

Miners

Due to increased investments in renewable energy, demand for critical minerals has risen by 50 percent since 2010, and according to the IEA, demand is expected to continue increasing.⁶ However, the mining industry is struggling to recruit new talent. A recent study found that 70 percent of respondents between the ages of 15 and 30 years old said that they would not or probably would not consider a career in mining.⁷ While demand for critical minerals remains high, labor is expected to be a continuing issue in the mining industry as 71 percent of mining leaders reported that the labor shortage has held them back from making production targets and delivering on strategic objectives.⁸

Welders

When it comes to the construction of utility-scale renewable energy assets, welding is a vital occupation. Welders play the significant role of assembling and maintaining renewable energy assets. For example, in the wind industry, welding is integral to the installation of wind turbines and assembly of the tower, blades, hub, and nacelle. With the labor shortage in welders, industry has reported being impacted by increased project timelines, project costs, and quality concerns.⁹ In 2023, 43.2 percent of U.S. welders were over the age of 45, and there is expected to be a shortage of 360,000 welding professionals by 2027 in the United States.¹⁰ Additionally, interest in pursuing a career in welding is down as younger generations are more likely to choose going to a university over trade schools.¹¹ In order to overcome the welder shortage, some firms have turned to automation and the use of collaborative robots (or cobots) to fill the gap. While reskilling workers was thought to be an issue, workers found that they preferred letting cobots do the more repetitive tasks.¹²

Electricians

Electricians play key roles in the development of renewable energy infrastructure including performing systems repairs, installation, and industrial component wiring. Additionally, it is estimated that 60 to 70 percent of American single-family homes will need to upgrade to bigger electrical panels to accommodate a fully electric home.¹³ Demand for electricians is expected to increase by 6 percent (or 73,500 jobs) per year through 2032 in the United States. In 2021, 40.2 percent of American electricians were over the age of 45, with women representing just 2 percent of electricians.¹⁴ Careers as an electrician typically start with an apprenticeship. Some school districts have implemented training programs in trades to boost interest by students and create a path to an apprenticeship.¹⁵ Additionally, the surge in renewable energy investments and the subsequent increase in demand for electricians is expected to raise wages—further attracting workers to the field.

⁶ Critical minerals used in renewable energy inputs include copper, lithium, nickel, cobalt, and rare earth elements. IEA, "[In the transition to clean](#)," accessed March 2024.

⁷ McKinsey and Company, "[Has mining lost its luster?](#)" February 2023.

⁸ *Ibid.*

⁹ TWI, "[Are welding jobs in demand?](#)" accessed March 2023.

¹⁰ American Welding Society, "[Shining a light on the welding workforce](#)," accessed March 2024.

¹¹ St-Esprit, "[The Stigma of Choosing Trade School](#)," March 6, 2019.

¹² American Welding Society, "[Solving The Welder Shortage With Cobots](#)," July 2023.

¹³ Calisch and Wyent, "[Electrification won't break the grid](#)," accessed March 2024.

¹⁴ BLS, "[Occupational Outlook Handbook, Electricians](#)," September 6, 2023.

¹⁵ Adams, "[A labor shortage stands in the way](#)," March 30, 2023.

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