

TESTIMONY OF PAOLO NATALI  
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U.S. HOUSE OF REPRESENTATIVES  
NATURAL RESOURCES COMMITTEE  
SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

Hearing entitled “The Toxic Legacy of the Mining Law of 1872”

July 27, 2021

Thank you, Chairman Lowenthal, Ranking Member Stauber, and distinguished members of the subcommittee, for inviting me to testify, and for your leadership on these critical issues. My name is Paolo Natali, and I am a Principal at RMI, formerly Rocky Mountain Institute. Founded in 1982, RMI is an independent, nonpartisan nonprofit dedicated to transforming global energy use to create a clean, prosperous, and secure zero-carbon future for all. I am grateful for the opportunity to speak with you today about RMI’s work with the mining sector, and in particular about the opportunities for reclaimed mine sites to play a central role in the energy transition needed to stave off the worst effects of climate change.

I was invited today to speak directly to the opportunities for transforming closed and abandoned mines into renewable energy hubs across rural America. I wish to make two points in particular. First, there are several compelling and complementary reasons to repurpose old mines sites into renewable energy developments, even in spite of persistent structural barriers. And second, the low-carbon energy transition is already increasing demand for certain critical minerals across the world, which may lead to an increase in domestic mining. From exploration to closure, it is critical to ensure that this expansion takes place responsibly, to maximize benefits and minimize harm to communities across rural America.

These dynamics are accelerating rapidly. Responsible leadership on US mining policy could put the nation at a competitive advantage in one of the fastest growing industries of this century, while increasing domestic energy independence, creating good jobs, and supporting American manufacturing. But these opportunities must be managed to provide long-term sustainable value to mining communities at all stages of the mining process—including after closure.

The work of the subcommittee stands to make a significant difference in this work. Legislation proposed in the 116<sup>th</sup> Congress sought to direct mining firms to ensure that reclaimed mines continue to deliver economic opportunity and value long after the last haul truck drives away.<sup>1</sup> Among the many possible pathways for reclaimed mines, renewable energy development often provides a compelling way to restore a disturbed site to beneficial use for all stakeholders.

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<sup>1</sup> See section 307(a)—Operation and Reclamation: General Rule.

In the past decade, RMI has worked with some of the world’s largest mining companies to explore the opportunities for transforming vacant, and sometimes toxic, brownfield sites into green energy hubs. Our partners in this work have included BHP and Freeport McMoRan, who operate active and legacy mines in Arizona, Colorado, and New Mexico.

Our research took us across the American Southwest. In the process, we visited communities reeling from the loss of a recently shuttered mine. For many of these cities and towns, the prospect of repowering old mines with renewable energy carried the promise of good jobs, clean air, and energy security.

Regardless of their proximity to mining, rural communities are already benefiting from the energy transition. In 2019, revenues in the United States from onshore wind and solar energy nearly equaled the revenue of all of America’s soy farmers.<sup>2</sup> Even under conservative assumptions, this renewable energy capacity will double by 2030.<sup>3</sup> Most of that expansion will take place in rural America.<sup>4</sup>

RMI spent years building economic models to determine whether investing in renewable energy offered a compelling value proposition to mining companies. Time and again, we found real-world instances where installing large-scale wind or solar power on an active or legacy mine site made clear economic sense—even before accounting for the non-economic benefits that renewable energy brings. In many of our analyses, mining companies could continue to generate income from reclaimed mines years after decommissioning. In so doing, a decommissioned mining site, otherwise a liability to the owner and the surrounding community, is transformed into an asset that contributes to an energy transition that sits squarely within the strategic interest of the United States.

Our findings were not surprising. In the past decade, solar and wind power have become the cheapest possible ways to generate electricity across most of the United States.<sup>5</sup> Since 2014, a majority of the newly installed power generation in the US has come in the form of renewables.<sup>6</sup> That share continues to rise; in 2021, 80% of the nation’s planned new electricity generation capacity is renewable.<sup>7</sup>

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<sup>2</sup> Katie Siegner, Kevin Brehm, and Mark Dyson, *Seeds of Opportunity: How Rural America is Reaping Economic Development Benefits from the Growth of Renewables*, Rocky Mountain Institute, 2021, <https://rmi.org/insight/seeds-of-opportunity/>

<sup>3</sup> Katie Siegner, Kevin Brehm, and Mark Dyson, *Seeds of Opportunity: How Rural America is Reaping Economic Development Benefits from the Growth of Renewables*, Rocky Mountain Institute, 2021, <https://rmi.org/insight/seeds-of-opportunity/>

<sup>4</sup> Katie Siegner, Kevin Brehm, and Mark Dyson <https://rmi.org/insight/seeds-of-opportunity/>

<sup>5</sup> Dyson, Mark, Jamil Farbes, and Alexander Engel. *The Economics of Clean Energy Portfolios: How Renewable and Distributed Energy Resources Are Outcompeting and Can Strand Investment in Natural Gas-Fired Generation*. Rocky Mountain Institute, 2018. [www.rmi.org/insights/reports/economics-clean-energy-portfolios](http://www.rmi.org/insights/reports/economics-clean-energy-portfolios)

<sup>6</sup> National Renewable Energy Laboratory, “High Renewable Electricity Growth Continued in 2015”, 2016. <https://www.nrel.gov/news/press/2016/high-renewable-electricity-growth-continued-in-2015.html>

<sup>7</sup> U.S. Energy Information Administration, “Renewables account for most new U.S. electricity generating capacity in 2021,” 2021. <https://www.eia.gov/todayinenergy/detail.php?id=46416>

In the case of closed mines, certain unique factors increase the overall value proposition. First, many modern mining sites already possess critical energy infrastructure, such as roads and transmission lines. Second, the land at mining sites is usually degraded to a certain extent; installing new infrastructure does not normally endanger pristine habitat or require the same level of remediation as some other post-closure applications. Finally, mining firms, unlike some local communities, have access to capital and equity to finance large energy projects and deliver economies of scale.

