

Do We Need To Mine Copper In Minnesota for The Green Economy? (no)

RECYCLING CAN MEET OUR FUTURE NEEDS

- Recycling is a must for a sustainable future – mining is fundamentally non sustainable – minerals don't grow back like leaves on a tree
- 2023 US growth of power grid turbine capacity used 0.04% of world wide supply
- Total US 2023 EV sales used only 0.53% of world wide copper production – copper in EV motors and wiring is VERY recyclable
- World wide production of copper has been increasing (almost lineally) by 2.76% CAGR for at least 30 years
- With recycling of HVAC systems, we can migrate from fossil fuel based heat to heat pumps with very little increase in copper supply
 - 88% of US households have AC (2020)
 - Difference between a heat pump and AC is in valves and control circuits – roughly the same amount of copper
- Copper recovered from scrap contributed 33% of the U.S. copper supply in 2024
- Recycling EV batteries and appliances with motors can address the majority of copper needs in the US

Recycling is Required For A Sustainable Future and MUST Meet Our Needs as Minerals Become Ever More Hard to Find and Expensive To Mine.

<https://www.nasdaq.com/articles/copper-ore-types-sulfides-versus-oxides-2011-04-23>

MINNESOTA COPPER WOULD CONTRIBUTE LESS THAN 1% OF THE WORLDWIDE MARKET - UNNECESSARY

- World Wide Reserves have been increasing (almost lineally) by 4.12% CAGR for at least 30 years.
- Increase in WW Reserves from 2023-2024 could build 1.3 Billion EVs
- There is plenty of copper worldwide – no need to sacrifice Minnesota pristine areas
- US Copper Reserves represents only 5% of WW Reserves (and is decreasing)
- US Copper Production across all copper mines in the US represents only 5% of WW Production and is decreasing as WW production grows

COPPER IN MINNESOTA IS GENERALLY FROM HIGH SULFIDE DEPOSITS

- High sulfide mining is toxic and damaging to the environment.
- The majority of copper worldwide is held in oxide based ores NOT sulfide based ores.
- Only 50% of worldwide copper production is from sulfide based ores

<https://www.youtube.com/watch?v=ZW8p640wNno>

Why Mine Toxic Sulfide Ores in Minnesota When Much Safer Oxide Based Ores Predominate World Wide Reserves?



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