

# What Are Gas Fees and Why Are They So High Sometimes?

*Understanding the Cost of Transacting on Blockchain and How to Minimize It*

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Every transaction on a blockchain network has a cost called a gas fee. For investors who move frequently between assets, chains, and protocols, gas fees can represent a significant drag on returns if not properly understood and managed.

## Gas Fees Across Different Networks

Network	Typical Fee Range	Peak Spikes	Best For
Ethereum Mainnet	\$2 — \$50+	\$100 — \$500+	Large value transactions only
Ethereum L2 (Base, Arbitrum)	\$0.01 — \$0.50	Rarely above \$1	Regular DeFi, swaps, staking
Solana	~\$0.00025	Effectively negligible	High frequency trading, small transactions
BNB Chain	\$0.10 — \$0.50	Rarely above \$2	Mid-frequency DeFi activity

## What Is a Gas Fee?

A gas fee is the amount of cryptocurrency paid to the network to compensate validators or miners for the computational work required to process and include a transaction in a block. Simple operations — like sending ETH from one wallet to another — require less gas. Complex operations — like executing a multi-step DeFi transaction — require significantly more gas. Gas fees are paid in the native cryptocurrency of the network: ETH on Ethereum, SOL on Solana, BNB on BNB Chain.

## How Gas Fees Are Calculated on Ethereum

Under the EIP-1559 model, every transaction pays two components:

**Base fee.** A minimum fee set algorithmically by the network based on current demand. The base fee increases when blocks are more than 50% full and decreases when blocks are less than 50% full. The base fee is burned — permanently removed from circulation — creating a deflationary mechanism for

ETH during high activity.

**Priority fee — tip.** An optional additional fee paid directly to the validator. A higher tip incentivizes validators to prioritize your transaction. During congestion, higher tips are required to get transactions processed promptly.

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$$\text{Total Gas Fee} = (\text{Base Fee} + \text{Priority Fee}) \times \text{Gas Units Used}$$

## Why Gas Fees Spike

**NFT launches and mints.** Popular NFT collections attracting thousands of simultaneous minting transactions create intense competition for block space. During major NFT launches, gas fees regularly exceeded \$100 to \$500 per transaction.

**DeFi protocol events.** Token launches, liquidity mining programs, and airdrop claims that attract simultaneous participation from thousands of users spike network demand dramatically.

**Market volatility.** During sharp price movements, liquidation events in DeFi protocols trigger automated smart contract transactions that compete with manual user transactions — driving fees higher precisely when investors most want to act.

**Arbitrage activity.** Automated bots constantly scanning for price discrepancies submit high-priority transactions to capture arbitrage opportunities — adding persistent baseline competition for block space.

## How to Reduce Gas Fees

**Transact during low activity periods.** Ethereum network activity is typically lower during weekends and late-night hours in US and European time zones. Transacting during these periods can reduce fees by 50% to 80% compared to peak hours.

**Use gas tracking tools.** Platforms like ETH Gas Station and the gas tracker on Etherscan show current network conditions and historical fee patterns — allowing you to identify optimal transaction windows.

**Use Layer 2 networks.** Ethereum Layer 2 networks — Base, Arbitrum, Optimism — process transactions off the main chain and batch them before submitting to mainnet. This reduces per-transaction fees to fractions of a cent while inheriting Ethereum's security.

**Consider alternative Layer 1 networks.** Solana, BNB Chain, and Avalanche have significantly lower base fees than Ethereum mainnet — making them cost-effective for frequent traders or smaller transaction sizes.

## **Key Takeaway**

Gas fees are not optional costs that can be ignored — they are a real drag on returns that compounds over time for active investors. Understand how they are calculated. Track network conditions before transacting. Use Layer 2 networks for regular DeFi activity. Never execute a transaction where the gas fee represents a significant percentage of the transaction value. These habits protect your returns in ways that most retail investors never consider until they see the cumulative cost.