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March 23, 2020

Ms. Carrie Gilbert
Forest Supervisor, Wayne National Forest
Attention: Plan Revision
13700 US Highway 33
Nelsonville, OH 45764

Dear Supervisor Gilbert:

The American Petroleum Institute ("API") submits the following comments in response to the Wayne National Forest Supervisor's Office *Draft Assessment* (Wayne National Forest; Forest Plan Revision – January 21, 2020; originally noticed in the April 19, 2018 Federal Register; 83 Fed. Reg. 17359). According to the Forest Service, the *Draft Assessment* presents and evaluates existing information about relevant ecological, economic, and social conditions, trends, risks to sustainability, context within the broader landscape and relationship to the 2006 Wayne National Forest Land and Resource Management Plan ("Forest Plan" or "Wayne Forest Plan").

Statement of Interest

API represents over 600 oil and natural gas companies, leaders of a technology-driven industry that supplies most of America's energy, supports more than 10.3 million jobs and 8 percent of the U.S. economy, and, since 2000, has invested nearly $2 trillion in U.S. capital projects to advance all forms of energy, including alternatives. The oil and natural gas industry is committed to an approach that promotes safety and environmental performance while securing the tremendous benefits of domestic energy production for our nation. API is a leader in developing the industry technical standards and programs that enhance the safety of operations worldwide.

Summary

In order to assist the Wayne National Forest Supervisor and staff in its public assessment process, API offers input and evidence on several issues and planning criteria relevant to energy development, operations, and well stimulation techniques, such as hydraulic fracturing. Our key points, in response to the Changed Conditions, Management Implications, and Information Gaps of the Non-Renewable Energy Resources Chapter within the *Draft Assessment* are summarized below:

- The state of the science, as well as operational practices and standards and the current regulatory structure at the federal and state level work effectively together to prevent environmental impacts from the use of hydraulic fracturing technology.

- The science and data clearly demonstrate that hydraulic fracturing can be and has been conducted safely and responsibly and a list of reputable studies by government agencies and academic institutions are appended to this comment letter.

- A comprehensive set of federal and state laws address exploration and production issues in Ohio. The Ohio Department of Natural Resources' Division of Oil and Gas Resources Management ("ODNR") has the "sole and exclusive authority" to regulate the industry in Ohio and does so in consultation with other federal and state agencies (including the Ohio Environmental Protection Agency). Ohio's oil and gas regulations are "some of the most comprehensive in the country"[1] covering enforcement, permitting, insurance and bonding, well site construction, drilling and completions, operations, restoration, abandonment and waste disposal.

- Industry standards and practices work in combination with federal and state regulations to provide an additional layer of environmental protection and information on API's five-document series specific to hydraulic fracturing – with a keen focus on groundwater and surface water protection -- is discussed in detail.

- As a part of stakeholder engagement and providing a high level of transparency with communities, companies report specific information about fracturing fluid used on an individual well-basis via a voluntary, publicly accessible website: FracFocus.org. Additionally, Ohio requires comprehensive reporting to ODNR under Ohio Revised Code Section 1509.10 for products, fluids and substances added to facilitate the drilling of a well.

General Comments and Approach

The Wayne National Forest *Draft Assessment* informs the upcoming "Needs to Change" aspect of the current Forest Plan (released in 2006) and includes information on the relevant conditions and trends for 15 key topics, two of which are of keen interest to API and its members: 1) the multiple use aspects of the Wayne Forest and the contributions to local, regional, and national economies and 2) Renewable and nonrenewable energy and mineral resources.

API supports the multi-use mission of the U.S. Forest Service – to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations (this includes the renewable resources of timber, range, water, recreation and wildlife and the nonrenewable resources of coal, oil and natural gas developed in collaboration with other federal agencies). According to its guiding principles, Forest Service actions are grounded in world-class science and technology– and rooted in communities. The Forest Service cares for shared natural

[1] http://oilandgas.ohiodnr.gov/contacts-about-us/about-us#FEE

resources in ways that promote lasting economic, ecological, and social vitality. In doing this, the agency supports nature in sustaining life.[2]

API promotes forward-looking burden-reducing policy decisions promoting domestic energy resources and we want to assist with information that will support the current Administration's goals of promoting environmentally-responsible development of oil and natural gas on public lands, while creating jobs and providing economic opportunities for local communities.[3]

Our goal with this letter is to provide accurate information on the state of the science, as well as operational practices and standards and the current regulatory structure which all work effectively together to prevent environmental impacts from industry operations, including the use of hydraulic fracturing technology. In turn, this information supports API's position that the final Wayne Forest Plan provide access for continued energy resource development in all three units of the Wayne National Forest.

