

Proof of Elapsed Time (PoET)

[Return to Consensus Mechanism](#)

The definition is provided by Frankenfield¹⁾:

Proof of Elapsed Time (PoET) is a [blockchain](#) network consensus mechanism algorithm that prevents high resource utilization and high energy consumption and keeps the process more efficient by following a fair lottery system. The algorithm uses a randomly generated elapsed time to decide [mining](#) rights and block winners on a [blockchain network](#). By running a trusted code within a secure environment, the PoET algorithm also enhances transparency by ensuring lottery results are verifiable by external participants.

Proof of elapsed time (PoET) is a consensus mechanism algorithm that is often used on the permissioned blockchain networks to decide the mining rights or the block winners on the network. Permissioned blockchain networks are those which require any prospective participant to identify themselves before they are allowed to join. Based on the principle of a fair lottery system where every single node is equally likely to be a winner, the PoET mechanism is based on spreading the chances of winning fairly across the largest possible number of network participants.

The working of the PoET algorithm is as follows. Each participating node in the network is required to wait for a randomly chosen time period, and the first one to complete the designated waiting time wins the new block. Each node in the blockchain network generates a random wait time and goes to sleep for that specified duration. The one to wake up first—that is, the one with the shortest wait time—wakes up and commits a new block to the blockchain, broadcasting the necessary information to the whole peer network. The same process then repeats for the discovery of the next block.

The PoET network consensus mechanism needs to ensure two important factors. First, the mechanism ensures that the participating nodes genuinely select a time that is indeed random and not a shorter duration chosen purposely by the participants in order to win. Second, the mechanism establishes that the winner has indeed completed the waiting time.

An excellent description of how PoET works is provided by Curran²⁾

¹⁾

Jake Frankenfield, Investopedia, [Proof of Elapsed Time \(PoET\) \(Cryptocurrency\)](#), 16 October 2020, Accessed: 18 July 2021, <https://www.investopedia.com/terms/p/proof-elapsed-time-cryptocurrency.asp>

²⁾

Brian Curran, Blockonomi, [What is Proof of Elapsed Time Consensus? \(PoET\) Complete Beginner's Guide](#), 11 September 2018, Accessed: 19 July 2021, <https://blockonomi.com/proof-of-elapsed-time-consensus/>

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