

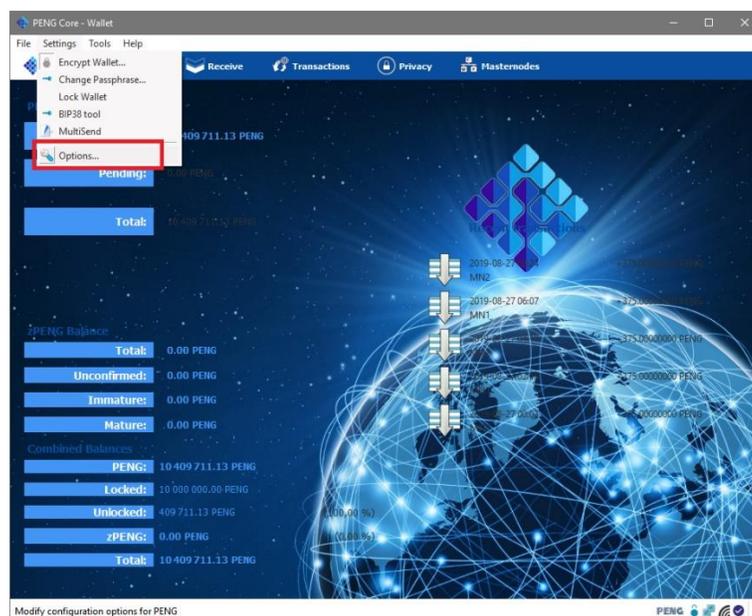
## Wallet management and staking guide

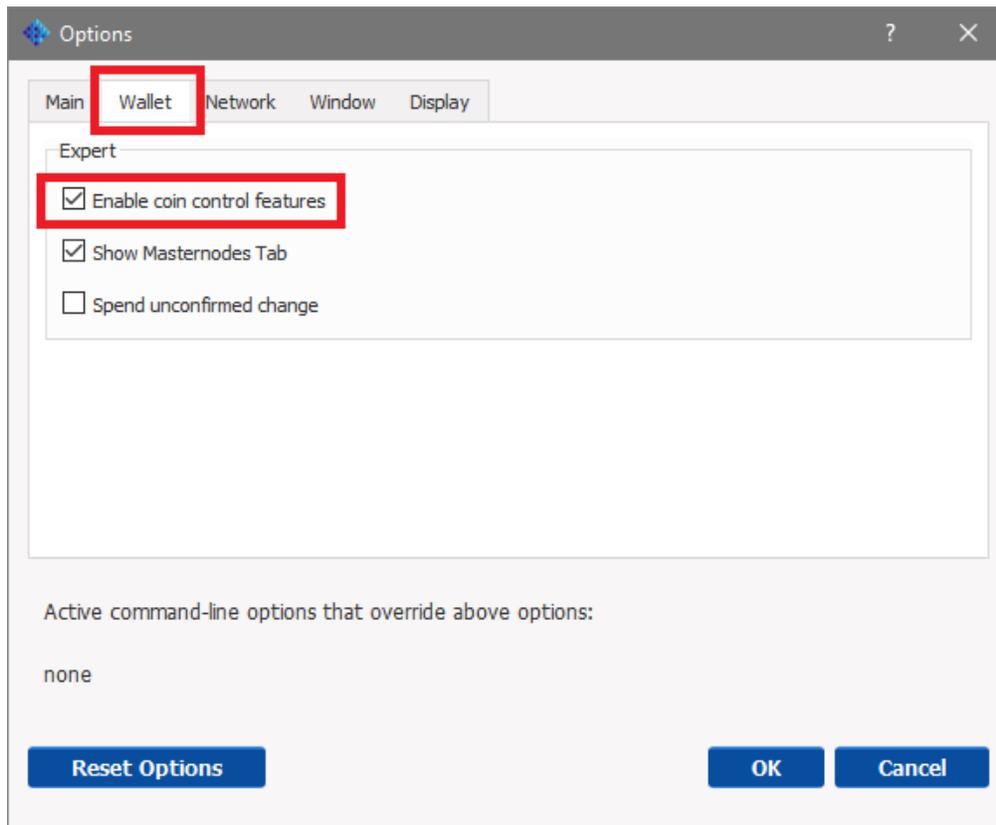
We rarely talk about wallet management in crypto, but some little tricks can really make the difference and help you to earn a little more than the average bear. Here is an easy guide that will help you correctly manage your wallet.

