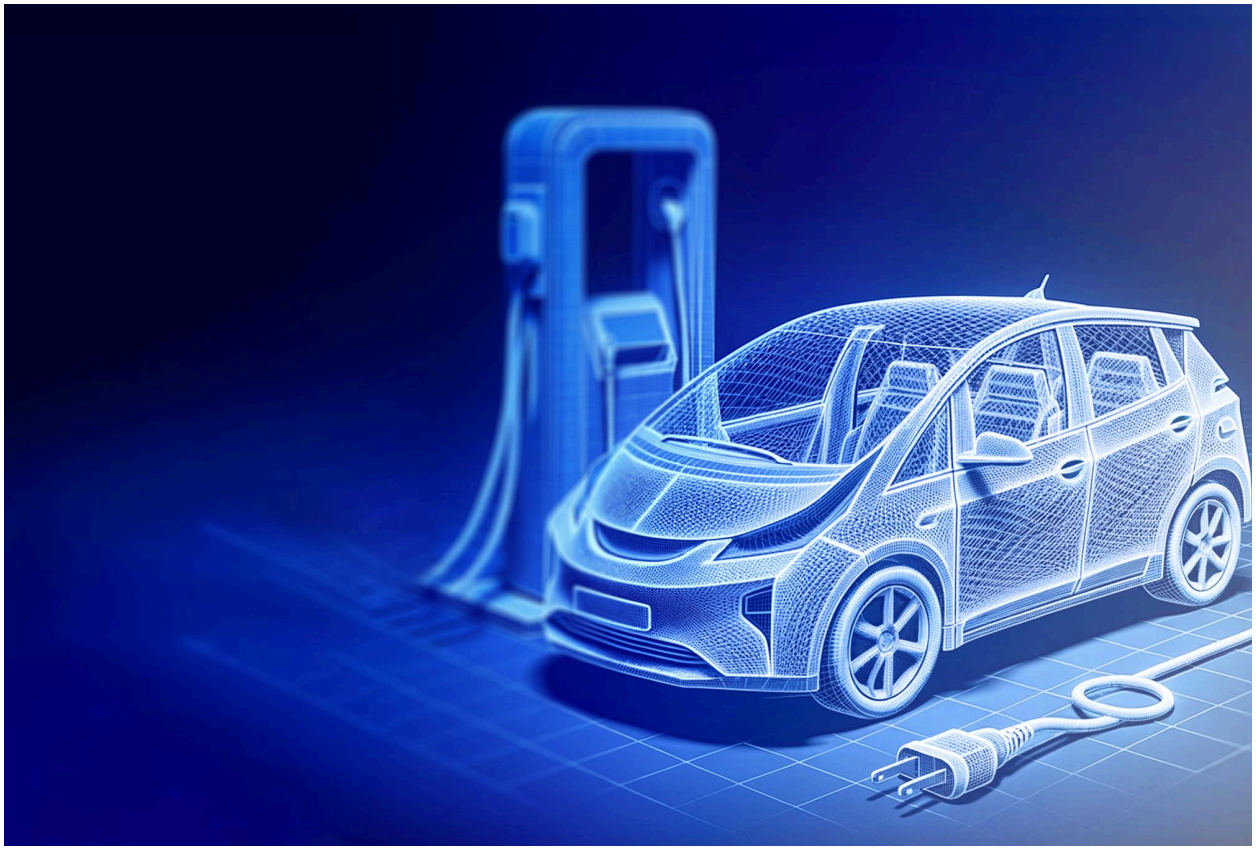


EV Commodity Index Methodology

CONTENT

1. Executive Summary

EV index ties together the underlying commodities needed to produce electric vehicles. It measures the number of electric vehicles (EVs) produced across the four different types and multiplies this by the underlying commodities needed to produce the batteries suitable for each of the EV types. This in aggregate represents a basket of commodities reflective of the total number of EVs.

