EIP-1559
The Good
The Bad
The Ugly

Diode

Dominic Letz
Chief Technology Officer
https://diode.io

Taipei Ethereum Meetup Online Event
Thursday, 24 September 2020

Ethereum Governance, DeFi, vAMMs, Layer 2 solutions, and more

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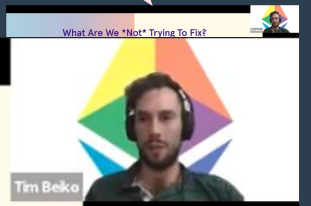
Tim Beiko (Parity)



What Are We *Not* Trying To Fix?

High Gas Prices

- There is a common misconception that EIP-1559 will help "bring gas prices down".
- This is only partially true: it will make intra-block gas prices more consistent and will allow for better management of demand spikes, but if demand is always high, and the block space (supply) is fixed, gas prices will be high.

ETH's Inflationary Supply

- There is a misconception that EIP-1559 will lead to "negative issuance" of ETH (i.e. a deflationary supply).
- This would only be true if transaction fees are significantly larger than block rewards for extended periods of time. Empirically, block rewards have almost always been much larger than total block transaction fees.

WHAT?

ABOUT ME

Diode

Co-Founder of Diode building **decentralized infrastructure**

- BlockQuick paper published on May 27, 2019
- PreNet Launched January 2020
- Diode Client v0.4.10
- Offices in Berlin and Taipei

Focusing on makers, Raspberry PI. Driving Network versatility. Broadcasting, secure tunneling, fleet management, VPN security, and storage.

BlockQuick Validation for IoT

Client	Storage	Sync/Day
geth fast sync	200 GB	~100 MB
geth light	1.2 GB	~3.5 MB
IOTA	8 GB	~1 GB
BlockQuick	20 KB	20 KB

The Problems EIP-1559 Tries to Solve

Mismatch between **volatility** of transaction fee levels and social cost of transactions

Needless **delays** for users

Inefficiencies of first price auctions

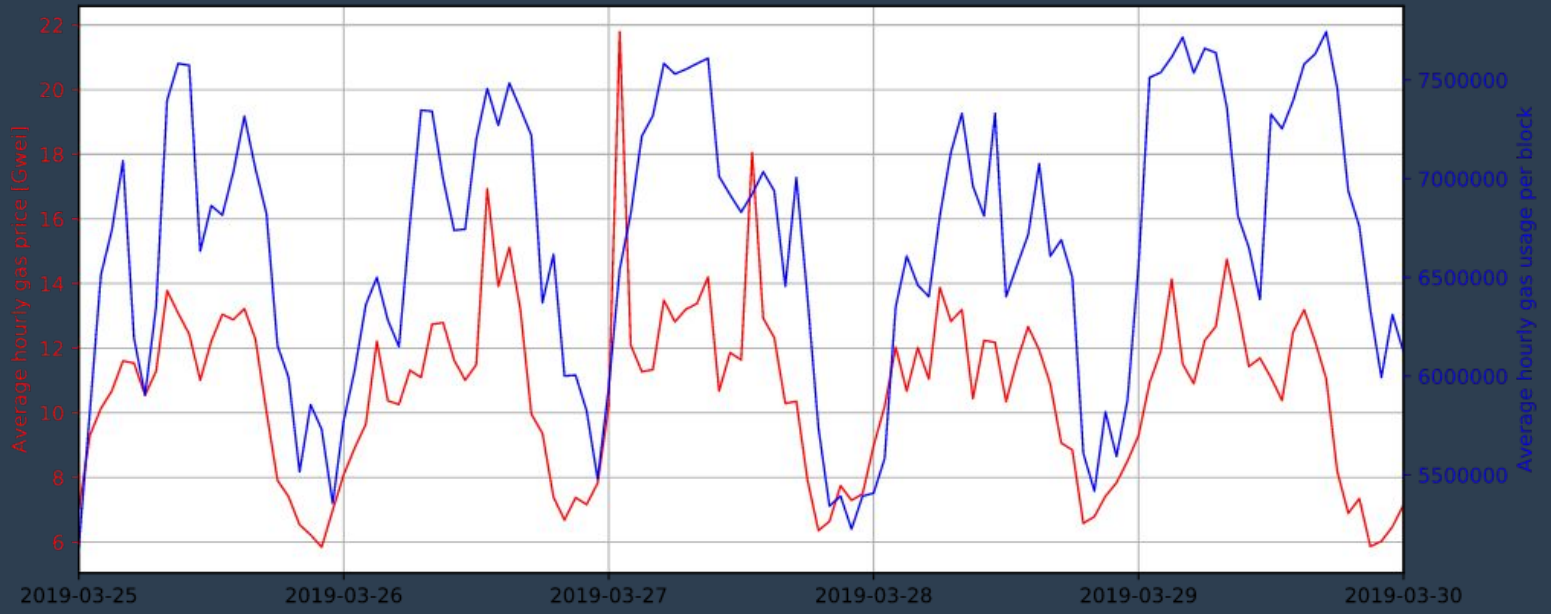
Instability of blockchains with no block reward

Vitalik Buterin March 2019

https://ethereum-magicians.org/t/eip-1559-fee-market-change-for-eth-1-0-chain/2783

GOOD

Daily Gas Demand Cycle



The difference between average gasprice and 10th percentile gasprice in a regular block is something like 3x for median and 5-8x for mean. People needlessly overpay massively.

https://solmaz.io/2019/10/21/gas-price-fee-volatility/
https://notes.ethereum.org/@vbuterin/BkSQmQTS8

