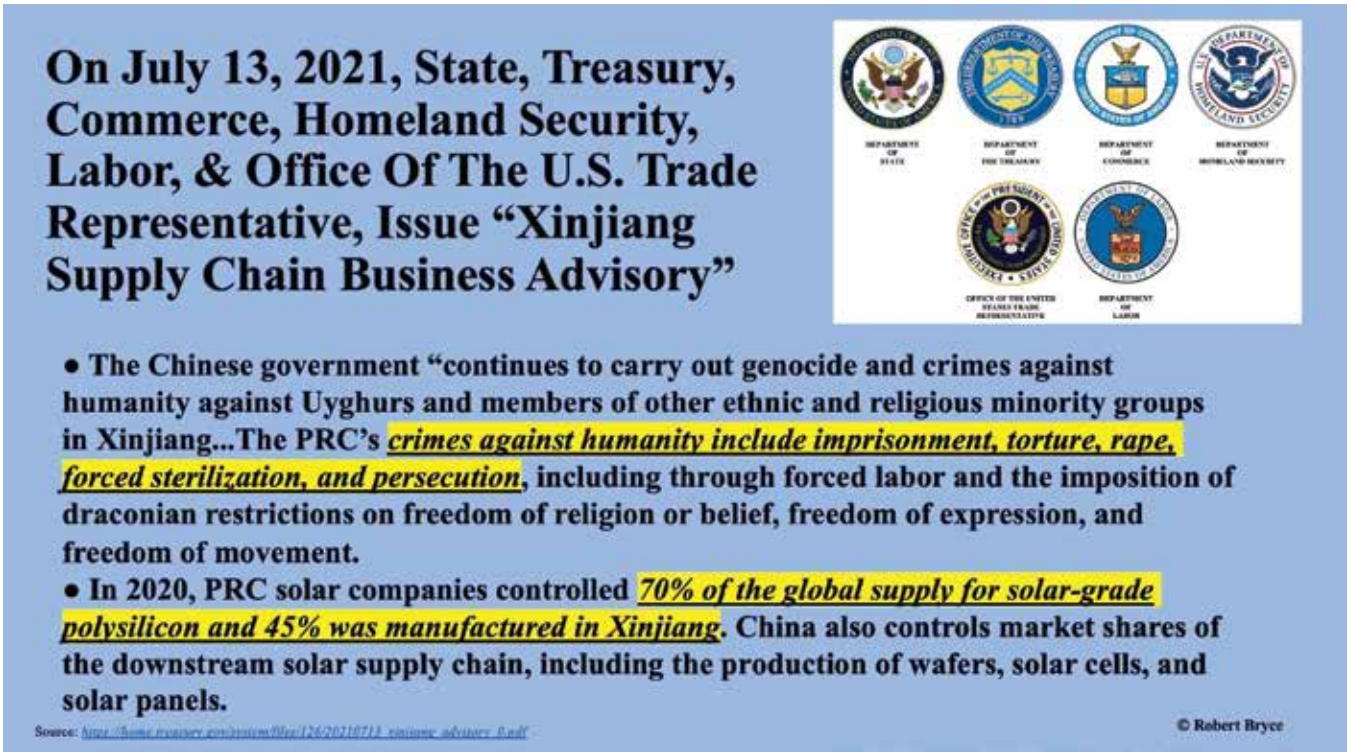
Since the 1973 Arab Oil Embargo, American policymakers have decried our dependence on foreign oil. But in 1973, the U.S. only imported about a third of the oil it used. And that oil came from several different countries, including members of OPEC.

Today, in the name of climate change, top U.S. policymakers are making rules that will make our transportation and alt-energy sectors almost wholly dependent on a single country – China – for numerous critical commodities. Furthermore, it will be reliant on Chinese suppliers at the same time that the U.S. and China are increasingly at odds over the origins of COVID-19, human rights abuses, which include the use of Uyghur slave labor in Xinjiang Province to produce polysilicon for solar panels, Taiwan, and navigation in the South China Sea.

In other words, by trying to force automakers to produce EVs, Buttigieg and the EPA want to trade reliance on domestically produced gasoline and diesel fuel for near-total reliance on Chinese metals, minerals, and magnets.

It's difficult to imagine a more foolish trade. ■





Harnessing innovation: *How U.S. oil and gas companies are reducing methane emissions*

By Holly Hopkins

AMERICA'S OIL AND NATURAL gas companies continue improving their ability to capture methane from operations – evident in a new U.S. Energy Information Administration (EIA) report showing that U.S. flaring and venting fell to an 18-year low in 2023.

EIA says the percentage of flared or vented natural gas decreased from 1.3 percent in 2018 and 2019 to 0.5 percent last year, even as natural gas production increased over the same period, to a record average of 125 billion cubic feet per day.

This reflects the use of new technologies and procedures for increased efficiency in capturing methane, the chief component in natural gas.

Industry-led initiatives, including The Environmental Partnership (TEP), are leading collaborative efforts to reduce emissions.

TEP, whose members represent about 70 percent of U.S. onshore production, is based on eight action programs. These include implementing best practices to reduce flare volumes such as promoting beneficial uses of associated gas. Thanks to efforts like these, TEP members reported a 14 percent reduction in total flare volumes and a 2.4 percent reduction in flare intensity in 2022.

The flaring progress reported by EIA is a good story, but not the end. TEP participants are innovating facility designs, improving operations, and advancing ways to detect and measure emissions.

Altogether, these efforts reflect the ingenuity, creativity, and know-how of the people powering America while minimizing environmental impacts. TEP and other initiatives have been integral to developing energy and environmental solutions and serve as a springboard to advance technological innovation, cultivate best practices, and reduce energy-related emissions.

Holly Hopkins is vice president of upstream policy at the American Petroleum Institute in Washington, DC. ■

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