The methodology for the Electric Vehicle Commodity Index (EV) measures the key ingredients of batteries for each type of EV and is designed to provide a reliable benchmark for tracking the price movements of essential components in the production of EVs. This index aims to offer vital insights into the production and supply dynamics as well as the commodity costs faced by EV manufacturers, reflecting the evolving landscape of the EV market.

The methodology begins by defining various types of EVs, including:

- Battery Electric Vehicles (BEVs),
- Hybrid Electric Vehicles (HEVs),
- Plug-in Hybrid Electric Vehicles (PHEVs), and
- Fuel Cell Electric Vehicles (FCEVs).

Understanding these categories is crucial as each vehicle type has different requirements for metals and other materials.

Focusing on the metals integral to EV production, the index tracks the prices of:

- Nickel
- Cobalt
- Copper
- Palladium
- Platinum
- Lithium

These metals are selected for their significant roles in the manufacturing process and the impact of their price fluctuations on the EV industry. The sourcing of data is a critical aspect of the methodology. Prices are compiled from reputable market exchanges and augmented with information from industry-leading sources and direct data from EV manufacturers. This multi-layered approach ensures a comprehensive view of the market.

A key feature of this methodology is the quarterly recalibration of the weights assigned to each metal. This recalibration considers the metal intensity per vehicle, the market share of each EV

type based on production data, and the metal prices on the rebalancing date. This dynamic weighting scheme allows the index to remain aligned with the latest trends and developments in the EV market.

The index calculation starts on January 1, 2018, offering a reference point for subsequent value comparison.

The methodology is underpinned by a robust compliance and governance structure. This includes adherence to international financial benchmark standards, oversight by a committee of experts, and regular audits to ensure accuracy and reliability.

Transparency is a cornerstone of the index, with detailed documentation of the methodology, data sources, and calculation processes available publicly. This governance framework also includes mechanisms for managing potential conflicts of interest and ensuring that the index remains an unbiased and objective market measure.

In conclusion, this methodology for the Institutional-Grade Index for EV Commodities represents a meticulous and comprehensive approach, designed to provide stakeholders with a reliable and insightful tool for understanding and navigating the complex dynamics of the EV commodity market.

2. About Truflation

Truflation is a leading RWA oracle service that provides independent, transparent and real-time financial and economic data on-chain.

Tracking over 18 million items with three price feeds per item, Truflation's censorship-resistant and accessible data indexes provide the necessary data infrastructure to bring about systemic advancements in the DeFi economy, empowering dApps like DEXs to open access to limitless markets.

From speculating on prices of orange juice and uranium to tracking BTC-denominated oil, gas, and corn prices, Truflation provides the key to unlocking a diverse array of financial markets and instruments in the Web3 world.

Our flagship product, the TruCPI, is up to 30 times more accurate than official government data collection and reporting methods. While TruCPI tracks 18 million items with three price feeds per item, the US government uses 477 employees to track 80,000 items manually. In contrast, Truflation is fully automated and brings multiple sources of data in different formats and intervals into one stream.

We're also a scalable solution built using modern systems for the next generation. The blockchain allows us to achieve this while being a modern, transparent, immutable, censorship-resistant, decentralized, trustless, and permissionless technology accessible to all.

Technology is important, of course, but we put more emphasis on our transparent methodology, which is continuously tested and validated using multiple sources in real time.

Our Truflation streaming network is a foundational growth engine providing financial, data and software engineers with the tools that enable anyone to make better investment decisions and build better financial products faster.

Truflation offers the following products, tools and services:

1. **Dashboard (including Truflation Personal Inflation Calculator and Truflation Forecasting)**

With over 500,000 monthly visitors to the website, the dashboard is a proven reliable source of financial and economic data.

Not only does this host the flagship CPI products, but we also provide a number of leading economic indicators, including granular pricing data for 12 categories and some 50+ sub-categories available for users to download, customize, and use in their own proprietary analysis.

Truflation's inflation calculator is used by 4,000 individuals each month to evaluate inflation and its impact on households, small businesses and their personal expenditures.