Despite these commonalities among closed sites, there is no one-size-fits-all approach to repowering old mines. Renewable energy does not provide a sound investment for communities or mining firms at every possible site. Local geography and land availability determine whether solar or wind provides a higher value proposition. In addition, the unique physical features of some mine sites make them ideal candidates for scaling up emerging technologies, such as gravity storage, compressed-air energy, or green hydrogen generation.

In recent years, several active and reclaimed mine sites across the nation have installed large renewable energy projects. Tucson-based mining firm Asarco installed a 35-megawatt solar energy plant at the Mission Mine in Arizona. It generates enough electricity to power more than 5,700 homes. In Wyoming, at the site of the closed and reclaimed Dave Johnston coal mine, 158 wind turbines currently provide enough electricity for 66,800 households across the Rocky Mountains.<sup>8</sup> In Pennsylvania, wind turbines totaling 138 megawatts have been installed on the rehabilitated land of former strip mines.<sup>9</sup>

These energy developments usually follow the same trajectory. In an arrangement known as a power purchase agreement, a mining firm or developer partners with a local utility to supply renewable energy to the grid. The mine has a guaranteed buyer for the energy it produces, and the utility often benefits from access to cheaper, cleaner electricity. These savings are passed on to local ratepayers, who pay less on their monthly utility bills than if they were still purchasing more expensive electricity from coal or gas stations.

But a large share of the value of renewable energy is not captured on the final balance sheet. Renewable energy allows local residents to breathe cleaner air. Low-carbon power can also attract interest and development from private companies that prioritize sourcing clean and cheap power, such as Google or Apple. And increasing the nation's share of renewable electricity moves the US one step closer to meeting our climate goals under the Paris Agreement. Last but not least, these projects rewrite the conventional narrative about closed mines and rural communities. Instead of embodying absence, these sites become places of renewal and growth.

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<sup>8</sup> "From coal mine to wind farm",  
<https://www.cnet.com/news/from-coal-mine-to-wind-farm/>

<sup>9</sup> U.S. Environmental Protection Agency, "RE-powering America's Land Initiative: Project Tracking Matrix," 2020.  
[https://www.epa.gov/sites/default/files/2020-10/documents/repowering\\_tracking\\_matrix\\_october\\_2020\\_508.pdf](https://www.epa.gov/sites/default/files/2020-10/documents/repowering_tracking_matrix_october_2020_508.pdf)

Nationally, the scale of this opportunity is tremendous. The Bureau of Land Management currently leases 1.3 million acres of federal land for mineral extraction (excluding oil and gas leases).<sup>10</sup> For context, the 815,000 acres allotted to mining non-coal minerals could accommodate roughly 80 gigawatts of solar energy<sup>11</sup>—nearly equal to the nation’s total existing solar capacity in 2020.

Of the 872 active mines on federal lands, many exist in states with abundant renewable energy resources. Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming—states with abundant solar and wind resources—account for 86% of the nation’s mines that are currently authorized to produce on federal land.<sup>12</sup>

But given the scale of the opportunity, there are far fewer instances of renewable energy installations on closed mines than one might expect. This is partly because many mine managers are hesitant to, as they see it, “get into the energy business.” At other times, regulatory hurdles and uncooperative utilities also generate friction in these systems, further dissuading mining firms from pursuing renewable energy development.

These structural barriers are multifaceted. No single solution exists for all aspects of the problem. But one issue stands apart: in most instances, mine operators have no trouble simply locking the gate and walking away once a mine falls below the threshold for economic viability. That’s where Congress can help.

Requiring operators to restore reclaimed mines to beneficial uses is likely to generate significant momentum in the push to install renewable energy on closed sites. It would also pressure mining firms to think ahead by planning for closure from day one, rather than falling back on an ad-hoc process. In practice, this would encourage advance planning for renewable energy installations, fostering the development of low-carbon energy sources on active mine sites as well as legacy ones.

Updating mine closure laws will not force any miner to develop clean energy infrastructure; but it will safeguard rural America by ensuring that when the production of one critical resource stops, it is more likely to be replaced with the production of another. Incorporating renewables is just one way to support cleaner mining practices and create a legacy resource for fence-line communities.

There is another important aspect to the energy transition that impacts the extractive industry in the United States. The transition to a low-carbon economy will require significant mineral inputs, and America’s mining industry can provide many of those critical materials. Solar panels,

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<sup>10</sup> <https://www.gao.gov/assets/gao-20-461r.pdf>

<sup>11</sup> <https://www.nrel.gov/docs/fy13osti/56290.pdf>

<sup>12</sup> <https://www.gao.gov/assets/gao-20-461r.pdf>

wind turbines, lithium batteries, transmission lines, public transportation, and other low-carbon infrastructure all require a substantial expansion of global mining capacity.<sup>13</sup> As domestic mining grows to supply these critical minerals, Congress has the opportunity to ensure that extraction occurs in a more responsible manner, from start to finish.

America's mining towns are already playing a critical role in the energy transition by providing the raw materials to build a new generation of low-carbon infrastructure. In this sense, miners and their communities are safeguarding the nation and the planet. Creating sustainable opportunities for these post-closure mining communities offers a pathway to safeguard their futures in return.

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<sup>13</sup> "Market value of green mining worldwide from 2017 to 2024 (in billion U.S. dollars)", <https://www.statista.com/statistics/1100778/global-green-mining-market-size/>