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EIP-1559 TRANSACTION

TIP

GASFEE

BASEFEE

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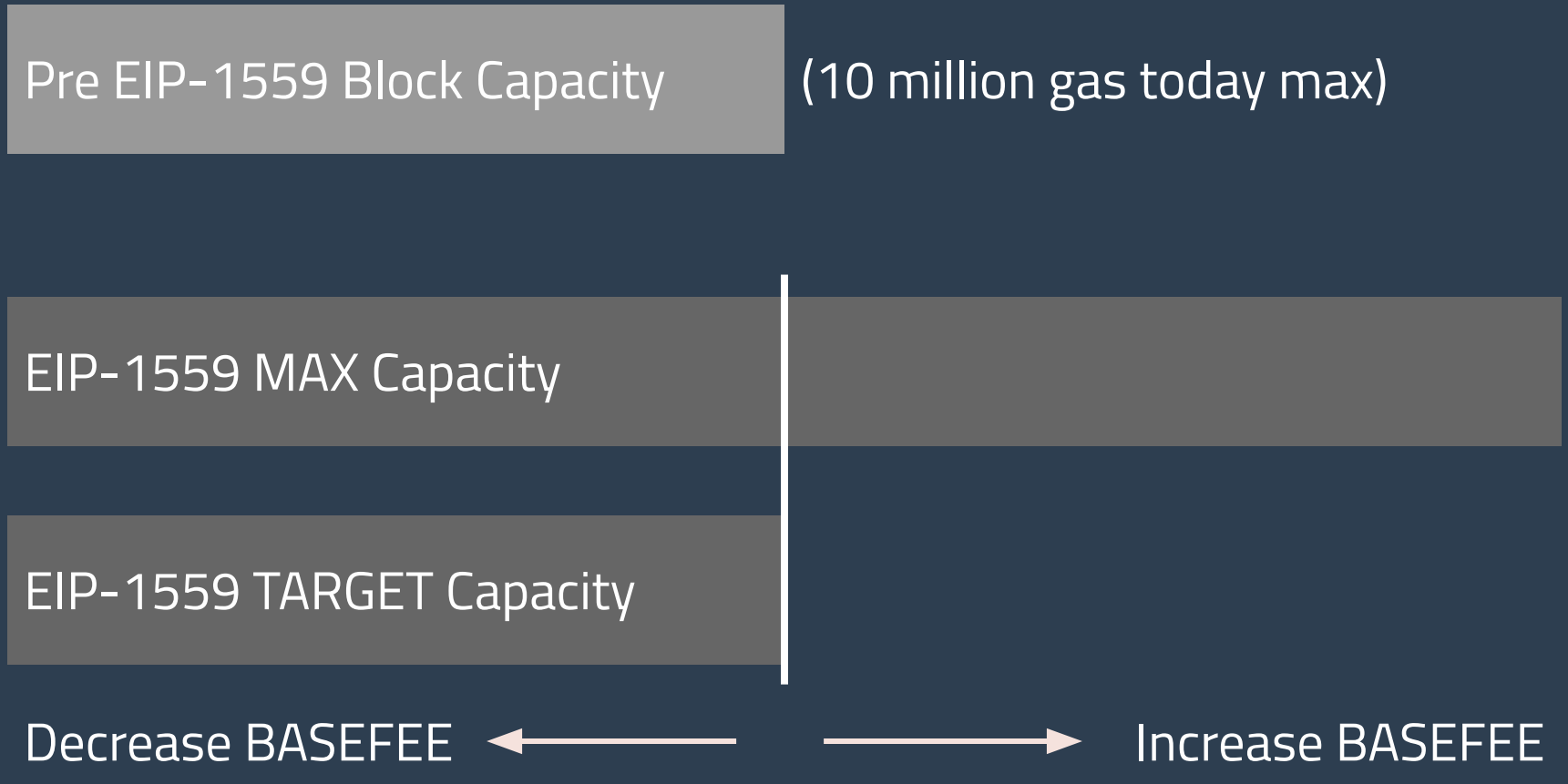
Pre EIP-1559 Block Capacity
(10 million gas today max)
EIP-1559 MAX Capacity
EIP-1559 TARGET Capacity
Decrease BASEFEE
Increase BASEFEE
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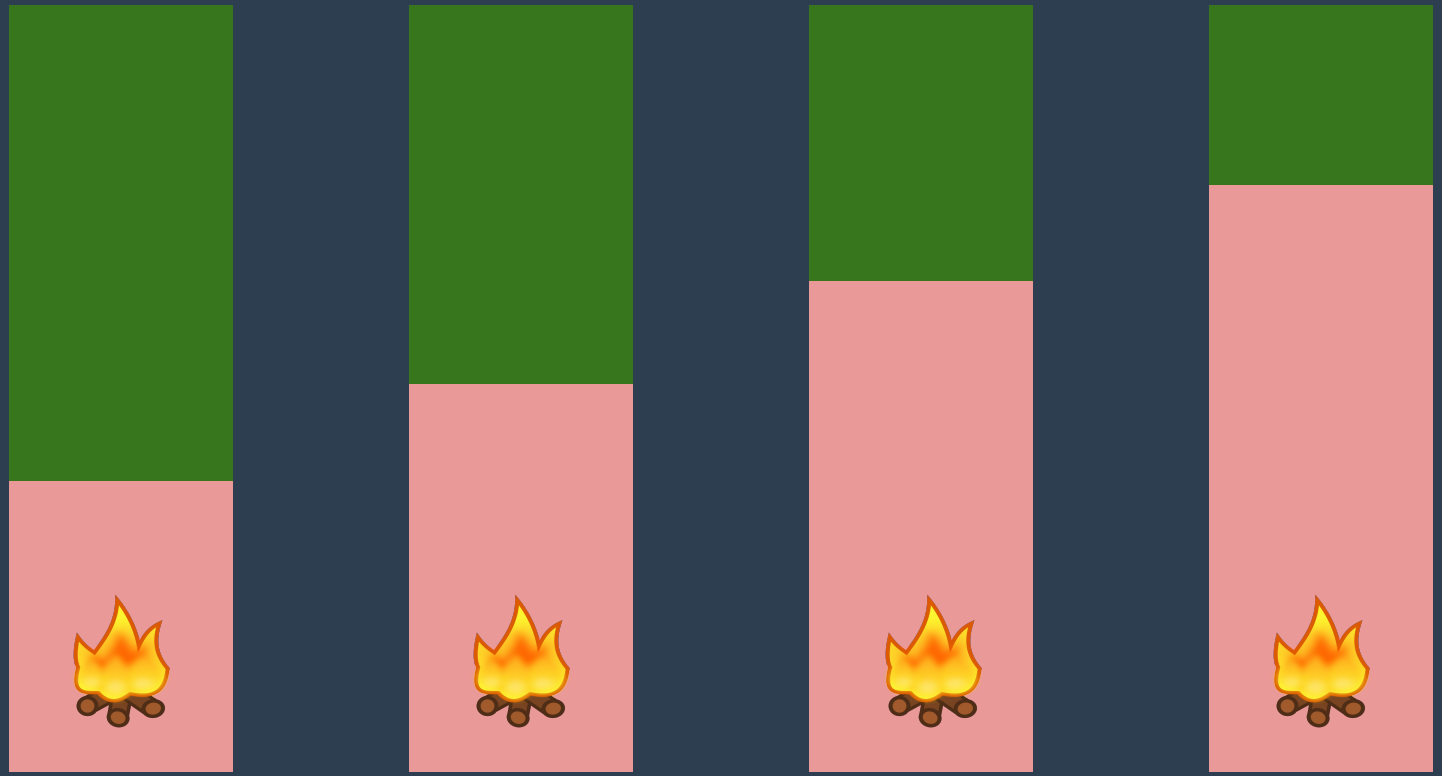
Full Blocks Increase the BASEFEE by max. 12%
Empty Block Reduce it by max. 12%