2. **RWA Oracle**

Truflation's data sources consist of over 18 million items and a comprehensive list of leading economic indicators. Our real-world asset oracle consists of a pool of commodity metals and precious metals pricing information. On top of this, our indexes provide DeFi protocol with access to a broad range of pricing information, enabling the development of synthetic assets, derivatives, and other specialist financial products.

3. **Index**

Our proprietary indexes are the third and last part of our product suite. In addition to our flagship CPI index and our proprietary Housing and Consumer Confidence indexes, we are extending our offering to cover commodity and metal prices.

Should you wish to receive any additional information on the products, tools and services outlined above, see our website for more information or alternatively, contact us.

For the purpose of this document, the focus is on the methodology for developing the EV Indexes.

3. Definition of EV Types

Battery Electric Vehicle (BEV): An EV that is solely powered by battery-stored electricity and requires external charging.

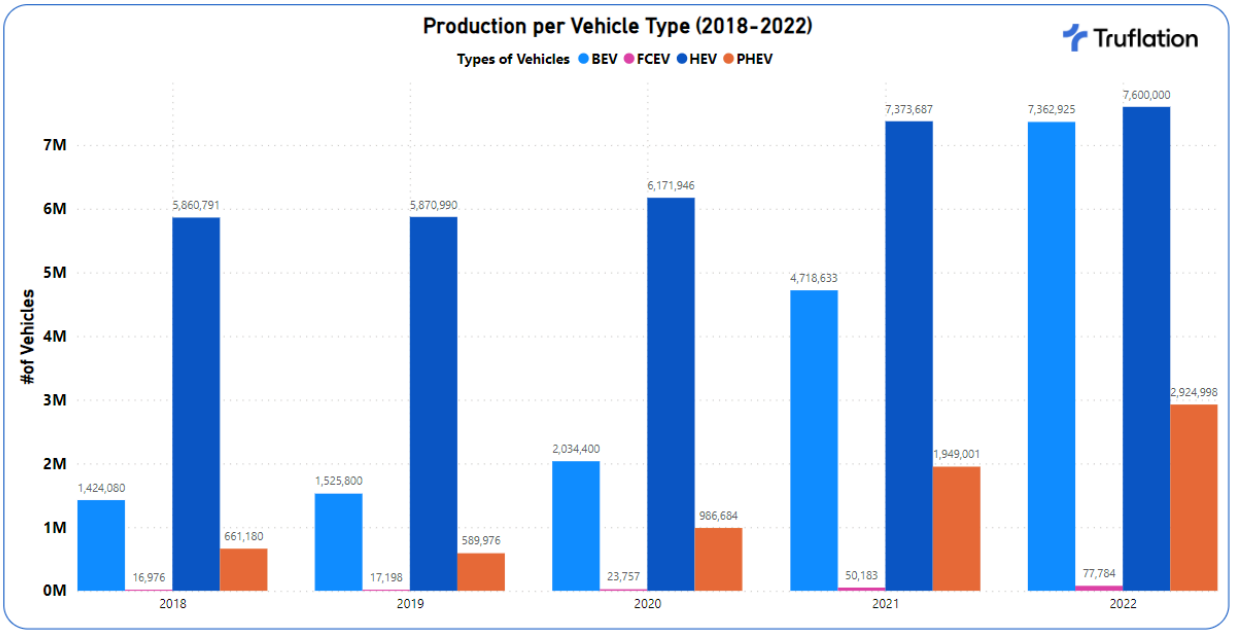
Hybrid Electric Vehicle (HEV): An EV that combines a conventional internal combustion engine with an electric propulsion system and recharges its battery through regenerative braking.

Plug-in Hybrid Electric Vehicle (PHEV): An EV that operates like an HEV but can also be recharged through an external power source due to its larger battery capacity.

Fuel Cell Electric Vehicle (FCEV): An EV powered by electricity generated from hydrogen gas through a fuel cell.

Production Data Overview for EV Types (2018 - Present)
To complement understanding of the evolving electric vehicle (EV) market, it is crucial to examine the production trends for each type of EV since 2018. This data not only reflects consumer preferences but also indicates the market penetration and growth trajectory of each EV category. Below is the chart that shows production trends over the last five years.

