



# Intratec Energy Prices & Markets

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## General Methodology Guide

Version: 26-06

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# Preamble

## Understanding Intratec Energy Prices & Markets Program

Amid a global push for renewable sources and ever-evolving geopolitical dynamics, energy markets have never been more complex or unpredictable. Shifting trade alliances, supply chain disruptions, and volatile pricing trends create a landscape that demands constant monitoring and strategic foresight.

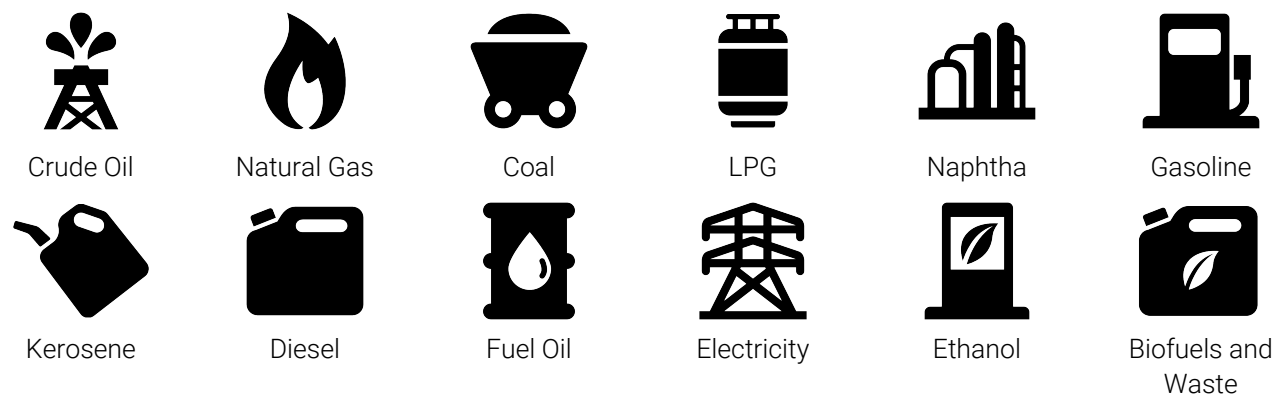
To help businesses and decision-makers navigate such uncertainties, we designed the Intratec Energy Prices & Markets, a subscription-based program that provides monthly reports with comprehensive and up-to-date assessments into the energy prices and markets worldwide.

Each report helps subscribers answer essential questions around a country's energy market, such as:

- \* How have energy prices changed historically, and recently?
- \* What are the price forecasts for energy commodities?
- \* How do local energy prices compare to global market prices?
- \* What are the key trends in the country's energy production and consumption?
- \* How are freight and insurance costs affecting the competitiveness of energy imports and exports?
- \* To what extent is the country self-sufficient in energy production?
- \* Which countries are its main energy trade partners, and how reliant is it on energy imports or exports?
- \* How exposed is the country to financial or supply risks in its energy trade relationships?

## Commodities Approached by Report

Every report under Intratec Energy Prices & Markets program includes price and market assessments on essential energy commodities:



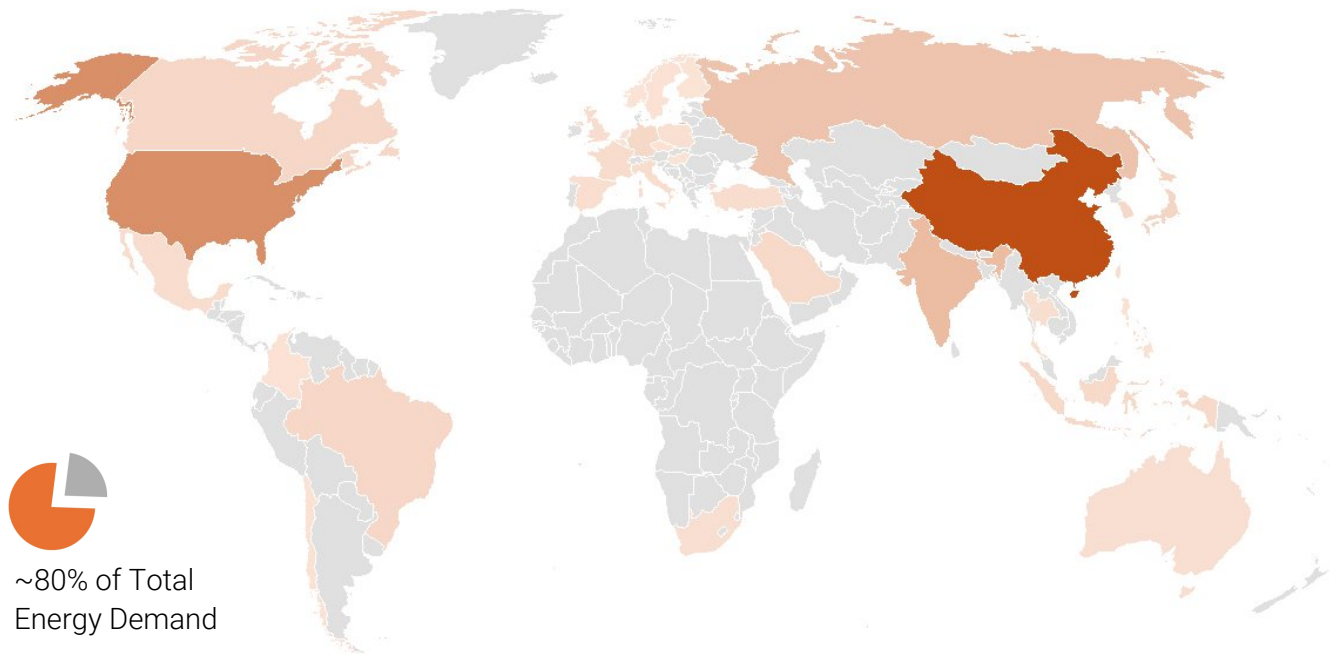
Each report is focused on a specific country. Subscribers receive new PDF reports every month, featuring the latest data and analyses, allowing them to stay informed about market trends.

## Available Reports

The Intratec Energy Prices & Markets program offers a selection of 33 country-specific reports, allowing subscribers to choose the countries that matter most to them. Upon subscription, they can tailor the coverage to their specific needs and receive only the selected reports monthly.



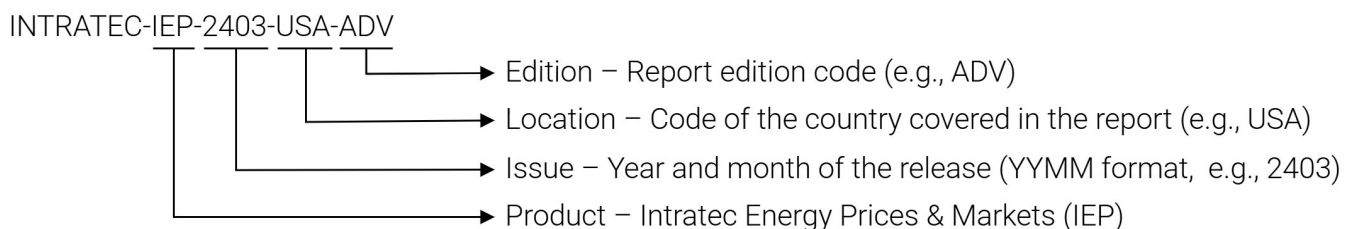
Such selection of countries covered in the program encompasses key players in the global energy landscape. These countries collectively account for significant shares of global energy production and demand, ensuring that subscribers gain insights into the most relevant markets influencing supply chains, price dynamics, and industry trends.



## How the Program is Organized

Each Intratec Energy Prices & Markets report is dedicated to a specific country, delivering in-depth analyses tailored to the selected location. The scope and depth of insights vary according to the subscription plan, ensuring that subscribers receive the level of detail that best suits their needs. Reports are released at the beginning of each month, providing timely updates on energy prices, forecasts, market trends, and key trade dynamics.

To ensure clarity and consistency, each report follows a structured identification format, which includes a unique code representing the subscription plan, the country covered, the release month and year, and the Intratec Energy Prices & Markets program designation:



This organization allows subscribers to effortlessly track their reports and stay up to date with the latest energy market developments in their regions of interest.

## Subscription Plans

To meet the diverse needs of our customers, Intratec Energy Prices & Markets is offered through three subscription plans, each providing reports with increasing levels of data coverage and analysis. These reports include key market insights and are released monthly, with different access features depending on the chosen plan.

- \* **Starter Plan.** Reports in this plan include the latest monthly prices for key energy commodities, along with a 1-year price history. Reports are updated on the 8th business day of each month. This plan provides online access to read-only PDFs for up to 2 users, making it ideal for those who need essential, regularly updated pricing data.
- \* **Pro Plan.** In addition to all the content available in the Starter Plan, reports in this plan include 3 years of historical price data, price forecasts, and key global price benchmarks. Reports are updated earlier, on the 5th business day of each month. This plan allows downloading of PDFs and includes global access for up to 3 users, making it suitable for professionals who require deeper market insights.
- \* **Advanced Plan.** This plan provides the most comprehensive reports, covering everything in the Pro Plan plus 10 years of historical prices, global price comparisons, trade balance data, freight and insurance costs, production and demand analysis, and electricity generation by source. Reports are updated on the 3rd business day of the month. The plan also includes advanced access features such as Excel and Power BI integration, API access, and unrestricted internal use for up to 5 users.

More details on each subscription plan's features are available in the full plan comparison at:

► <https://www.intratec.us/solutions/energy-prices-markets/features>

On the next page, readers will find links to the methodologies for each country covered in the Intratec Energy Prices & Markets. For a comprehensive understanding, they are encouraged to spend some time reading this document.

