Platts
S&P Global
Commodity Insights

Methodology and Specifications Guide

Global Hydrogen & Ammonia

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Definitions of the trading locations for which Platts publishes daily indexes or assessments **2**

Regulation Compliant Hydrogen Assessments 3
Carbon Neutral Hydrogen (CNH) Assessments 4
Implied Hydrogen Origin Certificate (h-OC) 6
Ammonia Assessments 7

Low-carbon Ammonia assessments **8**

Market-based assessments 8
Model-based assessments 9
Blue Ammonia Premiums 9
Blue Ammonia Price Assessments 11
Hydrogen Pump Prices 14
Hydrogen Production Cost Valuations 15

Revision history **24**

Definitions of the trading locations for which Platts publishes daily indexes or assessments

The following specifications guide contains the primary specifications for Platts hydrogen and ammonia assessments globally. All the assessments listed here employ Platts Assessments Methodology, as published at https://www.spglobal.com/platts/plattscontent/_assets/_files/en/our-methodology/methodology-specifications/platts-assessments-methodology-guide.pdf .

These guides are designed to give Platts subscribers as much information as possible about a wide range of methodology and specification questions. This guide is current at the time of publication. Platts may issue further updates and enhancements to this guide and will announce these to subscribers through its usual publications of record. Such updates will be included in the next version of this guide. Platts editorial staff and managers are available to provide guidance when assessment issues require clarification.

Daily Regulation Compliant Hydrogen Symbols

Description	Symbol	Bates	MDC	Dec	Freq	Curr	UOM
Spain Alkaline Renewable PPA Derived Hydrogen Eur/kg	SARHE00	c	HY	4	DW	EUR	KG
Spain Alkaline Renewable PPA Derived Hydrogen $/kg	SARDH00	c	HY	4	DW	USD	KG
Spain Alkaline Renewable PPA Derived Hydrogen $/MMBtu	SARPD00	c	HY	4	DW	USD	MMB
Spain Alkaline Renewable PPA Derived Hydrogen Eur/KWh	SAPDH00	c	HY	4	DW	EUR	KWH
Spain Alkaline Renewable PPA Derived Hydrogen Eur/kg MAvg	SARHE03	c	HY	4	MA	EUR	KG
France Alkaline Renewable PPA Derived Hydrogen Eur/kg	FARHE00	c	HY	4	DW	EUR	KG
France Alkaline Renewable PPA Derived Hydrogen $/kg	FARDH00	c	HY	4	DW	USD	KG
France Alkaline Renewable PPA Derived Hydrogen $/MMBtu	FARPD00	c	HY	4	DW	USD	MMB
France Alkaline Renewable PPA Derived Hydrogen Eur/KWh	FAPDH00	c	HY	4	DW	EUR	KWH
France Alkaline Renewable PPA Derived Hydrogen Eur/kg MAvg	FARHE03	c	HY	4	MA	EUR	KG
Germany Alkaline Renewable PPA Derived Hydrogen Eur/kg	GARHE00	c	HY	4	DW	EUR	KG
Germany Alkaline Renewable PPA Derived Hydrogen $/kg	GARDH00	c	HY	4	DW	USD	KG
Germany Alkaline Renewable PPA Derived Hydrogen $/MMBtu	GARPD00	c	HY	4	DW	USD	MMB
Germany Alkaline Renewable PPA Derived Hydrogen Eur/KWh	GRPDH00	c	HY	4	DW	EUR	KWH
Germany Alkaline Renewable PPA Derived Hydrogen Eur/kg MAvg	GARHE03	c	HY	4	MA	EUR	KG
Netherlands Alkaline Renewable PPA Derived Hydrogen Eur/kg	NARHE00	c	HY	4	DW	EUR	KG
Netherlands Alkaline Renewable PPA Derived Hydrogen $/kg	NARDH00	c	HY	4	DW	USD	KG
Netherlands Alkaline Renewable PPA Derived Hydrogen $/MMBtu	NARPD00	c	HY	4	DW	USD	MMB
Netherlands Alkaline Renewable PPA Derived Hydrogen Eur/KWh	NAPDH00	c	HY	4	DW	EUR	KWH
Netherlands Alkaline Renewable PPA Derived Hydrogen Eur/kg MAvg	NARHE03	c	HY	4	MA	EUR	KG

