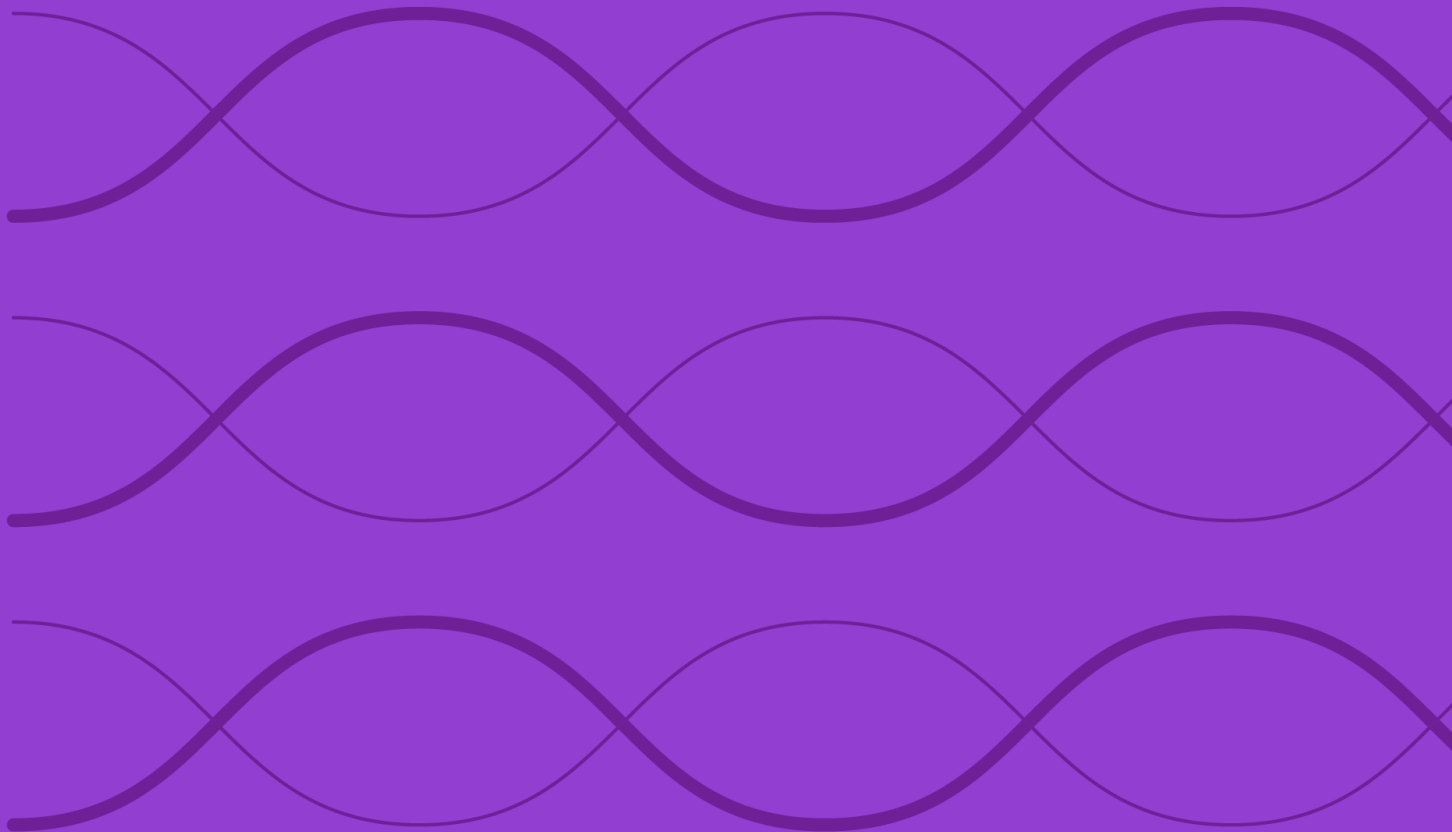


# Construction Rules for the Morningstar<sup>®</sup> Transformational Technologies Indexes<sup>SM</sup>



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## Overview

The Morningstar® Transformational Technologies Indexes are designed to deliver unparalleled, thematically pure exposure to a range of durable themes by drawing on the in-depth knowledge and forward-looking insights of Morningstar's equity research team. Themes covered include:

- Big Data & Analytics
- Cloud Computing
- Energy Transition
- Fintech Innovation
- Healthcare Innovation
- Hyperconnectivity
- Nanotechnology
- Next Gen Transportation
- Robotics

These indexes do not incorporate environmental, social, or governance criteria.