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Improvements

- Smooth BASEFEE Curve
- Predictable Gas Fees => Less Overpaid Gas
- Larger max. Blocks
- No/Less gas price Manipulation

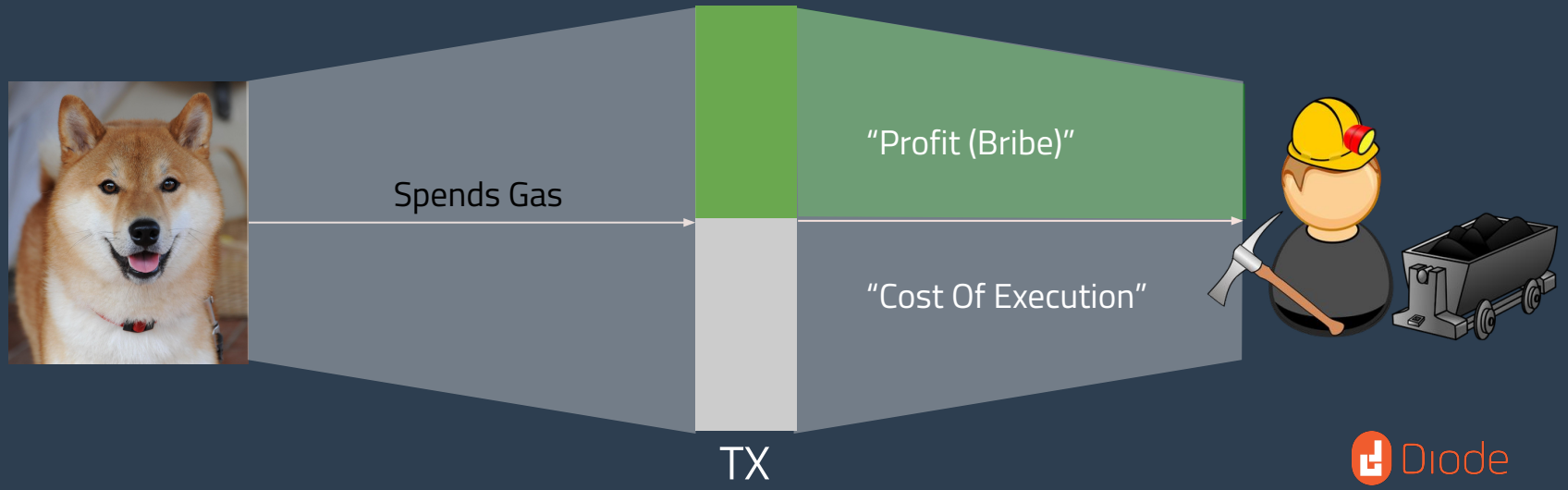
BAD

It’s a

TAX

Nobodoy profits

PRE EIP-1559



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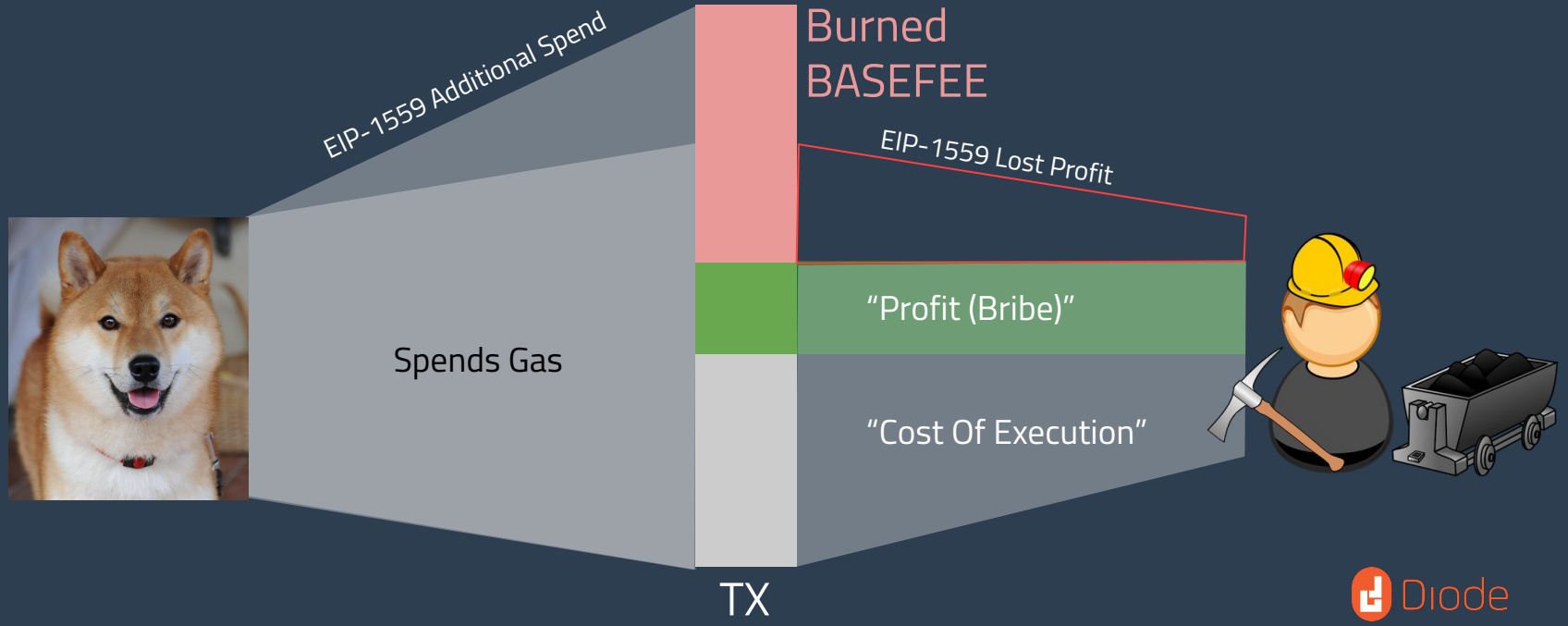
EIP-1559 Equilibrium?



