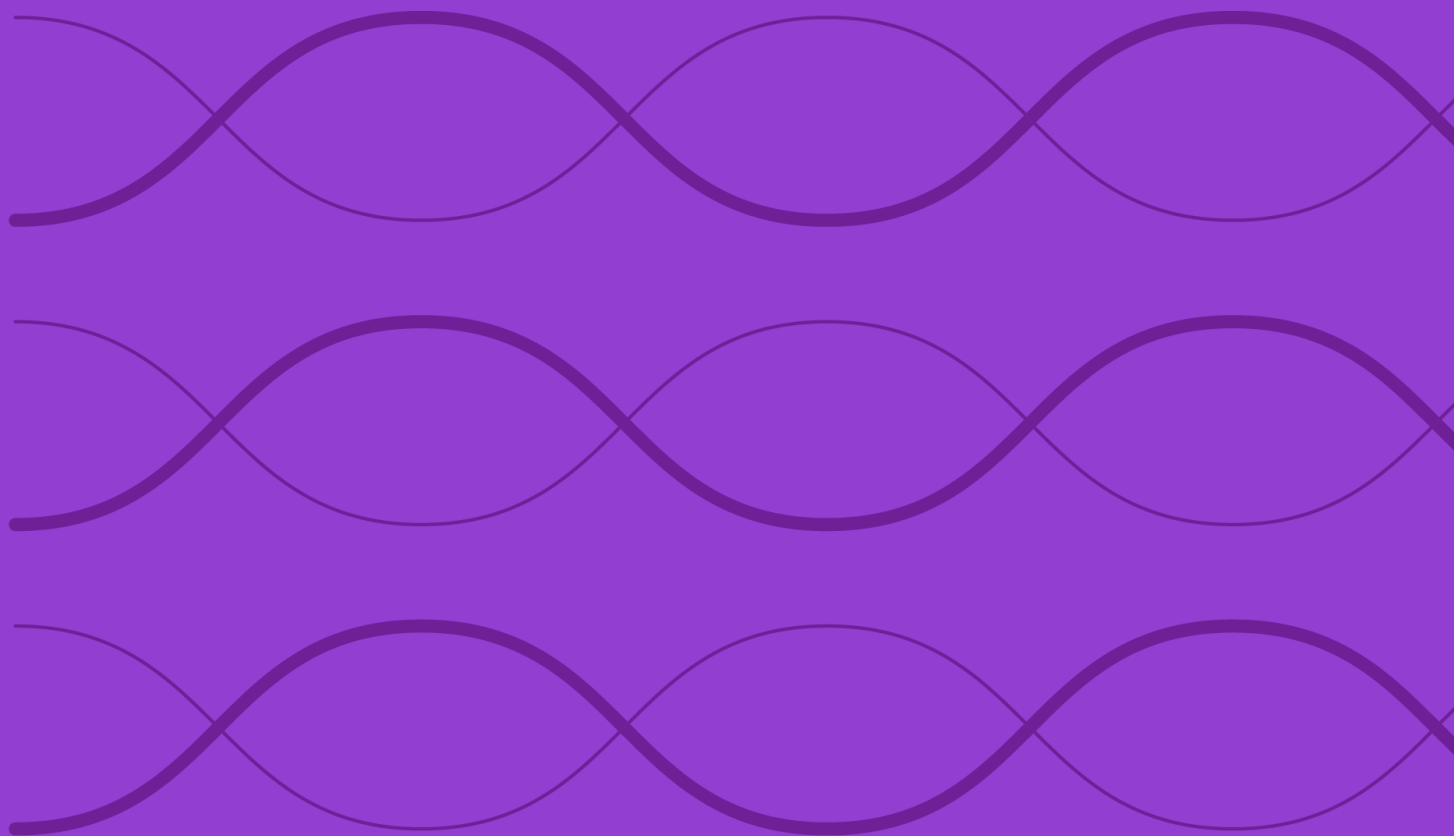


# Construction Rules for the Morningstar<sup>®</sup> Global Metaverse & Virtual Interaction Select Index<sup>SM</sup>



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## Overview

The Morningstar® Global Metaverse & Virtual Interaction Select Index<sup>SM</sup> is designed to deliver unparalleled, thematically pure exposure to the Metaverse & Virtual Interaction theme by drawing on the in-depth knowledge and forward-looking insights of Morningstar's equity research team. It targets the stocks of companies well positioned to benefit from Metaverse Platforms, Enhanced Social Media, Immersive Gaming, 3D Rendering & Simulation Software, Wearable Technology & VR/AR, and Digital Assets & Payments.