### Definitions

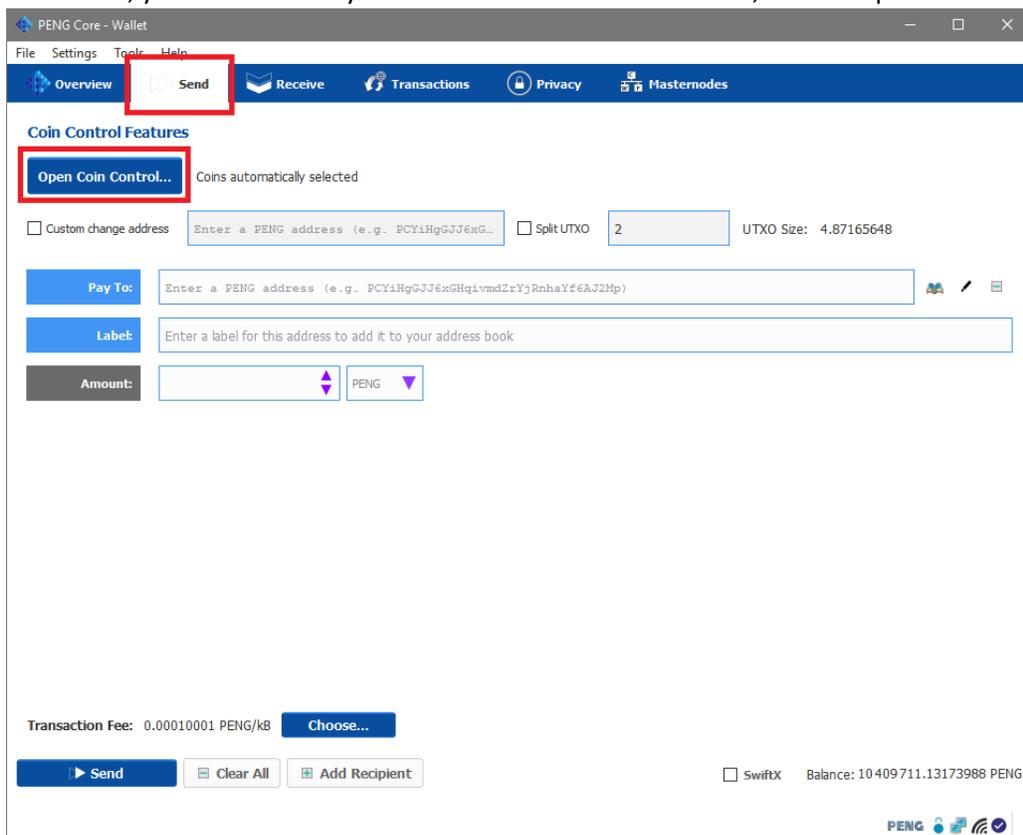
In this guide, we will use some technical terms. Here is a brief description of some of them:

- I. **Wallet:** This is the software you are installing on your computer. You can hold all your coins in there, manage your staking and your masternodes. There is also an online version available on some POS coin, but most of the function we will talk here are not available in the online wallet.
- II. **Address:** Each wallet can contain multiple address. Those are what you use to send and receive your coins. Each address in a wallet can contain multiple inputs.
- III. **Inputs:** Each address can contain multiple inputs. Each input represents a transaction that happened on that address. For example, each masternode reward create a new input. It can also be coins you sent in different transaction. By default, you are not able to see or manage your inputs, to activate that function, you need to enable coin control in “settings / options / wallet”