## Check Specific Assessments Guides

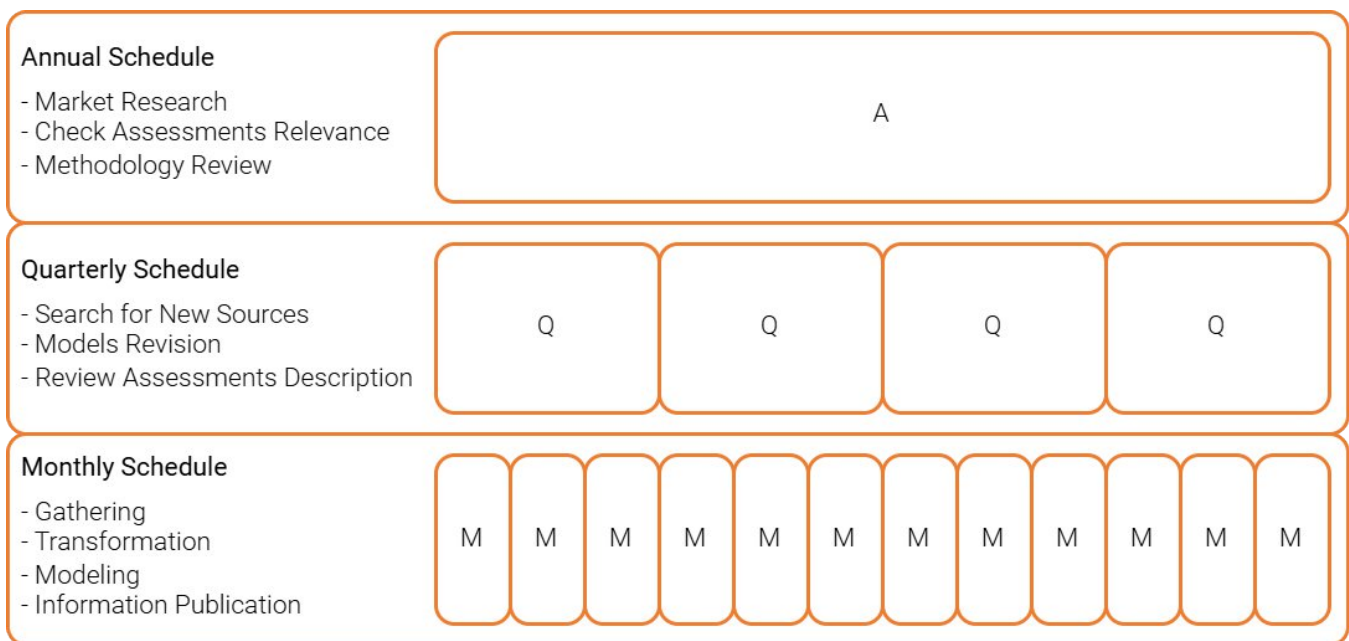
To understand the contents of each coverage and assessments, the reader should check out:

- \* United States: [https://intrat.ec/m?f=/iep-assessments-us\\_2606](https://intrat.ec/m?f=/iep-assessments-us_2606)
- \* Australia: [https://intrat.ec/m?f=/iep-assessments-au\\_2606](https://intrat.ec/m?f=/iep-assessments-au_2606)
- \* Belgium: [https://intrat.ec/m?f=/iep-assessments-be\\_2606](https://intrat.ec/m?f=/iep-assessments-be_2606)
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- \* Turkey: [https://intrat.ec/m?f=/iep-assessments-tr\\_2606](https://intrat.ec/m?f=/iep-assessments-tr_2606)
- \* United Kingdom: [https://intrat.ec/m?f=/iep-assessments-gb\\_2606](https://intrat.ec/m?f=/iep-assessments-gb_2606)

# Methodology Overview

To ensure clarity and ease of understanding, Intratec’s methodology is presented in a clear, concise format, supported by visual aids such as charts and tables. The document begins with an introductory chapter, followed by sections on general methodology organized by yearly, quarterly, and monthly cycles. Additional sections detail gathering, modeling, and publication. The final sections include disclaimers and references supporting the development of the Intratec Energy Prices & Markets methodology.

Our methodology consists of activities with different periodicity and duration. However, in case of atypical global events, (e.g., wars and natural disasters), any task may be anticipated. Figure 1 presents a summary of the primary steps of Intratec methodology divided according to their periodicity (A: annually, Q: quarterly, and M: monthly).



**Figure 1** Periodicity Diagram

Annually, Intratec conducts a comprehensive analysis of its methodology and energy markets, refining assessments and updating specifications. Quarterly, it evaluates data sources, modeling approaches, and commodity texts. Monthly, it automates the collection, transformation, modeling, and publication of energy data. In the next sections, each activity is described with more details.

# Annual Review & Methodology Assurance

Each year, Intratec undertakes a comprehensive cycle of market research, assessment relevance checks, and methodology reviews. This process ensures that data and reporting remain accurate, relevant, and aligned with market realities and best industry practices. The cycle includes:

- \* **Market Research:** Ongoing monitoring of energy markets and industry practices to identify new assessment opportunities and ensure data specifications align with trading conventions.
- \* **Assessments Relevance Check:** Annual review of all assessments for consistency, market alignment, and methodological appropriateness, with adjustments made as necessary.
- \* **Methodology Review:** Regular and annual examination of all methodologies and documentation, incorporating industry feedback and ensuring transparency in any changes.

## Market Research

When dealing with critical data for decision-making, as Intratec does, continuously researching the market is imperative. Intratec aims to provide the most relevant assessments, i.e., the most relevant energy commodities in strategic countries with the most common industry practices. This is done by constantly monitoring the relevance of assessments and can result in new assessment opportunities, assessment retirements, or changes in specifications.

Intratec provides specifications for each point it monitors, aligning with established trading conventions in energy commodity markets. The Intratec team ensures that collected information adheres to these specifications and that data falling outside these ranges are not considered in the assessment.

## Assessments Relevance Check

Every year, all assessments are reviewed as a whole by the Intratec team, and the data series are confronted to market expectations. Each assessment undergoes an evaluation process overseen by a qualified analyst. This process entails a thorough review of the assessments and a detailed examination of relevance and consistency of each series.

The comparison between the commodity market trends and Intratec assessments can result in removals, additions, or replacements of assessments, as well as changes in commodity specifications to match new market perspectives. As a result of the assessment quality, consistency, and relevance-to-market analysis, appropriateness of the methodology of existing assessments, termination of existing series, and initiation of new series are included.

If merited, an internal discussion will take place which will address changes in or terminations of existing commodities data, as well as the initiation of new data. If necessary, formal procedures for conducting such changes or terminations will ensue.

### Assessment Modifications

Intratec may discontinue, add, or change an assessment in accordance with our commitment to relevant information and market practices. For more information, the reader is referred to *“Disclaimers – Assessment Addition, Retirement, and Changes.”*

## Methodology Review

The publication of reliable, distortion-free data that are representative indicators of market values is any methodology’s overriding goal. To achieve that goal, Intratec employees perform regular methodology examinations and frequently compare to the industry practices. In addition to this ongoing review of methodology, Intratec undertakes at least an annual review of all its methodologies and methodology documents, including *Intratec Energy Prices & Markets – Methodology & Price Assessments Guide*.

Figure 2 presents the overall methodology review process.



**Figure 2** Review of Methodology Process

Some criteria that justify a methodology revamp after the annual review are:

- \* Alteration in the raw data used for price assessment calculations.
- \* Modification in the calculation methodology of the price, such as modeling enhancements.

- \* Clarification and simplification of the redaction of our methodology based on the feedback of database users, ensuring that they can understand both the kind of data Intratec provides and how it produces such data.

Transparency is a non-negotiable value at Intratec. Any modifications to methodology resulting from a review are announced in advance to customers before they take effect, as well as the duration of the transition period.

#### **Notes**

- A notification will be published detailing the changes as well as the earliest possible implementation date for most of changes.
- Even if a decision is made to discontinue an assessment, Intratec may opt to continue publishing it for a defined period if consultation results suggested it would benefit the market.
- Any new assessment will undergo shadow testing for a period before their official release.

# Quarterly Data Validation & Model Maintenance

Every quarter, Intratec undertakes a systematic process to ensure the integrity and relevance of its energy price and market assessments. This process includes:

- \* Data Sources: Mapping and integrating new data sources, enhancing automated data collection systems, and validating the reliability of all sources.
- \* Series Evaluation: Reviewing and revising analytical models and forecasts to ensure alignment with the latest market data and trends, including algorithmic and manual corrections as needed.
- \* Review of Commodity & Assessment Descriptions: Updating descriptions and specifications to reflect any changes in commodity manufacturing processes, uses, and market conventions.

## Data Sources

Quarterly, Intratec meticulously maps out pertinent sources of information and enhances automated technologies to gather vast amounts of data efficiently and accurately. This process aims to establish a comprehensive database that forms the foundation for developing models used in analyses. Intratec aims to ensure that our energy assessments are robust, precise, and reflective of real-world dynamics.

