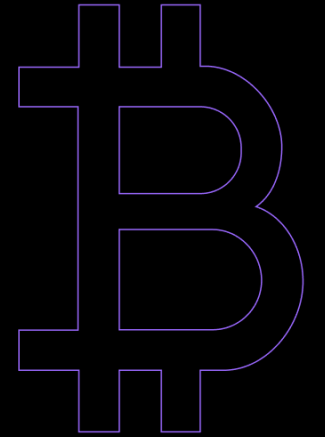


# BTC Price Cycles and Mining

Navigating the Halving and Mining's Future Landscape





# Bitcoin's 4<sup>th</sup> Halving

Every 210,000 blocks (~4 years), the Bitcoin network automatically reduces the rate of supply growth by half, resulting in a predictable monetary policy that will eventually culminate with a total of 21m coins. This monetary policy is etched into the Bitcoin software's source code and enforced by the consensus of thousands of Bitcoin software operators around the world. The policy is immutable, never to be changed as long as Bitcoin exists.

Halvings have historically framed bitcoin's four-year price cycles, with halving dates marking the beginning of a fresh cycle. Price has followed similar intra-halving cycle patterns classified by periods of hype, disillusionment, and accumulation.

Bitcoin's fourth halving will reduce the block reward (the amount of BTC allocated to miners for finding new blocks) from 6.25 BTC/block to 3.125 BTC/block. This halving period will see bitcoin's inflation rate drop below 1% and its supply increase by 656,250 BTC to 20,343,750 BTC (96.88% of sovereign supply).