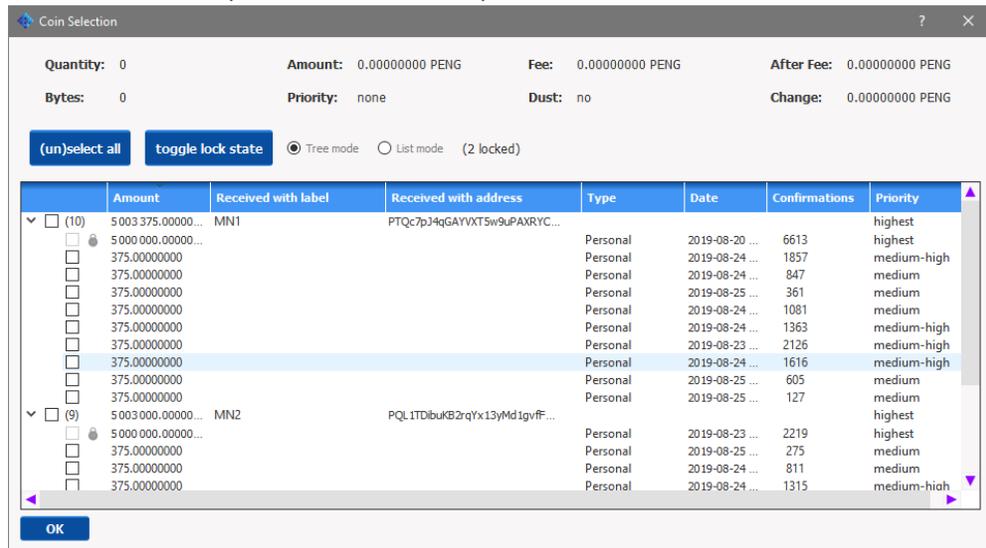




Once activated, you can see how your wallet work in the “send” tab, under “Open Coin Control”



Each line under an address represent a different input for that address.



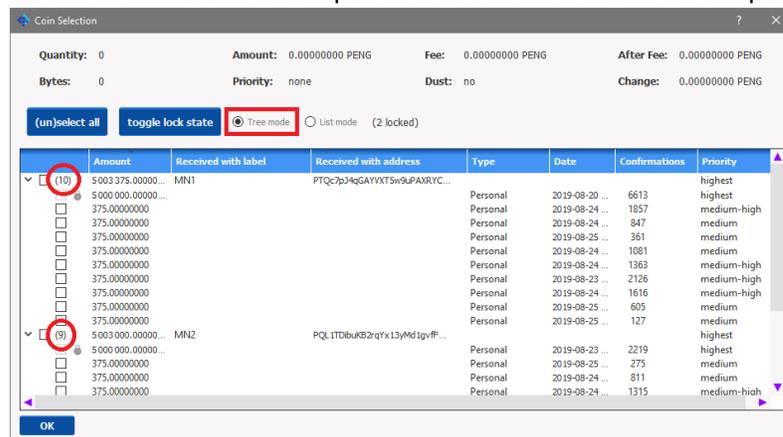
IV. Stack: We will use stack in reference to a stack of coin (for example 100 000 coins), regrouped under the same input

V. Stake: This will be used for a Proof-of-Stake reward, not to be confused with stack.

1. Masternode rewards and managing the inputs

As you can see in the image above, each masternode reward create a different input under that masternode address. If you keep those reward for a long time, it might cause you some problem with transaction size in the future. The same problem can also happen if you use a very small split threshold while staking your coin (see next section).

It is important to know that there is a hard-coded limit to transaction size in each wallet. This limit is usually set at 100 000 bytes for most wallet (or about 600 inputs, whatever the amount of your transaction). So, if for example, you left your wallet unattended for a long time, and you now have enough masternode reward to create a new masternode, you might have a transaction size problem. Why? Because a PENG masternode is 5 000 000 coins, and each masternode reward is 375 PENG, which means you are going to need about 13 334 inputs to attain the magic number of 5 million. If you select all those reward at once, the wallet is going to refuse your transaction because the transaction size is too big. You can follow the amount of input each address has by going in the coin control and selecting "Tree mode". The amount in parenthesis show the number of input that address contains.



The trick is to keep an eye on those numbers, and make sure they don't go above 600. If they get close to 600, you can simply condense all those input under 1 by sending those coin to yourself. To do so, select the inputs you want to condense, click "OK", and make sure the transaction size doesn't go above 100 000 bytes.