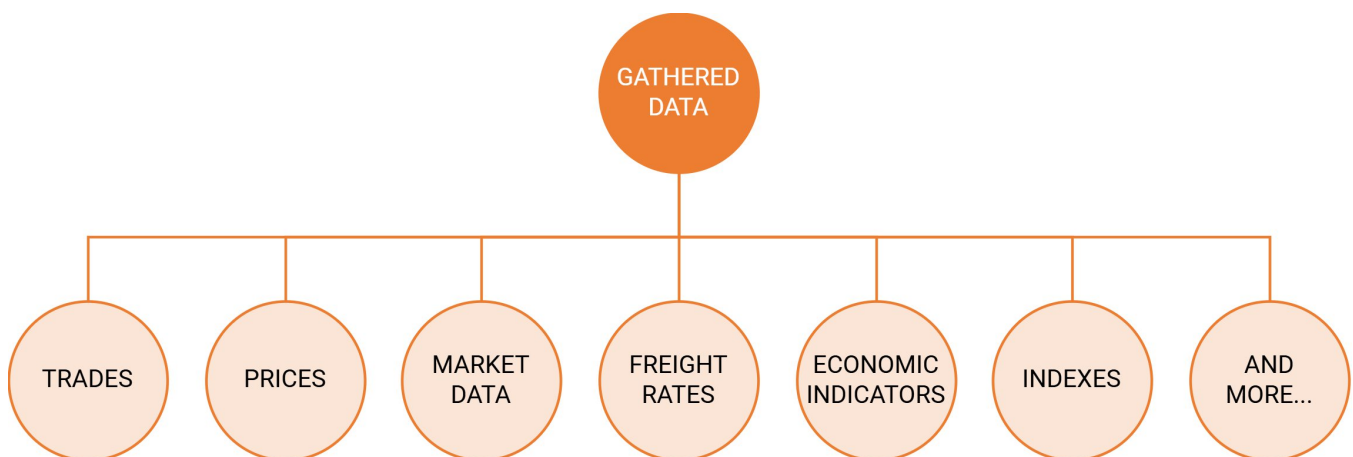
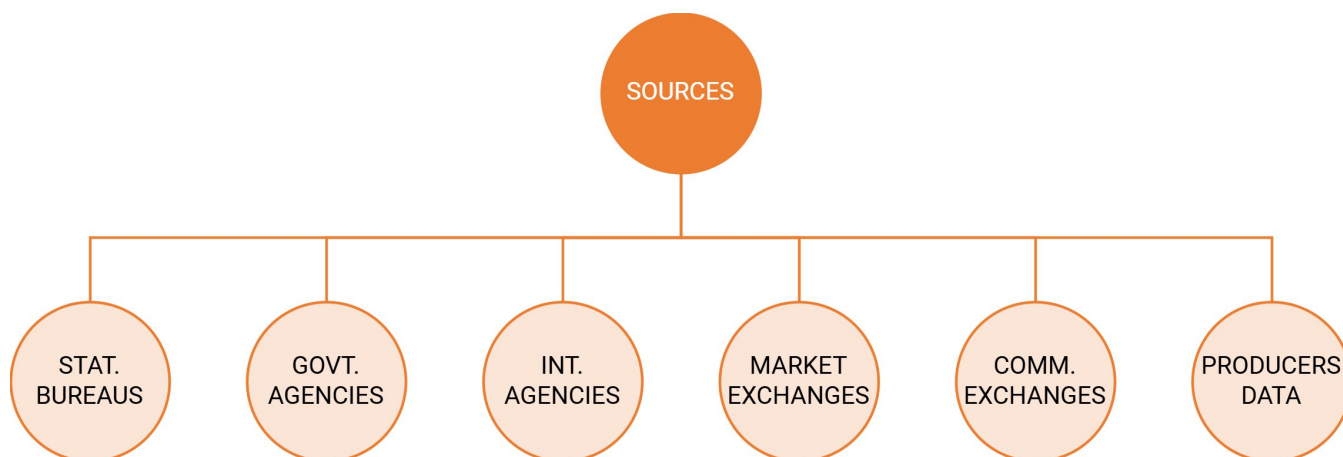


Figure 3 Data Collected by Intratec

Intratec has engineered a resilient system to extract data, prioritizing the automatic collection from diverse sources to construct a well-informed and sturdy market outlook. Given the energy market's inherent opacity, Intratec relies on sophisticated systems to gather and interpret this information.

The Intratec team continuously studies the data sources to establish the fullest set of information possible around energy price and market data. The data gathered include trades, prices, energy balances, freight rates, indexes, economic indicators, transactions, volumes, labor wages, and any other information that can make a material contribution to assessment calculations or forecasts.

Also, Intratec extensively collects valuable data for assessment calculations from both public and private sources, with prior permission from publishers or other third parties holding the rights to the information. These sources include national governments' statistics bureaus, governmental agencies, international multilateral organizations, market exchanges, private commodity exchange, and producers' data.



**Figure 4** Sources Used by Intratec

It is obvious that source reliability is key. Therefore, Intratec continuously works to assure the quality of our data in the following ways:

- \* Increasing the number of sources.
- \* Increasing the usage of national governments' statistics bureaus, foreign trade agencies, international organizations, as well as other recognized institutions.
- \* Improving data validation.
- \* Ensuring the quick replacement of any discontinued source.

### **Intratec is not a Primary Source for Pricing Data**

Intratec does not usually conduct surveys or maintain regular communication with a network of market players. It primarily relies on public sources – such as government statistics, trade agencies, international organizations, and market exchanges – rather than conducting surveys or maintaining regular contact with market players. In rare cases, raw data from Intratec's own surveys may be used.

## **Series Evaluation**

Every three months, the Intratec team evaluates the accuracy of the models – including forecast – either by comparing them with historical data (consolidated data available at that time) or with new market expectations and trends.

In practical terms, the evaluation process includes:

- \* Monitoring price and market variations using algorithms.
- \* Manual corrections conducted by Intratec experts.
- \* Adjustment of computational algorithms and regression models if necessary.
- \* Data adjustments when raw data are insufficient or fails to elicit a representative assessment.

After the evaluation, the inconsistencies are corrected and new series are generated. Analysts may detect relevant changes in the market conditions (e.g., plant shutdowns, economic crisis) or find that the model is not reflective of market dynamics any longer. In the latter case, the model is improved or replaced by a new one to ensure a more accurate data. The new assessments are evaluated again until the inconsistency is solved and Intratec analysts confirm the correct data.

## **Review Commodity & Assessment Descriptions**

The Intratec team periodically reviews and updates commodity, assessment, and report descriptions to reflect changes in manufacturing processes, uses, producers, and specifications. This ongoing effort supports accurate price and market analysis and aligns with Intratec's commitment to continuous improvement.

# Monthly Data Processing & Release Workflow

Intratec obtains energy data values through structured data processing pipelines developed by a team of market experts, computer scientists, and data scientists. Such strategy relies on advanced technologies to extract, store, process, and analyze various publicly available data from a wide range of open sources as soon as they are released, so they can be transformed into valuable information through mathematical models.

Each month, Intratec executes a comprehensive cycle to deliver accurate and timely energy prices and market data. This process includes:

- \* Collection & Integration: Extracting, transforming, and loading raw data from a wide array of validated sources.
- \* Modeling: Applying advanced modeling techniques – including price, market, freight and insurance, and global comparison modeling – to generate robust assessments.
- \* Information Publication: Publishing the finalized data and insights in the monthly report, ensuring transparency and accessibility for all users.

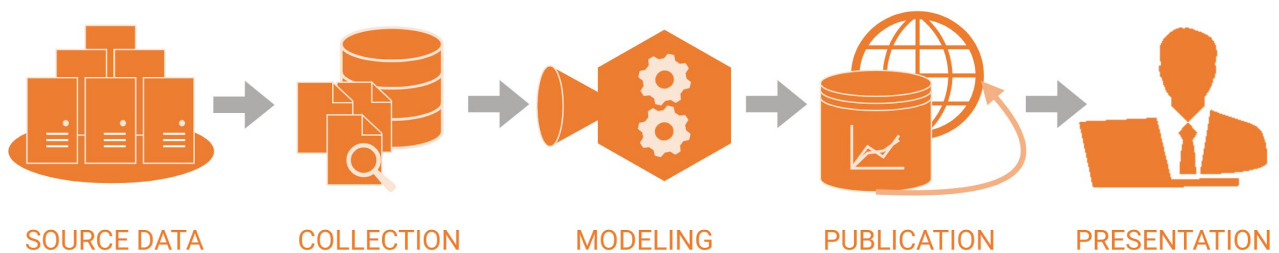


Figure 5 Monthly Data Processing & Release Workflow

## Collection & Integration

Given the wide range of sources used and the huge amount of data collected, it is Intratec’s goal to ensure both the integrity and the accuracy of the collected data. For that goal, Intratec’s data gathering process relies whenever possible on automated systems and algorithms to extract, transform, and load the data into our databases.

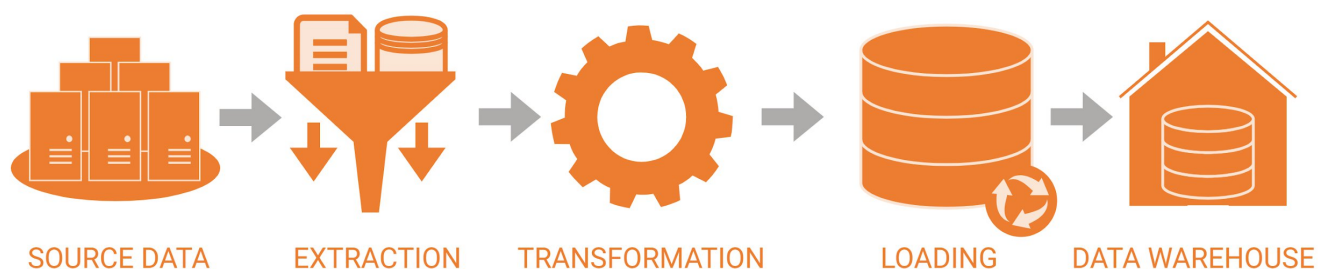


Figure 6 Data Collection & Integration Process

### Extraction

The automated collection processes are thoroughly tested and validated on a monthly basis, ensuring the integrity of any data collected. Furthermore, data consistency is guaranteed by several layers of data checking algorithms, as described in the next paragraphs. The automated extraction relies on Application Programming Interfaces (APIs) either provided by the data sources or developed by Intratec. Requests are automatically performed according to the sources’ update schedule and the data retrieved by the API enter an automated workflow for data integrity check.

After data collection, some errors can appear. In the first phase of error detection, the Intratec team checks if the source structure remains the same (e.g., table headers, numbers of lines). If anything has changed, the gathering system is adjusted to collect data from the new source structure and transmit them to the Intratec system.

In addition, some minor specific data sources demand manual collection. In such cases, to prevent errors derived from human mistakes, the same collection process is performed by multiple independent professionals and the result is cross-checked through computer algorithms. If any differences are found

in the data collected, additional professionals review the data and check the original source to attest which is the correct data.

At the end of the gathering process, raw data are ready to be transformed through the Intratec system.

## Transformation

Before being used in the modeling steps, raw data pass through a uniformization process, called Transformation, involving formatting, standardization, and unit and currency conversion.

Initially, the collected and verified data are organized in such a way that they fit into the Intratec database and can be processed by the Intratec system. The data formatting includes transformation of file and number formats.