Please refer to Appendix 2 for more details on the themes included in this index.

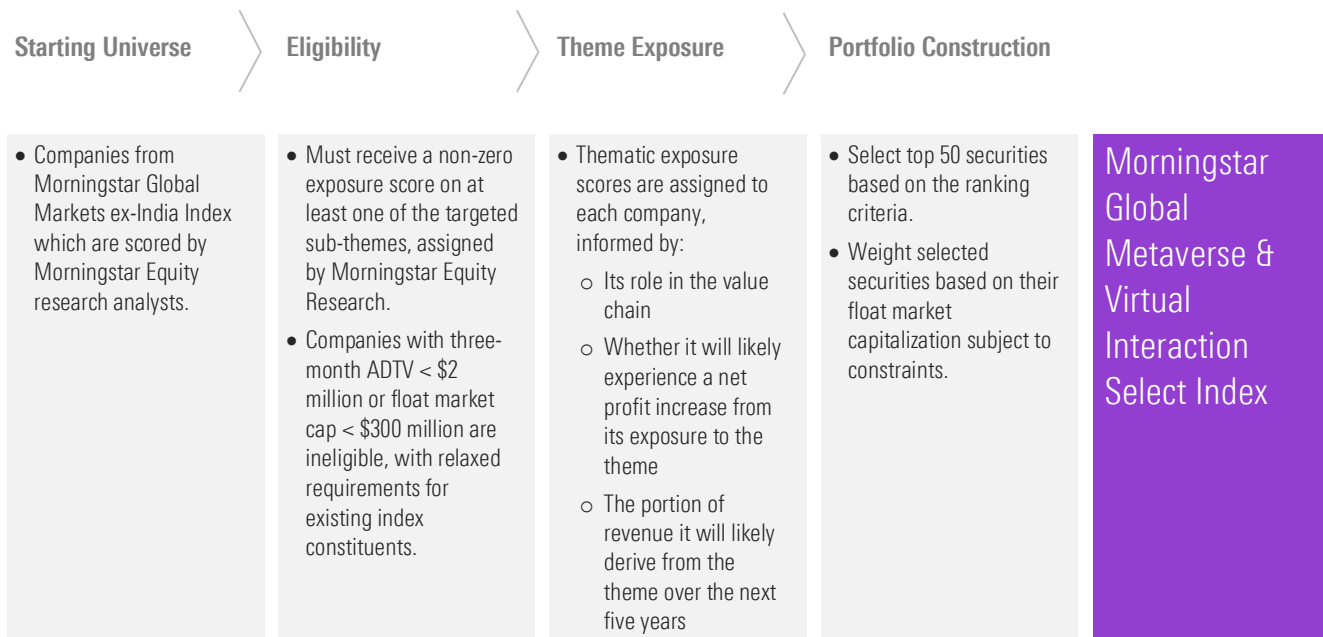
This index does not incorporate environmental, social, or governance criteria.

## Index Inception and Performance Start Date

The index inception date is Nov. 7, 2022, and the performance start date, when the first back-tested index value was calculated, is Dec. 21, 2018.

## Index Construction

### Methodology Summary



### Starting Universe

At each reconstitution, securities for Morningstar Global Metaverse & Virtual Interaction Select Index are derived from the Morningstar Global Markets ex-India Index (benchmark). For more details on benchmark construction, refer to the Construction rules for the [Construction Rules for the Morningstar Global Markets Indexes](#).

### Eligibility

To be eligible for inclusion in the index, all constituents must meet the following criteria:

- Companies with average three-month trailing daily trading volume less than \$2 million or free float market capitalization less than \$300 million are ineligible for the index.
- Buffer Rules: Current index constituents are ineligible if they have average three-month daily trading volume less than \$1.5 million or free-float market capitalization less than \$200 million.
- Selection occurs at the company level. If a company has more than one eligible share class:
  - Select the share class that is a current index constituent.
  - Otherwise, select the most liquid share class, as determined by Morningstar Indexes
- Companies must have a valid non-zero (4, 3, 2 or 1) exposure score to at least one sub-theme.

