

# CRESCENT CRYPTO ASSET MANAGEMENT

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## CRESCENT CRYPTO INDEXES MARKET INDEX

JANUARY 1, 2019 INDEX GUIDE

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# INTRODUCTION

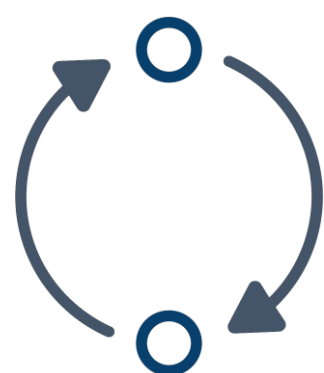
## Objective

The objective of the **Crescent Crypto Index Family** is to provide digital asset investors with transparent and investable indices. Our Indices provide investors with benchmarks for the total crypto market and emerging subsectors like Anonymity and Smart Contract Platforms. Our indices are **market capitalization weighted** and have constraints around **size, liquidity, and security**.



### Representative + Diversified

Our Indices employ a **trailing 90-day average market cap** selection and weighting methodology that reduces turnover and makes the index weightings stickier and less subject to short term price action.



### Data Integrity + Liquidity

Pricing data sources are selected by **evaluating the largest exchanges** with **strong track records of stable, secure performance** while maintaining local regulatory compliance. Coins are eligible if they meet **substantial liquidity thresholds**, which are measured only on the Index's limited list of eligible and trusted exchanges.



### Secure + Investable

The Eligible Index Universe is narrowed to only include digital assets with wallet solutions capable of **generating private keys** and **signing transactions offline**, allowing for **cold-storage custody**. The Index will not hold assets that cannot be stored and transferred safely.



# INTRODUCTION

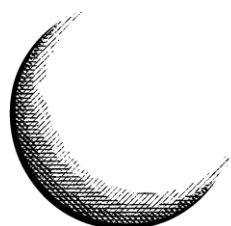
## Market Indices

	<b>Crescent Crypto Market Index (CCMIX)</b>
<b>Owner</b>	Crescent Crypto Asset Management LLC
<b>Type</b>	Digital Asset Market Index
<b># of Holdings</b>	8
<b>Weighing Method</b>	Trailing 90-day Average Market Cap
<b>Rebalancing Frequency</b>	Monthly
<b>Pricing Method</b>	Exchange Volume Weighted Average Price
<b>Administrator</b>	MV Index Solutions
<b>Calculation Agent</b>	CryptoCompare
<b>Eligible Exchanges</b>	Coinbase, Kraken, itBit, Bitstamp, Bittrex, Binance US
<b>Denomination Currency</b>	USD
<b>Inception Date</b>	12/31/2016
<b>Inception Value</b>	1000
<b>Dissemination</b>	Realtime
<b>Dissemination Period</b>	00:00 – 24:00 (EST)
<b>Daily Close Time</b>	16:00 (EST)
<b>Identifiers</b>	<i>Bloomberg : CCMIX</i> <i>Reuters : .CCMIX</i> <i>ISIN : DE000SLA6UN1</i> <i>SEDOL : BHR9718</i>



# INTRODUCTION

## Governance + Workflow



CRESCENT  
CRYPTO

### Index Committee

**Organization:** Crescent Crypto Asset Management LLC owns the Index, designs the rules of the Indices, and maintains and staffs the Crescent Crypto Index Committee - comprised of Crescent Partners and Industry Experts

**Responsibilities:** Eligible exchange selection, custody designations, and known security flaw designation



### Index Maintenance + Administration

**Organization:** MV Index Solutions, a wholly-owned subsidiary of Van Eck

**Responsibilities:** Managing the Monthly Review process (See [Index Maintenance](#) for more detail) and disseminating the index



### Index Calculation

**Organization:** CryptoCompare, a global cryptocurrency market data provider

**Responsibilities:** Calculating and transmitting real time custom pricing data



# INDEX CONSTRUCTION

## Eligibility Criteria

The Crescent determines a digital asset's index eligibility considering the following criteria:



### Size

**Minimum market cap** - Coins must have a trailing 90-day average market cap **greater than** USD \$500 million



### Liquidity

**Volume minimum** - A coin's trailing 30-day average daily trading volume (30-day ADTV) must be **greater than** USD \$3 million for at least one day over the past month.

30-day ADTV calculated using data only from eligible exchanges

**Redundancy** - A coin **must trade on 2 or more** eligible exchanges



### Custody

**Cold storage capable** - Air-gapped custody solution through a **hardware wallet** or **trusted 3rd party** with offline transaction ability



### Security

**Known security issues** - Coins have **no known security issues** – includes potential bugs, exposure to 51% attacks, public developers engaged in the project, transparent pre-mine information, announced delistings from exchanges, etc.