**Quantity:** 11      **Amount:** 409711.13173988 PENG      **Fee:** ~0.00017401 PENG      **After Fee:** ~409711.13156587 PENG

**Bytes:** ~1740      **Priority:** higher      **Dust:** no      **Change:** 0.00000000 PENG

(un)select all    toggle lock state     Tree mode     List mode    (2 locked)

	Amount	Received with label	Received with address	Type	Date	Confirmations	Priority
<input checked="" type="checkbox"/> (6)	5001875.00000...	MN2	PQL1TDibuKB2rqYx13yMd1gvFF...				highest
<input type="checkbox"/>	5000 000.00000...			Personal	2019-08-23 ...	4928	highest
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-27 ...	19	medium
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-27 ...	517	medium
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-26 ...	1006	medium
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-27 ...	268	medium
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-26 ...	764	medium
<input checked="" type="checkbox"/> (5)	5001500.00000...	MN1	PTQc7pJ4qGAYVXT5w9uPAXRYC...				highest
<input type="checkbox"/>	5000 000.00000...			Personal	2019-08-20 ...	9322	highest
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-26 ...	904	medium
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-27 ...	154	medium
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-26 ...	639	medium
<input checked="" type="checkbox"/>	375.000000000			Personal	2019-08-27 ...	394	medium
<input checked="" type="checkbox"/> (2)	406336.13173988	Staking	PG13V1hU9c4jvqeKeKpVJGYwVA...				higher
<input checked="" type="checkbox"/>	203168.06586994			Personal	2019-08-26 ...	1033	higher
<input checked="" type="checkbox"/>	203168.06586994			Personal	2019-08-26 ...	1033	higher

OK

**Quantity:** 11      **Amount:** 409711.13173988 PENG      **Fee:** ~0.00017401 PENG      **After Fee:** ~409711.13156587 PENG

**Bytes:** ~1740      **Priority:** higher      **Dust:** no      **Change:** 0.00000000 PENG

Custom change address    Enter a PENG address (e.g. PCYiHgGJJ6xG...)     Split UTXO    2    UTXO Size: 4.87165648

**Pay To:** Enter a PENG address (e.g. PCYiHgGJJ6xGHqivmdZrYjRnhaYf6AJ2Mp)

**Label:** Enter a label for this address to add it to your address book

**Amount:** [input field]    PENG

**Transaction Fee:** 0.00010001 PENG/kB    Choose...

Send    Clear All    Add Recipient     SwiftX    Balance: 10 409 711.13173988 PENG