The Collaborative Process in Wayne Forest Plan Development

The Forest Service explained that it is revising the 2006 Wayne Forest Plan under the guidance of the 2012 National Forest Management Act planning rule in order to "guide the collaborative and science-based development, amendment, and revision of land management plans that promote the ecological integrity of national forests and grasslands and other administrative units of the National Forest Service." It further explains the *Draft Assessment* organization, the ten Supplemental Reports, the strategic alignment within the U.S. Department of Agriculture ("USDA"), and the collaborative process undertaken. Meeting its public participation obligations of the planning rule, the Wayne Forest Revision Team, noted that it created eight (8) working groups that aligned with key themes including air, renewable energy, water resources, biodiversity and forest health, outdoor recreation, ecological forest management, climate protection, and sustainable economies – further discussed under Appendix A of the *Draft Assessment*.

Unfortunately, there is no mention of the Non-Renewable Energy Resources Work Group, who began meeting in the spring of 2018 with then Wayne Forest Supervisor Tony Scardina, Lori Swiderski, Special Assistant to the Regional Forester Regional Partnership Coordinator, and other Wayne Forest staff to review both conventional and unconventional energy development issues and concerns (see Attachment 1 for a listing of Non-Renewable Energy Resources Work Group members). This group was further refined to a smaller Technical Experts Working Group, members of which participated in several strategy sessions to help determine what the Forest Service might appropriately deem as a Reasonable Foreseeable Development (RFD) scenario. While RFD is not included as part of the *Draft*

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[2] https://www.fs.usda.gov/sites/default/files/This-is-Who-We-Are.pdf

[3] President Trump's March 28, 2017 Executive Order (EO) on *Promoting Energy Independence and Economic Growth* contains multiple provisions that target many sectors including coal, oil and natural gas, nuclear, and manufacturing and establishes the following policy:

> *It is in the national interest to promote clean and safe development of our Nation's vast energy resources, while at the same time avoiding regulatory burdens that unnecessarily encumber energy production, constrain economic growth, and prevent job creation. Moreover, the prudent development of these natural resources is essential to ensuring the Nation's geopolitical security.*

Assessment, it is key to further development of the Draft Forest Plan. The role and participation of this effective set of experts should be recognized and included in the *Final Assessment*.

Forest Service Analysis of Potential Environmental Impacts Must Consider the Science

As stated above, the guiding principles of the Forest Service requires actions that are grounded in world-class science and technology. As such, all aspects of the *Draft Assessment* must be based on facts and sound science, not innuendo and unsubstantiated accusations that may have been expressed through the public participation process to date.

The Non-Renewable Energy Resources Chapter of the *Draft Assessment* includes Key Findings and Supporting Data sections which outline several potential areas of impacts including groundwater and water resources impacts from poorly designed wells and surface spills, habitat fragmentation and land disturbance impacts, safety impacts based on increased truck traffic and seismic events, and health impacts from noise and light pollution and increased VOC emissions.

The U.S. Environmental |Protection Agency ("EPA") initiated a study in 2010 intended to investigate the potential impacts of hydraulic fracturing on water resources. EPA publicly released the Draft Assessment Report titled *Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources* on June 4, 2015. The Agency concluded its year-long formal peer review by the EPA Chartered Science Advisory Board ("SAB") with the submission of a Recommendations Report to the EPA Administrator on August 11, 2016. Afterwards, the Agency released its Final Assessment Report on December 13, 2016 retitled *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States* (EPA 600-R-16-236ES).

The EPA Chartered SAB Recommendations Report suggested that EPA needed more quantitative support of its June 2015 Draft Assessment topline and accurate conclusion of **"no systemic widespread impacts from hydraulic fracturing,"** As a result, API developed and shared two reports with the EPA Office of Research and Development ("ORD") – i) *Industry Practices and Trends Protecting Water Resources During Hydraulic Fracturing: Information for US EPA's Draft Assessment (October 2016)* and ii) *Quantitative Support for EPA's Finding of No Widespread, Systemic Effects to Drinking Water Resources from Hydraulic Fracturing (November 2016)*. Both reports are available on the API website.[4]

API contends that the science and data clearly demonstrate that hydraulic fracturing can be and has been conducted safely and responsibly. Over the last decade, considerable taxpayer resources at the state and federal level have been directed towards the topic of hydraulic fracturing. Numerous privately funded studies have also been conducted and made available for public review, including studies that have been conducted in California. On the whole, these studies have repeatedly concluded that actual cases of documented impacts are infrequent, and concerns about the practice are rooted largely in political

[4] http://www.api.org/oil-and-natural-gas/wells-to-consumer/exploration-and-production/hydraulic-fracturing/scientific-evidence-in-epa-study-confirm

ambiguity. API encourages the Forest Service to focus its review on the host of reputable studies by government agencies and academic institutions, coupled with empirical evidence, that together lead one to firmly conclude that hydraulic fracturing is not a threat to drinking water resources (see Attachment 2 to this letter).

