Solana (SOL)

Mandatory information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism, published under Article 66(5) of Regulation (EU) 2023/1114 (MiCA) and Commission Delegated Regulation (EU) 2025/422.

Mandatory information

- V2.0 Last updated on: 20th October 2026
- Whitepaper link: https://solana.com/solana-whitepaper.pdf

Code	Field	Content	Source
S.1	Name	Payhound Limited	
S.2	Relevant legal entity identifier	9845001DD90AF543DC90	
S.3	Name of the crypto-asset	Solana (SOL)	—
S.4	Consensus mechanism	Solana uses Proof-of-Stake. Proof of History, a verifiable sequence of hashes, timestamps and orders transactions. Tower BFT, a stake-weighted voting protocol, uses that shared clock to bring validators to agreement on which blocks are final with less messaging than traditional BFT. Block producers (leaders) rotate on a stake-weighted schedule, and validators vote on every block. The active validator count fell	R1, R4

		through 2025, to 906 by late October.	
S.5	Incentive mechanisms and applicable fees	Validators earn staking rewards from protocol-defined SOL inflation, plus transaction fees. SOL holders delegate stake to validators and share in these rewards, net of the validator's commission. Users pay a base fee of 5,000 lamports per signature, half of which is burned and half paid to the block producer, plus an optional priority fee. Since SIMD-0096 (February 2025), 100% of priority fees go to the block producer.	R1, R2, R3
S.6	Beginning of the period to which the disclosure relates	2025-01-01	—
S.7	End of the period to which the disclosure relates	2025-12-31	—
S.8	Energy consumption (kWh per year)	2,073,247	R4, R5, R6
S.9	Energy consumption sources and methodologies	Bottom-up estimate: 1,352 validators × the power draw of Anza's minimum validator specification × 8,760 hours. The validator count is the start-of-2025 level implied by SolanaFloor's report of 906 validators in late October 2025 after a 33% decline that year.	R4, R5, R6

		Power is estimated with the open-source Cloud Carbon Footprint coefficients for Anza's specification (12 cores/24 threads, 256 GB memory, about 2.5 TB NVMe): 24 vCPUs × 2.12 W + 256 GB × 0.392 W/GB + 2.5 TB × 1.2 W/TB = 154.2 W, × 1.135 data-centre PUE = 175.1 W, or 1,533.5 kWh per validator per year. Scope: validators only; RPC nodes, which do not vote, are not included.	

Supplementary key indicators on energy and GHG emissions

Code	Field	Value	How Derived	Source
S.10	Renewable energy consumption (% of total energy used per year)	33.8%	Validator energy contracts are not published, so the 2025 global average renewables share of electricity generation is used.	R9
S.11	Energy intensity (kWh per validated transaction)	0.0000628	2,073,247 kWh ÷ 33,000,000,000 non-vote transactions in 2025	R7, R8
S.12	Scope 1 DLT GHG emissions – controlled (t CO2eq per year)	0	Validators run on purchased electricity; no on-	—

			site generation is reported	
S.13	Scope 2 DLT GHG emissions – purchased (t CO2eq per year)	949.5	2,073,247 kWh × 0.458 kg CO2e/kWh (2025 global average grid intensity)	R9, R10
S.14	GHG intensity (kg CO2eq per validated transaction)	0.0000288	949,547 kg ÷ 33,000,000,000 non-vote transactions in 2025	R7, R10

Sources and methodologies

Code	Field	Content
S.15	Key energy sources and methodologies	The validator count comes from SolanaFloor [R4] and the hardware from Anza's Agave validator requirements [R5]. Power draw uses the Cloud Carbon Footprint methodology [R6]: AWS average CPU power of 0.74 W idle and 3.5 W at full load per vCPU at 50% utilisation, 0.392 W per GB of memory, 1.2 W per TB of SSD and a PUE of 1.135. Energy intensity (S.11) divides S.8 by the 33 billion non-vote transactions reported for 2025 [R7], which is consistent with the 88 million non-vote transactions a day Solana Compass reports for late August 2025 [R8]. Vote transactions, which validators send to reach consensus, are excluded so the figure reflects user activity. Because validator energy contracts are not public, S.10 uses Ember's 2025 global

		renewables share [R9]. No offsetting or market-based instruments are applied.
S.16	Key GHG sources and methodologies	Emissions (S.13) apply the 2025 global average grid emissions intensity of 458 g CO2e per kWh reported from Ember's Global Electricity Review 2026 [R9][R10] to the S.8 energy estimate. This is a location-based estimate; carbon credits bought by third parties are not deducted. All emissions are reported as Scope 2 because validators use purchased electricity. GHG intensity (S.14) divides S.13 by the 2025 non-vote transaction count [R7].

References

1. **R1** – Anza Docs, Tower BFT (Proof of History, slot leaders, stake-weighted voting) and Consensus Validator or RPC Node? (inflation rewards from vote credits, 50% of transaction fees to the block producer).
2. **R2** – Anza, Agave source: fee distribution (50% of base fees burned).
3. **R3** – The Defiant, Solana Proposal to Pay Full Priority Fees to Validators Goes Live, February 2025 (SIMD-0096: 100% of priority fees to validators, ending the 50% burn).
4. **R4** – SolanaFloor, Do We Need to Be Worried About Solana's Declining Validator Count?, 27 October 2025 (906 validators; 33% decline in 2025).
5. **R5** – Anza, Agave Validator Requirements (12 cores/24 threads, 256 GB+ memory, NVMe accounts, ledger and snapshot disks).
6. **R6** – Cloud Carbon Footprint, Methodology (Apache License 2.0).
7. **R7** – Mitrade Insights, Solana's 2025 Review Flags Fresh Records Across Revenue, Wallet Activity and DEX Volume, 7 January 2026 (33 billion non-vote transactions in 2025, up 28% year on year; 1,054 non-vote TPS on average).
8. **R8** – Solana Compass, Solana Processes 5.2 Billion Non-Vote Transactions in August (88 million non-vote transactions a day in late August 2025). Live data: Solana Compass statistics.
9. **R9** – Ember, Global Electricity Review 2026 (renewables 33.8% of global electricity in 2025).

10. **R10** – Down To Earth, Clean energy meets all global power demand growth as renewables overtake coal: Ember report 2026, April 2026 (global average 458 g CO2e/kWh in 2025, from Ember).