Bitgesell team announces **Dynamic Block Size** for coin burn improvement using transaction fees.

BIP-1 BGL Dynamic Block Size Proposal

Overview
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There were some debates over the years about what block size is perfect, the first bitcoin forks (Bitcoin cash has block size 32x of BTC for example) were using different block size or timing for various reasons. For BGL block size has probably even greater importance because of the fact that 90% of transaction fees are burned. This means that if blocks are mined less than full, it's not only about cheap fees, it also means that almost no supply is burned. Vice versa, when a block is congested, transactions are competing with each other to get into a block, fees rise, and more BGLs are being burned with each block.

The usage of the blockchain is evolving with time - there are periods when number of transactions raises, there are periods of relative calm, and in the longer term as the network gains adoption, overall volume of transactions increases. Anything to be projected in the absolute or fixed numbers for the optimal blockchain bandwidth would be very hard to predict.

Possible solution would be to introduce a variable block size, that would depend on some parameters (thus being a part of the network consensus) to regulate blockchain bandwidth depending on the transactional activity.

If there are less transactions, gradual decreasing of block size would raise tx competition and fees to compensate that, while allowing block sizes to expand when demand is raising, keeping the blockchain useful and reducing tx congestion.

Model options
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Possible options for the control parameter on which block size could depend:

1. historically verifiable metrics (data is available/verifiable on-chain)

A. measure of price of transacting
1.A.1. average fee relative increase/decrease

1.A.2. median fee relative increase/decrease

1.A.3. minimum/maximum fee proportion relative increase/decrease

B. measure of network congestion
1.B.1. total txes in block weight relative to a max block weight

! it is equal energy spending for a miner regardless of number of transactions in block.

2. historically unverifiable metrics (data is not available/verifiable on-chain)

2.1. number of transactions in mempool
pros: may reflect fee structure better, faster reaction time
cons: could be manipulated, nodes mempool differ, decision is controlled by a particular miner

