



July 20, 2023

Attn: Commission Clerk  
Oil & Gas Land Management Commission  
Ohio Department of Natural Resources  
2045 Morse Road  
[Commission.Clerk@oglmc.ohio.gov](mailto:Commission.Clerk@oglmc.ohio.gov)

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**Public Comment RE: Please DENY the Leasing Nomination for Wolf Run State Park,  
Nomination #: 23-DNR-0008**

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Dear Commissioners,

The Ohio Environmental Council (OEC) respectfully requests that you deny the leasing nomination submitted for Wolf Run State Park – Nomination Nos. 23-DNR-0008.

The OEC is Ohio’s leading state-wide public interest environmental organization. We have a 54-year history and thousands of members located throughout the state and beyond. Our mission is to secure healthy air, land, and water for all who call Ohio home.

Ohio Revised Code, Section 155.33(B)(1)(b), (c), (e), and (h) provides that:

In making its decision to approve or disapprove the nomination, the commission shall consider all of the following: [...]

- (b) Whether the proposed oil or gas operation is compatible with the current uses of the parcel of land that is the subject of the nomination;
- (c) The environmental impact that would result if the lease of a formation that is the subject of the nomination were approved; [...]
- (e) Any potential impact to visitors or users of a parcel of land that is the subject of the nomination; [and]
- (h) Any comments or objections to the nomination submitted to the commission by residents of this state or other users of the parcel of land that is the subject of the nomination;

Unconventional oil and gas development of Wolf Run State Park would generate

significant air, noise, and light pollution that would negatively impact visitors and users of the Park. R.C. 155.33(B)(1)(b), (c), (e), and (h). This development would conflict with current uses of the Park, including the recreational and health-based escape from industrialization, pollution, and nature fragmentation. R.C. 155.33(B)(1)(b), (c), (e), and (h). Oil and gas development of Wolf Run State Park would also push the world closer to climate catastrophe at a time when virtually all nations of the globe recognize the need to rapidly decarbonize the energy sector. R.C. 155.33(B)(1)(c), and (h).

#### **A. DENYING THE NOMINATION WILL PROTECT PUBLIC HEALTH AND SAFETY – R.C. 155.33(B)(1)(b), (c), (e), and (h).**

Unconventional oil and gas production (UOG) is associated with: dangerous levels of hazardous air pollutants, including carcinogenic and endocrine disrupting chemicals; childhood leukemia; increased mortality in elderly populations; more heart attacks; low birth weight and extreme premature births; asthma attacks; and headaches and fatigue.

##### **Dangerous Levels of Hazardous Air Pollution**

A 2019 meta-analysis on the links between hazardous air pollutants (HAPs) and oil and gas development showed that HAPs linked to numerous cancerous and non-cancerous health conditions are found in the vicinity of production sites at concentrations exceeding health safety thresholds (Garcia-Gonzales 2019).<sup>1</sup>

A 2018 meta-analysis of endocrine-disrupting air pollutants revealed that there are more than 200 airborne chemicals associated with unconventional oil and gas development, including 26 known endocrine-disrupting chemicals and 8 suspected endocrine-disrupting chemicals (Bolden 2018).<sup>2</sup>

A 2014 study identified eight highly toxic chemicals in air samples collected near fracking and associated infrastructure sites across five states, including Ohio. The most common airborne chemicals detected included two proven human carcinogens (benzene and formaldehyde) and two potent neurotoxicants (hexane and hydrogen sulfide). In 29 out of 76 samples, concentrations far exceeded federal health and safety standards, sometimes by several orders of magnitude (Macey 2014).<sup>3</sup>

##### **Childhood Leukemia**

A research study conducted over several years and published in 2022 revealed that children living within a 2-kilometer radius of at least one unconventional oil and gas well

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<sup>1</sup> Garcia-Gonzales, Diane A., et al. "Hazardous air pollutants associated with upstream oil and natural gas development: a critical synthesis of current peer-reviewed literature." [Annual Review of Public Health 40 \(2019\)](#): 283-304.

<sup>2</sup> Bolden, Ashley L., et al. "Exploring the endocrine activity of air pollutants associated with unconventional oil and gas extraction." [Environmental Health 17.1 \(2018\)](#): 1-17.