## Portfolio Construction

- Qualifying potential securities are assigned a Tier 1 or Tier 2 rating based on the following criteria:
  - Tier 1: Aggregate score across all sub-themes  $\geq 3$  and a minimum aggregate (non-overlapping) revenue exposure of 25% across all themes relative to companywide revenue
  - Tier 2: Aggregate score across all sub-themes  $< 3$ . Within Tier 2 we have:
    - Tier 2A: Aggregate score across all sub-themes  $= 2$  with Metaverse Platforms either 0 or 2
    - Tier 2B: Tier 2 Securities which are not in Tier 2A

The qualifying potential constituents are ranked in order that emphasizes exposure to the targeted theme. The ranking criteria (for Tier 2 companies) is given below by descending order of absolute preference:

- Higher Aggregate Score
  - Number of sub-themes in which a constituent scores 2
  - Number of sub-themes in which a constituent scores 1
  - Current index constituents are given preference
  - Company Total Market Capitalization, preferring smaller over larger
- If the total number of Tier 1 constituents is greater than or equal to 50 then all such Tier 1 constituents are selected. If the total number of Tier 1 constituents is less than 50 then the shortfall is filled with Tier 2 constituents until the total security count reaches 50.

### *Number of Stocks*

During reconstitution, if the total number of Tier 1 constituents is greater than or equal to 50 then the number of stocks in the index is subject to the selection and eligibility criteria at the time of reconstitution. However, if the total number of Tier 1 constituents is less than 50 then the target number of stocks in the index would be 50. However, if securities fall short of the selection and eligibility criteria, or if securities are added or removed due to corporate actions after reconstitution, the index could have more or fewer holdings than the targeted number. During reconstitution, if the number of securities is less than the target count, all eligible securities would be selected and the weight of the constituents would be determined based on the index weighting scheme. The schedule for reconstitution and corporate actions is available in the "Index Maintenance and Calculation" section.

### *Index Weighting*

- The index constituents are float-market-capitalization weighted with a minimum 80% weight allocated to Tier 1 constituents and 4.5–6–45 capping applied within the Tier 1. In case there is no feasible solution for the capping, the minimum weight allocated to Tier 1 constituents is reduced in steps of 1%.
- Remaining weight is assigned to Tier 2 with maximum 10% weight allocated to Tier 2B and rest assigned to 2A.
- The aggregate weight of securities within Tier 2B not belonging to Technology or Communication Services sector is capped at 5% and any excess weight is allocated to remaining securities within Tier 2B on a pro-rata basis.
- Security capping of 3% applied within Tier 2A and Tier 2B separately. In case there is no feasible solution, security capping is increased in the steps of 1% up to a maximum of 5% within the infeasible segment. This may lead to different

security capping within Tier 2A and Tier 2B and within Technology and Communication Services and other sector group within Tier 2B, depending on the relaxations required in each segment.

- In case there is no feasible solution for the security capping at 5% within tier 2B, extra weight is transferred from Tier 2B to Tier 2A, if capping in 2A is not feasible the excess weight is assigned to Tier 1 and BAC capping (if feasible) of 4.5-6-45 is applied at Tier 1 with the new weight.
- In case there is no feasible solution for the security capping of 4.5-6-45 in Tier 1 with new weight then the BAC security capping in Tier 1 is increased in steps of 0.5% from 6% up to a maximum of 9.5%.
- In case no feasible solution is found then apply 4.5-9.5-45 capping in the whole index irrespective of the Tier.

For further details please refer to Appendix 3.

## Index Maintenance and Calculation

### Scheduled Maintenance

The index is reconstituted annually and rebalanced quarterly. Changes are implemented after the close of business on the third Friday of December, March, June and September, and are effective the following Monday. If that Monday is a holiday, it is effective on the next business day. During each rebalance, membership in the parent index (Morningstar Global Markets ex-India) is checked at company level and the weights are rebalanced as per the weighting scheme using updated float market capitalization data.

The market data used for reconstitution and rebalancing are as of the last trading day of November, February, May and August. The theme scores used for reconstitution are those available on the last trading day of November.

Because the reconstitution of the Morningstar Global Metaverse & Virtual Interaction Select Index is less frequent than the parent index (Morningstar Global Markets ex-India Index), the securities excluded from the parent index (Morningstar Global Markets ex-India Index) at the reconstitution effective date are also deleted from the Morningstar Global Metaverse & Virtual Interaction Select Index. For clarity, this means that any constituent excluded from the parent index during its reconstitution is also excluded from the Morningstar Global Metaverse & Virtual Interaction Select Index at the same date. It will not be replaced, and its weight is reallocated among existing constituents in proportion to its existing weight.

Index files are published according to the Global calendar schedule. For more information, please refer to the [Morningstar Indexes Holiday Calendar](#).