Show general overview of wallet

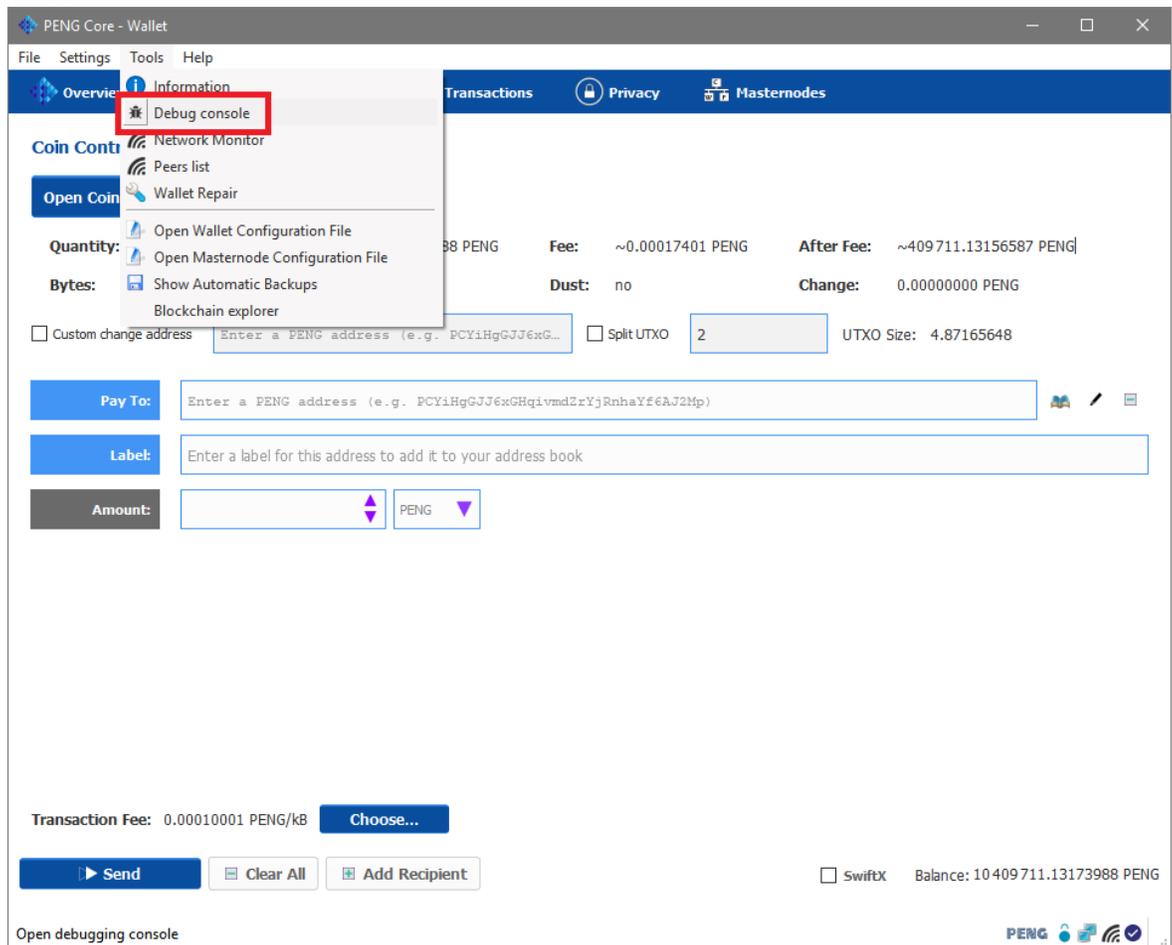
By doing so, you will always make sure you don't exceed the amount of input (or rather the transaction size) the wallet allows.

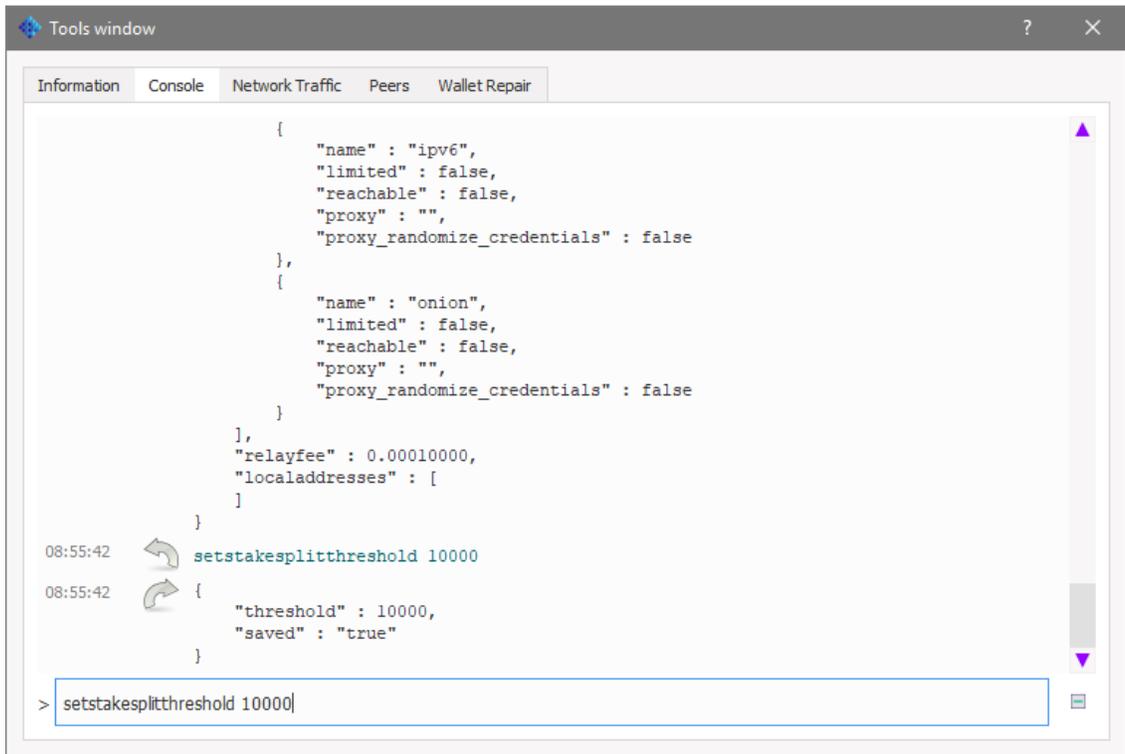
## 2. Staking split threshold, input priority and UTXO function