Regulation Compliant Hydrogen Assessments

European Regulation Compliant Hydrogen Assessments

Platts European Regulation Compliant Hydrogen Assessments reflect the market value of hydrogen that aligns with the European Union's Renewable Fuels of Non-Biological Origin (RFNBO) definition and complies with EU Delegated Act C/2023/1087.

The scope of RFNBO includes hydrogen produced via electrolysis from renewable electricity, its derivatives as well as other energy carriers.

For a detailed discussion of the scope of the European Union's RFNBO rules, including detailed rules for sourcing of renewable electricity that is used for the production of RFNBOs and for determining the greenhouse gas emission intensity, see here.

In the absence of market-based information Platts uses a model-based cost of production plus a premium to reflect market value of firm hydrogen supply. When available, market information such as bids, offers, trades and indications will take precedence for assessments.

For the cost of production modelling, the renewable hydrogen producer is assumed to be buying renewable power as part of a "Pay-as-Produced" Power Purchase Agreement. The size of the alkaline electrolyzer is 100 MW, operating above a minimum load of 25%. The production mix is optimized for every country to satisfy monthly requirements before end-2029 and hourly requirements from 2030 onwards. The model allows power exchange through the grid. The model includes specific provision for the cost of hydrogen storage.

Platts assesses the European Regulation Compliant Hydrogen prices for four countries in Eur/kg, Eur/kWh, USD/kg and USD/MMBtu:

Spain Alkaline Renewable PPA Derived Hydrogen

France Alkaline Renewable PPA Derived Hydrogen

Germany Alkaline Renewable PPA Derived Hydrogen

Netherlands Alkaline Renewable PPA Derived Hydrogen

Daily Carbon Neutral Hydrogen Symbols

Description	Symbol	Bates	MDC	Dec	Freq	Curr	UOM
Carbon Neutral Hydrogen Ex Works Australia	HYAUD00	c	HY	2	DW	USD	MMB
Carbon Neutral Hydrogen Ex Works Australia MAvg	HYAUD03	c	HY	2	MA	USD	MMB
Carbon Neutral Hydrogen Ex Works Australia	HYAUC00	c	HY	2	DW	USD	KG
Carbon Neutral Hydrogen Ex Works Australia MAvg	HYAUC03	c	HY	2	MA	USD	KG
Carbon Neutral Hydrogen Ex Works California	HYCAB00	c	HY	2	DW	USD	MMB
Carbon Neutral Hydrogen Ex Works California MAvg	HYCAB03	c	HY	2	MA	USD	MMB
Carbon Neutral Hydrogen Ex Works California	HYCAA00	c	HY	2	DW	USD	KG
Carbon Neutral Hydrogen Ex Works California MAvg	HYCAA03	c	HY	2	MA	USD	KG
Carbon Neutral Hydrogen Ex Works Far East Asia	HYFED00	c	HY	2	DW	USD	MMB
Carbon Neutral Hydrogen Ex Works Far East Asia MAvg	HYFED03	c	HY	2	MA	USD	MMB
Carbon Neutral Hydrogen Ex Works Far East Asia	HYFEC00	c	HY	2	DW	USD	KG
Carbon Neutral Hydrogen Ex Works Far East Asia MAvg	HYFEC03	c	HY	2	MA	USD	KG
Carbon Neutral Hydrogen Ex Works Middle East	HYMEB00	c	HY	2	DW	USD	MMB
Carbon Neutral Hydrogen Ex Works Middle East MAvg	HYMEB03	c	HY	2	MA	USD	MMB
Carbon Neutral Hydrogen Ex Works Middle East	HYMEA00	c	HY	2	DW	USD	KG
Carbon Neutral Hydrogen Ex Works Middle East MAvg	HYMEA03	c	HY	2	MA	USD	KG
Carbon Neutral Hydrogen Ex Works NW Europe	HYNWB00	c	HY	2	DW	EUR	MMB
Carbon Neutral Hydrogen Ex Works NW Europe MAvg	HYNWB03	c	HY	2	MA	EUR	MMB
Carbon Neutral Hydrogen Ex Works NW Europe	HYNWA00	c	HY	2	DW	EUR	KG
Carbon Neutral Hydrogen Ex Works NW Europe MAvg	HYNWA03	c	HY	2	MA	EUR	KG
Carbon Neutral Hydrogen Ex Works US Gulf Coast	HYUSB00	c	HY	2	DW	USD	MMB
Carbon Neutral Hydrogen Ex Works US Gulf Coast MAvg	HYUSB03	c	HY	2	MA	USD	MMB
Carbon Neutral Hydrogen Ex Works US Gulf Coast	HYUSA00	c	HY	2	DW	USD	KG
Carbon Neutral Hydrogen Ex Works US Gulf Coast MAvg	HYUSA03	c	HY	2	MA	USD	KG