Subsequently, the data undergo a standardization process. It consists of adapting the original arrangement to the Intratec's data storage structure, which varies according to each type of data. The last step of transformation is the conversion of raw energy data into default currencies and units of measure from the Intratec database.

## Loading

Once raw data is extracted and transformed, it is loaded into Intratec's structured data warehouse. This step ensures that standardized information is securely stored and readily accessible for subsequent modeling activities.

The loading process includes automated integrity checks to confirm alignment with the expected database schema. Any detected discrepancies trigger automated alerts, prompting review and correction before the data proceeds to analysis.

This step completes the ETL process, preparing a clean, consistent, and verified dataset for robust energy price and market modeling.

# Modeling

Modeling is responsible for converting raw data into useful and relevant data by analyzing and validating all values gathered for assessments. From a giant database, in the shortest possible time, Intratec arrives at relevant values that represent the market. This process comprises removing outliers and creating models to calculate relevant assessments quickly and efficiently.

The modeling flow depends on the assessment calculation method, which varies according to commodity, source, price type, and energy flow. For more details, the reader should refer to sections *“Prices Modeling,” “Market Modeling,” “Freight and Insurance Modeling,”* and *“Global Prices Comparison.”*



Figure 7 Modeling Process

## When Raw Data are Insufficient

When data are missing, limited, or deemed unsuitable for producing representative assessments, Intratec analysts estimate values using a broad set of factual market inputs. They are responsible for thoroughly collecting and validating all supporting data and for proposing appropriate mathematical models. These inputs may include other market assessments, producer or export indexes, labor costs, confirmed transactions, spreads, exchange trades, supply-demand fundamentals, and other relevant indicators.

More information about models used in case of insufficient raw data are available in sections *“Prices Modeling,” “Market Modeling,”* and *“Freight and Insurance Modeling.”*

## Forecasts

Price forecasts are indispensable tools for stakeholders in the energy sector, enabling informed decision-making in trading, risk management, and policy development. Accurate forecasts provide critical insights into future market trends, supporting long-term strategies and mitigating risks associated with price volatility.

In Energy Prices & Markets, Intratec provides short-term forecasts for selected price and freight assessments. More information about price forecasts and their accuracies, as well as freight forecasts, are available in sections *"Prices Modeling"* and *"Freight and Insurance Modeling."*

## Normalization

After series are generated, Intratec verifies the unicity of the standard specifications and timestamps used in its market assessments with prevailing industry norms. Due to the inherent diversity of physical commodity markets, variables such as quality, delivery locations, and specific trade terms can differ across commodity market sources evaluated by Intratec. Consequently, merely averaging trades in a diverse market may not lead to an accurate representation of an assessment value.

Intratec checks the alignment of market data with standardized definitions through a process known as normalization, which involves adjusting gathered market information to match the base standard reflected in its price assessments. The normalization analysis occurs concomitantly and iteratively with modeling and considers:

- \* Differences in location – corrected using freight rates.
- \* Data quality – corrected using factors, indexes, and based on other sources.
- \* Disparities in quantity and specifications – corrected using averages and outlier detection.
- \* Some assessment offsets – translations in relation to time between assessment curves of the same commodity, corrected using mathematical formulas.

As part of the normalization process, assessment currencies and units of measure are converted from Intratec's default to those commonly used in each country. At the end of this stage, historical and preliminary data are rounded to three significant figures, while forecast data are rounded to two. The data are then prepared for publication.

# Information Publication

After gathering and modeling, data obtained undergo a series of careful reviews to detect if any inconsistent value has appeared. These inconsistencies can be generated from missing data, mathematical or computational errors, anomalies or discrepancies in the data collected and the models used to calculate assessments. After corrected, the data are published through Intratec's various media.

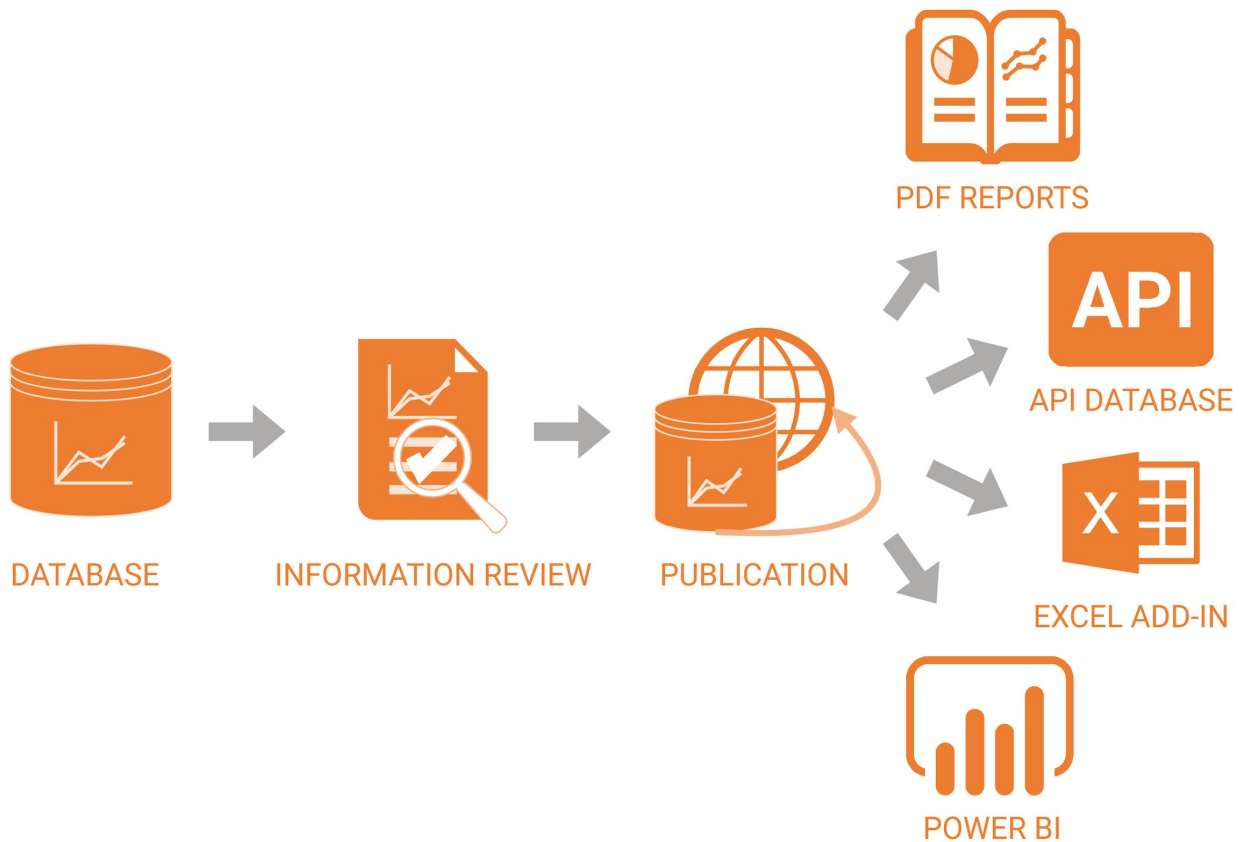


Figure 8 Intratec's Publication Flow Diagram

## Information Review

When an inconsistency is detected at the end of the modeling step, the associated data is flagged for further verification or treatment. This could trigger a review and potential recalibration of the mathematical models to ensure accuracy and reliability. Also, Intratec's analysts may investigate the cause of the

inconsistency, which could range from erroneous data entry to market anomalies or changes that the model has not yet accounted for.

To validate and contextualize findings, Intratec applies an extensive information-checking framework that draws on both internal benchmarks and external datasets. Characteristics of neighboring or related markets often serve as comparative baselines to identify expected trends and deviations.

Intratec's information checks include:

- \* Comparison of modeled values to series data from other sources.
- \* Analysis of market trends in adjacent or related energy commodities.
- \* Cross-checking levels across different geographic locations.
- \* Evaluation of trade flows, including unexpected surges or drops with partner countries.
- \* Comparison to customs data reported by both exporting and importing nations.
- \* Comparison to a more actively traded but slightly different specification commodity.
- \* Time-series analysis, including short- and long-term trend comparisons.
- \* Benchmarking against feedstock and downstream costs, prices, production, and demand.
- \* Evaluation of differences in trade based on transportation type, volume, or logistics configuration for the same commodity.
- \* Comparison to transactions occurring in different trade routes (across various port pairings).
- \* Verification of market-impacting events, such as plant shutdowns or startups.

This multi-layered review process ensures that Intratec's assessments are both robust and reflective of actual market dynamics, reinforcing the credibility and value of the information delivered to users.

When the series reflects typical market behavior, it is directed to subsequent steps. Otherwise, Intratec does not use these data and resorts to its models, as explained in the topic "*When Raw Data are Insufficient.*" This may include data that fall outside the established range of typical market activity. Insights from these investigations are then fed back into the model to improve its accuracy and reliability over time, especially in the quarterly model reviews.

## Final Presentation

After assessments are reviewed, the new information is loaded to our report templates and to our online database. After a test in a test presentation display by the Intratec team, they are made available to customers. A new value for each available series is released every month, according to the schedule presented at <https://intrat.ec/release-schedule>.

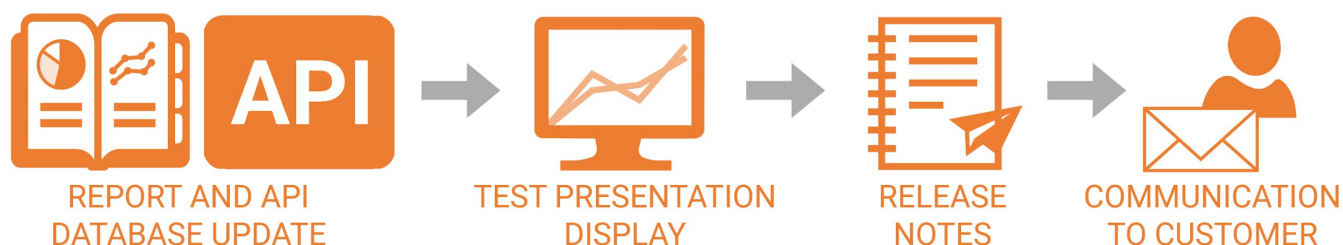


Figure 9 Final Presentation Diagram

The new data are firstly uploaded in the Intratec system: the API database is updated, followed by the reports available on the website. Then, Intratec publishes release notes about the latest improvements and updates made to databases, as well as revisions of published data available at <https://medium.com/intratec-release-notes>. After the final publishing is available, the Intratec team sends an e-mail notifying customers that the database has been updated.

