Approach to Quantify Net Material Emissions Impact of Renewable Energy Purchases:

Guidance for the Cryptocurrency Sector

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An Opportunity for the Cryptocurrency Sector to Reduce its Climate Change Impact

The popularity of cryptocurrencies (crypto) and blockchain-based solutions is accelerating. The number of global crypto owners increased by 178% in 2021, rising from 106 million in January to 295 million in December. Amidst surging crypto adoption, in November 2021, the crypto market reached a US$3 trillion market capitalization for the first time.

But this rapid growth has brought a major issue into the spotlight. The most widely used implementations of the technology consume large and growing amounts of energy, which generate a substantial and increasing amount of greenhouse gas (GHG) emissions that contribute to climate change. For example, Bitcoin's estimated annualized electricity consumption in early April 2022 hovered around 150 terawatt-hours (TWh) per year—equivalent to the total annual electricity consumption of a major country such as Malaysia or Poland, as outlined by CBECI.

In April 2021 nonprofits Energy Web, RMI, and the Alliance for Innovative Regulation co-founded the Crypto Climate Accord, an initiative for the entire crypto community focused on decarbonizing the cryptocurrency and blockchain industry. Since then, more than 200 organizations have joined the Accord, pledging to achieve net-zero emissions from all of their crypto-related operations by 2030 and to support efforts toward 100% renewably-powered blockchains by the 2025 UNFCCC COP30 conference.

A newly developed approach created by RMI and Energy Web provides the crypto industry with a unique opportunity to reduce GHG emissions, showcase industry-wide decarbonization, create new demand for renewable energy, and increase access to customers and capital with sustainability and net zero targets. To achieve these goals, actors in the crypto industry need a way to measure the material impact of renewable energy certificate purchases against their electricity consumption to ensure that renewable energy procurement choices result in real-world electricity sector decarbonization.

Why is the RE Emissions Score Approach Important for Crypto?

The RE Emissions Score Approach, outlined in the Approach to Quantify Net Material Emissions Impact of Renewable Energy Purchases document, allows cryptocurrency miners to make verifiable, impactful renewable energy claims. By combining a location-based method with a quantitatively evaluated market method, (both of which are outlined in the GHGP Guidance), the RE Emissions Score of a cryptocurrency miner allows quantification of that miner's electricity usage and procurement impact on lowering emissions and investing in new renewable energy generation. Without this analysis, the increased load from mining activities may cause additional electricity to be generated by fossil fuels, increasing the overall emissions of the grid.

Less impactful renewable energy procurement may not counteract this effect as well since low-quality EAC purchases have been shown to have little or no ability to drive new generation.

What Does the RE Emissions Score Apply to?

Crypto miners must account for electricity used in all mining activities. For detailed guidance on cryptocurrency GHG accounting, please see the Crypto Climate Accord's Guidance for Accounting and Reporting Electricity Use and Carbon Emissions from Cryptocurrency.

1. Mining activities are defined as:
    - All scope 2 emissions relating to company activities
    - Any scope 3 emissions from electricity that contribute to mining rewards. This would include electricity used by a data center that a miner leases equipment to, provided the miner is the benefactor of the mining rewards.
2. Miners must account for all mining activities when calculating the RE Emissions Score. No purchased or acquired electricity can be considered outside of the calculation.
3. Miners must report on activities annually at a minimum. Preliminary guidance for how to report claims will be provided

For more information or calculation guidance contact Samuel Huestis, shuestis@rmi.org or Charles Cannon, ccannon@rmi.org.