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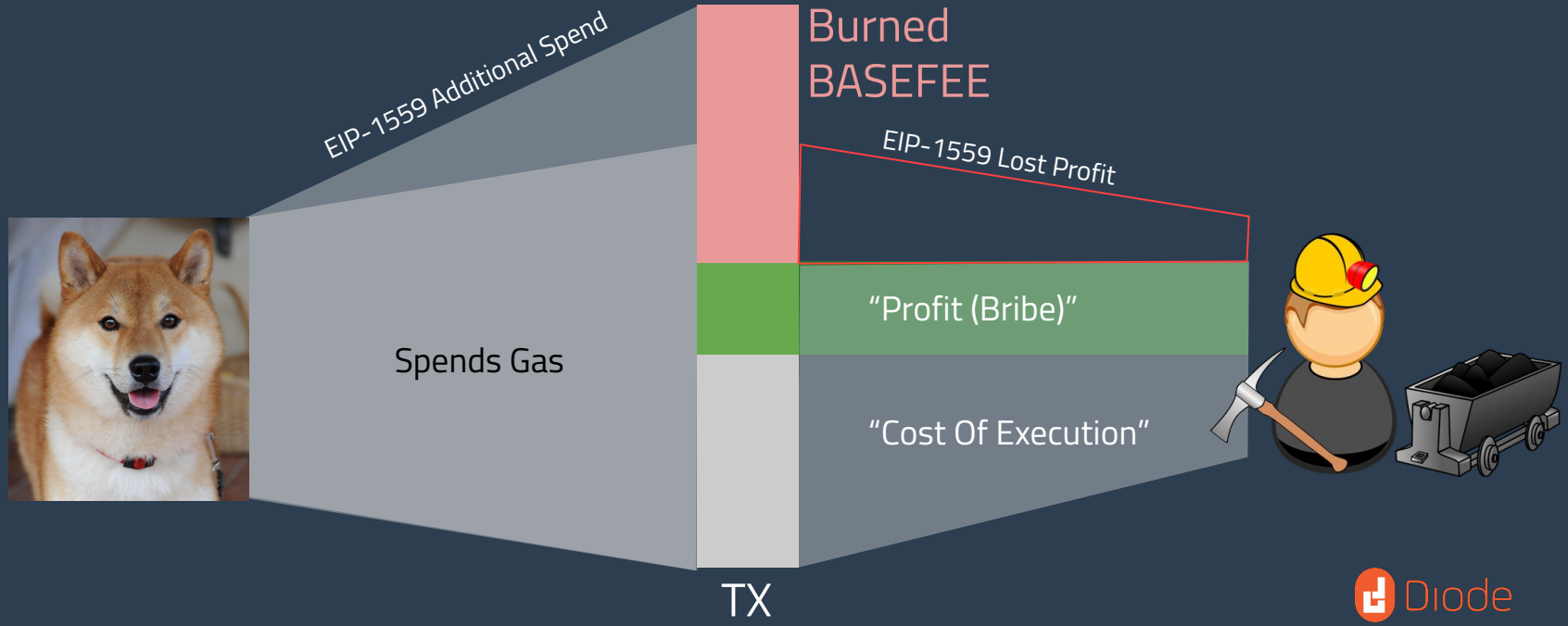
EIP-1559 Equilibrium?
“Loose-Loose”



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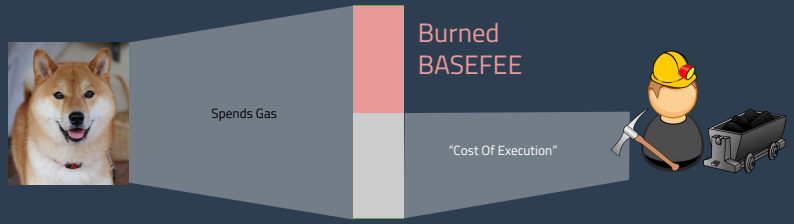
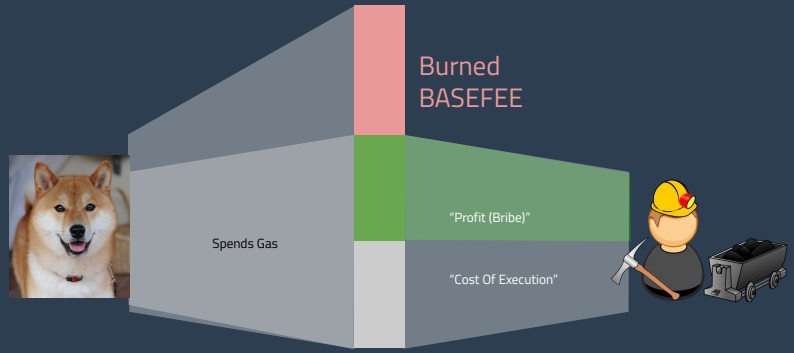
EIP-1559 Equilibrium?





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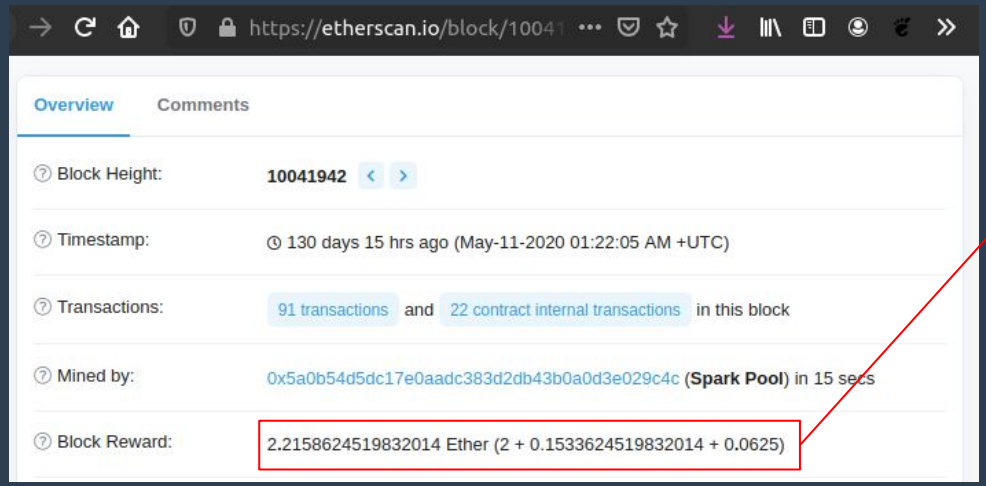