Carbon Neutral Hydrogen (CNH) Assessments

Platts Carbon Neutral Hydrogen (CNH) assessments reflect minimum lot sizes of 20,000 kg for prompt delivery the calendar month following the trading date. Daily assessments are published in Euros or US Dollars per kilogram and per million British Thermal Units for hydrogen, 99.99% purity, on an Ex-Works basis. Trades reported for other purities, volumes and terms may be normalized to this basis for assessment purposes. Platts CNH assessments reflect the value of hydrogen as it leaves the production facility.

The prices reflect the market value of hydrogen in which emissions have been, in order of priority: avoided where possible through the use of low emissions generation; removed through the use of carbon capture and storage; and offset through the use of carbon credits or equivalent instruments.

In addition to spot market activity, power-purchase agreements and hydrogen offtake agreements may be considered for assessment purposes, but normalized for terms, periods and other factors.

Platts also considers cost of production factors, which provide baseline inputs in the absence of market activity. These costs incorporate renewable power prices and carbon capture costs with any remaining accounted emissions offset using relevant carbon instruments. Platts accounts for carbon offset costs using Platts CRC, or removals-based carbon credits, which reflect the most competitive carbon credit assessments for projects that remove GHG emissions, as well as California Carbon Allowance and EU Emissions Allowance prices where relevant.

Platts assesses the CNH price at the following six locations:

- Ex Works California reflecting hydrogen delivered at any production facility in California
- Ex Works US Gulf Coast reflecting hydrogen delivered at any production facility in Texas or Louisiana
- Ex Works Northwest Europe reflecting hydrogen delivered at any production facility in the Netherlands
- Ex Works Middle East reflecting hydrogen delivered at any production facility in Saudi Arabia
- Ex Works Far East Asia reflecting hydrogen delivered at any production facility in Japan
- Ex Works Australia reflecting hydrogen delivered at any production facility in West Australia

Reported deals from other locations may be considered and normalized.