### Float

**No stablecoins or pegged assets** - Coins that are pegged to other digital assets, traditional assets, or fiat currency **will not be included**



# INDEX CONSTRUCTION

## Ranking and Selection

At time of Monthly Index Review, eligible cryptoassets are **ranked by their trailing 90-day average market capitalization**.

### Crescent Crypto Market Index

Eligible Assets (#)	Selection Process
Less than or equal to 20	All eligible assets are selected for inclusion in the Index

1. All eligible assets are ranked by trailing 90-day average market cap

2. The first 17 assets are automatically included

#### Greater than 20

3. The remaining assets will first include any current components in rank position of 18-23

4. If the number of assets is still below 20, the remaining slots filled with new entrants based on ranked order

See [Special Considerations](#) for more detail on **New Entrants, Air Drops** and **Forks**.

## Weighting Methodology

Index constituents' weighting factors are calculated based on the **trailing 90-day average market capitalization**. The market capitalization used in the selection process is also used to determine the final constituent weighting. The index **does not use "cap" or "floor" factors** to restrict the weights of components, which allows the index to represent the asset class more effectively. The **trailing 90-day average market capitalization for each index component is summed**, and the weighting is determined by each asset's proportional makeup of the sum.



# INDEX MAINTENANCE

## Review and Rebalancing Schedule

MVIS reviews and rebalances the Crescent Indices at **each month-end**. The schedule below outlines the investment evaluation process that is implemented five business days leading up to the CCMIX month-end reconstitution. <sup>1</sup>

### Monthly Index Review

T-5

Reviewed with data as of **five business days** before last calendar day of the month at **16:00 EST**. Constituents and target weights for month-end implementation are **calculated**.

### Display New Monthly Weightings

T-4

**Four business days** before the last calendar day of the month at **17:00 EST**. Month-end constituents and target weights are **displayed** on [MVIS Website](#).

### Trade Date + Implementation

T

**Last calendar day** of the month at **16:00 EST**. Index is **rebalanced** and **reconstituted**.

[1] A 'business day' means any day (other than a Saturday or Sunday) on which commercial banks and foreign exchange markets settle payments in Frankfurt, Germany.





# INDEX PRICING

## Pricing Sources

Eligible exchanges are determined by Crescent Crypto Asset Management on a **monthly basis**. Crescent Crypto's **Investment Committee** determines and periodically reviews eligible exchanges.

### Eligible Exchange Criteria

- Strong history of security controls
- Available to US institutional investors
- Substantial trading volumes
- Local regulatory compliance and accurate reporting

## Crypto Exchange Universe

200+ Exchanges | Lack of security, US accessibility, and accurate reporting



## Eligible Exchanges

6 Exchanges | Major exchanges known for security, US accessibility, and accurate reporting

coinbase

Bitstamp

BITTREX

itBit

kraken

BINANCE.US



# INDEX PRICING

## Pricing Calculation

Component pricing is calculated using a custom eligible exchange subset of the CCCAGG Price Index by our calculation agent, **CryptoCompare**.

### Example - Component Pricing of Litecoin (LTC)

- 1 After all trading pairs on the eligible exchanges are reviewed, the **trading pair with the most volume across the eligible exchanges will be selected** for each component. The most liquid trading pair excludes stablecoins.

LTC   24 Hour Volume by Trading Pair (in USD)								
Date	Symbol	USD	USDT	BTC	ETH	USDC	BNB	Total
12/25/2018	LTC	12,840,631	8,667,052	8,322,765	284,432	156,709	73,579	30,345,168

USD is the most liquid trading pair for LTC over the past 24 hours across eligible exchanges

- 2 Once a trading pair is identified, the component price is calculated based on the **24 hour volume weighted average price** as of the latest trade price received from the designated exchanges that trade the pair.

LTC-USD   24 Hour Volume on Eligible Exchanges					
Exchange	Coinbase	Bitstamp	Kraken	Bittrex	Total
LTC-USD	10,001,985	1,466,219	1,195,783	176,643	12,840,630
Exchange %	77.9%	11.4%	9.3%	1.4%	100.0%

The exchange weighted price will be allocated 77.9% Coinbase, 11.4% Bitstamp, 9.3% Kraken and 1.4% Bittrex. Exchange weightings are updated in real time as 24 hour volume numbers change.



