Unconstrained User Growth Versus Full Node Requirements, During Transition to Payment Channels

	factors	block number	chain size in GB	users	users not supported by BIP103	comparison: unconstrained growth users frustrated in BIP103	tps	user-ready blocksize	blocksize with capacity factor	network data use per full block	potential data use per month in GB	data/mo for fake-BIP103 (growth in 2016)	comparison: potential data use excess over BIP103	required bandwidth in continuous Mbps	days for background sync of old blocks
Jan 1, 2015		336895	26.50	2,000,000	-737,500	-37%	1.52	730,594	1,461,187	3,506,849	36.4	24.94	46%	0.11	37.56
(begin plan) Jan 1, 2016		389455	62.26	3,000,000	262,500	9%	2.28	1,095,890	2,191,781	5,260,274	54.7	24.94	119%	0.17	58.84
Jan 1, 2017		442015	115.91	4,500,000	1,277,963	28%	3.42	1,643,836	3,287,671	7,890,411	82.0	29.36	179%	0.25	73.02
Jan 1, 2018		494575	196.37	6,750,000	2,957,662	44%	5.14	2,465,753	4,931,507	11,835,616	123.0	34.56	256%	0.38	82.48
Jan 1, 2019		547135	317.07	10,125,000	5,661,418	56%	7.71	3,698,630	7,397,260	17,753,425	184.5	40.67	354%	0.56	88.78
(end year four) Jan 1, 2020		599695	498.12	15,187,500	9,933,864	65%	11.56	5,547,945	11,095,890	26,630,137	276.8	47.87	478%	0.85	92.98
user growth	1.5	<-- user growth: In this model, it also sets data use growth rate (e.g. 1.5 == Neilson's Law of 50% YoY growth; or 1.177 == BIP103).													
on-chain tx per year	24	<-- on-chain tx per year: Each user is allotted this many transactions. If some make more, then others must make less.													
average tx size in bytes	800	<-- average tx size: 1000 bytes allows some growth from late-2015 average of 600 bytes.													
blocksize spare capacity	2														
protocol overhead	1.2	<-- protocol overhead: Some coding work needed.													
peer data multiplier	2	<-- peer data multiplier: Full nodes should connect to more peers, but should expect each peer to share new announcements.													
old chain sync	2.5	<-- old chain sync: Some coding work needed for old blocks to synchronize in background, and also on demand.											bitcoin@rgrant.org 20151206		

github for xlsx: https://goo.gl/c8IYWb