## Index Inception and Performance Start Date

The inception dates and performance start dates, when the first back-tested index values were calculated, for the Morningstar Transformational Technologies Indexes are listed in Appendix 3.

## Index Construction

### Methodology Summary



Morningstar  
Transformational  
Technologies  
Indexes

### Starting Universe

At each reconstitution, constituents of the Morningstar Transformational Technologies Indexes are derived from the Morningstar Global Markets Index (benchmark). For more details on benchmark construction, refer to the [Construction Rules for the Morningstar Global Markets Indexes](#).

### Eligibility

To be eligible for the indexes, all constituents must be part of the benchmark index and must meet the following criteria in sequence:

- Companies with average three-month trailing daily trading volume less than \$5 million or free-float market capitalizations less than \$300 million are ineligible for the indexes.
- Buffer Rules: Current index constituents are eliminated if they have average three-month trading volume less than \$4 million or free-float market capitalization less than \$200 million.
- If a company has more than one eligible share class:
  - Select the one that is a current index constituent.
  - Otherwise, select the most liquid share class determined by Morningstar Indexes.
- Each company must receive a score of 1 or higher on at least one of the target themes (please refer to Appendix 3 for the list of themes).

## Portfolio Construction

- Companies must have a valid nonzero (4, 3, 2, or 1) exposure score to the targeted theme.
- Please see Appendix 3 for the list of targeted themes for each index.
- All eligible constituents are ranked in order that emphasizes exposure to the target theme. The ranking criteria is given below in descending order of absolute preference:
  - Constituent scoring 4.
  - Constituent scoring 3.
  - Constituent scoring 2.
  - Constituent scoring 1.
  - Current index constituents are given preference.
  - Company total market capitalization, preferring smaller over larger.
- Companies ranked in the Top N of the sorted list are selected for the index.

### *Number of Stocks*

The indexes target a fixed number of stocks based on a transparent ranking system subject to selection and eligibility criteria at reconstitution. However, if securities fall short of the selection and eligibility criteria, or if securities are added or deleted as a result of corporate actions after reconstitution, the indexes can have more or fewer than the targeted number. During reconstitution, if the number of securities is less than the target, all eligible securities would be selected, and the weight of the constituents will be determined based on the index weighting scheme. The schedule for reconstitution and corporate actions is available in the "Index Maintenance and Calculation" section. The target counts for all indexes in the family are provided in Appendix 3.

### *Index Weighting*

The indexes are float market capitalization weighted with 5-10-40 capping. This means no single constituent can have a weight greater than 10% and the sum of those with weights greater than 5% cannot exceed 40%. For more details, refer to the [Morningstar Indexes Calculation Methodology rulebook](#).

## Index Maintenance and Calculation

### Scheduled Maintenance

The index is reconstituted, where the membership is reset, and rebalanced annually. Adjustments are made on the Monday following the third Friday of December. If the Monday is a holiday, reconstitution occurs on the next business day. The market data used for reconstitution is as of the last trading day of November. The index shares may change between the annual rebalancing dates as non-mandatory corporate action related to float and share change events are accumulated and implemented quarterly coinciding with the rebalancing schedule of the parent benchmark index.

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

If the number of eligible securities falls below 20 during the reconstitution of any Index, Morningstar Indexes reserves the right to calculate and maintain the index without reconstitution or decommissioning such an index with a sufficient notice period. Any such decision will be communicated with sufficient advance notice, as per the Morningstar Indexes announcement policy.

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 float-adjusted market capitalization-weighted indexes corporate action methodology. 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	Moved to new template	March 2023
Index Construction	Updated to reflect new selection criteria	October 2023
Appendix 2	Updated thematic scoring framework	October 2023

### Appendix 2: Morningstar Global Equity Research Technology Theme Identification

- Step 1

The Exponential Technologies Steering Committee within Morningstar's Global Equity Research team identifies technologies with the potential to provide significant economic benefits to their producers and suppliers of those producers. These themes are reviewed annually by the equity research team and can be subject to change over time as they evolve and new themes emerge.