<sup>3</sup> Macey, Gregg P., et al. "Air concentrations of volatile compounds near oil and gas production: a community-based exploratory study." [Environmental Health 13.1 \(2014\)](#): 1-18.

at the time of their birth were almost twice as likely to be diagnosed with acute lymphoblastic leukemia (Clark 2022).<sup>4</sup>

### **Increased Mortality in Elderly Populations**

A study conducted in 2022 indicated that air contaminants stemming from unconventional oil and gas operations could be linked to negative health impacts in elderly individuals. The investigation discovered that older people residing close to or in the direction of the wind from these unconventional oil and gas extraction sites faced an increased likelihood of early death compared to their counterparts dwelling upwind (Li 2022).<sup>5</sup>

### **More Heart Attacks**

A 2021 research study established a connection between unconventional natural gas production and heart-related health risks. The study uncovered higher rates of hospitalization due to acute myocardial infarction, commonly known as a heart attack, in middle-aged and elderly men, as well as older women, residing in Pennsylvania counties located above the Marcellus Shale (Denham 2021).<sup>6</sup>

### **Increased Risks to Babies**

A 2020 study found that expectant mothers residing close to active oil and gas wells faced a higher risk of giving birth to babies with low birth weight (Tran 2020).<sup>7</sup> A 2018 study of women living near fracking sites in Texas found a risk of extreme preterm birth (Whitworth 2018).<sup>8</sup>

### **Asthma Attacks, Headaches, and Fatigue**

A 2017 research study involving approximately 24,000 primary care patients from central and northeast Pennsylvania found that living near unconventional natural gas development sites was associated with symptoms like nasal and sinus issues, migraines, and increased fatigue (Tustin 2017).<sup>9</sup>

A 2016 study examined the medical records of over 35,000 patients with asthma who resided in proximity to unconventional natural gas production sites in Pennsylvania. The study concluded that UOG operations close to the patients' homes were correlated with a

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<sup>4</sup> Clark, Cassandra J., et al. "Unconventional oil and gas development exposure and risk of childhood acute lymphoblastic leukemia: a case-control study in Pennsylvania, 2009–2017." *Environmental Health Perspectives* 130.8 (2022): 087001.

<sup>5</sup> Li, Longxiang, et al. "Exposure to unconventional oil and gas development and all-cause mortality in Medicare beneficiaries." *Nature Energy* 7.2 (2022): 177-185.

<sup>6</sup> Denham, Alina, et al. "Acute myocardial infarction associated with unconventional natural gas development: A natural experiment." *Environmental Research* 195 (2021): 110872.

<sup>7</sup> Tran, Kathy V., et al. "Residential proximity to oil and gas development and birth outcomes in California: a retrospective cohort study of 2006–2015 births." *Environmental Health Perspectives* 128.6 (2020): 067001.

<sup>8</sup> Whitworth, Kristina Walker, et al. "Drilling and production activity related to unconventional gas development and severity of preterm birth." *Environmental Health Perspectives* 126.3 (2018): 037006.

<sup>9</sup> Tustin, Aaron W., et al. "Associations between unconventional natural gas development and nasal and sinus, migraine headache, and fatigue symptoms in Pennsylvania." *Environmental Health Perspectives* 125.2 (2017): 189-197.

higher likelihood of experiencing mild, moderate, and severe intensification of asthma symptoms. Those living near active gas wells are 1.5 to 4 times more likely to suffer from asthma attacks than those living farther away, with the closest group having the highest risk (Rasmussen 2016).<sup>10</sup>

**B. DENYING THE NOMINATION WILL PROTECT CURRENT USES AND PREVENT NEGATIVE IMPACTS TO USERS/VISITORS AND THE ENVIRONMENT – R.C. 155.33(B)(1)(b), (c), (e), and (h).**

On a per capita basis, public land is a relatively rare resource in Ohio; nature in Ohio is fragmented. The air pollution, stress, traffic safety, and wildlife impacts associated with UOG are incompatible with the current health benefits and recreational uses of Wolf Run State Park.