If you want to stake your coins instead of using them as a masternode collateral (or if you don't have enough), you really need to know and understand those functions.

### I. Staking split threshold

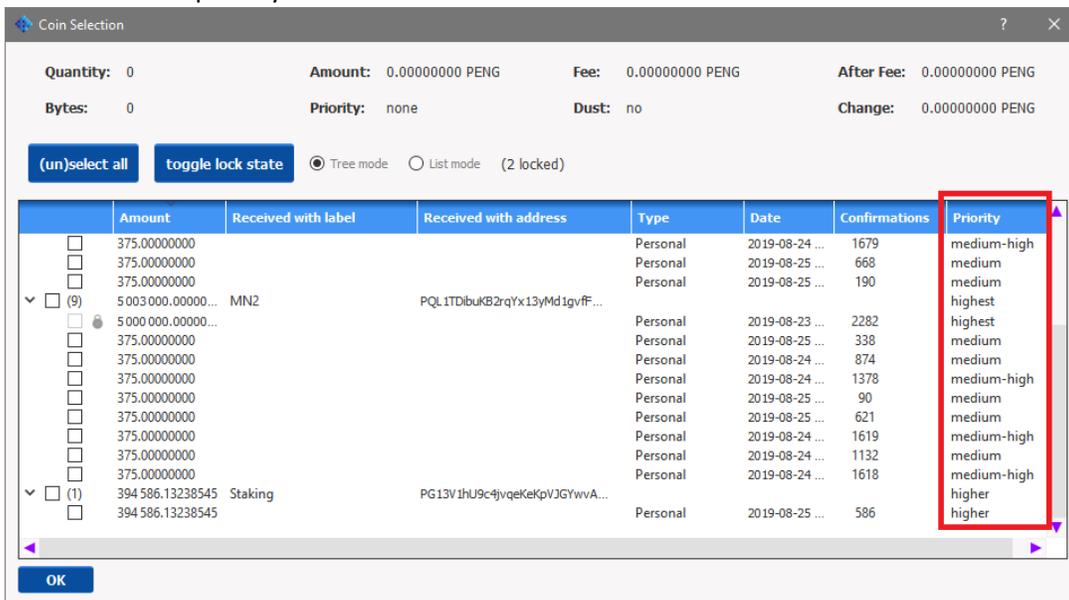
This value, set by default at 500 PENG, is the minimum amount of coin that will end up in an input AFTER a split due to a staking reward. In other words, as soon as an input reach a value ABOVE 1000 PENG and win a staking reward, this input will split in 2 inputs of 500 PENG. The first input will be maturing with the staking reward for 60 confirmations, and the other input will stay "in line" to get the next staking reward. If you leave that value to a small amount, you might end up with too many inputs in your wallet, as we explained above. To change this value, you can go in "tools / Debug console" and enter "setstakesplitthreshold 10000" if you want to set it to 10 000 PENG. Just change the amount to what fits your need.





## II. Input priority

Each input in your wallet is assigned a priority from “low” to “highest” based on 3 data: Number of confirmations, Network relative weight and Stack size. You can see each input priority in the coin control window under “priority”



The highest the priority, the more chance an input have to get a staking reward. Now let’s have a closer look at those 3 data.

- Number of confirmations: As we said above, the number of confirmations required for an input to mature for staking is 60. The idea here is to have the highest priority possible once your coins are mature, so that they have the highest chance of earning a staking reward right away, and then be

back on the waiting line again with highest priority after another 60 confirmations. Other than that, this number only increase as long as you don't transfer the input elsewhere.