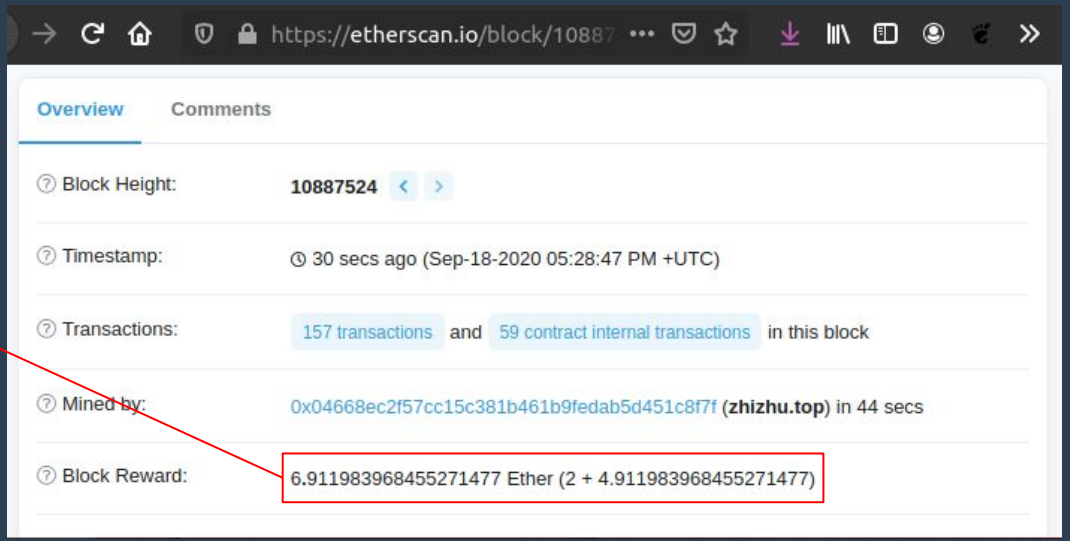
Good old time with low tx fees

$832

Todays defi reality

$2,609

At Risk ~$1,777



RISKS

- Stability: 2x Sized Blocks ??
- Implementation: Two Transaction Queues
- Miners: Lower Revenue Per Block
  Harder to Earn Block Mining Incentives
- Price Equilibrium: ?

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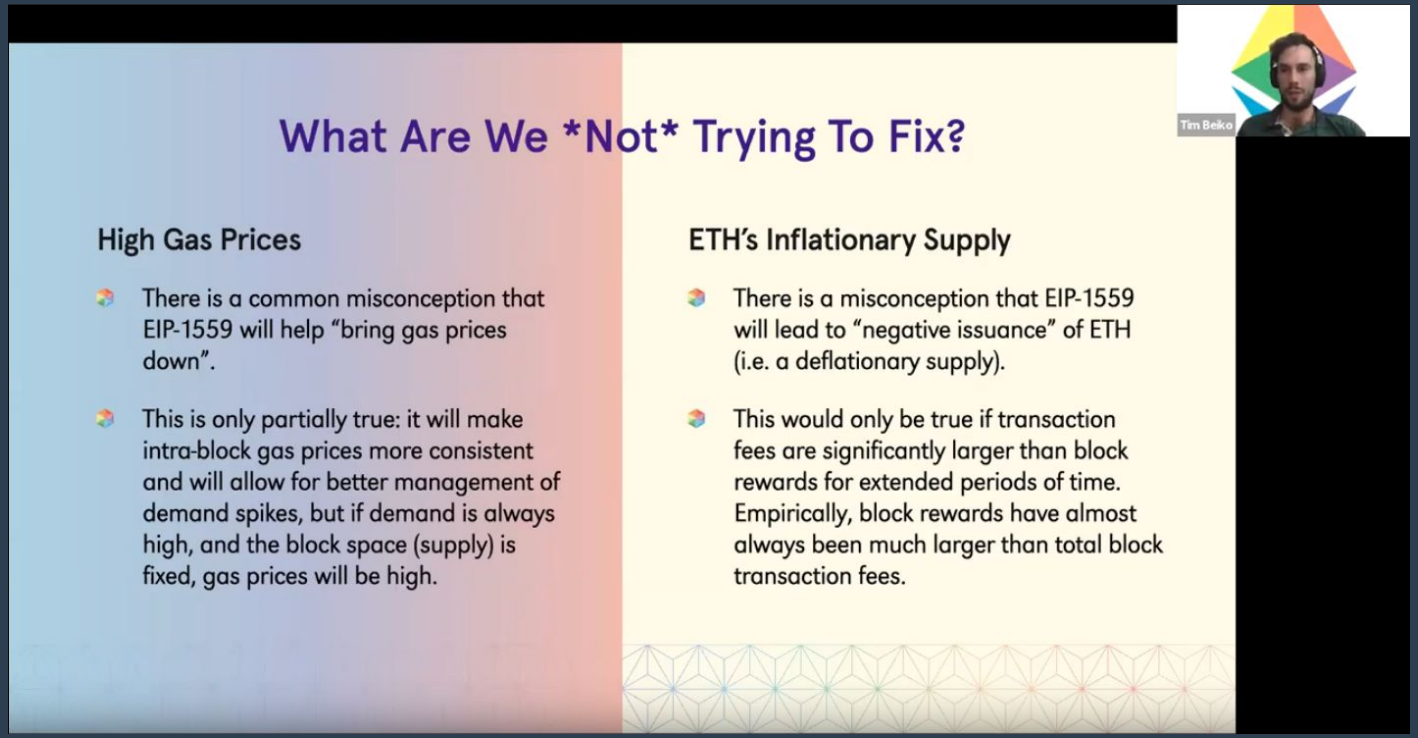
UGLY

IT'S NOT FIXING HIGH GAS PRICES



https://www.youtube.com/watch?v=Njv2IhdcmGo
https://slack-files.com/T9C7VSRBN-F0188EUPTGV-c4049dfb31

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“In Protocol”-Collusion

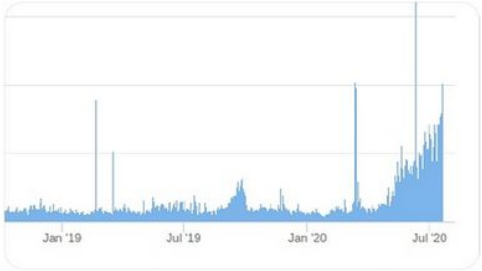
25 DAYS LATER

dominic Jul 22

Just saw your comment @vbuterin

vitalik.eth @VitalikButerin · 17 Std.

Transaction fee revenue is now nearing half as high as block reward revenue. This actually risks making ethereum *less* secure because of cs.princeton.edu/~arvindn/publi…. Fee market reform (ie. EIP 1559) fixes this; another reason why that EIP is important.



80 229 1.025

Could you lay out the thought how eip-1559 helps with the attack described in the paper? I was thinking about the impact myself but concluded that because the anticipated equilibrium in https://www.cs.princeton.edu/~arvindn/publications/mining_CCS.pdf 4 has only half filled blocks it would keep the MINFEE at 0 and hence not change anything on the problem.

There was another paper proposing payout of the transaction fee in a sliding average window of the last 10 blocks. That might fix the risk of the petty miner scheme and could be quick follow of 1559.