Chart 2. Annual Production Data for EV Types (2018 - Present)



Source: LMC Automotive, EV Volumes, Car manufacturers public reports

4. Metals Used in EV Production

The index will monitor five key commodities that are integral to the manufacturing of electric vehicles (EVs), factoring in their usage in batteries, motors, and other essential EV components. These commodities have been chosen based on their significant roles and the impact of their price fluctuations on the EV industry.

Nickel: Used in the cathodes of lithium-ion batteries, nickel increases energy density and storage capacity, which are critical for BEVs and PHEVs. It is also utilized in the production of stainless steel and other alloys necessary for various EV parts.

Cobalt: A critical element in lithium-ion batteries, cobalt is valued for its ability to extend the life of the battery, maintain performance over time, and provide safety in thermal management. Its use is predominant in BEVs and PHEVs.

Copper: Essential for electric motors, wiring, and charging infrastructure, copper's high conductivity makes it indispensable across all EV types. The demand for copper is expected to grow as the infrastructure for EVs expands and technology advances.

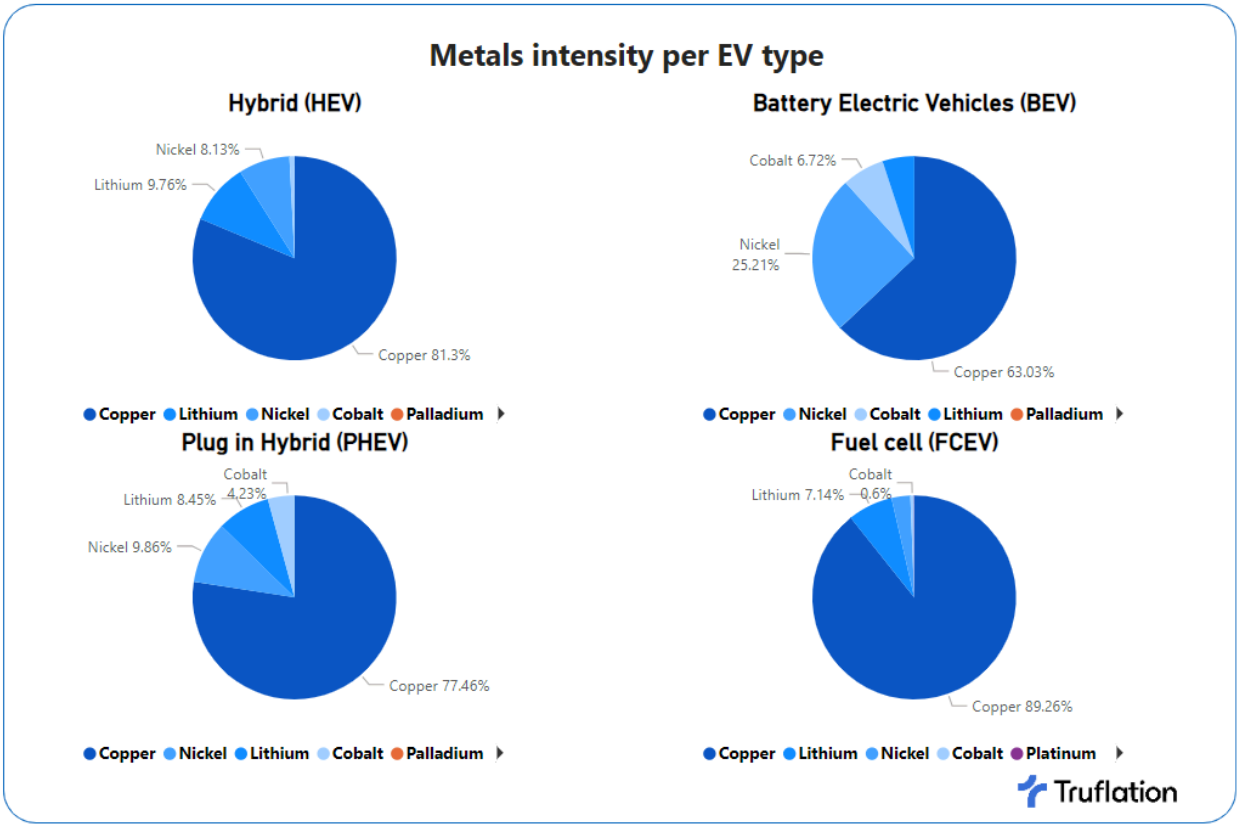
Palladium: While not directly used in EV batteries, palladium is crucial for catalytic converters in HEVs and ICE vehicles, which are part of the transitional automotive landscape as we move toward more sustainable fuel sources.