**The Public Needs Quality Public Greenspace for Physical and Mental Wellbeing.** Meta-analysis results showed that greenspace exposure is associated with wide-ranging health benefits, including statistically significant associations with reduced diastolic blood pressure, heart rate, salivary cortisol, incidence of type II diabetes and stroke, all-cause and cardiovascular mortality, as well as health-denoting associations with pregnancy outcomes, HRV, and HDL cholesterol, and self-reported health.<sup>11</sup>

Forest-based interventions (also known as “forest-bathing”) have a positive impact on the cardiovascular system; some immunological and/or inflammatory parameters; and mental health in the areas of stress, depression, anxiety, and negative emotions. Positive effects were seen in healthy children and adults, as well as in adults with various preexisting conditions.<sup>12</sup>

**UOG-Generated Air Pollution Is Incompatible with Current Uses and Threatens Significant Negative Visitor and Environmental Impacts.**

Refer to Section A., above.

**UOG Causes Stress and Reduces Quality of Life and Public Safety.**

In a 2018 study of residents of Ohio’s Guernsey and Noble Counties, every participant reported experiencing negative impacts on their quality of life from unconventional natural gas development. Types of psychological stress reported included stress from noise or light pollution; feeling frustrated and manipulated after interactions with the oil and gas industry; general stress and uncertainty about the future. Researchers found that experiences of social stress extended to include divisions among family or community; fears of, or direct experiences of, environmental health harms; observing dying, unhealthy trees; and traffic-related effects. Nearly all residents interviewed had

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<sup>10</sup> Rasmussen, Sara G., et al. "Asthma Exacerbations and Unconventional Natural Gas Development in the Marcellus Shale." *JAMA Intern Med.* 176.9 (2016):1334-1343.

<sup>11</sup> Twohig-Bennett, Caoimhe, and Andy Jones. "The health benefits of the great outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes." *Environmental research* 166 (2018): 628-637.

<sup>12</sup> Stier-Jarmer, Marita, et al. "The psychological and physical effects of forests on human health: A systematic review of systematic reviews and meta-analyses." *International journal of environmental research and public health* 18.4 (2021): 1770.

experienced dangerous encounters with oil and gas truck drivers and observed that damaged roads had become increasingly common.<sup>13</sup>

A 2015 study in Pennsylvania found vehicle crash rates to be substantially higher in counties with notable oil and gas drilling; while heavy truck crash rates were 61 to 65% higher.<sup>14</sup>

### **UOG Surrounding Wolf Run Would Harm Ohio's Outdoor Recreation Economy.**

The State of Ohio reported 42,831,130 visits to Ohio State Parks for the year 2018.<sup>15</sup> The reality and perception of fracking and UOG production under and surrounding Wolf Run would negatively impact park attendance and Wolf Run's reputational value.

The Outdoor Industry Association estimates that outdoor recreation in Ohio annually generates \$24.3 billion in consumer spending, supports 215,000 direct jobs, \$7 billion in wages, and \$1.5 billion in state and local tax revenue.<sup>16</sup>

### **UOG Light and Noise Pollution Harms Wildlife.**

Light and noise pollution from oil and gas production disrupt wildlife behavior, including in protected areas and critical habitats of endangered species, and have been linked to mass die-offs of waterfowl and declines in songbird populations in Alberta, Canada, Pennsylvania, West Virginia, eastern Ohio, and New Mexico.<sup>17</sup> Chronic noise from drilling and fracking operations interferes with the ability of birds to respond to acoustic cues.<sup>18</sup> Wildlife biologists in West Virginia found genetic changes in the Louisiana waterthrush that were linked to shale gas development.<sup>19</sup>

## **C. DENYING THE WOLF RUN NOMINATION WILL HELP POSITION OHIO'S PUBLIC LANDS TO CONFRONT CATASTROPHIC CLIMATE CHANGE – R.C. 155.33(B)(1)(c), and (h).**

Deciding to keep Wolf Run's publicly-owned oil and gas reserves in reserve rather than putting them in production would be an important act of restraint, foresight, and conservation. The 2023 IPCC Synthesis Report states that "Limiting human-caused global warming requires

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<sup>13</sup> Fisher, Michael P., et al. "Psychosocial implications of unconventional natural gas development: Quality of life in Ohio's Guernsey and Noble Counties." *Journal of Environmental Psychology* 55 (2018): 90-98.

<sup>14</sup> Graham, Jove, et al. "Increased traffic accident rates associated with shale gas drilling in Pennsylvania." *Accident Analysis & Prevention* 74 (2015): 203-209.

<sup>15</sup> Smith, Jordan W., Anna B. Miller, and Yu-Fai Leung. "2019 Outlook and Analysis Letter: The Vital Statistics of America's State Park Systems." *Institute of Outdoor Recreation and Tourism* (2020): 1.