### Corporate Actions

The treatment of corporate actions will be as per the alternatively-weighted indexes. For more details, please refer to the [Morningstar Indexes Corporate Actions Methodology rulebook](#)

### Index Calculation and Price Data

Details about index calculations and price data can be found in their respective rulebooks: [Morningstar Indexes Calculation Methodology](#) and [Equity Closing Prices Used for Index Calculation](#).

## Methodology Review and Index Cessation Policy

The index methodology is continually reviewed to ensure it achieves all stated objectives. These reviews consider corporate action treatment, selection, and maintenance procedures. Subscribers to the index will be notified before any methodology changes are made. For more details, refer to the [Morningstar Index Methodology Change Policy](#).

Morningstar Indexes notifies all subscribers and stakeholders of the index that circumstances might arise that require a material change to, or a possible cessation of, the index. These circumstances are generally not within Morningstar's control and may include significant changes to the underlying market structure, inadequate access to necessary data, geo-political events, and regulatory changes. In addition, factors such as low usage or methodology convergence may result in the cessation of an index.

Because the cessation of the index or benchmark index could disrupt subscriber products that reference this index, all subscribers are encouraged to have robust fallback procedures if an index is terminated. For more details, refer to the [Morningstar Index Cessation Process](#).

## Data Correction and Precision

### Intraday Index Data Corrections

Commercially reasonable efforts are made to ensure the accuracy of data used in real-time index calculations. If incorrect price or corporate action data affects index daily highs or lows, it is corrected retroactively as soon as is feasible.

### Index-Related Data and Divisor Corrections

Incorrect pricing and corporate action data for individual issues in the database will generally be corrected upon detection. In addition, an incorrect divisor of an index, if discovered within two days of its occurrence, will be fixed retroactively on the day it is discovered to prevent an error from being carried forward. Commercially reasonable efforts are made to correct an older error subject to its significance and feasibility.

For more details, refer to the [Recalculation Guidelines](#).

### Computational and Reporting Precision

For reporting purposes, index values are rounded to two decimal places and divisors are rounded to appropriate decimal places.

### Exceptions

While Morningstar will seek to apply the method described above, the market environment, supervisory, legal, financial, or tax reasons may require an alternative approach to be adopted. A decision to take an alternative approach will be made by the relevant Morningstar Indexes Methodology Committee, and in all instances, the application of a nonstandard process will be reported to the Morningstar Indexes Oversight Committee.

## Appendixes

### Appendix 1: Modifications to the Rulebook

Section	Description of Change	Update Date
Entire Rulebook	Updated to the new template	July 2023
Portfolio Construction	Updated the last tiebreak rule to reference company level market capitalization, rather than security level market capitalization	November 2023

### Appendix 2: Metaverse & Virtual Interaction – Sub Theme Definitions & Exposures

#### • Step 1

Qualifying potential securities are assigned a Tier 1 or Tier 2 rating based on the following criteria.

The Morningstar Global Equity Research team identifies technology themes with the potential to provide significant economic benefits to producers and suppliers. These themes are reviewed annually by the Metaverse & Virtual Interaction steering committee and can be subject to change over time as they evolve, and new themes emerge. All index constituents currently have exposure through revenues or products/services to the Metaverse & Virtual Interaction theme (rather than any specific sub-theme).

As of Aug. 03, 2022, six themes have been identified:

- **Metaverse Platforms:** The metaverse encompasses the next logical iteration of the internet, proceeding from its origin as a text-based, visually and auditorily rich two-dimensional environment to a three-dimensional immersive world. It will enhance the way humans relate to one another and to products or services beyond the confines of proximity. Key building blocks for metaverse platforms include 3D rendering & simulation software, wearable technology that employs virtual and augmented reality, immersive gaming, enhanced social media, and digital assets & payments. These technologies facilitate virtual interactions across a high volume of users to enhance how data is exchanged, relationships are formed, and emotions are felt.

#### Exposure Examples

- Enterprise: Collaboration tools that are a natural extension of video and remote collaboration
- Consumer: Applications may include “get together with friends and family, work, learn, play, shop, create” (per Mark Zuckerberg)

- **Enhanced Social Media:** Interactive digital channels, enhanced by the use of virtual and augmented reality platforms, that allow users to create and share content.

#### Exposure Examples

- Software Platforms: Tools that allow users to create and consume content in a 3D environment.

- **Immersive Gaming:** All-encompassing online games that many players can play simultaneously and the associated tools and hardware that facilitate their development.