Resulting effect
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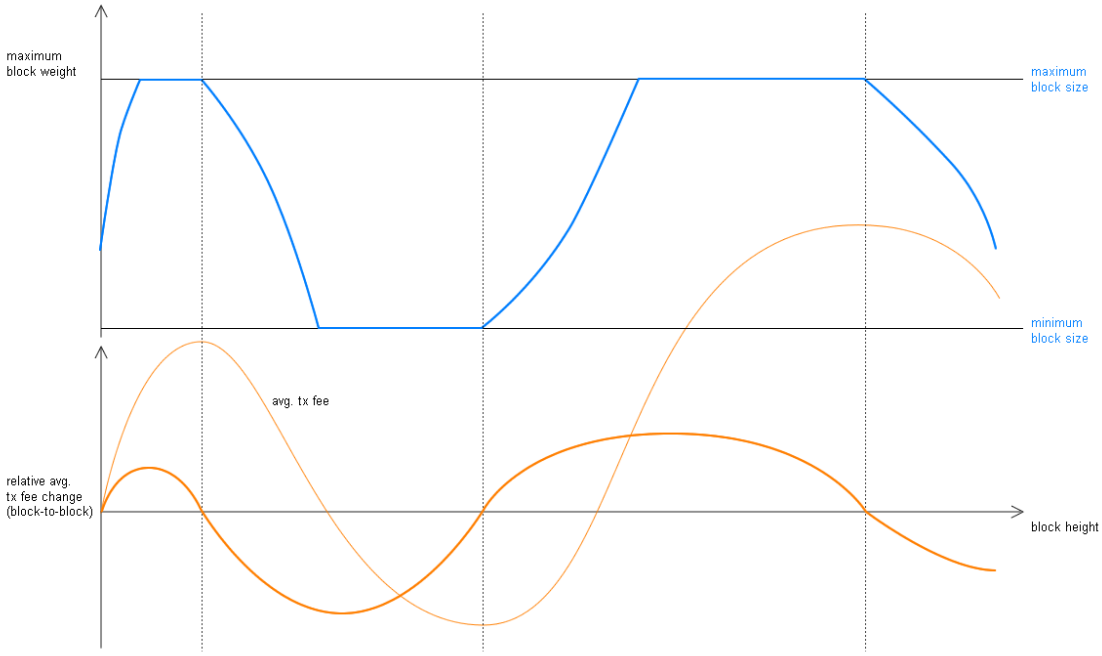
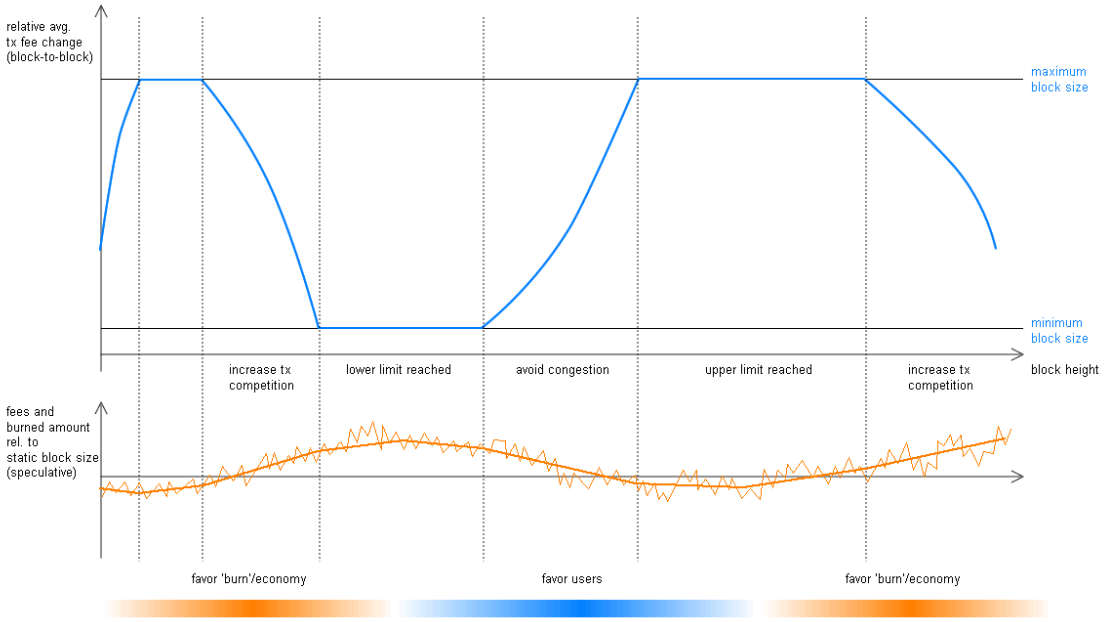
Change of block size could have upper and lower boundary to keep things safe.
Overall the dependence of block size on some control parameter can be represented in graphical form (Fig. 1) to illustrate the idea: if the first derivative of the e.g. average block transaction fee increases, the maximum block size is increased too, helping users to transact, but when average fee decreases, the block size follows, protecting the network fee gathering (and burning rate). This could be also viewed as incentive balancing between users transacting and network economy as a whole (Fig. 2).



Relative metrics (not absolute numbers) are used to avoid binding to some valuation that could (and would) change
with time. The specific parameters of how a particular value change drives block change (sensitivity) and how fast (easing) parameters are to be fine-tuned on a later stage (after parameters would have been chosen) using historical data.



Historical data could be used from BGL itself, or even from bitcoin (to have a larger dataset with different time periods with tx intensiveness etc.)

Transaction fee gathered (and burned) could be set as a target parameter to maximize, but not necessarily, e.g. median fee variance could be set as a target (to decrease short-term fees fluctuations).

Resume (possible implementation steps)

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The approach could be done in several steps, proposed are (if decisions are positive):

1. Publish and gather feedback on the proposal from the BGL community;
2. Select control parameters that would affect block size and desired effect (fee and burn impact), expand the rationale for them.
3. Using historical data propose a numeric model that dynamically defines maximum block weight (size) on the blockchain;
4. Make a prototype to get things going in the code;
5. If all above is approved and implemented, prepare change as signalling version bits and plan the transition.

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Such thing could be named as a Bitgesell Improvement Proposal (BIP, but this acronym is already taken by Bitcoin, so let's use something like BGL-IP-number?)