<sup>16</sup> [Outdoor Industry Association](#) (2017).

<sup>17</sup> Buxton, Rachel T., et al. "Noise pollution is pervasive in US protected areas." *Science* 356.6337 (2017): 531-533.

<sup>18</sup> Kleist, Nathan J., et al. "Chronic anthropogenic noise disrupts glucocorticoid signaling and has multiple effects on fitness in an avian community." *Proceedings of the National Academy of Sciences* 115.4 (2018): E648-E657.

<sup>19</sup> Frantz, Mack W., et al. "Epigenetic response of Louisiana Waterthrush *Parkesia motacilla* to shale gas development." *Ibis* 162.4 (2020): 1211-1224.

net-zero CO2 emissions [and] a strong reduction in other greenhouse gas emissions.”<sup>20</sup> UOG fracking and production stands in opposition to both of these goals. It is a process that not only releases large amounts of methane, but creates an end product that will be burned and release further CO2 into the atmosphere. Swift and steep reductions in GHG emissions are needed to conserve a habitable climate and a livable world.

According to the International Energy Agency (IEA), there can be no new oil and gas development if the global energy sector is to reach net zero emissions by 2050 and help avoid catastrophic climate change.<sup>21</sup>

According to the International Institute for Sustainable Development (IISD), the world must decrease global oil and gas production and consumption by 30% by 2030 in order to satisfy Paris Agreement climate goals.<sup>22</sup>

According to the Intergovernmental Committee on Climate Change (IPCC), limiting warming to 1.5°C and 2°C involves rapid, deep, and in most cases immediate greenhouse gas emission reductions.<sup>23</sup>

The stated aim of the 2015 Paris Agreement, which virtually every nation on Earth has ratified, is to keep global temperature rise “well below” 2 degrees Celsius and to “pursue efforts” to limit it to 1.5 degrees Celsius.<sup>24</sup>

In 2018, the IPCC determined that the 0.5-degree increase from 1.5 to 2.0 degrees Celsius would make the impacts of catastrophic heat waves, flooding, drought, crop failures, coral reef loss, and species extinctions significantly harder for humanity to handle.<sup>25</sup> Limiting global warming to 1.5 degrees Celsius, rather than 2 degrees Celsius, “could reduce the number of people exposed to climate-related risks and susceptible to poverty by up to several hundred million by 2050,” the 2018 IPCC report states.<sup>26</sup> At 1.5 degrees Celsius, the number of people across the globe at risk of inadequate water supplies could be 50 percent lower than at 2 degrees.<sup>27</sup>

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<sup>20</sup> IPCC, “[Climate Change 2023 Synthesis Report Summary for Policymakers](#).” A Report of the Intergovernmental Committee on Climate Change. Contribution of the Working Groups I, II, and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 25 May 2023, at p. 19.

<sup>21</sup> International Energy Agency, “[Net zero by 2050: A roadmap for the global energy sector](#).” (2021).

<sup>22</sup> IISD, von Kursk, Olivier Bois, and Greg Muttitt. “[Lighting the Path: What IPCC energy pathways tell us about Paris-aligned policies and investments](#).” International Institute for Sustainable Development (2022).

<sup>23</sup> IPCC, “[Climate Change 2023 Synthesis Report Summary for Policymakers](#).” A Report of the Intergovernmental Committee on Climate Change. Contribution of the Working Groups I, II, and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 25 May 2023, at p. 22.

<sup>24</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement>

<sup>25</sup> Masson-Delmotte, Valérie, et al. “[Global warming of 1.5 C.](#)” *An IPCC Special Report on the impacts of global warming of 1.5 (2018)*: 43-50.

<sup>26</sup> Masson-Delmotte, Valérie, et al. “[Global warming of 1.5 C.](#)” *An IPCC Special Report on the impacts of global warming of 1.5 (2018)*: 43-50.

<sup>27</sup> Masson-Delmotte, Valérie, et al. “[Global warming of 1.5 C.](#)” *An IPCC Special Report on the impacts of global warming of 1.5 (2018)*: 43-50.