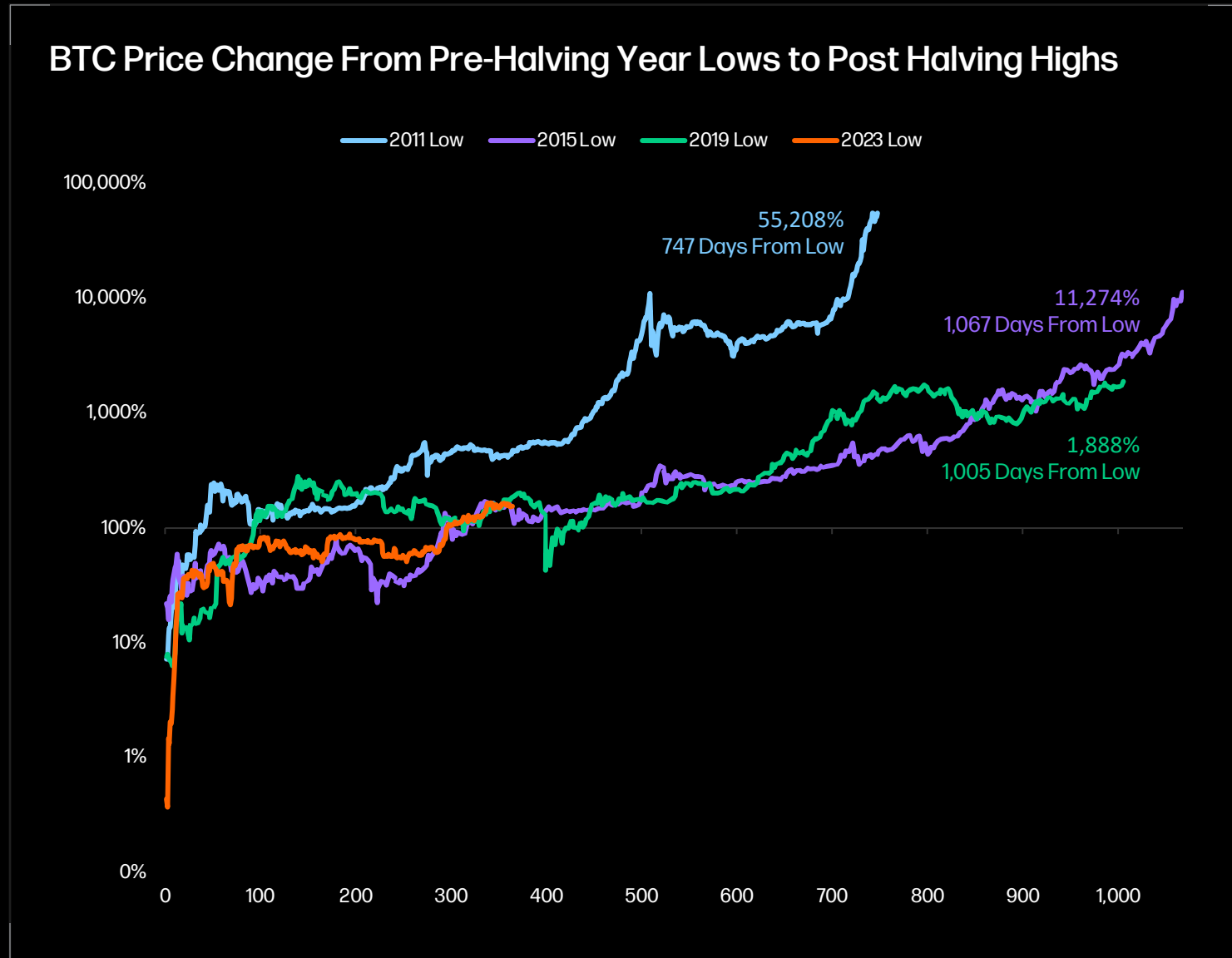
## Bitcoin Halving Supply and Model

Block	Reward Era	BTC/block	Start BTC	BTC Added	Supply	End BTC	BTC Increase	End BTC % of Limit
0	1	50	0	10500000	0	10500000	infinite	50.00%
210000	2	25	10500000	5250000	15750000	15750000	50.00%	75.00%
420000	3	12.5	15750000	2625000	18375000	18375000	16.67%	87.50%
630000	4	6.25	18375000	1312500	19687500	19687500	7.14%	93.75%
840000	5	3.125	19687500	656250	20343750	20343750	3.33%	96.88%
1050000	6	1.5625	20343750	328125	20671875	20671875	1.61%	98.44%
1260000	7	0.78125	20671875	164062.5	20835938	20835937.5	0.79%	99.22%
1470000	8	0.390625	20835937.5	82031.25	20917969	20917968.8	0.39%	99.61%
1680000	9	0.1953125	20917968.8	41015.625	20958984	20958984.4	0.20%	99.80%
1890000	10	0.0976563	20958984.4	20507.813	20979492	20979492.2	0.10%	99.90%
2100000	11	0.0488281	20979492.2	10253.905	20989746	20989746.1	0.05%	99.95%
2310000	12	0.0244141	20989746.1	5126.9526	20994873	20994873	0.02%	99.98%
2520000	13	0.012207	20994873	2563.4763	20997437	20997436.5	0.01%	99.99%
2730000	14	0.0061035	20997436.5	1281.7371	20998718	20998718.3	0.01%	99.99%
2940000	15	0.0030518	20998718.3	640.8675	20999359	20999359.1	0.00%	100.00%
3150000	16	0.0015259	20999359.1	320.4327	20999680	20999679.6	0.00%	100.00%
3360000	17	0.0007629	20999679.6	160.2153	20999840	20999839.8	0.00%	100.00%
3570000	18	0.0003815	20999839.8	80.1066	20999920	20999919.9	0.00%	100.00%
3780000	19	0.0001907	20999919.9	40.0533	20999960	20999959.9	0.00%	100.00%
3990000	20	9.536E-05	20999959.9	20.0256	20999980	20999980	0.00%	100.00%
4200000	21	4.768E-05	20999980	10.0128	20999990	20999990	0.00%	100.00%
4410000	22	2.384E-05	20999990	5.0064	20999995	20999995	0.00%	100.00%
4620000	23	1.192E-05	20999995	2.5032	20999997	20999997.5	0.00%	100.00%
4830000	24	5.96E-06	20999997.5	1.2516	20999999	20999998.7	0.00%	100.00%
5040000	25	2.98E-06	20999998.7	0.6258	20999999	20999999.4	0.00%	100.00%
5250000	26	1.49E-06	20999999.4	0.3129	21000000	20999999.7	0.00%	100.00%
5460000	27	7.4E-07	20999999.7	0.1554	21000000	20999999.8	0.00%	100.00%
5670000	28	3.7E-07	20999999.8	0.0777	21000000	20999999.9	0.00%	100.00%
5880000	29	1.8E-07	20999999.9	0.0378	21000000	20999999.9	0.00%	100.00%
6090000	30	9E-08	20999999.9	0.0189	21000000	21000000	0.00%	100.00%
6300000	31	4E-08	21000000	0.0084	21000000	21000000	0.00%	100.00%
6510000	32	2E-08	21000000	0.0042	21000000	21000000	0.00%	100.00%
6720000	33	1E-08	21000000	0.0021	21000000	21000000	0.00%	100.00%
6930000	34	0	21000000	0	21000000	21000000	0.00%	100.00%



# Bitcoin Bull Runs Following Halving Cycles





Data: Glassnode

The current halving cycle is ending, with the fourth halving anticipated to happen in mid to late April 2024. BTC performance is behaving like that of the past 2 cycles.