### More Details about the Methodology

This “*Monthly Data Processing & Release Workflow*” section provides a concise overview of the monthly methodology Intratec applies to all its assessments. For greater transparency and detail, the sections “*Price Modeling*,” “*Market Modeling*,” “*Freight and Insurance Modeling*,” and “*Global Price Comparison*” offer in-depth explanations of each specific methodology.

Also, Intratec provides a glossary for key terms used throughout this methodology, available at [https://cdn.intratec.us/\\_nt/docs/methodologies/intratec-glossary.pdf](https://cdn.intratec.us/_nt/docs/methodologies/intratec-glossary.pdf).

# Prices Modeling

Intratec methodology for price assessments relies on official government trade data processed with AI or estimated using advanced models, regularly updated by experts. As exposed in the “*Methodology Overview*” section, firstly data are gathered and transformed. Then, raw data pass through the modeling steps, that will be explained in the following paragraphs. Lastly, assessment series are normalized and directed to “*Information Publication*” steps.

Modeling converts raw data into useful and relevant data. The Intratec team validates the price, volume, specifications, and location basis, removes outliers and creates models to calculate relevant assessments quickly and efficiently. For prices, the modeling flow depends on the assessment calculation method, which varies according to price type.

## Trade-Based Prices

Trade-based prices come from international trade information reported by countries. The prices from trade are selected according to a criterion of data homogeneity, which checks if all data used refer to the same assessment, i.e., the same commodity with similar specifications and trade conditions.

A completely homogeneous data set shows no variation in its features. In the real world, however, some variance is expected even within a dataset relative to a single commodity specification, so a tolerable homogeneity level is necessary to obtain datasets that result in better price calculations.

In this case, Intratec applies a clustering algorithm to group similar trade transactions based on the identified statistical modes and data dispersion. By identifying clusters of trades with comparable characteristics, the algorithms can discern underlying market patterns and reduce the impact of anomalies on the final price estimation. Each cluster is used to produce a unique price assessment, avoiding the “basket” effect of trade data. If no homogeneity is found within a raw dataset, the data are considered unqualified to be used for price assessment calculation.

Once the data are considered homogeneous, the trade-based prices are calculated: unit value and transaction price. These price types vary according to the calculation algorithm, primarily the statistical treatment applied to detect and remove outliers.

## Unit value

Unit values are calculated by dividing the total amount of money by the total quantity of a given commodity in each month traded by a specific country as reported by countries' custom authorities. It is calculated with no statistical treatment.

## Transaction price

Transaction prices, unlike unit values, are treated to remove inconsistent values. Transaction prices are calculated by filtering out data that fall outside a minimum traded quantity and then applying a univariate outlier detection algorithm that employs methods used by the OECD with the goal of removing inaccurate data through a more simplified model.

- \* Volume minimums: Since trade data are usually not provided individually for each transaction, Intratec usually establishes minimum volumes as a multiple of a typical trade size, given the diverse transportation infrastructure in commodity markets. In practical terms, the minimum volume is often two or three times the standard cargo size, which varies according to region and commodity. Otherwise, for domestic or small-quantity trades (e.g., spot assessments or low-traded commodities), the minimum volume is estimated as a multiple of the most common transportation for region and commodity.
- \* Gross outliers' removal: Trade prices that significantly deviate from the median of all transactions are not accounted for in the transaction price calculation. The method employed is based on the Median Absolute Deviation, a statistical dispersion measure, considered more resilient to outliers than the standard deviation.

In addition, because of confidentiality or the time necessary to transmit the information, some official foreign trade statistics are published with delays, usually varying from 1 to 2 months. To mitigate these "blanks," the Intratec team has developed price models that represent the best price estimate for the period up to the current month when insufficient or no data is available, the preliminary prices. They are calculated based on other related assessments with no lag, using a regression model adjustment. Intratec makes it explicit which assessments are preliminary prices.

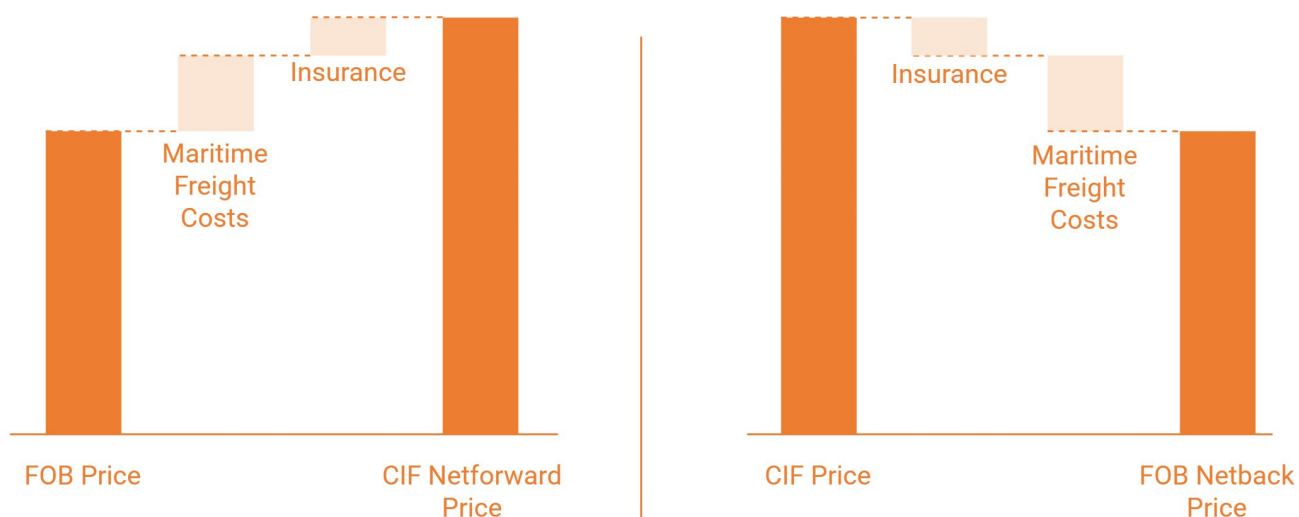
## Formula-Based Prices

Formula-based assessments are calculated using the price of other commodities, achieving the price most likely practiced by the market. First, the market research indicates what commodities are probably related to this assessment (usually raw materials or primary derivatives). Then, a regression model is adjusted, finding the model parameters that fit the assessment curve based on other assessments. Finally, the model is fed with current commodity prices and the calculation results in the assessment price. Intratec makes it explicit which assessments are formula-based.

*Price = function of price of related commodities, economic indicators, currency rates, etc.*

## Freight-Based Prices

Netback and netforward assessments are calculated from other assessments, respectively, by subtracting or adding maritime freight rates. The freight rates are calculated considering the most used transport form for each assessment, even though others may be used for shipping. Prices are calculated according to the currency and quantity unit of the assessment.



**Figure 10** Netforward / Netback Price Calculation

\* Netback: represents the value of the products returned to the loading terminal by subtracting freight and insurance costs.

\* Netforward: represents the value of the products arriving at the destination terminal by adding freight and insurance costs.

\* *Price = function of other assessments, freight rates, and insurance*

## Manufacturing Cost-Based Prices

Manufacturing cost-based prices estimate the operating costs of producing a commodity based on process inputs. These prices may include raw materials (net of by-product credits), utilities, labor, maintenance, operating charges, plant overhead, local taxes, and insurance. Raw material and by-product prices are sourced from Intratec Primary Commodity Prices (<https://intrat.ec/icp>), while utility prices come from Intratec Industry Economics Worldwide (<https://intrat.ec/ie>).

*Price = function of KPIs, price of raw materials, utilities, labor, and IC index*

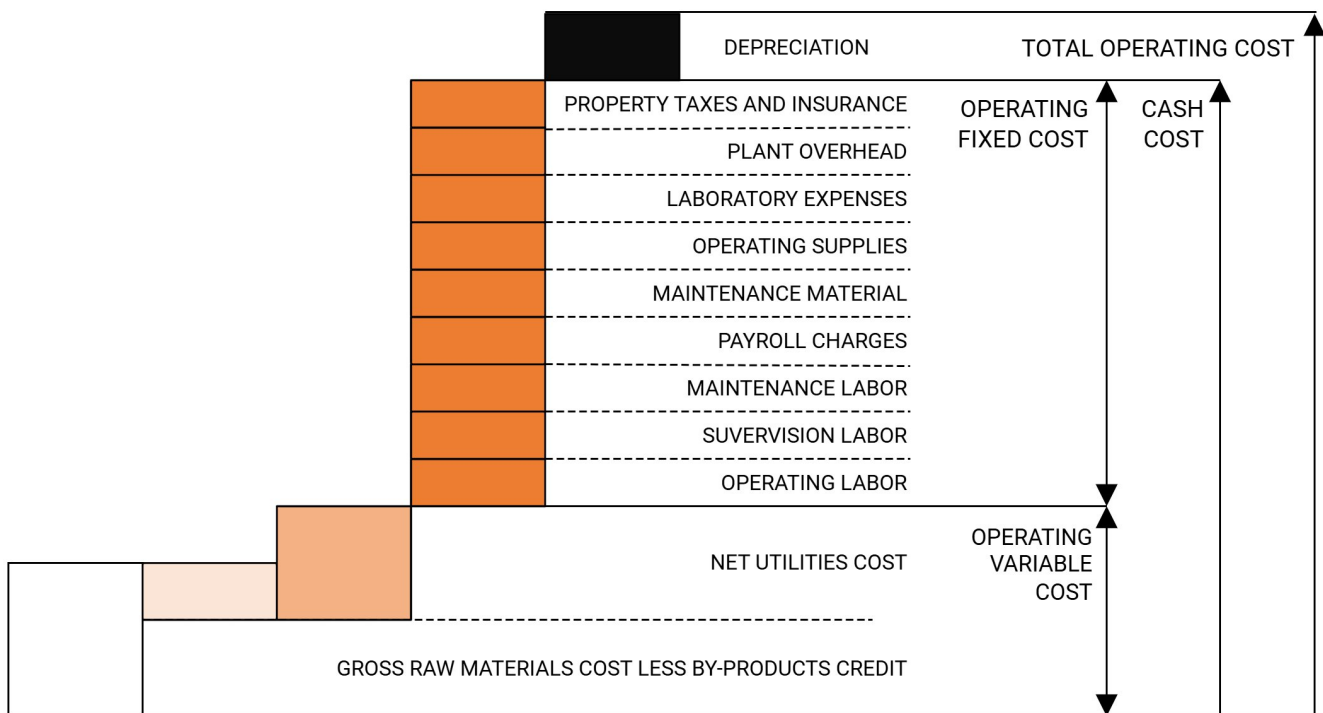


Figure 11 Manufacturing Cost-Based Prices Diagram

## Compiled Prices

Finally, some assessments are modeled using price data from public sources, and their raw data consist of some price series (value per quantity) over a month. In the same way as the other price assessments, raw publicly available price data undergo a formatting step that adapt them to the Intratec system.

