# Incentivizing the chain: Staking on Polymesh

Staking on Polymesh enables economic incentives for network participants to secure the Polymesh blockchain. These incentives are supported by a consensus mechanism—the consistent method that ensures which blocks get written to Polymesh, and which do not. Polymesh uses the Nominated Proof-of-Stake consensus mechanism to set roles, rules, and incentives for interacting with the chain.

Proof-of-Stake on Polymesh

Operators and Stakers fulfill the Polymesh roles and rules by using POLYX to stake the chain and activities on it. By following the simple rules of Polymesh, they ensure the chain operates as intended. But most of all, the economic incentives stipulated by Proof-of-Stake make Polymesh more secure by building in benefits for adhering to the rules that outweigh the costs of malicious or negligent behavior.

Staking on Polymesh 101
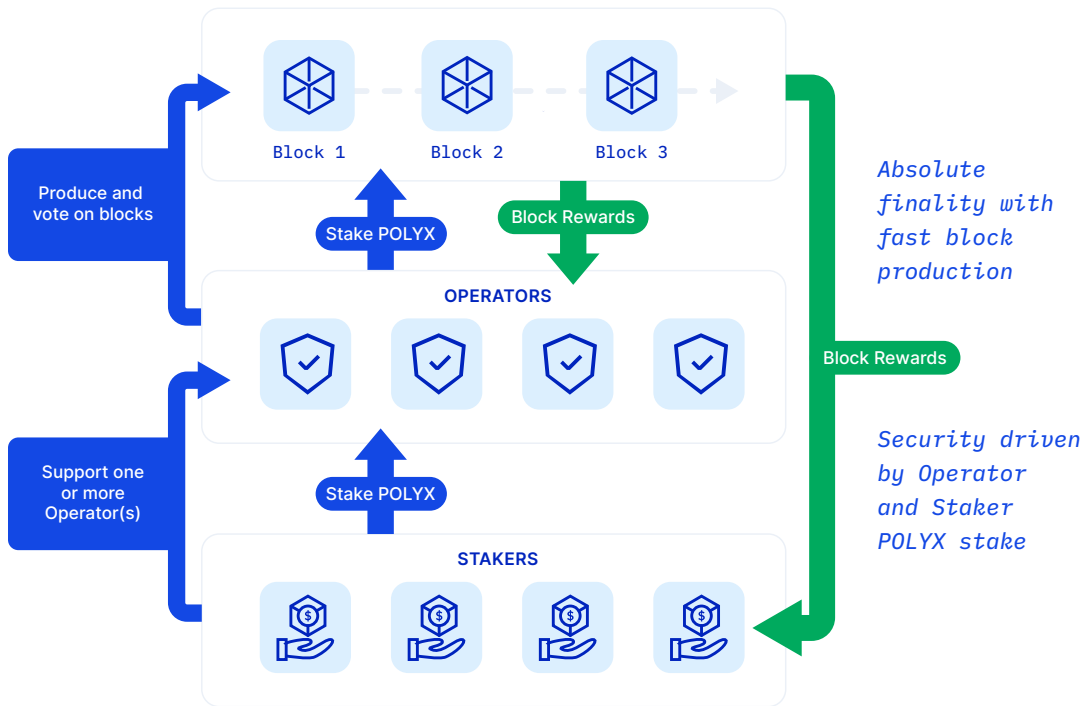
Staking the chain:

A Operators stake Polymesh with POLYX

B Stakers select one or more Operators and stake a desired amount of POLYX

Operators

Operators run software (an authoring node) that writes new blocks to Polymesh. To participate, they stake the chain with POLYX. Their role involves gathering transactions into blocks to be written to the chain, as well as voting on new blocks. All Operators are permissioned entities that are evaluated and approved by the Polymesh Governance Committee.

Stakers

Stakers use their POLYX to stake Operators of their choice. Stakers can be any POLYX holder whose identity has been verified through a customer due diligence process.

Approving a block:

(i) An Operator proposes a block

(ii) The remaining Operators vote on writing it to the chain

(iii) Once two-thirds of Operators have voted in favour of a block, it is finalized and written to Polymesh. If more than one-third of Operators vote against a block, it is discarded.

(iv) The block-writing Operator and its Staker(s) are rewarded in POLYX

(v) The process repeats for each block successfully written to the chain

POLYX

Polymesh is fueled and secured by the network protocol token, POLYX. POLYX is used for network processing fees, accessing smart contracts, and fueling the incentive structure for Operators and Stakers. Since POLYX is needed to participate on the chain as either an Operator or Staker, it ensures security by disincentivizing undesirable behavior.

Rewards

Operators and Stakers are rewarded on Polymesh based on how an Operator performs its role. When an Operator successfully writes a block to the chain, that Operator and its Staker(s) receive POLYX. However, if an Operator is delinquent in its duties (e.g. the Operator node is offline; the Operator double-signs a block), the Operator is fined POLYX.* This system secures Polymesh by ensuring Operators and Stakers are incentivized to fulfill their roles and duties on Polymesh. To deter Operator collusion when writing blocks to the chain that would typically be invalid, Polymesh uses superlinear fines that increase the percentage of the fine as the number of Operators involved increases. At launch, commissions charged on rewards are set by the network, but over time may be unlocked for Operators to set through on-chain governance.

* At launch, Stakers will not be fined but this will change over time.