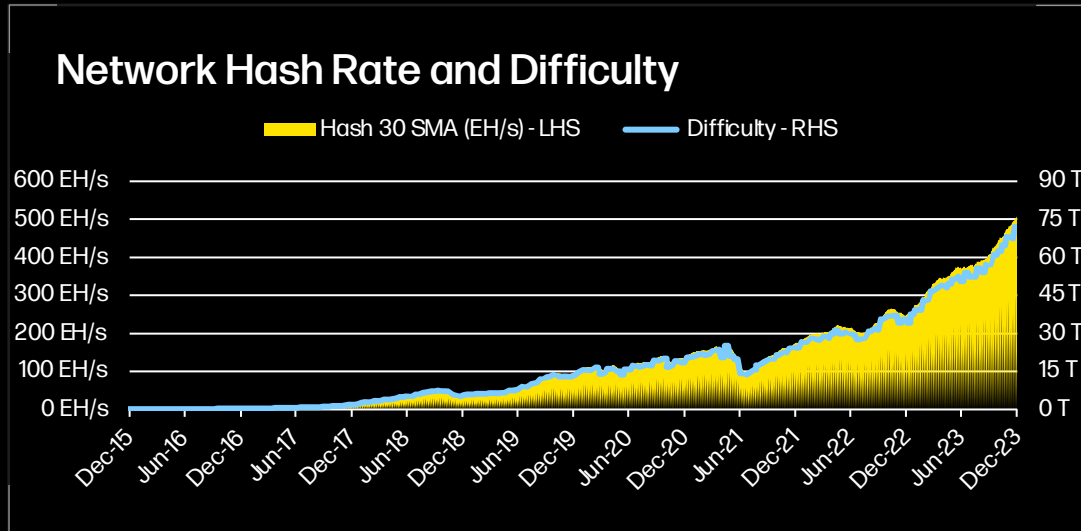
Using the pre-halving year low as a basis, the current price action observed in BTC is on pace with 2015 moving into the 2016 halving and 2019 moving into the 2020 halving.

At 364 days since the 2023 low, BTC price has rebounded 154%. This compares to 151% from the 2015 low and 186% from the 2019 low at the same time.

The previous 3 halving dates have come between 376 and 542 days after the low was notched.

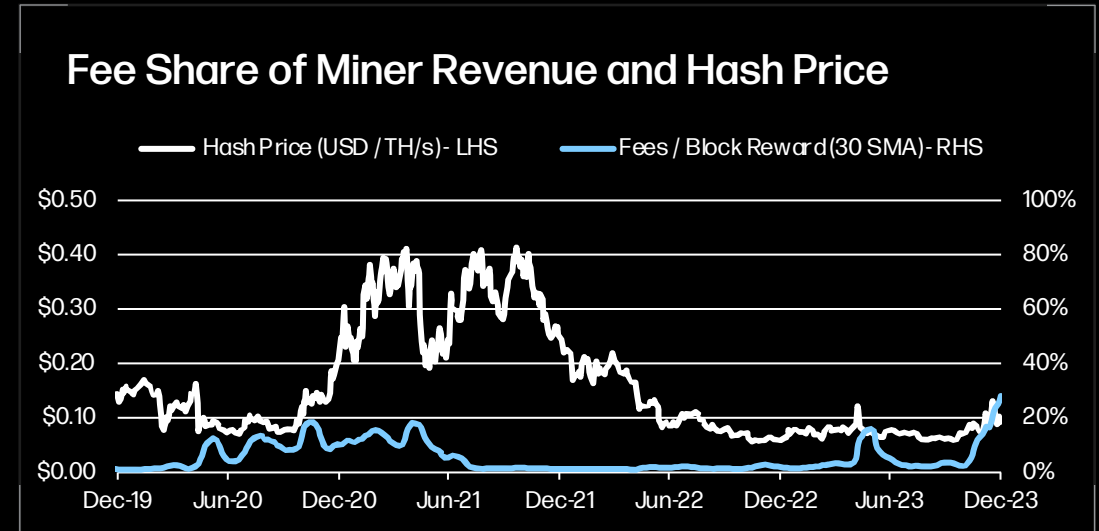
2012 Halving: 376 days after the 2011 low  
 2016 Halving: 542 days after the 2015 low,  
 2020 Halving: 459 days after the 2019 low.

The 2024 halving is anticipated to take place 467 days after the 2023 low, putting it within 75 days of the 2016 halving date from the low and within 8 days of the 2020 halving from the low.



At the end of 2023 hash rate was trending around all-time highs of 505 Exahashes (EH/s). This is a signal that miners are pushing to get as much hash online before their rewards are reduced after the mid-April 2024 halving. Hash rate increased 103% from 248.5 EH/s to 505.3 EH/s in 2023. Adding 286 EH/s of raw hash power, the network added more hash rate in 2023 than the previous six years combined.

The network's elevated hash rate coincides with all-time highs in mining difficulty, or the number of hashes required to find a Bitcoin block. The greater the difficulty the more resources are required to mine BTC and the fiercer the competition between miners is. At the conclusion of 2023, the network required 72 trillion hashes of power to find a single block. This compares to 35.4 trillion hashes at the start of 2023.



Rising difficulty and hash rate that make mining more resource intensive and competitive present challenges for miners in the year ahead. This is expressed through hash price, which is a measure of miner revenue per unit of hash rate they have online per day, and the fees paid to miners.

Despite block reward remaining the same and fees paid by users clearing the 2021 peak (noted by heightened fee to block reward ratio), miners are earning 76% less revenue today than they were in October 2021 per unit of hash power they have online. This can be partially attributed to 36% decline in BTC price since then but is magnified by the growing competition between miners as new hash has come online.

The halving will further reduce possible miner income by 3.125 BTC per block, or 450 BTC per day. This can exacerbate the economic challenges faced by miners which can lead to some miners closing their doors. The consolidation, however, can bring mining difficulty to a more sustainable level that economically benefits the miners who stay online.