After they are inserted into the system, statistical validation detects anomalies and possible outliers inside the raw data and removes them. Subsequently, these assessments are typically calculated as a monthly average of closing prices for daily/weekly published price data. Once the price series are generated, they are directed to the normalization step.

## In the Event of Data Shortage

When data are insufficient, inadequate, or unavailable, or when Intratec determines that a data-driven approach is not suitable for establishing representative assessments, Intratec analysts will estimate values based on a wide range of factual market information. Analysts must meticulously collect, verify all market data used to determine assessments, and propose mathematical models. The information utilized may encompass other assessments, producer or export indexes, labor costs, completed deals, spread and exchange trades, fundamental supply and demand data, and additional relevant factors.

This is the case of preliminary data, derived from Intratec's proprietary models, which were developed to address delays in the publication of official statistics, typically released with lags of 1 to 2 months. Intratec models provide the best price estimates for periods up to the current month, ensuring timely and reliable information for decision-making. In publications, preliminary assessments are marked with (P). To ensure trustworthiness, the accuracy of preliminary prices is updated monthly and published in the reports, calculated as described in the "*Accuracies of Preliminary and Forecast Prices*" section.

## Price Forecasts

Price forecasts are indispensable tools for stakeholders in the energy sector, enabling informed decision-making in trading, risk management, and policy development. Accurate forecasts provide critical insights into future market trends, supporting long-term strategies and mitigating risks associated with price volatility.

In Energy Prices & Markets, Intratec provides short-term forecasts for selected price assessments. They are derived from mathematical models utilizing forecast data such as: (i) prices of related commodities; (ii) economic indices; (iii) industry indicators.

The forecasts presented are reflective of what Intratec considers to be the most probable scenario for the upcoming six months, as of the date such forecasts are updated. It should be noted that market parameters utilized in the calculation of these forecasts can undergo significant revision within short periods of time, which is the reason for monthly updates. Aiming for trustworthiness, price forecast accuracies are monthly updated and published in the reports, and they are calculated as explained in the “*Accuracies of Preliminary and Forecast Prices*” section below.

## Accuracies of Preliminary and Forecast Prices

As explained in the “*In the Event of Data Shortage*” and “*Price Forecasts*” sections, Intratec makes available preliminary data and forecasts for several assessments. To provide transparency and convey the reliability of Intratec's data, the performance and accuracy of preliminary and forecast price models are continuously evaluated and made publicly available. To assess model quality, Intratec has developed a proprietary metric called the Model Performance Score (MPS), which consolidates key evaluation metrics into a single indicator of reliability.

Before delving into how the MPS is calculated, it is important to understand the foundational metrics used in model evaluation:

- \* **Mean Absolute Percentage Error (MAPE):** Expressed as a percentage, this metric measures the deviation between estimated and consolidated prices. It contextualizes deviations in relative terms, enabling meaningful comparisons across time periods and datasets.
- \* **Mean Absolute Percentage Accuracy (MAPA):** Expressed as a percentage and calculated as  $100\% - \text{MAPE}$ , this metric measures the accuracy of estimated prices compared to the consolidated ones.
- \* **Directional Accuracy (DA):** This metric evaluates the model's ability to correctly predict price trends – whether prices will rise or fall – providing a practical assessment of its reliability for decision-making.

To ensure a robust evaluation of model performance, Intratec calculates average MAPA and DA values over three distinct timeframes: the last 3 months, the last 6 months, and the last 12 months where consolidated prices are available. This approach allows for a direct comparison between estimated price estimates and actual consolidated prices over different periods.

Building on these metrics, Intratec developed the Accuracy Index (AI) to provide a single, user-friendly indicator of a model’s reliability for each timeframe analyzed. The AI is calculated as a weighted combination of MAPA and DA using the following formula:

$$Accuracy\ Index\ (AI) = \frac{(MAPA \times (24 - num\_obs)) + (DA \times num\_obs)}{24}$$

In this formula:

- \* 24 represents the maximum total number of months used for evaluation.
- \* num\_obs refers to the actual number of data points available (e.g., last 3 months or last 12 months).

The AI ranges between 0 and 100%, with higher values indicating better model accuracy for the analyzed timeframe.

To provide an overall evaluation of model performance across all timeframes, Intratec combines the Accuracy Indexes from the three timeframes into a proprietary metric called the Model Performance Score (MPS). The MPS assigns greater weight to more recent preliminary prices using a ratio of 5:3:2 for the last 3 months, last 6 months, and last 12 months respectively. The formula for MPS is:

$$MPS = \frac{(0.5 \times Last\ 3\ Months\ AI + 0.3 \times Last\ 6\ Months\ AI + 0.2 \times Last\ 12\ Months\ AI)}{20}$$

The MPS ranges from zero to five circles, where:

- \* Five full circles (●●●●●) indicate an excellent model.
- \* Three or fewer circles (e.g., ●●●○○) suggest areas for improvement in model performance.

The MPS measures both the accuracy of preliminary assessments and M1 (forward-month) forecasts, as they are the most relevant for short-term planning and decision-making. The forward-month forecast is the most critical horizon, providing immediate insights for navigating near-term market dynamics.

Additionally, a high-level evaluation of M6 (six-month ahead) forecast performance is presented through a comparison of Intratec’s model MAPA values against those of a baseline Constant Price Model (Naïve MAPA). This comparison highlights the added value of Intratec’s forecasting methodology. The ratio between these MAPAs is the relative performance:

$$Relative\ Performance\ Ratio = \frac{Intratec\ Model\ MAPA}{Naïve\ Model\ MAPA}$$

Values above 100% indicate superior performance by Intratec’s models compared to the Naïve model.

In some cases, there may be insufficient historical assessment data to estimate all parameters. When this occurs, Intratec indicates the data gap with a “not available” (NA) label.

# Market Modeling

Energy underpins modern economies, fueling industries, transportation, households, and nearly every facet of daily life. To grasp the complexity of energy markets, it is vital to analyze both the flow and characteristics of energy commodities. Intratec has therefore developed a standardized methodology for assessing national energy markets, detailed in the following sections.

After gathering and transforming data from public sources, the Intratec team models these inputs into standardized energy flows for each commodity. These modeled data are then normalized, reviewed, and published in all available formats. In Intratec reports, energy commodity data are typically organized by flow in energy units (and, where relevant, in mass or volume units).

The following sections seek to clarify how the country's energy balance is assembled, as well as the metrics that can be explored from it (e.g., self-sufficiency and trade dependency).

## Energy Balance

The energy balance provides a comprehensive overview of the relationship between energy production, imports, exports, demand, and consumption. It serves as a key indicator of how energy flows within the country, highlighting self-sufficiency levels, trade dependencies, and consumption patterns. Each balance component is called “energy flow,” as summarily explained below.

## Energy Flows

Energy flows include key stages such as production, transformation, trade (imports and exports), stock changes, and consumption. Fossil fuels are extracted from reserves, while renewables such as wind, hydro, and solar mainly contribute through electricity generation. Countries may import energy to meet domestic needs or export surplus production.

The general flow of an energy commodity, from its first appearance to final consumption, is illustrated in Figure 12.