# INDEX PRICING

## Definitions

- At any time the **Index Price** for a currency is the weighted average of prices on all exchanges
- “Exchange Weight”** is the 24H trading volume for a currency on one exchange as a ratio of volume across all eligible exchanges
- “24 Hour Exchange Volume”** is the sum of volume for the currency over preceding 24 Hours
- Exchange Volume** is adjusted with a liquidity penalty factor, that decreases as more time passes since last trade

$$P_t^* = \sum_i P_t^i W_t^i$$

$$W_t^i = \frac{V_t^i 1_{\{x=0\}} \gamma_t^i}{\sum_k V_t^k 1_{\{x=0\}} \gamma_t^k}$$

$$V_t^i = \sum_{s=h_t-86400}^{h_t} V_s^i$$

$$\gamma_t^j = \begin{cases} 1 & \text{if } t_t^i \leq 5 \\ 0.8 & \text{if } 5 < t_t^i \leq 10 \\ 0.6 & \text{if } 10 < t_t^i \leq 15 \\ 0.4 & \text{if } 15 < t_t^i \leq 20 \\ 0.2 & \text{if } 20 < t_t^i \leq 25 \\ 0.001 & \text{otherwise} \end{cases}$$

Variable	Explanation
$i, j$	Exchanges
$t, s$	Unix timestamp in seconds
$P_t^i$	Price at exchange $i$ and time $t$
$P_t^*$	CCCAGG Index price $i$ and time $t$
$W_t^i$	Index weight of exchange $i$ at time $t$
$V_t^i$	24 hour volume of exchange $i$ at time $t$
$x$	Excluded from pricing, $x = \{0,1\}$
$\gamma_t^i$	Liquidity penalty factor of exchange $i$ at time $t$
$h_t$	Last hour timestamp at time $t$
$t_t^i$	Time since last trade in minutes on exchange $i$ at time $t$



# APPENDIX



# SPECIAL CONSIDERATIONS

## New Entrants

Cryptoassets that have become **newly eligible** by satisfying all criteria are referred to as **New Entrants**. New entrants are afforded some considerations in order to be captured into the index in a timely and accurate manner.

Consideration	Condition	Adjustment
<b>Avg Market Cap</b>	Less than <b>90 days of history</b> on eligible exchanges	The <b>average market capitalization</b> used for determining the index weight will be calculated using a <b>simple moving average of the daily market caps</b> since the asset's first day of trading on an eligible exchange up until the review period.
<b>Liquidity</b>	Less than <b>30 days of history</b> on eligible exchanges	The <b>minimum liquidity thresholds</b> will calculate using <b>daily average volumes across eligible exchanges</b> from the asset's first day of trading on an eligible exchange up until the review period.

## Airdrops

**Airdrops** are distinct from a hard fork, where small amounts of tokens are distributed to holders of cryptocurrencies either for free or for performing a specific task. Because most airdrops are of de minimis value and are illiquid or unlisted, the **CCMIX does not incorporate their values into the calculation** of the Index. Claiming airdrops sometimes requires agency on the behalf of an investor and may pose a security risk. Fund Managers tracking this index may claim airdrops in pursuit of excess returns.