A recent example worthy of note is a two-year study released in mid-2017 by the Academy of Medicine, Engineering, and Science of Texas ("TAMEST").[5] This work analyzed the overall impacts of oil and natural gas development in Texas – a state with a development history that dates to 1866. The report identifies data gaps and areas of concern (most notably under transportation), while recognizing that these are all being addressed by state and federal regulations and industry practices. The report concluded – based on facts – that hydraulic fracturing is being done in a safe and environmentally friendly manner with economic benefits provided to the state. This report also supports the EPA original fact-based assertion above, that hydraulic fracturing is not a significant threat to drinking water supplies, in its statement:

> "Direct migration of contaminants from targeted injection zones is highly unlikely to lead to contamination of potential drinking water aquifers." (The Academy of Medicine, Engineering and Science of Texas, *Environmental and Community Impacts of Shale Development in Texas* – Page 128.)

Facts About the Oil and Natural Gas Industry's Responsible Operations

The oil and natural gas industry carries out operations for safe and environmentally responsible exploration and production activities on lands administered by state and federal authorities, including production via the use of hydraulic fracturing and horizontal drilling in unconventional plays.

As previously discussed, federal and state regulations in Ohio are comprehensive. Hydraulic fracturing activity occurring on Forest Service lands in Ohio would be subject to the state's own comprehensive statutory and regulatory programs. These requirements include extensive monitoring requirements that further validate that ongoing oil and gas production activity in the planning area are not creating widespread impacts to water resources

Furthermore, industry standards and practices work in combination with federal and state regulations to provide an additional layer of environmental protection. Formulated by the industry's standard-setting program, these recommended practices cover all aspects of the industry's work and are consistently updated as a part of the industry's ongoing effort toward continued improvement of operations.

A. Protection of Groundwater Resources

Hydraulic fracturing in the United States has been conducted for over six decades. During this time industry has developed techniques for improving well drilling, cementing, and casing to protect

[5] http://tamest.org/wp-content/uploads/2017/07/Final-Shale-Task-Force-Report.pdf

freshwater sources, restrict fluids to the intended zone, and enable efficient hydrocarbon production. The primary means of ensuring that underground sources of drinking water are protected is by carefully casing the well with steel pipe and cementing it into place to create a tight seal. Several redundant layers of steel casings and cement sheaths are sequentially installed to provide layers of protection. After installation, the cement is tested to evaluate its strength and seal.[6] Well integrity is a top priority for the industry in protecting subsurface water resources.

B. Protection of Surface Waters

Industry also carefully manages water at the surface at all stages of operations. This applies throughout the water cycle and includes sourcing, transportation, and use as well as treatment, reuse, or disposal. Technological, and in certain cases, state regulatory advances have allowed producers to minimize use of fresh water sources in favor of non-potable, lower quality water, or produced water. Water reuse within the oil and natural gas industry is also encouraging development of more efficient, more mobile water treatment technologies that could eventually be scaled and utilized by other industries.

The federal government creates framework environmental laws that often prescribe regulatory minimum thresholds for states to follow. For example, the Clean Water Act ("CWA") applies to oil and natural gas operations, particularly where water resource protection, and in certain cases, restoration is concerned. The CWA allows for the establishment of the National Pollutant Discharge Elimination System ("NPDES"), which, in most states, regulates how oil and natural gas operators manage stormwater and other wastewater discharges from their sites. Operators must seek coverage under construction and operating permits; prepare compliant Stormwater Pollution Prevention Plans ("SWPPP"); and implement best management plans ("BMPs") and controls (including routine inspections and testing of upstream discharge points) to prevent impacts to receiving water bodies. The NPDES program further requires permits and engineering and other controls (including routine inspections and testing) for any discharge of wastewater from oil and natural gas sites. Further, a separate provision of the CWA, the Oil Spill Prevention, Control, and Countermeasures ("SPCC") Regulation requires oil and natural gas operators to prepare SPCC plans, implement controls, and establish BMPs to prevent impacts to receiving water bodies from tanks and other structures that hold oil on site.

Under the federal structure, states are authorized to be the primary stewards and regulators of their water. Most states have extensive water quality and quantity regulations overseen by a wide range of agencies. For example, Ohio's Environmental Protection Agency ("OEPA") Division of Surface Water ("DSW") includes six key program areas that support the CWA's "fishable, swimmable" goals for all surface waters in the state. These programs assess the quality of the surface waters, set standards for protection of the waters and establish plans to bring impaired waters back into attainment with water quality goals.