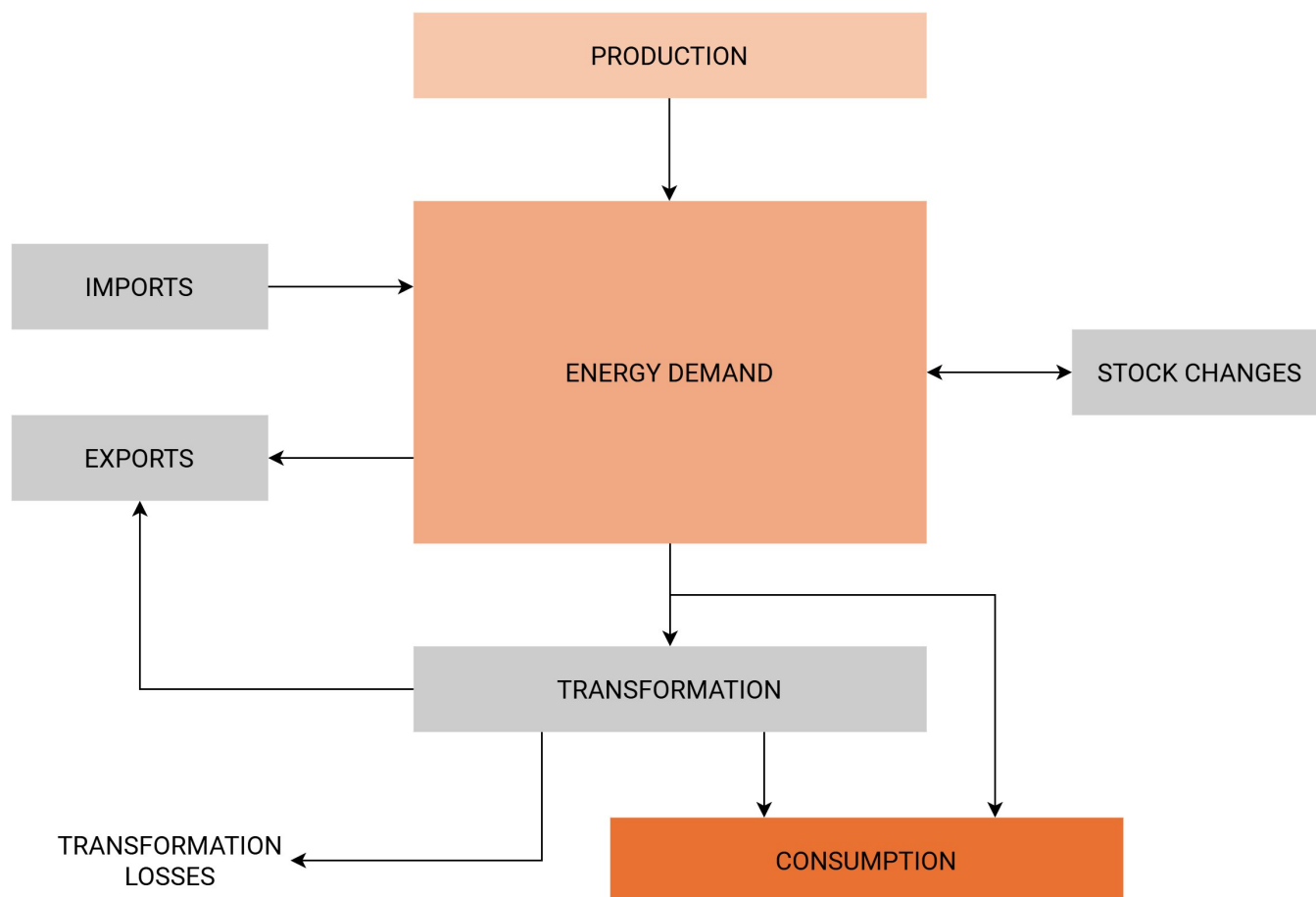


Figure 12 Energy Flows

- \* Production: Extraction or generation of energy from fossil, nuclear, or renewable sources.
- \* Imports and Exports: Quantities crossing national borders, reported by official trade statistics.
- \* Stock Changes: Difference between closing and opening inventories.
- \* Demand: Total energy needed by end users, accounting for production, trade, and stock changes.
- \* Transformation: Conversion of primary energy sources into secondary products (e.g., refining crude oil into gasoline, generating electricity from gas).
- \* Oil Products Domestic Supply: Availability of refined petroleum products, based on demand and transformation from crude and other inputs.
- \* Consumption: Energy directly used by end-users (industrial, residential, transport, etc.).

## Energy Balance Modeling

Most of Intratec’s energy balances are built using the core inputs and equations outlined below. Input data are those that are directly gathered from public sources, while the others are calculated or estimated. All data are modeled in energy units, ensuring consistency across energy types.

For each energy commodity – including coal, natural gas, oil, biofuels, and oil products (such as gasoline, diesel, fuel oil, and LPG) – Intratec builds and solves a system of linear equations based on physical energy flows. This system is structured around the fundamental balance identity:

- \* *Imports = often reported directly by public sources*
- \* *Exports = often reported directly by public sources*
- \* *Net Trade = Imports - Exports*
- \* *Production = often reported directly by public sources*
- \* *Stock Changes = often reported directly by public sources*
- \* *Demand = Production + Imports - Exports - Stock Changes*
- \* *Energy Transformation = often reported directly by public sources*
- \* *Consumption = Demand + Energy Transformation*

For each of the 33 countries modeled, the set of eight equations is defined per energy source. These systems are solved using numerical algorithms optimized for linear equation systems, ensuring that all outputs comply with energy conservation principles and are internally consistent across the full energy matrix.

In the case of oil products, Domestic Supply is calculated by adding final consumption to the portion of oil products used for electricity generation.

When specific input data are unavailable, Intratec applies one of two estimation methods:

- (i) Rearranging the energy balance equation to calculate the missing value from known variables, ensuring the balance remains consistent; or
- (ii) Applying mathematical models, as described in the “*When Raw Data are Insufficient*” section. Some of the models used are:
  - a. Seasonalizing annual/quarterly input using another related monthly input
  - b. Using the monthly variation of another series as an index to estimate missing points

- c. Using regression-based formulas tied to related assessments

This energy balance framework ensures a coherent representation of national energy systems, supporting both internal data validation and cross-market comparability.

## Analytical Metrics

In addition to energy balances, Intratec reports provide market indicators and analytical metrics to enrich market understanding.

- \* **Trade Partners:** Key partners involved in country energy imports and exports, focusing on major commodity categories such as Oil, Oil Products, Natural Gas, and Coal in the last four years.
- \* **Energy Self-Sufficiency:** Ratio of domestic production to total demand, indicating the degree of reliance on imports.
- \* **Trade Dependencies:** Analysis of key import and export partners, including the GDP share linked to energy trade.

### Understanding Terms used in Market Modeling

Intratec provides a glossary for key terms used throughout this methodology, available at:

- ▶ [https://cdn.intratec.us/\\_nt/docs/methodologies/intratec-glossary.pdf](https://cdn.intratec.us/_nt/docs/methodologies/intratec-glossary.pdf).

# Freight and Insurance Modeling

Transportation costs play a crucial role in energy markets, shaping the final price of commodities and influencing the competitiveness of suppliers across regions. Thus, Intratec examines the key cost components of shipping energy commodities, including sea freight rates, insurance costs, and their impact on market pricing.

## Freight

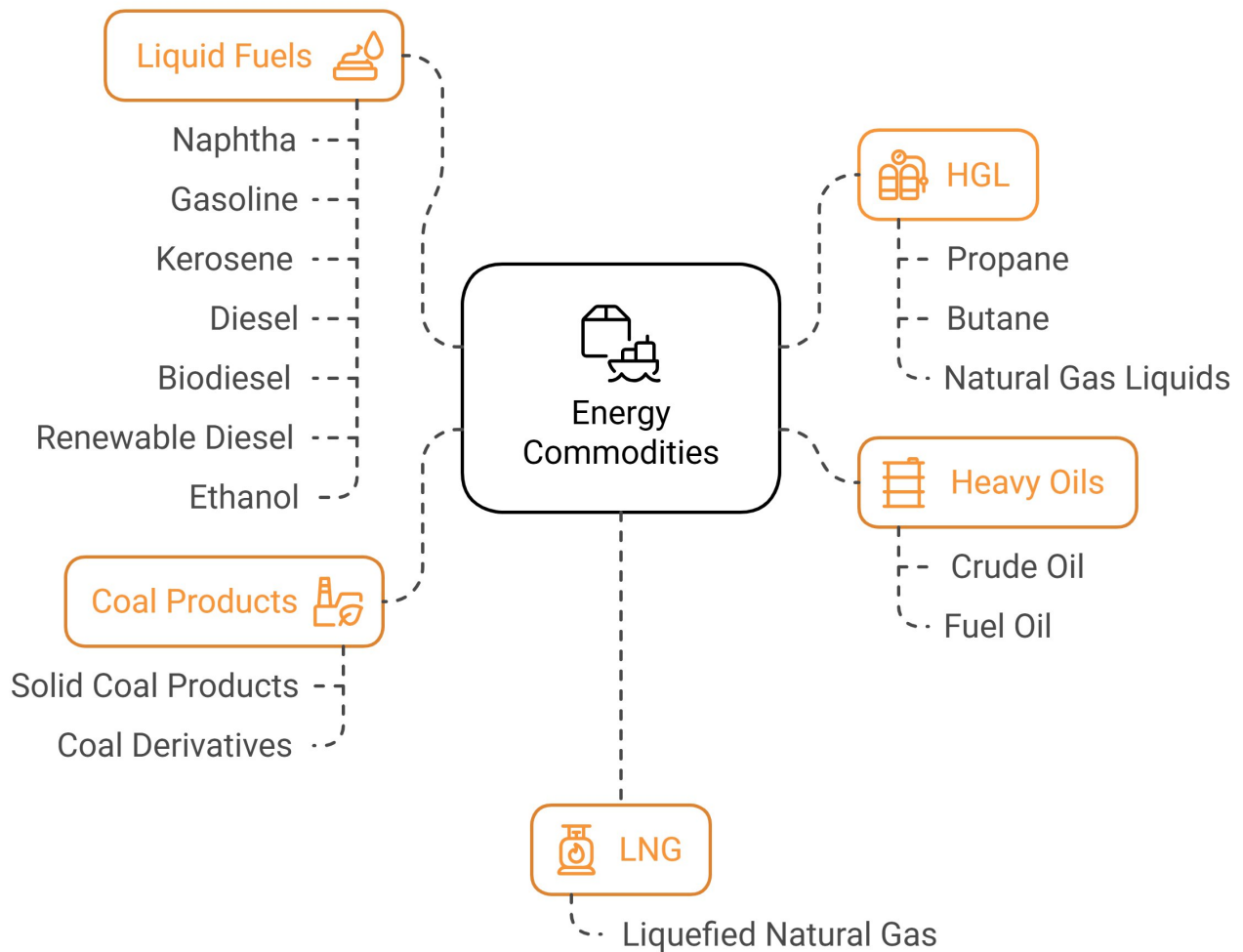


Figure 13 Energy Commodities Freight Categories

Maritime freight rates represent the cost of shipping energy commodities along various international trade routes by sea. For landlocked countries, the maritime freight figures presented refer to the port in a nearby country through which the goods are typically brought or shipped by sea. The freight figures cover maritime transportation only and do not include the cost of transportation between the port and country.