As of Oct. 12, 2023, nine themes have been identified:

- **Big Data & Analytics:** Capabilities with data sets too large and complex to manipulate or interrogate with standard methods or tools. Related subthemes include Artificial Intelligence & Machine Learning and Bioinformatics.
- **Cloud Computing:** A paradigm shift from the legacy IT model whereby each element is accessed in a scalable, on-demand manner through the internet. Relative subthemes include Infrastructure as a Service (IaaS) & Platform as a Service (PaaS) as well as Software as a Service (SaaS).
- **Energy Transition:** The quest to abate global climate change and reduce greenhouse gases has led to a surge of new energy technologies, investment, and innovation. Related subthemes include Carbon Capture Technologies, Energy Storage, Hydrogen, and Renewable Energy.
- **Fintech Innovation:** The search for and acknowledgement of nontraditional emerging funding sources, platforms, currency, and stored and transferred value. In some cases, traditional financial services companies are expanding their offerings with innovative, technology-enabled services to meet consumer preferences. On other cases, companies are building new platforms that could potentially transform the industry.
- **Healthcare Innovation:** Key advancements in unlocking the human genome have opened doors to paradigm shifts that will radically change the way we treat or prevent diseases. Related subthemes include Innovated Devices & Diagnostics and Innovative Therapies.
- **Hyperconnectivity:** This theme will fuel rapid growth in connected devices and a voracious need to push more data at faster transmission rates between users and devices. Related subthemes include 5G Connectivity, Cybersecurity, Internet of Things (IoT), and Non-Cellular Connectivity.
- **Nanotechnology:** The branch of technology that deals with dimensions and tolerances of less than 100 nanometers, especially the manipulation of individual atoms and molecules. Significant research dollars are being spent with the goal of starting with atoms and building up, to further progress in miniaturization. We see a wide range of potential applications, spanning medicine, computing, industrial manufacturing, and travel, to name a few.
- **Next Gen Transportation:** Technologies replacing traditional human-operated, internal combustion engine-based vehicles. This includes a wide variety of applications like traditional light vehicles, public transportation vehicles,

scooters/bikes, and drones, to name just a few. Related subthemes include Autonomous Driving Technologies and Electric Vehicles.

- **Robotics:** The branch of technology that deals with the design, construction, operation, and application of robots. Advances in robotics have seemingly infinite potential applications, spanning technology, industrial, medical, and consumer-facing channels.