Reply

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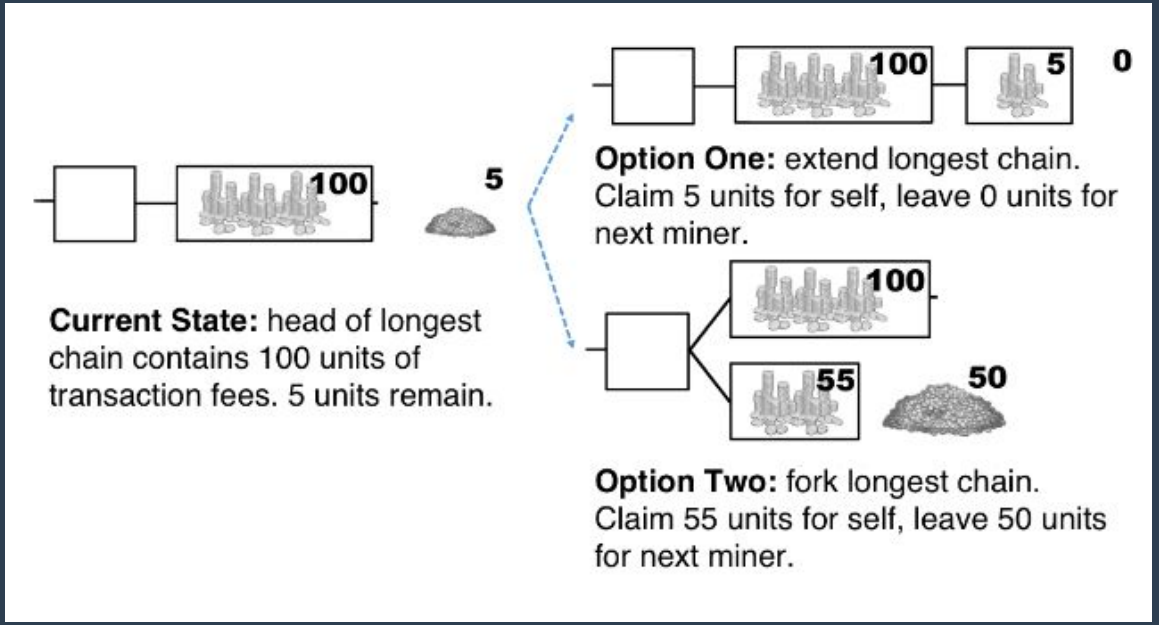
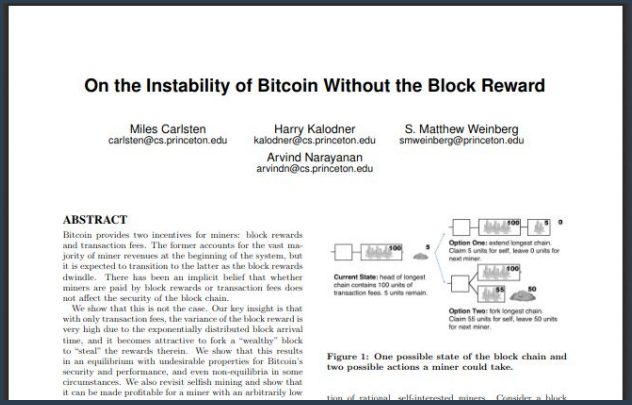
IDEA: All Consensus Rules are Followed but we don't include all Transactions





On the Instability of Bitcoin Without the Block Reward

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ABSTRACT

Bitcoin provides two incentives for miners: block rewards and transaction fees. The former accounts for the vast majority of miner revenues at the beginning of the system, but it is expected to transition to the latter as the block rewards dwindle. There has been an implicit belief that whether miners are paid by block rewards or transaction fees does not affect the security of the block chain.

We show that this is not the case. Our key insight is that with only transaction fees, the variance of the block reward is very high due to the exponentially distributed block arrival time, and it becomes attractive to fork a "wealthy" block to "steal" the rewards therein. We show that this results in an equilibrium with undesirable properties for Bitcoin's security and performance, and even non-equilibria in some circumstances. We also revisit selfish mining and show that it can be made profitable for a miner with an arbitrarily low

Figure 1: One possible state of the block chain and two possible actions a miner could take.

tion of rational, self-interested miners. Consider a block

https://www.cs.princeton.edu/~arvindn/publications/mining_CCS.pdf

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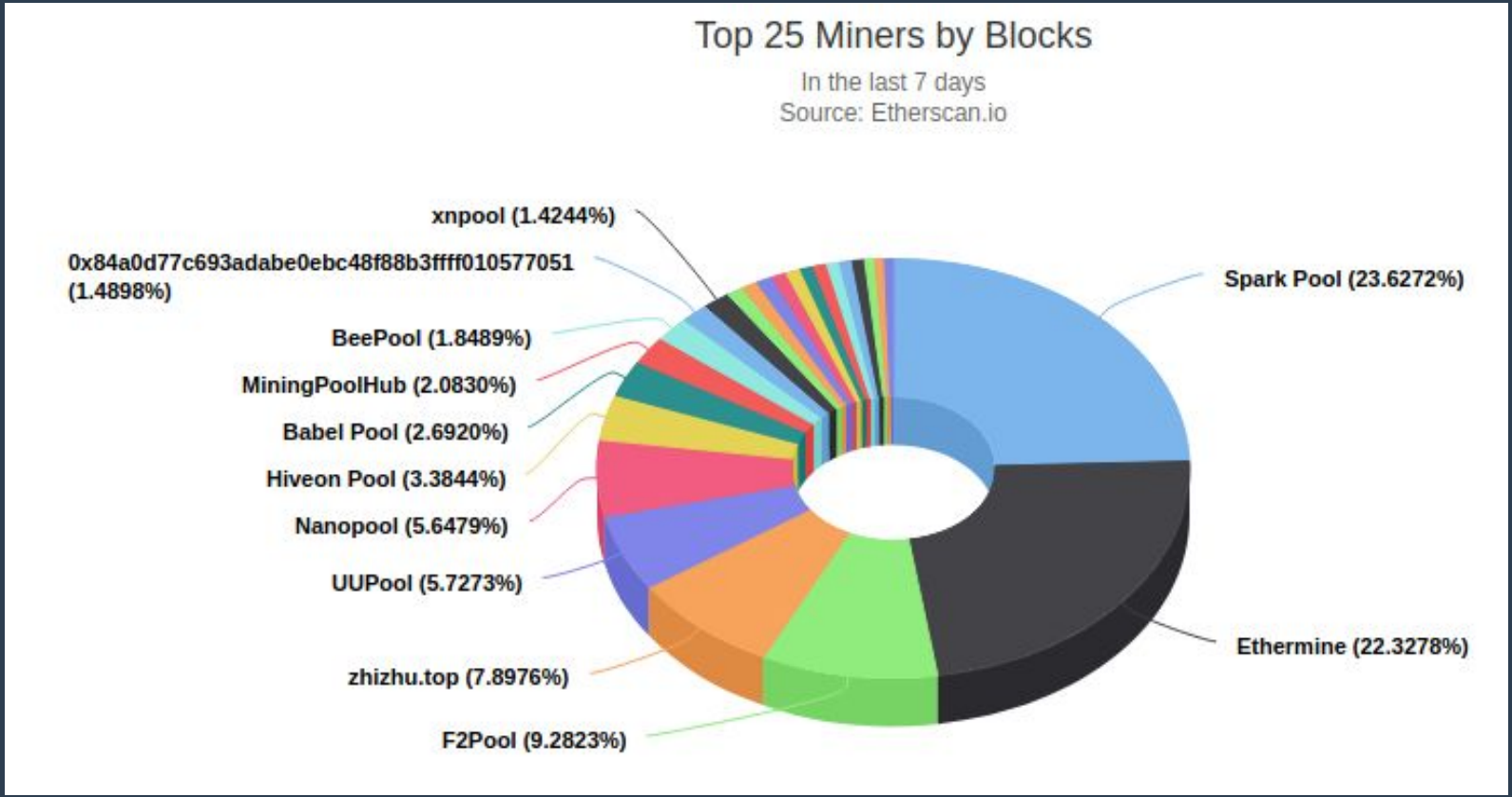
Top 25 Miners by Blocks
In the last 7 days
Source: Etherscan.io
xnpool (1.4244%)
0x84a0d77c693adabe0ebc48f88b3ffff010577051 (1.4898%)
BeePool (1.8489%)
MiningPoolHub (2.0830%)
Babel Pool (2.6920%)
Hiveon Pool (3.3844%)
Nanopool (5.6479%)
UUPool (5.7273%)
zhizhu.top (7.8976%)
F2Pool (9.2823%)
Spark Pool (23.6272%)
Ethermine (22.3278%)

