lum**o**s

Illuminating the Path to a Decentralized Future.

Blockchain Money Flow Analysis Report: Ethereum

for Ricardo Mastrangelo
by Lumos.codes
Mark Tsyrulnik
Eugen Amelin
Ivan Haenko

General information

Actors on Ethereum

Users (Externally Owned Accounts, aka EOAs): Initiate transactions (transfers, swaps, deployments). They *pay for gas* for every computation or storage use.

Validators (post-Merge, PoS): Propose and attest blocks. They are paid **priority fees (tips)** and block builder bids (if using MEV-Boost). They also earn separate consensus-layer staking rewards (issuance), but that's outside transaction gas.

Builders (MEV-Boost / Proposer–Builder Separation): Assemble profitable block bundles. Paid indirectly via MEV captured; forward a share to proposers (validators).

Searchers (MEV participants): Scan mempool/orderflow, craft arbitrage/liquidation/sandwich bundles. Earn profits from extracting MEV opportunities. They *pay* builders to include their bundles.

Relay (PBS infra): Trusted middleware between builder and proposer, usually not taking fees (though could via business models).

Consensus layer infra (beacon nodes, client teams, RPC providers like Infura): Not paid directly by protocol. Earn via subscriptions, grants, or donations.

Oracles (e.g., Chainlink): Nodes that post data are compensated by sponsors or dApps (typically in LINK or stablecoins). Their payments are separate from gas fees, though they pay gas to publish updates

Protocols (e.g., Uniswap, Aave, Lido): Define their own fee rules. Liquidity providers or lenders earn user-paid fees. Some protocols activate a "protocol fee switch" for the treasury.

How EOAs Typically Pay

Block rewards

A recent academic study reports that block builders paid an average of 0.1554 ETH per block to validators via MEV-Boost bids
https://etherscan.io/block/23238658

Reward Source	Average per Block (ETH)	Average per Block (USD)	Notes
Execution Layer (Tips + MEV)	≈ **0.1554 ETH**	≈ **$155.40**	Paid to block proposers via transaction tips and MEV-Boost builder bids
Consensus Layer (Staking Issuance)	~0.002–0.003 ETH (est.)	≈ $2–3	Rewards for proposing, attesting, sync duties; depends on total ETH staked
Base Fee Burn (EIP-1559)	Negative (varies)	–	Not a reward (but has a deflationary pressure), base fees are permanently destroyed, reducing the ETH supply

Simple ETH Transfer

For example, let's say Alice has to pay Bob 1 ETH. An ETH transfer requires 21,000 units of gas, and the base fee is 10 gwei. Alice includes a tip of 2 gwei.

The total fee would now be equal to: units of gas used * (base fee + priority fee)

where the base fee is a value set by the protocol, and the priority fee is a value set by the user as a tip to the validator.

i.e. 21,000 * (10 + 2) = 252,000 gwei (0.000252 ETH).

When Alice sends the money, 1.000252 ETH will be deducted from Alice's account. Bob will be credited 1.0000 ETH. The validator receives the tip of 0.000042 ETH. The base fee of 0.00021 ETH is burned.

Parameters: gasUsed = 21,000, baseFee = 10 gwei, priorityFee = 2 gwei, 1 ETH = 1'000$;

Actor / Recipient	Calculation	Amount (ETH)	Amount (USD)	Explanation
Total Paid by Alice	21,000 × (10 + 2) gwei	**0.000252**	**$0.252**	Alice's total transaction fee, in addition to the 1 ETH she sends to Bob.
Burned (Base Fee)	21,000 × 10 gwei	0.000210	$0.210	Permanently destroyed per EIP-1559 → deflationary pressure on ETH supply.
Validator (Proposer Tip)	21,000 × 2 gwei	0.000042	$0.042	Goes to the block proposer as a tip. If MEV-Boost is active, the proposer may also receive a larger builder payment.

Other actors	–	0	$0.00	No MEV in a plain ETH transfer, so they earn nothing.

Example Transaction: Uniswap v3 Swap

Suppose Alice swaps 10,000 USDC → ETH in a Uniswap v3 0.30% fee tier pool.

Parameters: gasUsed = 120,000; baseFee = 20 gwei, priorityFee = 3 gwei.

Actor / Recipient	Calculation	Amount (ETH / USDC)	Amount (USD)	Explanation
Total Gas Paid by Alice	120,000 × (20 + 3) gwei	0.00276 ETH	$2.76	Gas cost = base fee + tip.
Burned (Base Fee)	120,000 × 20 gwei	0.00240 ETH	$2.40	Permanently destroyed per EIP-1559.
Validator (Proposer Tip)	120,000 × 3 gwei	0.00036 ETH	$0.36	Goes to the block proposer. May also include **builder -> proposer payment** if MEV-Boost is used.
Liquidity Providers (LPs)	0.30% × 10,000 USDC	30 USDC	$30.00	Earn a swap fee for providing liquidity.

Commented [1]: Uniswap FE fees itself

Uniswap DAO Treasury	20% of the fee if switch = ON	6 USDC (if ON)	$6.00 (if ON)	Governance-controlled fee switch diverts 20% of LP fees to DAO treasury.
LPs (if switch ON)	Remaining 80%	24 USDC	$24.00	LPs receive only part of the fee if the protocol fee switch is enabled.
Builders / Searchers (MEV)	–	Variable	Variable	If trade creates arb/liquidation, MEV profit flows builder → validator.
User (Alice)	–	Pays 0.00276 ETH + 30 USDC	$32.76 total	Total cost of transaction (gas + swap fee).

References

- https://ethereum.org/en/developers/docs/accounts/
- https://ethereum.org/en/developers/docs/gas/
- https://ethereum.org/en/developers/docs/mev/#validator-centralization
- https://ethereum.org/en/developers/docs/mev/#maximal-extractable-value
- EIP-1559: Fee market change for ETH 1.0 chain
- https://www.alchemy.com/docs/maxpriorityfeepergas-vs-maxfeepergas
- https://ethereum.org/en/roadmap/pbs/#pbs-and-mev
- https://ethresear.ch/t/proposer-block-builder-separation-friendly-fee-market-designs/9725
- https://docs.uniswap.org/concepts/protocol/fees
- https://app.uniswap.org/whitepaper-v3.pdf
- https://docs.uniswap.org/concepts/protocol/oracle

- https://gov.uniswap.org/t/rfc-enable-0-05-protocol-fee-on-all-uniswap-v3-pools-for-one-month-experiment/25589/2
- https://docs.chain.link/data-feeds/price-feeds
- https://patentpc.com/blog/ethereum-network-growth-gas-fees-staking-usage-stats
- https://bitinfocharts.com/ethereum
- https://defillama.com/protocol/uniswap
-