#### Exposure Examples

- Software Development and publishing: Creating online games and experiences
- Middleware: Offers development tools and full game engines to help others with the creation of online games
- Video game hardware: Purpose built for virtual worlds.

- **3D Rendering & Simulation Software:** Software and tools leveraged by businesses, consumers, and brands to build and develop content for virtual and augmented reality platforms.

#### Exposure Examples

- Entertainment CAD: Tools for consumer-oriented companies to develop and assign virtual worlds.
- Enterprise Simulation & CAD: Tools for building virtual worlds for internal, enterprise use – such as AR training, AR marketing, creating digital twins, or simulating for predictive maintenance.

- **Wearable Technology & VR/AR:** Per NASA, virtual reality is the use of computer technology to create the effect of an interactive three-dimensional world in which the objects have a sense of spatial presence. Per Merriam Webster, augmented reality is an enhanced version of reality created by the use of technology to overlay digital information on an image of something being viewed through a device (such as a smartphone camera).

#### Exposure Examples

- VR headsets: Meta Quest 2
- AR technology: Apple iPhones
- Wearables and hearables: Watches, headphones, etc.

- **Digital Assets & Payments:** A digital asset is a collection of binary data which is self-contained, uniquely identifiable, and has a value. Digital payments are transfers of value from one payment account to another by use of a digital device, with no exchange of cash. This theme targets companies that facilitate payment solutions and the existence of digital assets in shared virtual spaces.

#### Exposure Examples

- Providers of digital payment platforms
- Providers of blockchain technologies
- Cryptocurrencies
- Non-fungible tokens (NFTs)

## • Step 2

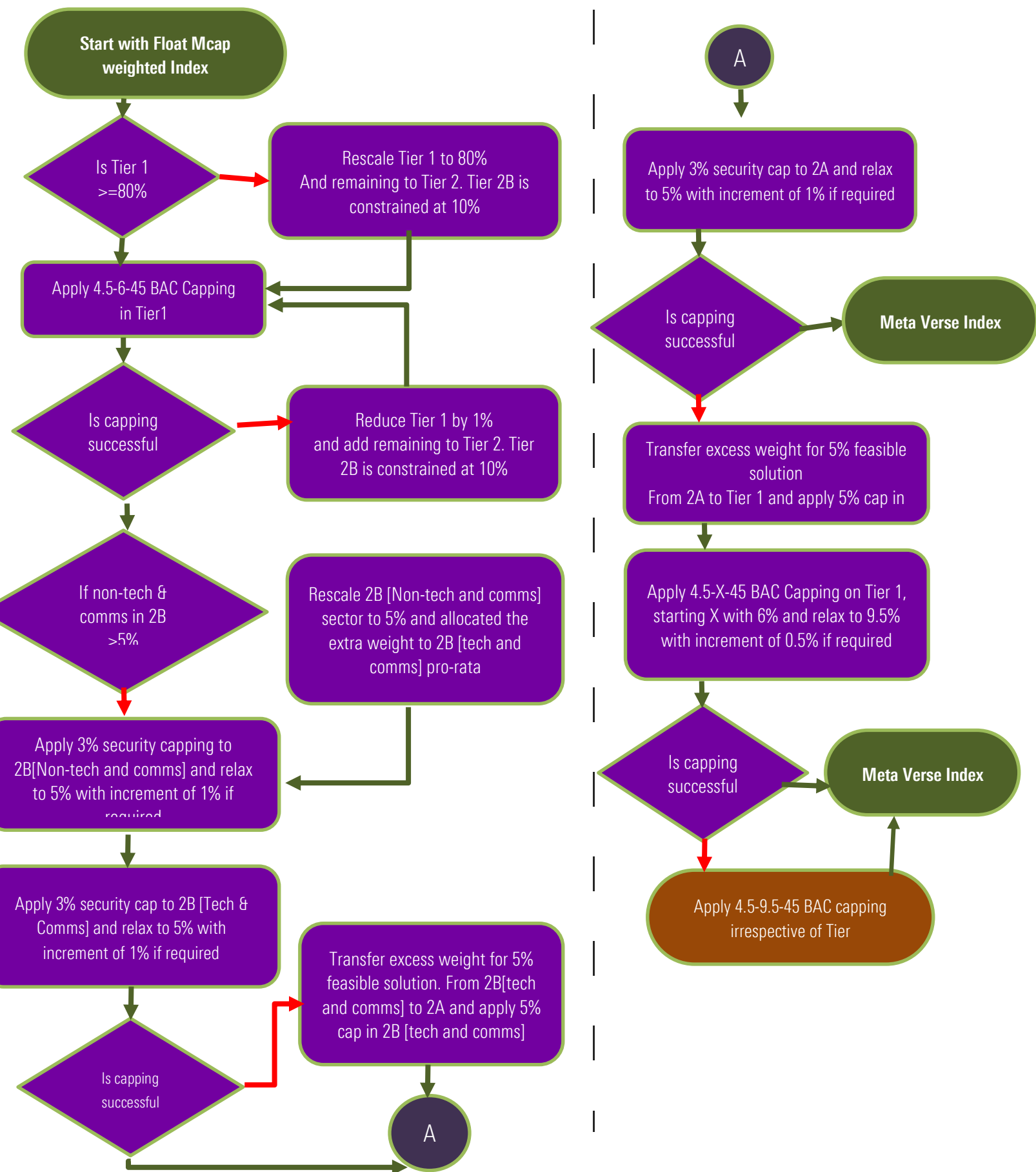
The Morningstar Equity Research team's Metaverse & Virtual Interaction steering committee trains analysts on the subthemes and scoring framework. Rather than relying solely on historical data points, analysts provide forward-looking data points that translate to thematic exposure scores of 0, 1, 2, 3, or 4 across each subtheme. To garner a thematic exposure score above zero for a given subtheme, a firm must be classified as a producer of related goods or services or a supplier of those producers. Additionally, Morningstar equity analysts must classify the firm as being highly likely to enjoy a material net profit increase from its exposure to that subtheme over the next five years. Analysts then estimate the percent of revenue a firm will derive from its exposure to each subtheme at a point in time five years forward. These estimates translate into thematic exposure scores in the following manner:

- 0 – Less than 10% of revenue of a firm
- 1 – 10%-25% of revenue for a producer or supplier firm
- 2 – 25%-50% of revenue for a producer or supplier firm
- 3 – Greater than 50% of revenue for a supplier firm
- 4 – Greater than 50% of revenue for a producer firm

- **Step 3**

Morningstar Equity Research Metaverse & Virtual Interaction steering committee then provides a quality control review of each company's thematic exposure scores to optimize internal consistency. During this step, committee members engage in discussions with analysts and directors to test the rationale behind submitted data points. Once the quality control process has been completed, thematic exposure scores are submitted to the Morningstar Indexes team for index reconstitution purposes.

### **Appendix 3: Weighting Scheme Flow Chart**



## About Morningstar Indexes

Morningstar Indexes was built to keep up with the evolving needs of investors — and to be a leading-edge advocate for them. Our rich heritage as a transparent, investor-focused leader in data and research uniquely equips us to support individuals, institutions, wealth managers, and advisors in navigating investment opportunities across major asset classes, styles, and strategies. From traditional benchmarks and unique IP-driven indexes to index design, calculation, and distribution services, our solutions span an investment landscape as diverse as investors themselves.

## Morningstar Indexes Methodology Committee

The Morningstar Indexes Methodology Committee oversees all new index development, index methodology changes, and cessation of indexes for any indexes where Morningstar owns the intellectual property. This committee is also charged with ensuring that indexes align with Morningstar Research principles and values. The group comprises members of the index team with index research, product development, product management, client service, index implementation, and operation expertise who provide the first layer of governance over index design and methodology.

## Morningstar Indexes Operations Committee

The Morningstar Indexes Operations Committee governs the processes, systems, and exception handling of the day-to-day management of all live indexes, including index rebalancing and reconstitution, restatements, market classification, and contingency management. The committee oversees the annual review of index methodology (as required by U.K. and EU benchmark regulations, or BMR), ensuring that methodologies remain fit for purpose and continue to achieve their stated investment objectives. The group comprises members of the index team with data, operations, corporate actions, product development, index launch, client service, and index management experience who provide the first layer of governance over index operations.

## Morningstar Indexes Oversight Committee

The Morningstar Indexes Oversight Committee is responsible for the index oversight function as per the requirements of the U.K. and European BMR, providing independent oversight of all aspects of the governance of benchmark administration as required by the relevant BMR. Its remit extends to all calculation and administration-related business activities of Morningstar Indexes, including administration of Morningstar-owned benchmarks as well as client-owned benchmarks and index calculation. The oversight function is part of the organizational structure of Morningstar but is separate and independent from the index business, index management, and the other index committees.

[www.indexes.morningstar.com](http://www.indexes.morningstar.com)

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