- Network relative weight: There is not much you can do about this one. Its an obscure number that is determined by the amount of input awaiting a staking reward at anytime on the network. The more input awaiting staking reward on the network at any time, the lesser your chance of earning a reward. The more coin you own, the higher your chance of getting the reward. You can only guess your relative weight by knowing how many coins are staking at any time on the network [network weight = Your staking coin / (circulating supply – number locked in masternode – number of coins on exchange – number of coins in offline wallet – number of coins not staking – coin not staking for whatever the reason)]. As you can see its not an easy number to get, and even once you have a good idea, its hard to say how it influence the balance in your favor.
- Stack size: This is the single most important data if you want to stake efficiently. In the image above, we can see that a stack of 375 PENG with 90 confirmations only get a score of “medium” as where a stack of close to 400 000 PENG get higher at 586 confirmations (it actually gets higher at 150 confirmations). Remember that, when an input wins a staking reward, it is locked for 60 confirmations (or about an hour). During that time, those coin won't be able to get another reward. This means you need to find the most optimal stack between size and priority. For example, if you split that 400k in two stacks of 200k, chances are the priority is still going to be good, and you will still have 200k available for reward if the first stack is maturing. Its all about balance. How do you determine the optimal stack? Trial and error and patience is the only way. If you want a good starting point, here is a table we compiled around block 570 000 that gives you the priority in relation with stack size and number of confirmations.

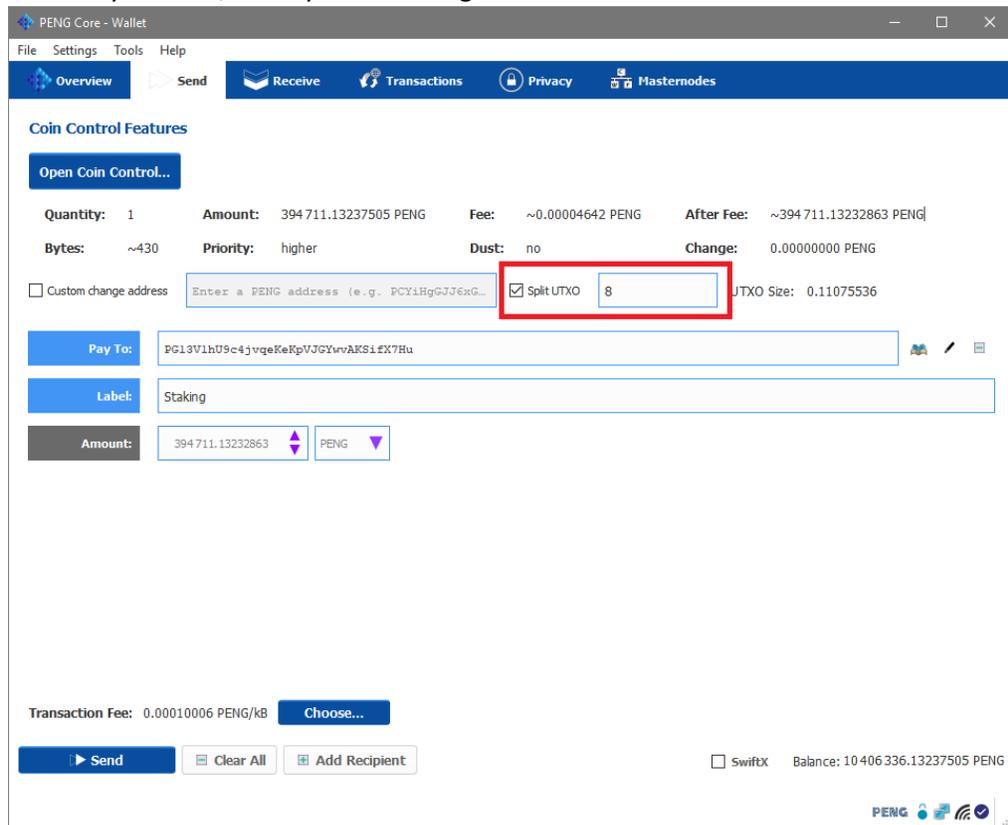
Stack Size / Confirmations	1 conf	50 conf	100	200	350	400	1000	2000	2200
25 000 PENG	Medium-high	Medium-high	Medium-high	High	High	High	High	Higher	Higher
50 000 PENG	Medium-high	Medium-high	High	High	High	High	High	Higher	Higher
100 000	Medium-high	High	High	High	High	High	High	Higher	Staked / Higher
150 000	Medium-high	High	High	High	Higher	Higher	Staked / Higher	Higher	Higher
200 000	High	High	High	High	Staked / High	High	Staked / Higher	Higher	Higher
250 000	High	High	High	Higher	Higher	Higher	Staked / Higher	Higher	Higher
300 000	High	High	High	Higher	Higher	Higher	Staked / Higher	Higher	Higher