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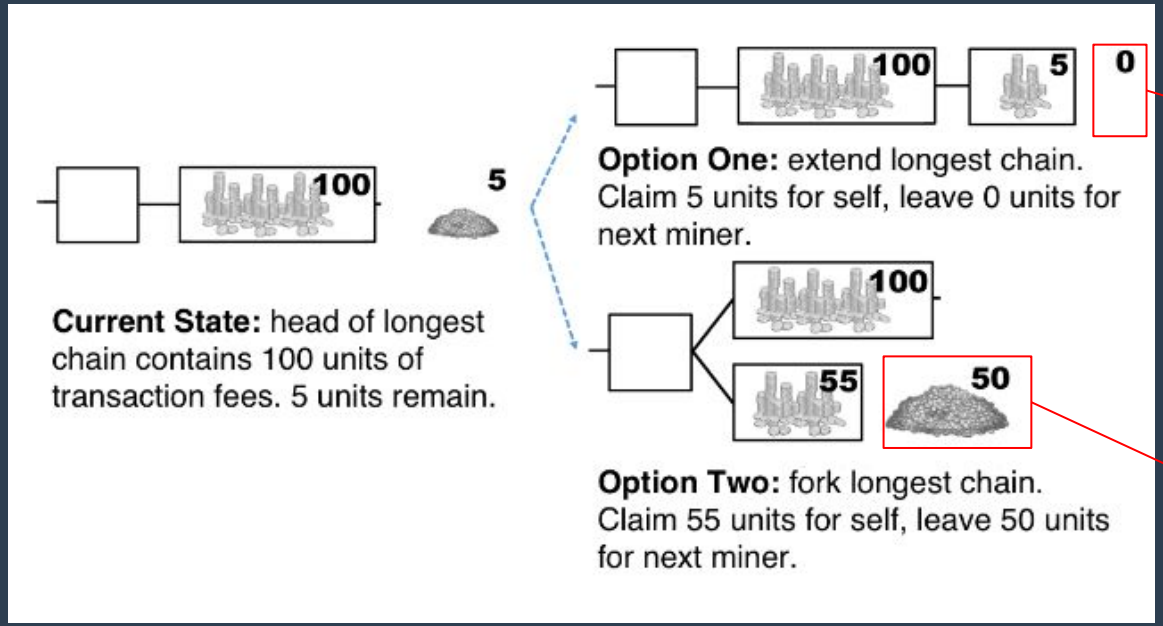
https://etherscan.io/blocks

Block #10887532 to #10887556 (Total of 10,887,557 blocks)

First | Page 1 of 435503 | Last

Block	Age	Txn	Uncles	Miner	Gas Used	Gas Limit	Avg.Gas Price	Reward
10887556	24 secs ago	223	0	0x6ebaf477f83e055589...	12,413,590 (99.75%)	12,445,052	338.64 Gwei	6.20373 Ether
10887555	54 secs ago	203	0	Nanopool	12,440,435 (99.87%)	12,457,216	407.77 Gwei	7.07282 Ether
10887554	1 min ago	200	0	Spark Pool	12,424,625 (99.84%)	12,445,064	376.82 Gwei	6.68183 Ether
10887553	1 min ago	142	0	0x84a0d77c693adabe0...	12,409,204 (99.81%)	12,432,924	301.02 Gwei	5.73535 Ether
10887552	1 min ago	150	0	Ethermine	12,407,075 (99.69%)	12,445,076	350.87 Gwei	6.35328 Ether
10887551	1 min ago	142	0	F2Pool	12,424,149 (99.93%)	12,432,936	429.19 Gwei	7.33235 Ether
10887550	1 min ago	88	0	Ethermine	12,430,473 (99.88%)	12,445,088	323.97 Gwei	6.02708 Ether
10887549	2 mins ago	198	0	F2Pool	12,421,181 (99.91%)	12,432,948	379.02 Gwei	6.70793 Ether
10887548	2 mins ago	161	0	Spark Pool	12,440,039 (99.96%)	12,445,100	329.96 Gwei	6.10477 Ether
10887547	2 mins ago	194	0	0x84a0d77c693adabe0...	12,431,325 (99.99%)	12,432,960	387.76 Gwei	6.82036 Ether
10887546	2 mins ago	161	0	Minerall Pool	12,433,019 (99.90%)	12,445,112	402.77 Gwei	7.00763 Ether
10887545	2 mins ago	20	1	zhizhu.top	1,149,933 (9.23%)	12,457,276	338.68 Gwei	2.45195 Ether
10887544	2 mins ago	222	0	2Miners: SOLO	12,451,903 (99.86%)	12,469,452	395.43 Gwei	6.92391 Ether
10887543	3 mins ago	145	0	BTC.com Pool	12,466,044 (99.88%)	12,481,640	317.81 Gwei	5.96184 Ether
10887542	3 mins ago	153	1	Mining Express	12,460,580 (99.73%)	12,493,840	333.35 Gwei	6.21625 Ether

Which Block Would you Follow?