Platinum: Platinum is used in fuel cells for FCEVs due to its effectiveness as a catalyst. Although the market for FCEVs is currently smaller than for other EV types, the inclusion of platinum in the index anticipates future growth in this sector.

Lithium: Serving as the cornerstone for lithium-ion batteries, lithium's lightweight nature and high electrochemical potential enable the production of high-energy-density batteries essential for electric vehicles (EVs). Its pivotal role spans across BEVs, FCEVs, PHEVs, and HEVs, underpinning the shift towards cleaner transportation technologies.

This chart offers a clear visual representation of the different quantities of each metal used in the production of various EV types, enhancing the understanding of their respective roles and importance.

Chart 2. Metals Used Per Vehicle Type



Source: Multiple data sources listed in Data sources section

5. Weighting Scheme

The weighting of each metal within the index is a critical component that reflects its significance in the production of electric vehicles (EVs). To ensure the index remains relevant and accurate, weights are recalculated quarterly. The recalculation is based on a combination of factors that capture the dynamic nature of the EV and commodities market. Here is the step-by-step methodology for the quarterly recalculation of weights.

Step 1: Metal Intensity Adjustment
For each metal, the intensity is calculated by determining the kilograms of the metal used per vehicle. This figure is then multiplied by the price of the metal on the rebalancing day, providing a value that reflects both the quantity of metal used and its market value at a specific point in time.

Step 2: Vehicle Type Weighting
Next, the Kg x Price value (price of metal on rebalance day) is used to assign a preliminary weight for each metal within each vehicle type. This step accounts for the differing amounts of metal used in different types of EVs (BEVs, HEVs, PHEVs, FCEVs).

Step 3: Production Market Share Integration
Next comes the adjustment of the preliminary weights based on the market share of each vehicle type from the previous year. This step ensures that the weight of each metal is proportional to its actual use in the production of EVs, as determined by consumer and manufacturer preferences in the market.

Step 4: Daily Index Calculation
Finally, the Weight per Metal obtained from Step 3 is applied to the index calculation on a daily basis. This involves multiplying the daily futures price of each metal by its respective weight to determine its contribution to the index for that day.

Weight Calculation Formula

In EV Commodity Index, a sophisticated approach is applied to calculate the contribution of each individual metal – Nickel, Copper, Cobalt, Palladium, Platinum, and Lithium – across different electric vehicle (EV) types. The formula considers the four main types of EVs – Battery Electric Vehicles (BEVs), Hybrid Electric Vehicles (HEVs), Plug-in Hybrid Electric Vehicles (PHEVs), and Fuel Cell Electric Vehicles (FCEVs). This method ensures that our index accurately reflects the importance and usage of each metal in the EV industry.

For Each Metal X (where X represents Nickel, Copper, Cobalt, Palladium, Platinum, or Lithium), the weight in the index is calculated using the following formula:

$$\sum_{T \in \{BEV, PHEV, HEV, FCEV\}} \left(\frac{W_{X,T} \times P_X}{\sum_Y (W_{Y,T} \times P_Y)} \times M_T \right)$$

Where:

$W_{X,T}$ is the weight of metal X per vehicle type T.
P_X is the spot price of metal X.
M_T is the market share of the vehicle type T.
$\sum_Y (W_{Y,T} \times P_Y)$ is the sum of the products of weights and spot prices for all metals Y in the vehicle type T, providing a normalization factor for each vehicle type.