Methane, the main component of natural gas, is 34 times more potent as a greenhouse gas in the atmosphere than CO<sub>2</sub> over a 100-year timeframe, and 86 times more potent over a 20-year timeframe.<sup>28</sup>

Climate change is a threat to human well-being and planetary health. There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all.<sup>29</sup>

The IPCC states: “Continued emissions will further affect all major climate system components, and many changes will be irreversible on centennial to millennial time scales and become larger with increasing global warming. Without urgent, effective, and equitable mitigation and adaptation actions, climate change increasingly threatens ecosystems, biodiversity, and the livelihoods, health, and wellbeing of current and future generations.”<sup>30</sup>

Here in America, many vulnerable populations such as children, older adults, pregnant women, low-income communities, some communities of color, indigenous populations, people with disabilities, and people with pre-existing or chronic health conditions are considered disproportionately vulnerable to the effects of climate change.<sup>31</sup>

Climate change will cause extreme heat and extreme weather events to become more common. Outdoor air quality will drop and flooding will become more frequent. Vector-borne diseases, water-borne diseases, and food-related infections will thrive in the warmer climate. And, the mental health of the people will suffer from both the fear of the future and the negative impacts of all the other effects harming their lives.<sup>32</sup>

Air quality will decrease significantly due to climate change. Meteorological conditions will shift and allow for ozone concentrations to increase in the air, further increasing the rate of “premature deaths, hospital visits, lost school days, and acute respiratory symptoms.”<sup>33</sup> Wildfires, which will become more common as temperatures rise, also harm air quality by increasing particulate matter and ozone precursors in the air.<sup>34</sup>

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<sup>28</sup> Stocker, Thomas, ed. *Climate change 2013: the physical science basis: Working Group I contribution to the Fifth assessment report of the Intergovernmental Panel on Climate Change*. Cambridge university press, 2014.

<sup>29</sup> IPCC, “[Climate Change 2023 Synthesis Report Summary for Policymakers](#).” A Report of the Intergovernmental Committee on Climate Change. Contribution of the Working Groups I, II, and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 25 May 2023, at p. 24.

<sup>30</sup> IPCC, “[Climate Change 2023 Synthesis Report Summary for Policymakers](#).” A Report of the Intergovernmental Committee on Climate Change. Contribution of the Working Groups I, II, and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 25 May 2023, at p. 24.

<sup>31</sup> Crimmins, Allison, et al. “The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.” [U.S. Global Change Research Program, 2016](#).

<sup>32</sup> Crimmins, Allison, et al. “The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.” [U.S. Global Change Research Program, 2016](#).

<sup>33</sup> Crimmins, Allison, et al. “The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.” [U.S. Global Change Research Program, 2016](#).

<sup>34</sup> Crimmins, Allison, et al. “The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.” [U.S. Global Change Research Program, 2016](#).

We are already seeing increased climate-related air quality impacts in Ohio. In 2015, wildfires and the ozone precursors they emit caused ozone levels to rise to 60-80 ppb for over 8 hours, putting people's health at risk.<sup>35</sup> Wildfires in eastern Canada are filling Ohio's June and July, 2023 skies with smoke and resulting in central Ohio's first "unhealthy" air quality alert since 2003.<sup>36</sup> These numbers are above recommended safety levels and put some of the most vulnerable populations at risk, such as the many children with asthma in Ohio who make up part of the 6.8 million American children with asthma that will suffer from these drops in air quality.<sup>37</sup> Fossil fuel-driven climate change is the main cause of increasing fire weather.<sup>38</sup> These air quality impacts will worsen as the planet's temperature rises.

For all of the foregoing reasons, both individually and collectively, the OEC respectfully requests that you DENY the Wolf Run State Park leasing nomination.

Respectfully Submitted,

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<sup>35</sup> Dreessen, Joel, John Sullivan, and Ruben Delgado. "Observations and impacts of transported Canadian wildfire smoke on ozone and aerosol air quality in the Maryland region on June 9–12, 2015." *Journal of the Air & Waste Management Association* 66.9 (2016): 842-862.

<sup>36</sup> Behrens, Cole, "[Canadian wildfire haze drifts into Ohio. Air quality alert for unhealthy level first since 2003](#)" The Columbus Dispatch, June 28, 2023.

<sup>37</sup> Crimmins, Allison, et al. "The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment." [U.S. Global Change Research Program, 2016.](#)

<sup>38</sup> Zhuang, Yizhou, et al. "Quantifying contributions of natural variability and anthropogenic forcings on increased fire weather risk over the western United States." *Proceedings of the National Academy of Sciences* 118.45 (2021): e2111875118.