[6] http://www.api.org/~/media/Files/News/Infographics/Cementing_A_Seal_For_Safety.pdf

Further, ODNR protects Ohio's groundwater resources by regulating the disposal of brine and other wastes produced from the drilling, stimulation, and production of oil and natural gas in the state. ODNR received primacy of its Underground Injection ("UIC") Program from EPA in 1983 – and manages brine injection wells, annular disposal wells, and enhanced oil recovery injection wells. Enhanced recovery injection wells are used to increase production of hydrocarbons from nearby producing wells.

ODNR's UIC personnel are responsible for reviewing construction specifications, engineering, geological data, and issuing permits for Class II wells used to inject fluids, primarily oil-field brine, into deep, underground geological formations for disposal or for secondary oil recovery.[7] ODNR also regulates the hauling and spreading of brine. Brine haulers in Ohio are required to be formally registered, bonded and insured.

C. Chemical Disclosure

Approximately 99.5 percent of the contents of most hydraulic fracturing fluid systems are well-known and widely disclosed: water (90 percent by volume) and a proppant (typically sand or other non-toxic material, which constitutes 9.5 percent by volume). The substances that are most commonly found in the additional 0.5 percent of hydraulic fracturing fluid systems are also commonly found in food, cosmetics, detergents and other household products.[8] These substances are essential for efficient delivery of the proppant to the rock fractures, reduction of friction, which in turn reduces the energy required to pump, and in the prevention of corrosion and scale build up, which is detrimental to equipment and overall production. The combination of chemicals used by certain service companies, who typically carry out the actual fracturing operations, can be of a proprietary nature and receive similar protections from disclosure offered to other industries. The industry generally protects specific ingredients within additives that commonly represent less than a thousandth of a percent (0.001 percent) of the total hydraulic fracturing fluid volume. Even in those narrow circumstances, where precise chemical identification is not publicly released, the industry typically provides chemical category information that allows the public to identify the class and function of the chemical. Further, several states require that the precise identity of these ingredients be disclosed to regulators, physicians, and emergency personnel.

As a part of stakeholder engagement and to maintain a high level of transparency with communities, companies report specific information about fracturing fluid used at an individual well via a voluntary, publicly accessible website: FracFocus.org. This chemical disclosure registry was developed in 2011 by the Groundwater Protection Council ("GWPC") and the Interstate Oil and Gas Compact Commission ("IOGCC"), two organizations comprised of state regulators that oversee the oil and natural gas industry. FracFocus.org also serves as a reporting method to meet state disclosure for 25 states including: Alabama, Alaska, Arizona, California[9], Colorado, Idaho, Kansas, Kentucky, Louisiana,

[7] http://oilandgas.ohiodnr.gov/regulatory-sections/underground-injection-control
[8] Department of Energy/Groundwater Protection Council: Modern Shale Gas Development in the United States: A Primer (2009)
[9] California has implemented its own reporting system but does require concurrent reporting to FracFocus. While Arkansas and Wyoming do have FracFocus records (because operators submit them to FracFocus) neither state currently requires the use of FracFocus for official state reporting.

Michigan, Mississippi, Montana, Nebraska, New Mexico, Nevada, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Tennessee, Utah, and West Virginia. To date, chemical information on over 163,000 wells is contained within the registry.[10] Further, Ohio has strong disclosure requirements which apply during all aspects of the initial drilling process and during hydraulic fracturing.

Finally, safety data sheets ("SDSs") contain safety, health, and environmental information for ingredients of the products used (including those denoted as proprietary). SDS documents must be available onsite for the substances used in the hydraulic fracturing process as required by the Occupational Safety and Health Administration ("OSHA").

D. Air Emissions

The oil and natural gas industry is mindful of the value of improving air quality, and the expanding role that natural gas has provided in maintaining a national trend of emissions reduction. From an operations perspective, the production segment of the industry has been subject to a series of federal Clean Air Act regulatory programs over the past several years, which should be recognized as contributing to the positive story of reductions in greenhouse gases and overall emissions.

Natural gas is the major reason why the U.S. has reduced emissions more than any other nation, even while producing the most natural gas and oil. Just last month the nonpartisan International Energy Agency ("IEA") issued its latest report, finding that global energy-related carbon dioxide emissions flattened in 2019 – even as the world economy expanded by 2.9% – in large part due to the increased use of natural gas. The U.S. recorded the largest emissions decline of any country, down 140 million tons from the previous year. The IEA's executive director even referred to the findings as "grounds for optimism that we can tackle the climate challenge this decade [and] evidence that clean energy transitions are underway." Clearly, clean natural gas is integral to reaching domestic and global emissions-reduction and climate goals.