5. 1 Implementation in the Index

Production Market Share Adjustments: The market share of each EV type (MT) is used to adjust the weights, reflecting the prevalence of each vehicle type in the market.

Dynamic Data Inputs: Both the metal weights per vehicle type and the metal spot prices are dynamic inputs, updated regularly to reflect current market conditions.

This formula enables an accurate quantification of the contribution of each metal to the EV market, considering both its usage in different types of vehicles and its current market value. This allows the index to provide a nuanced and comprehensive view of the commodities' significance in the EV sector.

6. Index Calculation

The index calculation is designed to accurately reflect the changes in the prices of the selected commodities and their impact on the electric vehicle industry. This section outlines the procedures and formulas used to calculate the index.

6.1. Price Averaging

For the daily index value, an arithmetic average of futures prices from multiple distinct sources is calculated, where available. Each day, the reported prices of each metal from all sources are averaged to produce a singular price point that represents the day's value. This multi-source methodology not only bolsters the robustness of the data by mitigating source-specific anomalies but also provides a balanced representation of market prices. In instances where a

daily price is unavailable from one source, the index defaults to the price from the remaining sources for that day and that specific commodity. This ensures continuity in the index calculation and reduces the potential for gaps in the data set.

6.2. Rebalancing Frequency

The index is rebalanced quarterly in the first 15 days of January, April, July and October to reflect the most current market conditions by using spot prices of commodities on the first day of each quarter (Jan 1st, Apr 1st, Jul 1st and Oct 1st). The rebalancing includes the update of the production data for the previous year/quarter if it has been released.

During the rebalancing, the weights of each metal in the index are updated based on the latest metal intensity data, production market share figures, and metal spot prices as of the rebalancing date. This ensures the index remains aligned with the actual market usage and demand for the metals in EV production, capturing any shifts in technology, consumer preferences, or supply chain dynamics that may have occurred over the past year.

6.3. Historical Weights

Historical weights are listed in a Table below:

Weights	Nickel	Copper	Cobalt	Palladium	Lithium	Platinum
2018-01-01	**5.32%**	**19.42%**	**6.25%**	**5.21%**	**63.09%**	**0.70%**
2018-04-01	**5.59%**	**18.50%**	**7.75%**	**4.77%**	**62.66%**	**0.73%**
2018-07-01	**7.69%**	**22.29%**	**7.73%**	**6.11%**	**55.33%**	**0.84%**
2018-10-01	**8.06%**	**26.66%**	**7.31%**	**8.65%**	**48.31%**	**1.01%**
2019-01-01	**7.34%**	**26.43%**	**7.47%**	**10.21%**	**47.56%**	**0.98%**
2019-04-01	**9.35%**	**28.96%**	**4.25%**	**11.17%**	**45.21%**	**1.05%**
2019-07-01	**9.07%**	**27.42%**	**4.22%**	**12.66%**	**45.57%**	**1.05%**
2019-10-01	**13.18%**	**27.41%**	**5.28%**	**14.98%**	**37.93%**	**1.21%**
2020-01-01	**12.09%**	**31.77%**	**6.03%**	**17.36%**	**31.41%**	**1.34%**
2020-04-01	**10.76%**	**26.39%**	**6.12%**	**21.80%**	**33.85%**	**1.08%**
2020-07-01	**11.80%**	**33.39%**	**5.71%**	**18.82%**	**29.03%**	**1.26%**
2020-10-01	**12.25%**	**33.27%**	**6.17%**	**20.37%**	**26.71%**	**1.24%**
2021-01-01	**14.40%**	**32.76%**	**6.66%**	**15.00%**	**30.10%**	**1.08%**
2021-04-01	**10.73%**	**28.37%**	**7.93%**	**12.27%**	**39.77%**	**0.93%**
2021-07-01	**11.81%**	**29.64%**	**7.84%**	**12.68%**	**37.22%**	**0.83%**

Source: Tru Labs Inc.