Since similar vessel classes are often used to transport different energy commodities, these fuels are categorized based on their physical and chemical properties, which influence their handling, storage, and shipping requirements. Proper categorization ensures compatibility with specific freight types, such as tankers for liquids or bulk carriers for solids. The categories include Heavy Oils, Light Fuels, Hydrocarbon Gas Liquids (HGL), Liquefied Natural Gas (LNG), and Coal Products, as presented in Figure 13.

Intratec freight assessments can also be divided into two types: compiled and estimated freights, according to how they are modeled.

## Compiled Freights

Compiled freight assessments refer to prominent global trade routes, where the volume and transparency of trade allow raw data to closely reflect actual freight activity between countries. These assessments are modeled using freight data gathered from public sources, typically comprising a series of freight rates (e.g., cost per unit quantity) collected over a month.

The raw public data first undergo a formatting step to align with the Intratec system. Once integrated, the data are subjected to statistical validation to detect and remove anomalies or outliers. Following this cleaning process, compiled freights are usually calculated as a monthly average of the closing values from daily or weekly published freight rates. The resulting price series is then sent to the normalization step.

## Estimated Freights

Freight values for less prominent trade routes – where direct data is limited – are estimated. In such cases, Intratec uses compiled freights from comparable routes as a reference and adjusts the values proportionally based on differences in route distances and times.

## Freight Forecasts

Freight forecasts are vital for energy sector stakeholders, enabling well-informed decisions in logistics planning, cost management, and strategic development. Reliable projections provide key insights into future freight market dynamics, supporting long-term planning and reducing exposure to transport cost fluctuations.

In Energy Prices & Markets, Intratec provides short-term forecasts for selected freight assessments. These forecasts are based on mathematical models that incorporate projected data such as: (i) freight costs for related routes, (ii) prices of relevant commodities (e.g., fuels), and (iii) economic indicators. Each forecast reflects Intratec's view of the most likely scenario over the next six months, as of the latest update.

## Insurance

Insurance is a critical component of energy trade, providing coverage for risks associated with cargo transport and protecting shipments against potential losses. Insurance costs are calculated as a percentage of the CFR (Cost and Freight) price, varying by commodity.

The percentage for each commodity insurance comes from international trade information reported by countries for each traded good. Intratec gathers these data and transforms them to store all the information needed to estimate the insurance costs. The percentage is obtained as the average of selected data according to a criterion of data homogeneity, minimum volume, and gross outlier removal.

## In the Absence of Timely Data

Due to confidentiality or the time required for processing, official foreign trade statistics are often published with a delay of one to two months. In such cases, when data is insufficient, inadequate, or unavailable, Intratec provides preliminary assessments. To ensure quality, analysts meticulously collect and verify all supporting data and apply suitable mathematical models. In all publications, preliminary values are clearly marked with (P) to distinguish them from consolidated data.

Finally, freight and insurance assessments are directed to *Normalization* and published in accordance with the "*Information Publication*" procedures.

# Global Prices Comparison

Unlike prices, market, and freight and insurance, no data is directly gathered to make global prices comparisons by Intratec. They are result of price and consumption assessments previously obtained. As explained below, the modeling of commodity ranking assessments depends on price assessments, while average energy prices consist of an average of the same assessments, but weighted using energy consumption assessments. After modeling, the series are normalized and published according to “*Information Publication*” procedures.

## Commodity Rankings

Intratec provides a monthly price ranking of countries involving specific commodities: natural gas, electricity, gasoline, diesel, fuel oil, and naphtha. The rankings are obtained by selecting a given commodity assessment for each country covered. Assessments considered for each country and commodity can be found in *Country Specific Assessments Guides*; available at:

► [https://cdn.intratec.us/\\_nt/docs/methodologies/iep-methodologies-index.pdf](https://cdn.intratec.us/_nt/docs/methodologies/iep-methodologies-index.pdf).

## Average Energy Price

The country average energy price can be interpreted as the representative unit cost of energy (in USD/MMBtu, for example) across the economy. This figure serves as a proxy for national energy affordability, industrial competitiveness, and market efficiency. A lower average price may indicate better access to domestic resources, more efficient energy infrastructure, or favorable policy environments. Conversely, a higher average price may reflect import dependency, regulatory burdens, or underdeveloped infrastructure.

This metric should not be viewed as the actual price paid by any one consumer or sector but rather as a synthetic indicator – comparable to GDP per capita in economics – designed to enable cross-country comparisons and macroeconomic energy analyses.

This index is useful for:

\* Market Benchmarking & Competitiveness Analysis

- \* Policy and Investment Decision-Making
- \* Risk and Exposure Assessment
- \* Macroeconomic and Trade Studies

Intratec's country-level energy price averages are built using a methodology that prioritizes accuracy and comparability. The average energy price provided represents a comprehensive indicator of the typical cost of energy in each country, calculated through a consumption-weighted average of the most relevant energy price assessments available for that country. This metric is essential for understanding the economic and competitive landscape of energy markets across different regions.

To ensure methodological transparency, Intratec publishes detailed *Country Specific Assessments Guides*, which list the specific energy price assessments included for each country and provide documentation on the underlying data sources and weighting procedures. This allows users to understand how each country's average is constructed and to replicate or adjust the methodology as needed for internal use. Assessment guides are available at:

► [https://cdn.intratec.us/\\_nt/docs/methodologies/iep-methodologies-index.pdf](https://cdn.intratec.us/_nt/docs/methodologies/iep-methodologies-index.pdf).

# Disclaimers

## Assessment Addition, Retirement, and Changes

The energy market is constantly changing, and Intratec is concerned about this, in such a way that it can make changes to the coverage of its products by initiating, terminating, or changing assessments.

Intratec may add new assessments to its products in contexts where there is emerging demand for data on specific assessments, shifts in market dynamics, or gaps in current coverage that need to be addressed. This can occur due to new assessments gaining importance, customer feedback for additional data points or new commodity assessments, industry trends, and periodic internal reviews.

In the event of a prolonged shortage of data that meets our requirements for an assessment, the Intratec team adopts one of the following approaches to correct this issue: (i) use of a model based on good previous and/or related price data, (ii) change of data source while maintaining the commodity specification, (iii) alteration of the assessment specification. If the lack of data persists, Intratec reserves the right to discontinue the assessment following our commitment to the quality of our products.

Intratec may make changes to its assessments in several scenarios. One key reason for adjustments is changes in market dynamics identified by regular internal reviews, which results in changes and improvements in the assessment models. New regulations or standards imposed by industry bodies or governmental agencies also may prompt updates to the price assessments, particularly specifications.

## Data Corrections

Intratec is committed to accurately presenting reliable and representative data; thus, occasionally, published data might be reviewed. The correction process includes errors caused by clerical and typographical mistakes, calculation errors, technical glitches, or methodology misapplication. Also, data corrections involve retroactively adjusting assessments when new information becomes available or a mathematical model enhancement occurs.

### Check Reviewed Data

Whenever such data reviews are made, they are communicated in the “Release Notes,” at <https://medium.com/intratec-release-notes>.

## Ethics and Compliance

At Intratec, we uphold the highest standards of ethics and compliance in all aspects of our operations. We recognize the paramount importance of maintaining integrity, transparency, and independence in our practices, ensuring trust and reliability.

Independence and impartiality are central to Intratec and what we do. Intratec has no vested interest in the price of the commodities on which we report; our goal is to reflect the actual market landscape.

Aligned with industry best practices, all Intratec employees are required to confirm annually the absence of any personal relationships or financial interests that could influence or even be perceived as influencing their ability to perform their duties as objective, impartial, and effective individuals.

### Legal Information

For detailed legal information regarding [www.intratec.us](http://www.intratec.us) and Intratec products and services, the reader can refer to <https://cdn.intratec.us/docs/legal/index.pdf>.

## Methodology References

Intratec has built its knowledge based on the most relevant textbooks, encyclopedias, and technical papers related to the prices and markets of energy commodities. Such expertise has established a large foundation that enriches all Intratec products, in a way that the reader can expect the most trustworthy information. The methodology references reflect this foundation of bibliographical data, used in the development of Intratec Energy Prices & Markets, particularly in the elaboration of the methodology.

- [M1] Atkinson, A. C. et al.. 2017. Robust Bayesian Regression with the Forward Search: Theory and Data Analysis. *Test*, vol. 26, pp. 869–886.
- [M2] International Energy Agency. 2004. *Energy Statistics Manual*. IEA, Paris
- [M3] International Monetary Fund. 2009. *Balance of Payments and International Investment Position Manual (6th ed.)*
- [M4] International Monetary Fund. 2009. *Export and Import Price Index Manual*. Organisation for Economic Co-Operation and Develop.
- [M5] Mankiw, G.. 2020. *Principles of Economics (9th ed.)*. Cengage
- [M6] Miao, G.; Wegner, E.. 2022. Using Unit Value Indices as Proxies for International Merchandise Trade Prices. SDD Working Paper No. 111. OECD, Paris.
- [M7] Perrotta, D. et al.. 2020. The Robust Estimation of Monthly Prices of Goods Traded by the European Union. EUR 30188 EN. Publications Office of the European Union. Luxembourg. ISBN 978-92-76-18351-8. doi:10.2760/635844. JRC120407.
- [M8] Riani, M. et al.. 2018. The Use of Prior Information in Very Robust Regression for Fraud Detection. *International Statistical Review*, vol. 86(2), pp. 205-218.
- [M9] Rais, S.. 2008. Outlier Detection for the Consumer Price Index. In *Proceedings of the Survey Methods Section: Statistical Society of Canada Annual Meeting*, vol. 110.
- [M10] Schofield, N. C.. 2021. *Commodity Derivatives: Markets and Applications (2nd ed.)*. John Wiley & Sons.
- [M11] Spyros A. et al.. 2015. The Estimation of Fair Prices of Traded Goods from Outlier-free Trade Data. EUR 27696 EN. doi:10.2788/57125.
- [M12] Temere, Dawit Sisay. 2016. Disaggregated international trade prices. *Nationaløkonomisk Tidsskrift*.

[M13] United Nations. 1981. Strategies for Price and Quantity Measurement in External Trade: A Technical Report. Series M, No. 69.

[M14] United Nations. 2018. International Recommendations for Energy Statistics. Series M, No. 93