Since 2012, new sources of emissions from the oil and natural gas sector have been regulated by EPA's New Source Performance Standards at 40 CFR 60, Subpart OOOO ("NSPS OOOO"). The 2012 rule regulated emissions of volatile organic compounds ("VOCs"), with the co-benefit of reducing methane emissions. In 2014, the Obama Administration published its Methane Strategy, which directed multiple federal agencies to consider action to reduce methane emissions. In 2016, the Obama Administration expanded the 2012 rule to cover additional sources and added methane as a regulated pollutant in the regulations at 40 CFR 60, Subpart OOOOa ("NSPS OOOOa"). This action – the addition of methane as a regulated pollutant – compels the EPA under the Clean Air Act to develop guidelines for the states to regulate existing sources. In March 2017, President Trump directed EPA to review NSPS OOOOa and take action to suspend, revise or rescind the rule.

[10] Information on state reporting as of June 2019.

The EPA is undertaking two separate rulemakings to revise NSPS OOOOa. The first rule ("technical rule"), published in October 2018, proposed technical changes to OOOOa. The final rule has been delayed and was sent to the White House Office of Management and Budget ("OMB") in late November 2019. On September 24, 2019, EPA published the proposed "policy rule" reconsidering the direct regulation of methane. The rule is co-proposing two potential actions: a primary proposal and an alternative proposal. Both actions, if finalized, would remove the Agency's obligation to develop emission guidelines to address methane emissions from existing sources under section 111(d) of the Clean Air Act. Both rules are expected to be finalized before May 2020.

During much of this rulemaking activity, to demonstrate industry's commitment to addressing emissions, API launched and administered a voluntary program, The Environmental Partnership ("TEP"), for oil and natural gas production companies to continually improve their environmental performance.[11] With 75 participating companies, the immediate focus of the program is on actions to further reduce methane and VOC emissions using proven cost-effective technologies in upstream and midstream operations. The Environmental Partnership is an example of our forward-looking commitment to delivering on a continuous cycle of learning, collaborating, and taking action.

E. Industry Standards

Since 1924, API has led in the establishment, maintenance, and dissemination of hundreds of standards to ensure the safe and sustainable development of oil and natural gas in the U.S. and across the world. The process to create and manage the standards has been accredited by the American National Standards Institute ("ANSI"), the body that accredits similar programs at several U.S. national laboratories. This method brings together academics, government regulators and industry experts to improve and advance the safety of energy development. Each standard is reviewed at least every five years to maintain its integrity. API's standards represent industry safety practices based on the best available science and research. This is one reason they are widely cited, and often incorporated, in federal and state regulations. International regulators often reference the standards in their country's regulations, as well. As these standards are implemented and their effects measured, they add to the body of knowledge of industry best practices and lessons learned, and deliver significant improvements to system integrity, reliability, and integrated safety. API maintains a portfolio of more than 700 standards that cover all aspects of the oil and natural gas industry, including 260 focused specifically on exploration and production activities.

In our on-going effort toward continuous improvement of operations and building on existing API standards and practices pertaining to oil and natural gas extraction, API developed a set of 5 documents which specifically address the risk management issues accompanying well construction and management. First completed in 2011 and revised in 2013 under API's accredited consensus-based standards development process, this robust series helps to protect the public by providing a blueprint for strong, carefully constructed wells. The standards were created to convey proven industry practices while remaining flexible enough to accommodate the variations in state and regional regulatory

[11] https://theenvironmentalpartnership.org/

frameworks that often occur due to fundamental differences in regional geology and other factors, and to also serve as a reference for federal, state and international regulators.

ANSI/API RP 100-1 -- ***Well Integrity and Fracture Containment, 1st Edition, October 2015***

- Highlights practices for onshore well construction and fracture stimulation design and execution relating to well integrity and fracturing containment.
- Identifies actions to protect and isolate useable quality groundwater through application of appropriate barriers and controlled fracture design and execution practices.

ANSI/API RP 100-2 -- ***Managing Environmental Aspects Associated with Exploration and Production Operations Including Hydraulic Fracturing, 1st Edition, August 2015***

- Provides proven practices applicable for the planning and operation of wells, including hydraulic fracturing. It includes topics on managing environmental aspects during site planning; site selection; logistics; mobilization; rig up and demobilization; and stimulation operations.

ANSI/API Bulletin 100-3 -- ***Community Engagement Guidelines, 1st Edition, July 2014***

- Outlines what local communities and other key stakeholders can expect from operations. It is designed to acknowledge challenges and impacts that can occur and provides flexible and adaptive strategies for managing expectations and engaging with the community.

API Standard 65 Part 2 – ***Isolating Potential Flow Zones During Well Construction,*** **2nd Edition, December 2010**

- Helps ensure the well is properly designed and constructed to contain the hydrocarbons through the well bore and isolate them from ground water aquifers. This is accomplished through the use of casing, cement, and mechanical barriers.
- Includes information on industry cementing practices. A well-designed cement job optimizes cement placement through considerations such as laboratory tested slurry design, honoring pore pressure/fracture gradient window, use of spacers/pre-flushes, proper density and rheological hierarchy, fluid compatibility and adequate centralization.