2021-10-01	**8.64%**	**21.21%**	**6.14%**	**6.25%**	**57.24%**	**0.54%**
2022-01-01	**7.59%**	**15.61%**	**3.82%**	**2.38%**	**70.22%**	**0.36%**
2022-04-01	**8.53%**	**11.18%**	**5.32%**	**2.98%**	**71.74%**	**0.23%**
2022-07-01	**6.29%**	**9.57%**	**4.79%**	**2.77%**	**76.34%**	**0.23%**
2022-10-01	**5.85%**	**8.67%**	**3.67%**	**2.86%**	**78.73%**	**0.21%**
2023-01-01	**8.20%**	**9.59%**	**3.61%**	**2.43%**	**75.90%**	**0.26%**
2023-04-01	**11.82%**	**19.32%**	**4.40%**	**3.88%**	**60.10%**	**0.47%**
2023-07-01	**8.22%**	**13.95%**	**3.42%**	**2.47%**	**71.60%**	**0.32%**
2023-10-01	**11.30%**	**21.68%**	**5.15%**	**4.10%**	**57.24%**	**0.52%**
2024-01-01	**12.70%**	**28.68%**	**5.52%**	**4.63%**	**47.73%**	**0.74%**
2024-04-01	**12.31%**	**28.67%**	**5.24%**	**4.10%**	**49.03%**	**0.65%**
2024-07-01	**13.50%**	**33.60%**	**5.21%**	**4.33%**	**42.62%**	**0.75%**
2024-10-01	**14.11%**	**36.24%**	**4.83%**	**4.57%**	**39.46%**	**0.79%**
2025-01-01	**13.50%**	**34.72%**	**5.37%**	**4.62%**	**41.00%**	**0.79%**
2025-04-01	**12.55%**	**38.71%**	**6.45%**	**4.55%**	**36.96%**	**0.78%**
2025-07-01	**12.65%**	**41.52%**	**6.87%**	**4.92%**	**33.21%**	**0.84%**

7. Data Sources

Commodity prices will be sourced from price reporting agencies to ensure accuracy and reliability.

The process of gathering production data for the index is dynamic and multifaceted, ensuring a comprehensive view of the market. The initial phase of data compilation involved aggregating information from a diverse array of industry-leading sources known for their expertise in tracking automotive trends.

EV Volumes, Daily Metal Prices, SNE Research, Hybrid Vehicles Market, IMARC, and the International Energy Agency (IEA) provided foundational data, supplemented with specific details obtained directly from manufacturers specializing in Hybrid Electric Vehicles (HEVs) and Fuel Cell Electric Vehicles (FCEVs).

As the index evolved, the breadth of sources expanded to incorporate insights from additional analytics firms that specialize in market research. Spherical Insights, Grand View Research, Fortune Business Insights, Coherent Market Insights, and Mordor Intelligence became

instrumental in offering more granular data, reflecting the latest trends and projections in the EV market. These sources contribute a wealth of information, including the number of units produced and units sold, market penetration, and geographic distribution of production, which are critical for accurate index calibration.

This layered approach to data collection ensures that the index remains robust and relevant, capturing the nuances of a rapidly developing market. It also allows for the integration of historical data with cutting-edge market analysis, providing a well-rounded perspective on the production trends that influence the demand for EV-related commodities.

EV index incorporates metal usage data to reflect the actual consumption of materials in electric vehicle production. This data is sourced from a select group of specialized sources outlined below.

Automotive Industry Sources: LMC Automotive provides insights into vehicle production volumes, influencing the estimated metal usage in EV manufacturing.

Metal Institutes: Organizations like the Nickel Institute and Copper Institute offer targeted data on the usage of these metals in EV components.

Commodities and Energy Data Providers: The LBMA, US Department of Energy, and IEA contribute essential information on trading, energy consumption, and material use relevant to EV production.

Market Analysis Firms: GlobalData supports our dataset with broader industry trends and projections that affect metal demand.

8. Compliance and Governance

The compliance and governance section of the index methodology outlines the regulatory framework, ethical guidelines, and oversight mechanisms that ensure the index operates with integrity, transparency, and in accordance with industry best practices.

