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

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

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

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

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

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