

# MCEA's SUNDOG Concept Doesn't Shine

## Comparing the Facts

Recently, mining opposition group Minnesota Center for Environmental Advocacy (MCEA) unveiled a proposed alternative for the PolyMet site. The plan “reimagines the site as a clean energy and manufacturing hub, one that includes a solar array, wind turbines, and an energy storage facility that could help power the creation of carbon-free steel on the Iron Range.”

Replacing PolyMet with the SUNDOG concept is like proposing a farmer's market, but without farming. This exacerbates the shortage of critical minerals needed for clean energy while depriving Northern Minnesota of 95% of the jobs and economic benefits associated with the mine. Fortunately, we don't have to choose, Minnesota can add hundreds of megawatts of renewables and contribute the minerals needed to build thousands more by moving forward with PolyMet. Additionally, the 45-50 MW of beneficial, high load factor demand which PolyMet will add will help reduce electric costs for all customer classes and further enable renewables like wind where the generation is typically more abundant overnight and underutilized by residential or commercial customers during this time.

	MCEA SUNDOG Concept	PolyMet NorthMet Project
<b>How will the project be paid for?</b>	Government subsidies. No known private investments secured.	\$1B+ in private investment.
<b>Construction Jobs</b>	Estimated at around 400,000-500,000 construction hours. Dependent on solar/wind mix, but regardless the constructions hours and related construction jobs are significantly less than the PolyMet NorthMet Project.	2 million construction hours.
<b>When operational, how many jobs will this project support?</b>	Estimated at less than 25 jobs and dependent on the solar/wind split. Solar sites often have no on-site employees and support only a few contractor technicians who travel to the site as needed to perform maintenance.	PolyMet will directly support 360 family and community sustaining jobs with excellent benefits. PolyMet will indirectly support more than 600 additional jobs. Additionally, PolyMet is estimated to provide a \$515 million annual boost to the St. Louis County economy.
<b>Site environmental quality and clean-up</b>	The site is currently impacted by legacy water quality problems associated with former taconite processing. SUNDOG includes no plan to cover the high cost of cleaning up the legacy site.	PolyMet would be required to address legacy pollution using proven technology that protects taxpayers and meets strict water quality standards. The PolyMet project is already permitted and financially assured to clean up the legacy site.
<b>Impact on supply of critical metals</b>	Construction of 300-400 MW of wind and solar would require more than 2 million pounds of copper and tens of thousands of pounds of other critical minerals that are largely sourced from outside the U.S.	PolyMet is expected to produce the following over 20 years: 1.2 billion pounds of copper, 170 million pounds of nickel, 6.2 million pounds of cobalt. <ul style="list-style-type: none"> <li>The copper produced by PolyMet could support manufacture of more than 1,000 gigawatts of wind turbines or 6.6 million electric vehicles (EVs).</li> <li>PolyMet's 20 year estimated nickel and cobalt production would support the manufacturing of more than 3 million EV batteries.</li> </ul>

PolyMet's NorthMet Project is the first large-scale project to have received permits within the Duluth Complex in northeast Minnesota, one of the world's major, undeveloped copper, nickel and platinum group resources. Once operational, NorthMet will produce copper, nickel, cobalt and other precious metals we need to drive a sustainable future.

## FACTS:

*Here is why the minerals in the Duluth Complex are needed:*

### **Critical minerals are needed.**

You can't have cell phones, medical devices, computers, batteries, rockets, airplanes, and military equipment without minerals. These metals do so much more than support our everyday conveniences, their broader significance is potentially existential for the nation and the world.

### **Critical minerals, including both nickel and cobalt, are critical to the U.S. military and national defense.**

The critical minerals needed today for national defense are copper, nickel, cobalt and platinum group metals found in abundance in Minnesota's Duluth Complex. President Biden recognized the importance of both nickel and cobalt when he evoked the Defense Production Act in his Executive Order on April 5, 2022 to strengthen the domestic supply chain for clean energy minerals. The USGS agreed included both metals on its 2022 Critical Minerals List as "essential to the economic or national security of the U.S."

### **Critical minerals, including copper, are equally important to clean energy.**

Copper, nickel, cobalt and platinum group minerals are essential to the production of most clean energy technologies. To reach President Biden's ambitious timetables to reach 50% vehicle electrification by 2030 and produce almost half of our nation's electricity from solar power by 2050, we need domestic mining projects to produce the raw materials needed for EV production and clean energy technologies:

- **Nickel in wind turbines:** Nickel alloys of steel can withstand extreme conditions, including being able to absorb mechanical energy - like the rotation of wind turbine blades - without fracturing.
- **Nickel and cobalt in energy storage:** Nickel and cobalt are also vital components in energy storage, including for EVs. The lithium-ion batteries in many EVs have cathodes made of a mixture of metals including nickel and cobalt.
- **Copper in solar panels and wind turbines:** Copper is in the chips and wiring of solar voltaic cells and wind turbines and in the wiring that distributes renewably generated energy to customers.
- **Copper in EVs:** EVs also require on average between 85 and 132 pounds of copper for the battery, the motor, the internal wiring, and the wiring connecting it to the charging station.

### **Critical mineral deposits are hard to find and difficult to develop.**

Minnesota's Duluth Complex, which PolyMet is a part of, is reported to contain the "world's second largest copper and platinum deposits and the third largest nickel deposit." The technical reports for six projects in the Duluth Complex disclose approximately: 28.1 million metric tons of copper, 8.3 million metric tons of nickel, and 302,000 metric tons of cobalt. And these are just a few of the projects that have studied the resource. The Duluth Complex is one of the few geological settings where these deposits are found. In fact, these types of mineral deposits occur in only four limited geological settings in the world. Many sources of copper, nickel, and cobalt in the world are found in water scarce environments and are neither sustainable nor reliable.

### **Relying on production from other countries creates tremendous uncertainty.**

The following risks are outside of our control and all we can do is develop our own reliable, domestic supply. Examples of the many risks in relying on foreign sources for these minerals include:

- **Supply chain instability:** The U.S. has already recognized the risks of relying on other countries and is taking measures to secure domestic sources of these metals for U.S. manufacturers.
- **Geopolitical risks:** China has previously restricted exports in retaliation. And Russia's invasion of Ukraine has complicated access to Russian nickel (which is one of the [top 5 producers](#) of nickel in the world).
- **Geological risks:** Chile and Peru, where much of the world's copper is mined, are at high risk for damaging and disruptive earthquakes, could face significant mine closures and geopolitical and environmental challenges including water scarcity.
- **Humanitarian risks:** The cobalt mines in the Democratic Republic of the Congo and Indonesia have expanded dramatically in the last ten years with very few safety systems in place.

### **The explosion in clean energy generation and EVs has created a marked increase in demand for critical metals.**

The demand for cobalt and nickel is expected to exceed current production rates by around 2030. EV manufacturers are already raising alarm about nickel shortages. According to the [World Bank](#), in the last 5,000 years, about 550 m/t of copper has been produced and the world will need about the same amount of copper in the next 25 years to meet global demand.

### **There are very few options to meet these demands.**

Existing copper mines are experiencing lower grades, higher operating costs and declining production. The world is not developing enough new copper mines sufficient to meet future demand. Only one new nickel mine has opened in the last ten years in the United States, and that deposit is expected to be mined out by the end of 2025. PolyMet will be the only permitted nickel mine in the U.S.