From that table we can see that:

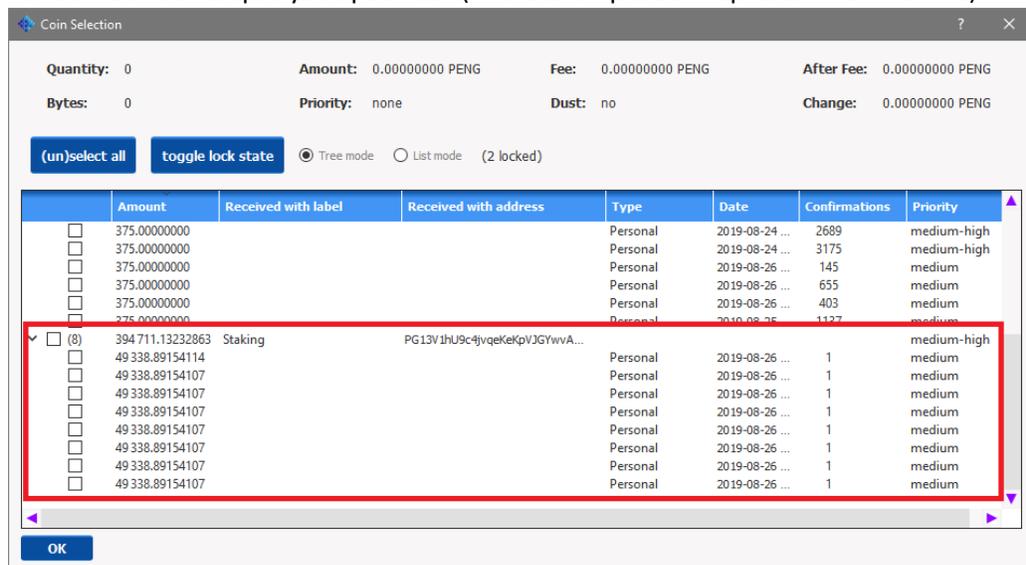
- Smaller stack takes a long time to get “higher” priority and stake
- Bigger stack gets “higher” faster, but once their have the same chance to stake
- None of these stack gets “highest” before staking, or after 60 confirmations
- 200 000 staked twice during the data collection
- The optimal stack size seems to be between 150k and 200K PENG

### III. UTXO function

Once you have found the perfect stack size, you will want to split that big amount you just transferred from an exchange. Before the introduction of the UTXO function, you would have had to split that big stack manually. Today's wallet can do it for you. You can access the UTXO function in the "send" tab. You first select the inputs you want to split, then you only need to check "Split UTXO" and enter the amount of same size stack you want, enter your receiving address and click on "Send"



After at least one confirmation, you can go in the coin control window, and you should see your input splitted in the amount of output you specified. (In the example 394K splitted in 8 = 49k x 8)



It is also possible to use the UTXO function to condense many inputs like we showed you before. For example, if you have 500 masternode rewards totalizing 187 500 PENG and you would like to have 2 outputs of 93 750 PENG instead, you can select them all using the coin control function, then send them to yourself using the UTXO function (split in 2).

There you are, now you should be able to manage your wallet and your staking like a pro. If you have any questions, don't hesitate to come and talk with us on our discord. You will always find a nice team member or other user ready to help you!

Our Discord: <https://discord.gg/GmWVrKY>

Please also visit our website for many more info about our project, or how to follow us: <https://pengcoin.io>

Thank you and happy staking!