# SPECIAL CONSIDERATIONS

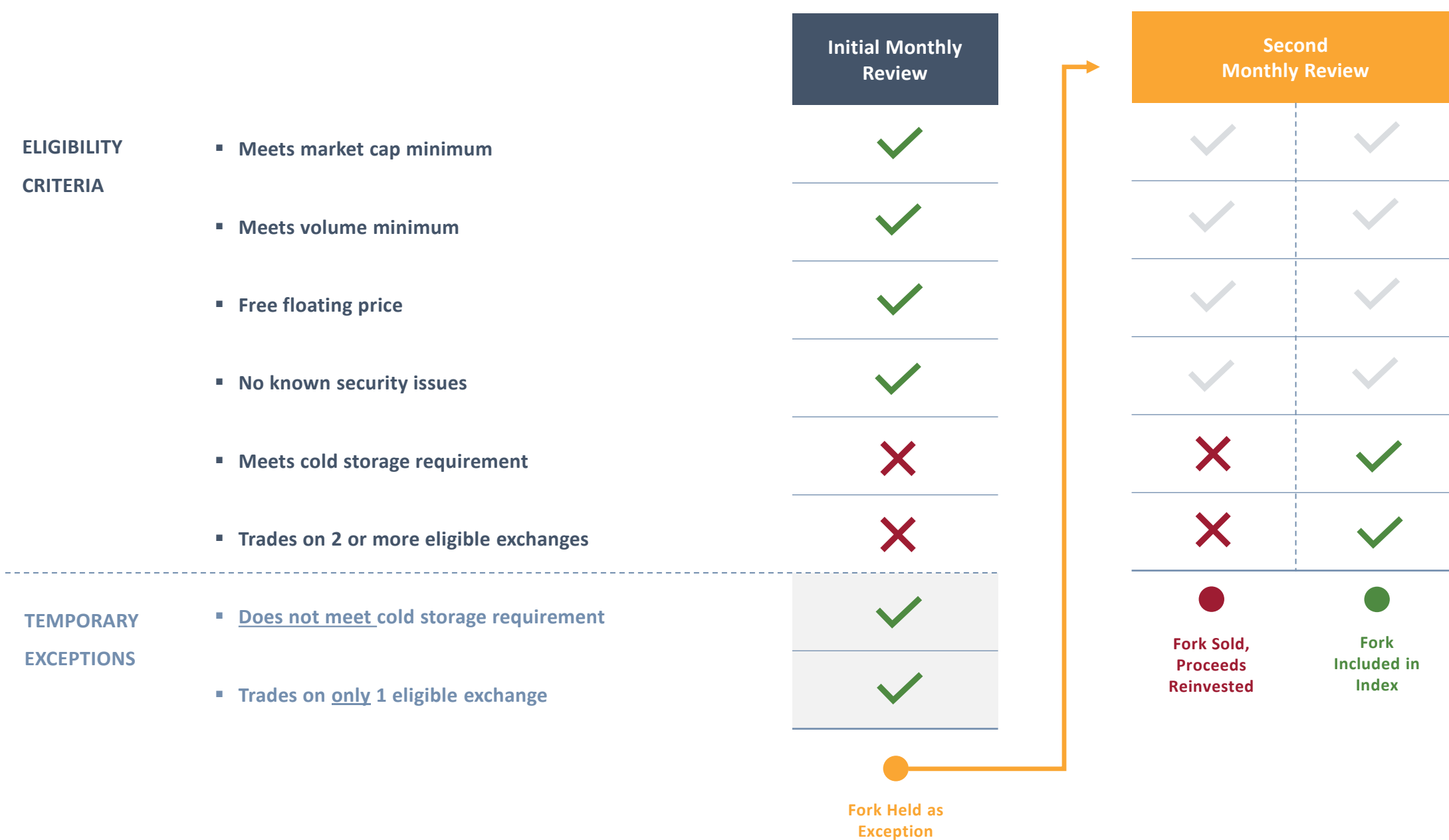
## Fork Policy

Any forked asset will be **eligible for index inclusion** if it meets all eligibility criteria.

Forked assets that do not meet all eligibility criteria can rely on **temporary exceptions** during the **first Monthly Review**.

At the **second Monthly Review**, a forked asset is **either included in the Index** or **sold and reinvested into the index**.

### Hard and Soft Fork Index Eligibility Process



## GLOSSARY OF TERMS

**Hard Fork** - A hard fork occurs when a blockchain protocol has changed, such that it becomes incompatible with older versions. In effect, participants taking part in transactions on the old blockchain must upgrade to the new one in order to continue validating transactions. However, participants that do not upgrade may continue to support and validate transactions on the older blockchain protocol separately. The result of this is two separate blockchains. If there are nodes permanently supporting the new chain, then the two chains will co-exist. Users that once held digital assets on an older blockchain before the protocol change at a pre-specified blockchain length will now also hold an amount of new coins on the altered blockchain.

**Cold Storage** - Describes the method by which underlying private keys for a given cryptocurrency wallet are generated offline and maintained offline via air gapped devices. Practically, cold storage and offline authentication is the safest way to store and transfer funds. Newer cryptocurrencies tend to lack this functionality immediately and software solution enable this interaction.

**Exchange Weighted Volume Average Price** - The global digital asset market is fragmented and liquidity is pooled on different exchanges. Different exchanges have different listings, trading pairs, and jurisdiction. As such, prices differ and in order to calculate the CCMIX, this is a standardized pricing methodology which looks back at where the last 24 Hours of trading and weights prices as a % of where volume occurred.

**Eligible Exchanges** - These are exchanges selected by the Index Committee to make up the pricing and the calculation of the Index. There are hundreds of exchanges across the globe, many of which are inaccessible US investors, show disparate pricing, and report inaccurate volumes. Eligible exchanges are selected due to their accessibility, consistent pricing, security, and transparency.

**Airdrop** - Airdrops are distributions of digital tokens to public addresses on the blockchain. They are usually distributed to holders of a particular asset and may represent a small interest in a project. Generally, air drops are of de minimis value and are not included in the Index.

**New Entrant** – a New Entrant is any digital asset that becomes newly eligible for inclusion. It could be the case that a formerly unqualified asset becomes qualified, or a new asset which is fully qualified begins trading. There are special considerations around average market cap and liquidity that allow fully qualified New Entrants to be included in the Index immediately.

**Liquidity Penalty Factor** – describes a feature of CCMIX pricing methodology, which lowers the weight of an exchange in a pricing calculation, based on amount of time that has elapsed since last trade. The longer time between trades, the larger the penalty.

**Stablecoin** – are digital assets that seek a price that is stable and is highly correlated to another asset, usually a fiat currency.

**30 day Average Daily Trading Volume (30D ADTV)** – Over the past 30 trading days, the average trading volume per day across only eligible exchanges.

