

DeLottery: a fair and equitable auto-drawing lottery mechanism

<https://de-lottery.eth.limo> delottodev@gmail.com

ABSTRACT: DeLottery (symbol: DL), short for decentralized lottery, is an ERC-20 token with built-in lottery mechanism based on blockchain and crypto technology. With the transparency of smart contract and the randomness from Chainlink VRF, DeLottery is drawn automatically and justly every day, providing a daily fair and equitable opportunity to a fortune for its participants. In contrast to common lotteries, which has a very low, even negative, expected value, DeLottery offers a very high expected value which makes it the most promising lottery the world has ever seen.

Lottery Mechanism

I. Lottery Pool

DeLottery (DL) taxes on the token's transfer, buy, sell, and all the taxes are transferred to the token's smart contract as the lottery pool.

Tax Rates:

transfer tax: 5%

buy tax: 5%

sell tax: 8%

Note: to prevent whales, every transaction or address balance beyond 2% of the total supply are taxed with double rate, and 5% with fourfold rate.

II. DeLottery Prizes

There are two types of winning prize in DeLottery and a reward prize for the lottery drawer:

- 1. Jackpot prize:** jackpot prize is 70% of the total lottery pool, namely 70% of the token contract's DL balance, only one jackpot winner is drawn every lottery round.
- 2. Luckydog prize:** 10% of the total lottery tickets are drawn as luckydog winners, and 9% of the lottery pool is divided equally for them as luckydog prize.
- 3. Drawer reward:** 1% of the lottery pool is sent to the drawer as reward.

Note: 20% of the lottery pool remains to the next round as initial pool.

III. Participation

There are two ways to participate in DeLottery:

1. Transfer the ticket amount of DeLottery token (DL) to the token's contract address.
2. Buy DL on Pancakeswap, and if the tax amount (5% of trading amount) is equal or greater than the current ticket amount, the buyer address gets a lottery ticket.

Note:

1. The ticket amount is a property of the contract, which is recalculated on every lottery drawing to fix it to a certain amount USD of DL tokens, you can get the current ticket amount on the official website <https://de-lottery.eth.limo> or in the DeLottery telegram channel <https://t.me/DeLottery>, you can also directly read it from the blockchain.

2. Only one ticket is allocated in one transaction, no matter how many DL tokens transferred or taxed, if you want to get another ticket, you should transfer or buy again.
3. The tax or transfer amount is not accumulative, only the current transaction is considered in allocating a ticket. if you pay enough tax in two or more transactions, you won't receive a ticket.
4. Every ticket has a unique number and you can check your address's ticket numbers on the official website <https://de-lottery.eth.limo> or by sending your address to DeLottery telegram group <https://t.me/DeLotteryGroup>, you can also call the checkAddressTicket function directly to the contract from blockchain.
5. The following actions can't get a ticket:
 - a. Sell any amount of DL tokens or transfer to other addresses.
 - b. The amount taxed or transferred to the token contract is less than the current ticket amount.

IV. Drawing

DeLottery (DL) is automatically drawn at 14:00 UTC everyday by triggering transactions — transfer to DL contract or buy of any amount — in three steps :

Step1: Close the current lottery round — in the first triggering transaction after 14:00 UTC, the current lottery round is closed and new tickets allocated is for the next round, if the triggering transaction is allocating a ticket, it's the last ticket for current round. This costs the transaction maker little more gas.

Step2: Request a random number from Chainlink — in the first triggering transaction 30 seconds after the close, the DL contract sends a request to Chainlink oracle for a random number. This costs the transaction maker little more gas.

Step3: Draw the winners and config the next round — in the first triggering transaction after Chainlink returns a random number to DL contract, which takes ten-blocks' time, the jackpot winner is drawn basing on the random number, so are the luckydog winners basing on the jackpot winner's address, and the prizes are transferred to winner addresses.

The drawing result will be recorded in the contract's properties and posted on the official website <https://de-lottery.eth.limo> and in DeLottery telegram channel <https://t.me/DeLottery>, you can also check out the drawing result directly from the blockchain.

At last, the ticket amount is recalculated to 1 USD of DL tokens for the next round.

All the above may cost the transaction maker a lot of gas, so the drawer reward (1% of the pool) will be transferred to the transaction maker as incentive.

Note:

1. As the triggering transactions may cost more gas than usual, you should avoid making transactions around 14:00 UTC if you don't want to get the drawer reward.
2. For one round the jackpot winning probability is:

$$1 / \text{count of tickets} * 1.3$$

there is a 30% probability that the drawing may fail and the lottery pool will continue increasing to next round, which will make next jackpot more attractive. If the pool is over 10% of the token's total supply, the winning probability will be $1 / \text{count of tickets}$ to avoid unlimited prize. So in the long run, the jackpot winning probability for one ticket is:

$$1 / \text{count of tickets}$$

3. There is a 24-hour liner lock for the jackpot winner to transfer or sell the prize DL tokens to delay the sell pressure.

4. There're four types of drawing result:
- a. Insufficient ticket count: there are less than 2 tickets.
 - b. Skip: the drawing skips to the next round.
 - c. Blocked: invalid winner address.
 - d. Congratulations: the draw is successful.

DeLottery Tokenomics

I. Token Information

Token Name: DeLottery

Token Symbol: DL

Total Supply: 8,000,000,000 (as the world's population is about 8 billion)

Token Decimals: 18

Buy & Sell Slippage:

Token Contract Address:

Token Contract ABI: (you can use the ABI to read DeLottery information from blockchain, we'll public the source code when DeLottery reaches 3000 tickets a day)

Distribution

50% for liquidity pool

15% for initial incentive: airdrop, promotion reward etc.

20% for Future DAO fund

15% for dev team

II. Buy & Sell Pressure

As all participants have to buy DL token every time to join the lottery, even the winners decide to sell all the prize tokens, the sell pressure should just be equal with the buy pressure. With more and more people joining DeLottery, the token price will be increasing gradually until the lottery participants become stable.

III. Benefit Expected Value

According to the article <https://www.businessinsider.com/mega-millions-lottery-jackpot-expected-value-2018-3>, in traditional lottery, the benefit expected value of a ticket is less than 0.03, namely you can only get 0.03 USD from a 2 USD ticket in the long run, and even less considering tax, but in DeLottery the benefit expected value is far more big.

Assuming there're N tickets in the pool and every ticket is allocated with 2 USD of DL tokens, so the jackpot pool is $N * 2 * 70\%$ USD, the winning probability is $1 / (N * 1.3)$, and the benefit expected value of one ticket is $N * 2 * 0.7 / (N * 1.3) = 1.1$ USD, it's much greater than common lotteries even not considering the luckydog prize. In reality a big portion of the lottery pool is just taxes without tickets and the benefit expected value is far more high. In brief, DeLottery provides you at least a 1/100 chance of winning 100x, 1/1000 chance of 1000x and so forth, the more people joining DeLottery, the more reward you have.

Future Plans

2022.Q1 Launch Contract & Website
2022.Q2 Establish DeLottery DAO (DLDAO)
2022.Q3 DeLottery DeFi
2022.Q4 Publish DeLottery NFT

Reference

1. Ethereum, <https://ethereum.org/>
2. Chainlink VRF, <https://docs.chain.link/docs/chainlink-vrf/>
3. The Mega Millions jackpot is over \$500 million — we did the math to see if it's worth buying a ticket, <https://www.businessinsider.com/mega-millions-lottery-jackpot-expected-value-2018-3>