API RP 51R – ***Environmental Protection for Onshore Oil and Gas Production Operations and Leases,*** **1st Edition, July 2009**

- Provides environmentally sound practices for domestic onshore oil and gas production operations, including fracturing. Applies to all production facilities, including produced water handling facilities. Operational coverage begins with the design and construction of access roads and well locations, and includes reclamation, abandonment, and restoration operations.

A new standard, focused on species and habitat conservation practices, is expected to be completed by mid- 2020 and will provide strategies focused on landscape level planning, site specific wildlife assessment, operational practices, and habitat conservation/mitigation and at the entry, exploration, development, production, and exit phases of oil and natural gas development.

A. Economic Contributions of the Oil and Natural Gas Industry

Within the *Draft Assessment*, we were pleased to see the Forest Service recognize and discuss the benefits provided by a healthy oil and gas industry in the Appalachian Basin. A Price Waterhouse Coopers study, released by API in 2017, showed at the macro level that the entire oil and natural gas industry supports more than 262,800 jobs in the state. This includes direct industry jobs as well as jobs in the wholesale/retail, construction, manufacturing and other sectors.[12] A more recent study, completed by Cleveland State University for JobsOhio and released in November of 2019, shows the industry contributed $78 billion to the state's economy since 2011.[13] Overall, producing the energy that the U.S, and its allies, rely upon to fuel the nation's economy has also been a proven tool for job creation, economic stimulation, federal revenues, and national security.

And yet, with the upcoming 2020 Presidential election, there has been much political chatter about banning safe hydraulic fracturing and ending oil and natural gas leasing on private and federal lands. The reality is, we should be celebrating and expanding the use of this advanced technology for the many benefits it has brought in recent years – including economic growth, increased energy security, emission reductions, and consumer savings.

A new economic analysis, completed by the consulting firm, OnLocation, shows that a ban on fracturing could have detrimental consequences, at a time when more impact on the economy is unwarranted.[14] This analysis finds that American families – even while consuming less energy – could pay, on average, $618 more each year due to higher prices for gasoline, natural gas, electricity, and heating oil. It also shows that the U.S. could lose hard-earned progress toward energy security, returning to dependence on foreign suppliers for 21% of our total energy needs by 2030. Overall, the domestic economy could lose $7.1 trillion in cumulative GDP and millions of jobs through 2030, potentially triggering a recession.

Conclusion

As noted above, there have been changes in both federal and state laws, which have resulted in more stringent regulatory programs that need to be considered as the Forest Service moves forward with any significant changes to the current Wayne Forest Plan.

The oil and natural gas industry is committed to meeting federal and state approaches that promote safety and environmental performance while securing the tremendous benefits of domestic energy production for our nation. Further, API is a leader in developing the industry technical standards and programs that enhance the safety of operations worldwide. API urges the Forest Service to fully consider the scientific data, the available studies, state and federal regulatory frameworks, industry best practices, and the significant technology and engineering advancements in this industry that make safe

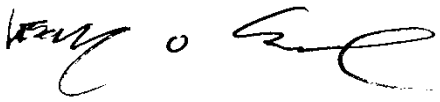
[12] https://www.api.org/news-policy-and-issues/american-jobs/economic-impacts-of-oil-and-natural-gas
[13] https://www.jobsohio.com/media-relations/posts/ohio-growing-shale-energy-industry/
[14] https://www.api.org/~/media/Files/Oil-and-Natural-Gas/Hydraulic-Fracturing/2020/fracking-ban-study-americas-progress-at-risk

and responsible oil and natural gas development possible. Upon having considered the information in an unbiased manner, you must conclude that existing controls (both mandatory and voluntary) are more than adequate to protect human health and the environment, both now and in the future, particularly as technologies and management practices advance.

Therefore, drastic changes are not needed with regard to energy development in the Wayne National Forest. Decisions to preclude development in one unit as a trade-off for allowing continued development in another unit is not in line with an agency mission of sustaining the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. Instead, thoughtful consideration must be given to what resource needs may exist in the future and a Final Wayne Forest Plan be developed that encourages safe energy resource development in all three units of the Wayne National Forest.

API would be happy to discuss any of these topics with the Plan Review Team and you in greater detail. Please reach out to Stephanie Meadows of my staff (202-682-8578 or meadows@api.org) if you have questions or would like to set up a time to meet in person or by teleconference. Thank you.