8.1. Compliance with Standards

The EV index methodology is in the process of adhering to international standards for financial benchmarks. This includes compliance with the principles set forth by the International Organization of Securities Commissions (IOSCO), which cover aspects such as data sufficiency, transparency, accountability, and auditability.

8.2. Audit and Review

In continuous pursuit of transparency and integrity for the EV Commodity Index, the governance process will actively partner with reputable audit firms. This initiative underscores dedication to upholding the highest standards of accuracy and reliability in indexes.

Scope of the Audit

- Methodology Verification: Data Accuracy
- Compliance Check

Ongoing Review Process

- Regular Audits: Once the initial audit is completed, plan is to establish a regular audit schedule to ensure ongoing compliance and integrity.
- Transparency with Stakeholders: The findings and recommendations from the audits will be shared with stakeholders to maintain transparency and build trust.
- Continuous Improvement: Commitment to using the insights gained from the audits to continuously improve index methodology and operations.

Engaging with top-tier audit firms for the review of the EV Commodity Index is a critical step towards ensuring that index remains a credible and trusted benchmark in the industry. The importance of independent validation is crucial in reinforcing the confidence of users and stakeholders.

8.3. Conflict of Interest Management

In the context of the EV Commodity Index, an immutable methodology signifies a predetermined and transparent set of rules and calculations that govern the composition and recalibration of the index. Consistent adhering to this methodology is ensuring that the index reflects market data and predetermined criteria without any subjective interference or adjustment.

The EV Commodity Index and the data it relies on go through the same process as any other index built on Truflation Stream Network. Reputation systems, public governance, and Byzantine fault tolerant nodes work together to ensure that the data and calculations are

unaltered at all times. To learn more, please read the Truflation litepaper. [https://whitepaper.truflation.com/]

By adhering to an immutable methodology, the EV Commodity Index maintains its integrity and reliability. This approach is central in providing a fair and unbiased market benchmark, free from conflicts of interest and reflective of true market conditions.

8.4. Mitigating the Risk of Volatile Markets

In the ever-changing landscape of commodity markets, managing volatility is crucial to maintain the reliability and usefulness of the EV Commodity Index. This approach integrates several key strategies to mitigate market risks and ensure the index remains a robust tool for stakeholders.

1. **Diversification**

Broad Commodity Range: A diverse array of commodities is included in the index, spanning nickel, cobalt, copper, palladium, platinum, and lithium. This variety ensures that the index is not overly reliant on the price movements of a single commodity.
Reflecting the EV Market: The chosen commodities are integral to EV production, ensuring that the index is not only diversified but also representative of the industry.

2. **Dynamic Weighting**

Responsive Weighting System: The index employs a dynamic weighting scheme that is recalibrated quarterly. This approach allows for adjustments in the weights of each commodity based on their current market relevance and price stability.
Balancing the Index: By adjusting the weights, the index can better reflect the current market conditions, reducing the impact of volatile commodities and enhancing overall stability.

3. **Regular Monitoring and Reassessment**

Continuous Market Surveillance: Regular monitoring of market trends, commodity prices, and industry developments is conducted. This ongoing vigilance enables quick identification of significant market changes that could impact the index.
Methodology Reassessment: The index methodology is reviewed periodically to ensure it aligns with the current market environment. This includes reassessing the choice of commodities, the data sources, and the calculation methods.
Adapting to Market Changes: Should substantial shifts in the commodity market occur, there could be some timely adjustments to the index methodology to maintain its accuracy and relevance.

Through these mechanisms — diversification, dynamic weighting, and regular monitoring and reassessment — the EV Commodity Index is designed to be a resilient and adaptable tool. These strategies work in tandem to buffer against market volatility, providing stakeholders with a reliable reference for understanding and navigating the complex dynamics of the EV commodity market.

9. Version History

Version	Date Released	Notes
1.0	2023-12-13	Genesis of EV index
1.1	2024-04-12	Lithium addition and TRUF token launch
1.2	2024-10-09	Remove Base Date paragraph
1.3	2025-04-15	Added Historical weights
1.4	2025-07-15	Rebalance July 2025