You make
~$800

You make
~$2,700

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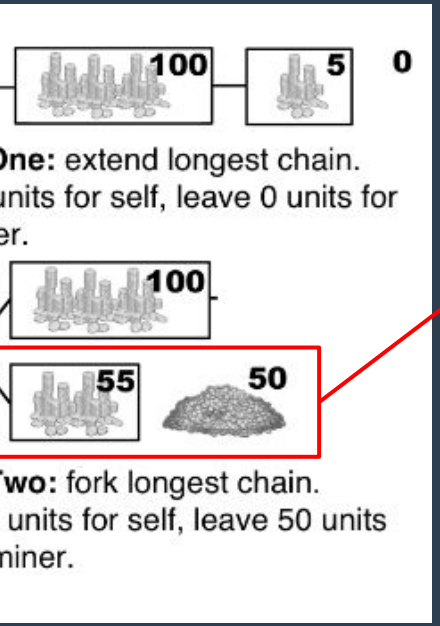
Which Block Would you Follow?



Half-filled blocks:

- Leave more $$$ for the next miner
- Reduce the BASEFEE TAX: “Win-Win”
- If everyone does it BASEFEE stays 0 and all stays as is pre eip-1559...

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What are other Options?

Diode Logo

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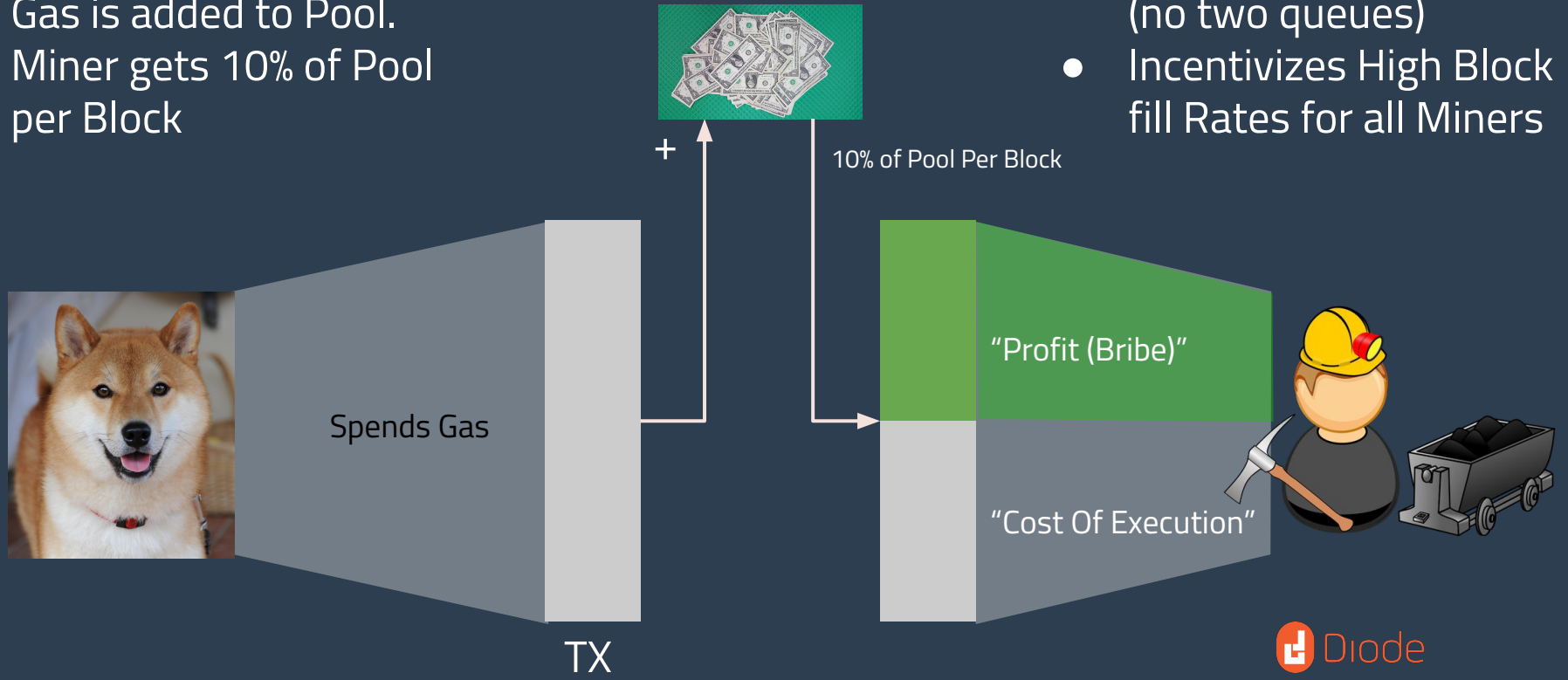
EIP-1559 + FeePool

1) No Burning, no TAX.
2) Gas is added to Pool.
3) Miner gets 10% of Pool per Block

- Simpler to implement (no two queues)
- Incentivizes High Block fill Rates for all Miners



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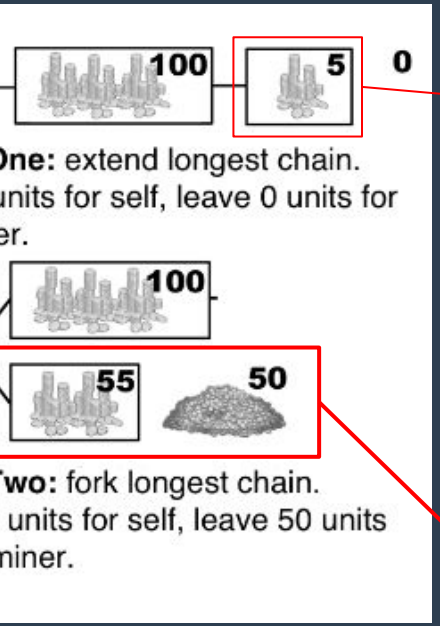
FeePool Edition (Diode Network):



Full blocks:

- More $$$ for the next miners
  10% (20m gas * 9 block + 1m * 1 block) = 18m gas

Half-filled blocks:

- Leave **less!** $$$ for the next miners
  10% (10m gas * 9 block + 10m * 1 block) = 10m gas
- Reduce the MINFEE: “Loose-Win”

Thank You!


https://diode.io


https://t.me/diode_chain


https://twitter.com/diode_chain


https://www.linkedin.com/company/diode-chain


partner@diode.io