Sincerely,



Lem O. Smith
Vice President
Upstream Policy
American Petroleum Institute

ATTACHMENT 1

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ATTACHMENT 2

RESOURCES FOR REVIEW BY THE WAYNE FOREST SERVICE SUPERVISOR

Water Resource-Related Studies

Barth-Naftilan, E., J. Sohng, and J.E. Saiers. 2018. Methane in groundwater before, during, and after hydraulic fracturing of the Marcellus Shale. Proceedings of National Academy of Sciences, https://doi.org/10.1073/pnas.1720898115

Jennifer S. Harkness, Thomas H. Darrah, Nathaniel R. Warner, Colin J. Whyte, Myles T. Moore, Romain Millot, Woldfram Kloppman, Robert B. Jackson, and Avner Vengosh; 2017, The Geochemistry of Naturally Occurring Methane and Saline Groundwater in an Area of Unconventional Shale Gas Development: Geochimica et Cosmochimica Acta, https://www.sciencedirect.com/science/article/pii/S0016703717302004 (link to article on the study).

Peter B. McMahon, Jeannie R.B. Barlow, Mark A. Engle, Kenneth Belitz, Patricia B. Ging, Andrew G. Hunt, Bryant C. Jurgens, Yousif K. Kharaka, Roland W. Tollett, and Timothy M. Kresse; 2017, Methane and Benzene in Drinking-Water Wells Overlying the EagleFord, Fayetteville, and Haynesville Shale Hydrocarbon Production Areas: Environmental Science and Technology; (U.S. Geological Survey study link).

U.S. Environmental Protection Agency; December 2016, Final Assessment Report: *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States* (EPA 600-R-16-236ES) -- (study link).

Wyoming Department of Environmental Quality, 2016 (study link).

E. Claire Botner, Amy Townsend-Small, David B. Nash, Xiaomei Xu, Arndt Schimmelmann, Joshua H. Miller; 2016, Monitoring Concentration and Isotopic Composition of Methane in Groundwater in the Utica Shale Hydraulic Fracturing Region of Ohio: *Environmental Monitoring and Assessment* (2018) 190:322[15] https://link.springer.com/journal/10661.

Nicot, J.-P., Mickler, P., Larson, T., Castro, M. C., Darvari, R., Smyth, R. C., Uhlman, K., and Omelon, C.; 2015, Understanding and managing environmental roadblocks to shale gas development: an analysis of shallow gas, NORM, and trace metals: Bureau of Economic Geology, The University of Texas at Austin, Contract Report prepared for RPSEA, under contract no. 11122-56, 272 p.[16] http://www.rpsea.org/projects/11122-56/.

Donald Siegel, Bert Smith, Elizabeth Perry, Rikka Bothun, and Mark Hollingsworth; 2016, Dissolved methane in shallow groundwater of the Appalachian Basin: Results from the Chesapeake Energy predrilling geochemical database, *Environmental Geosciences* V. 23, No.1 (March 2016) 47 p. http://archives.datapages.com/data/deg/2016/EG012016/eg15015/eg15015.html.

Robert B. Jackson, Ella R. Lowry, Amy Pickle, Mary Kang, Dominic DiGiulio, and Kaiguang Zhao; 2015**,** The Depths of Hydraulic Fracturing and Accompanying Water Use Across the United States, E*nvironmental Science and Technology*, *49* (15), pp 8969–8976 https://pubs.acs.org/doi/abs/10.1021/acs.est.5b01228?journalCode=esthag.

[15]Hard copy is available by contacting API directly.
[16]Hard copy is available by contacting API directly.

Brian D. Drollette, Kathrin Hoelzer, Nathaniel R. Warner, Thomas H. Darrah, Osman Karatum, Megan P. O'Connor, Robert K. Nelson, Loretta A. Fernandez, Christopher M. Reddy, Avner Vengosh, Robert B. Jackson, Martin Elsner, and Desiree L. Plata; 2015, Elevated levels of diesel range organic compounds in groundwater near Marcellus gas operations are derived from surface activities, PNAS October 27, 2015. 112 (43) 13184-13189 http://www.pnas.org/content/112/43/13184?tab=author-info.

Donald I. Siegel, Nicholas A. Azzolina, Bert J. Smith, A. Elizabeth Perry, and Rikka L. Bothun; 2015, Methane Concentrations in Water Wells Unrelated to Proximity to Existing Oil and Gas Wells in Northeastern Pennsylvania, *Environmental Science and Technology*, 2015, *49* (7), pp 4106–4112 https://pubs.acs.org/doi/abs/10.1021/es505775c.

California Council on Science and Technology (CCST), 2015 – Summary Report (study link).

California Council on Science and Technology (CCST), 2015, Volumes 1, 2, 3 (study link).