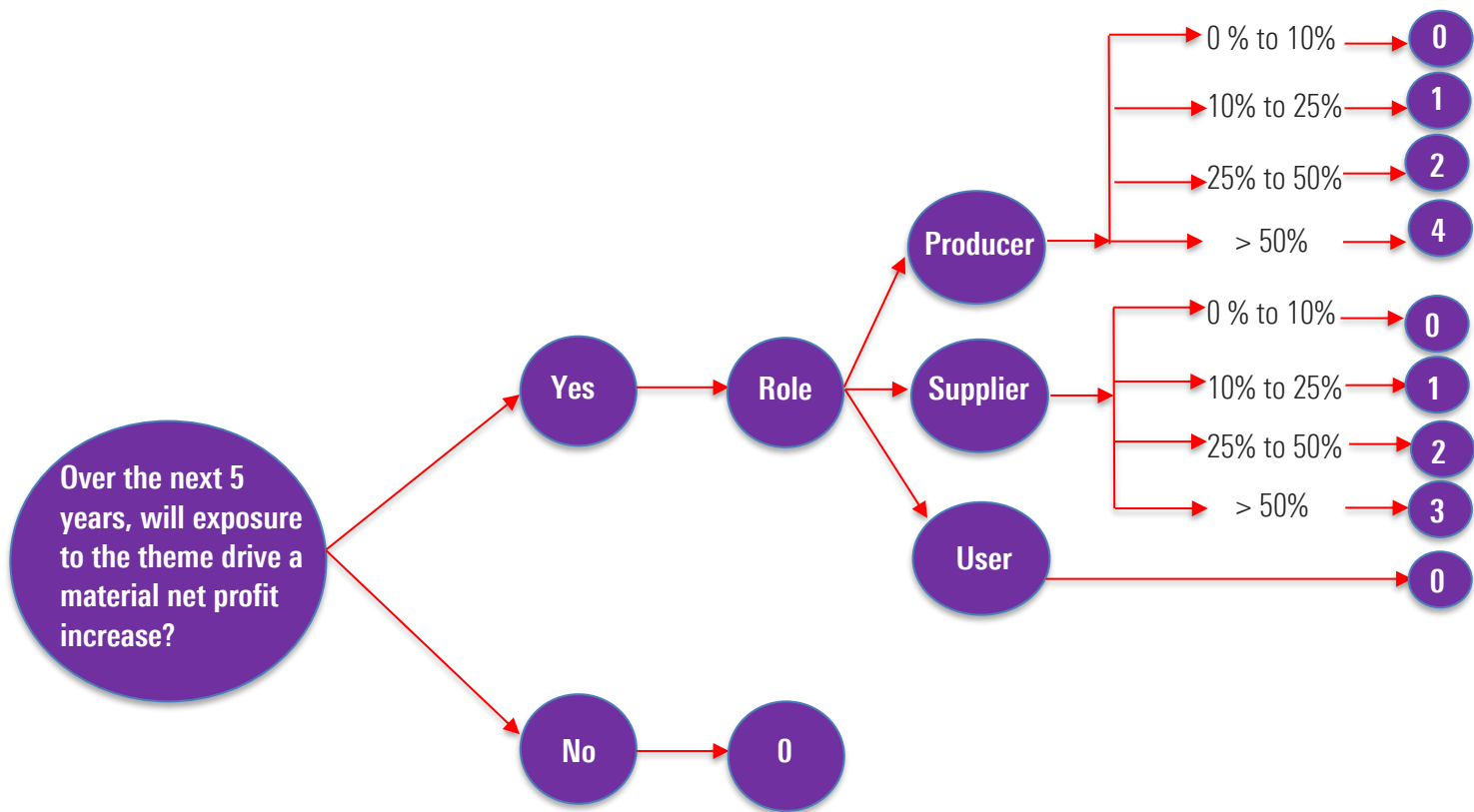
- Step 2

The Exponential Technologies Steering Committee trains analysts on the themes and scoring framework. Rather than relying on single point-in-time metrics, analysts provide forward-looking data points that translate to thematic exposure scores of 0, 1, 2, 3 or 4 across each theme or subtheme.

To garner a thematic exposure score above zero for a given theme, a firm must be classified as being likely to enjoy a material net profit increase from its exposure to that theme over the next five years, based on Morningstar equity analysts' assessments. Analysts then estimate the percent of revenue a firm will likely derive from its exposure to each subtheme at a point in time five years forward and determine each firm's role in the supply chain. These inputs translate into thematic exposure scores in the following manner:

- 0 – A downstream user or less than 10% revenue for a producer or supplier
- 1 – 10%-25% revenue for a producer or supplier
- 2 – 25% -50% revenue for a producer or a supplier
- 3 – Greater than 50% revenue for a supplier
- 4 – Greater than 50% revenue for a producer

Exhibit 1: Thematic Scoring Framework



**Appendix 3: Inception and Performance Start Dates**

Index	Targeted Theme	Inception Date	Performance Start Date	Target Constituent Count
Morningstar Global Big Data & Analytics Index	Big Data & Analytics	Aug. 17, 2022	Dec. 21, 2018	50
Morningstar Global Cloud Computing Index	Cloud Computing	Aug. 17, 2022	Dec. 21, 2018	50
Morningstar Global Energy Transition Index	Energy Transition	Aug. 17, 2022	Dec. 21, 2018	50
Morningstar Global Hyperconnectivity Index	Hyperconnectivity	Aug. 17, 2022	Dec. 21, 2018	50
Morningstar Global Healthcare Innovation Index	Healthcare Innovation	Aug. 17, 2022	Dec. 21, 2018	50
Morningstar Global Next Gen Transportation Index	Next Gen Transportation	Aug. 17, 2022	Dec. 21, 2018	50
Morningstar Global Nanotechnology Index	Nanotechnology	Aug. 17, 2022	Dec. 21, 2018	30
Morningstar Global Robotics Index	Robotics	Aug. 17, 2022	Dec. 21, 2018	30
Morningstar Global Fintech Innovation Index	Fintech Innovation	Aug. 17, 2022	Dec. 21, 2018	30

Note: Buffers mentioned in the Security Selection section are not applied at the Dec.20,2021 reconstitution to simulate an initial construction for the index composition at the Dec.20,2021 reconstitution for all indexes in the family.

## 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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