Hammack, R.; Harbert, W.; Sharma, S.; Stewart, B.; Capo, R.; Wall, A.; Wells, A.; Diehl, R.; Blaushild, D.; Sams, J.; Veloski, G. An Evaluation of Fracture Growth and Gas/Fluid Migration as Horizontal Marcellus Shale Gas Wells are Hydraulically Fractured in Greene County, Pennsylvania; NETL-TRS-3-2014; EPAct Technical Report Series; U.S. Department of Energy, National Energy Technology Laboratory: Pittsburgh, PA, 2014; p 76. https://www.netl.doe.gov/File%20Library/Research/onsite%20research/publications/NETL-TRS-3-2014_Greene-County-Site_20140915_1_1.pdf.

Samuel A. Flewelling and Manu Sharna; 2013, Constraints on Upward Migration of Hydraulic Fracturing Fluid and Brine, *Groundwater* July 2013. https://onlinelibrary.wiley.com/doi/full/10.1111/gwat.12095.

Lisa J. Molofsky, John A. Connor, Albert S. Wylie, Tom Wagner, and Shahla K. Farhat; 2013, Evaluation of Methane Sources in Groundwater in Northeastern Pennsylvania, *Groundwater*, April 2013 https://onlinelibrary.wiley.com/doi/abs/10.1111/gwat.12056.

Timothy M. Kresse, Nathaniel R. Warner, Phillip D. Hays, Adrian Down, Avner Vengosh, Robert B. Jackson; 2012, Shallow Groundwater Quality and Geochemistry in the Fayetteville Shale Gas-Production Area, North-Central Arkansas, (U.S. Geological Survey study link).

U.S. Government Accountability Office, 2012 (report link).

Cardno Entrix, 2012 (report link).

Massachusetts Institute of Technology (MIT) Energy Initiative, 2010 (report link).

Community Health-Related Studies

Associated with the Epidemiology Literature

Bamber, A. M., Hasanali, S. H., Nair, A. S., Watkins, S. M., Vigil, D. I., Van Dyke, M., ... & Richardson, K. (2019). A systematic review of the epidemiologic literature assessing health outcomes in populations living near oil and natural gas operations: Study quality and future recommendations. International journal of environmental research and public health, 16(12), 2123.

HEI-Energy Research Committee. 2019. Potential Human Health Effects Associated with Unconventional Oil and Gas Development: A Systematic Review of the Epidemiology Literature. Special Report 1. Boston, MA: Health

Effects Institute–Energy Wendt Hess, J., Bachler, G., Momin, F., & Sexton, K. (2019). Assessing Agreement in Exposure Classification between Proximity-Based Metrics and Air Monitoring Data in Epidemiology Studies of Unconventional Resource Development. International journal of environmental research and public health, 16(17), 3055.

Associated with Exposure Studies in the Literature

Long, C. M., Briggs, N. L., & Bamgbose, I. A. (2019). Synthesis and health-based evaluation of ambient air monitoring data for the Marcellus Shale region. Journal of the Air & Waste Management Association, 69(5), 527-547.

Gradient LLC, 2019. Public Health Evaluation of Ambient Air Near a Shale Gas Well Site and School Campus: Results from Long-term Air Monitoring at the Yonker Well Site Nearby the Fort Cherry School Campus in Washington County, PA: Prepared for Range Resources-Appalachia, LLC.

Maskrey, J. R., Insley, A. L., Hynds, E. S., & Panko, J. M. (2016). Air monitoring of volatile organic compounds at relevant receptors during hydraulic fracturing operations in Washington County, Pennsylvania. Environmental monitoring and assessment, 188(7), 410.

Produced Water-Related Resources

Veil, J. Produced Water Volumes and Management Practices in 2017 (Final Report) Prepared for the Groundwater Research and Education Foundation; February 2020, http://www.gwpc.org/sites/default/files/pw%20report%202017%20-%20final.pdf.

Produced Water Report: Regulations, Current Practices and Research Needs; Groundwater Protection Council; June 2019, http://www.gwpc.org/sites/default/files/files/Produced%20Water%20Full%20Report%20-%20Digital%20Use.pdf.

U.S. Study of Oil and Gas Extraction Wastewater Management Under the Clean Water Act; U.S. Environmental Protection Agency Engineering and Analysis Division Office of Water; Draft May 2019; EPA-821-R19-001, https://www.epa.gov/sites/production/files/2019-05/documents/oil-and-gas-study_draft_05-2019.pdf.

Induced Seismicity Resource

Potential Injection-Induced Seismicity Associated with Oil & Gas Development: A Primer on Technical and Regulatory Considerations Informing Risk Management and Mitigation; Second Edition; States First Initiative; 2017, http://www.gwpc.org/sites/default/files/ISWG%20Primer%20Second%20Edition%20Final%2011-17-2017.pdf.

(NOTE: The 3rd Edition of the Induced Seismicity State Primer is under development and expected by Fall 2020).