Daily H-OC Symbols

Description	Symbol	Bates	MDC	Dec	Freq	Curr	UOM
Implied Hydrogen Origin Certificate California $/MWh	HYIHB00	c	HY	2	DW	USD	MGW
Implied Hydrogen Origin Certificate California $/MWh MAvg	HYIHB03	c	HY	2	MA	USD	MGW
Implied Hydrogen Origin Certificate California $/kg	HYIMB00	c	HY	2	DW	USD	KG
Implied Hydrogen Origin Certificate California $/kg MAvg	HYIMB03	c	HY	2	MA	USD	KG
Implied Hydrogen Origin Certificate Northwest Europe Eur/MWh	HYIHA00	c	HY	2	DW	EUR	MGW
Implied Hydrogen Origin Certificate Northwest Europe Eur/MWh MAvg	HYIHA03	c	HY	2	MA	EUR	MGW
Implied Hydrogen Origin Certificate Northwest Europe Eur/kg	HYIMA00	c	HY	2	DW	EUR	KG
Implied Hydrogen Origin Certificate Northwest Europe Eur/kg MAvg	HYIMA03	c	HY	2	MA	EUR	KG
Implied Hydrogen Origin Certificate USGC $/MWh	HYIHC00	c	HY	2	DW	USD	MGW
Implied Hydrogen Origin Certificate USGC $/MWh MAvg	HYIHC03	c	HY	2	MA	USD	MGW
Implied Hydrogen Origin Certificate USGC $/kg	HYIMC00	c	HY	2	DW	USD	KG
Implied Hydrogen Origin Certificate USGC $/kg MAvg	HYIMC03	c	HY	2	MA	USD	KG

Implied Hydrogen Origin Certificate (h-OC)

Implied Hydrogen Origin Certificates (h-OC) represents a premium for hydrogen derived from carbon-neutral production pathways. The implied prices are calculated as the difference between the cost of production of hydrogen produced via steam methane reforming without carbon capture and sequestration, and carbon-neutral hydrogen produced via proton exchange membrane electrolysis.

The implied h-OC premium may consider added costs of decarbonization, including renewable energy certificates, guarantee of origin and carbon offsets where applicable. One h-OC certificate will represent the premium of using 1 MWh of energy from hydrogen produced using carbon-neutral sources.

Pricing locations: h-OC considers the implied premium for carbon neutral hydrogen in three locations: Northwest Europe, the US Gulf Coast and California. In Northwest Europe, h-OC will be based on production costs in the Netherlands. In the US Gulf Coast, h-OC will consider production pathways in Texas and Louisiana.

Units: Platts assesses implied h-OC price in Euros per megawatt hour and Euros per kilogram in Europe and US dollars per megawatt hour and US dollars per kilogram in the US.

Assessment window: Daily assessment basis CFR Northwest Europe would be based on latest information sourced from the market up to the close of the assessment window at 4:30 pm London time. Daily premium assessments for the USGC would be based on latest information sourced from the market up to the close of the assessment window at 1:30 pm Houston time.

Timing: H-OC implied values will be reflected on a spot basis for the calendar month following the trading date.

Ammonia Symbols

Description	Symbol	Bates	MDC	MI MDC	Dec	Freq	Curr	UOM
Ammonia CFR Far East Asia $/MMBtu	AMMOB00	c	AMO	ETR	2	DW	USD	MMB
Ammonia CFR Far East Asia $/MMBtu MAvg	AMMOB03	c	AMO	ETR	2	MA	USD	MMB
Ammonia CFR Far East Asia $/mt	AMMOA00	c	AMO	ETR	2	DW	USD	MT
Ammonia CFR Far East Asia $/mt MAvg	AMMOA03	c	AMO	ETR	2	MA	USD	MT
Ammonia CFR Northwest Europe $/MMBtu	AMMOD00	c	AMO	ETR	2	DW	USD	MMB
Ammonia CFR Northwest Europe $/MMBtu MAvg	AMMOD03	c	AMO	ETR	2	MA	USD	MMB
Ammonia CFR Northwest Europe $/mt	AMMOC00	c	AMO	ETR	2	DW	USD	MT
Ammonia CFR Northwest Europe $/mt MAvg	AMMOC03	c	AMO	ETR	2	MA	USD	MT
Ammonia CFR USGC $/MMBtu	AMMOF00	c	AMO	ETR	2	DW	USD	MMB
Ammonia CFR USGC $/MMBtu MAvg	AMMOF03	c	AMO	ETR	2	MA	USD	MMB
Ammonia CFR USGC $/mt	AMMOE00	c	AMO	ETR	2	DW	USD	MT
Ammonia CFR USGC $/mt MAvg	AMMOE03	c	AMO	ETR	2	MA	USD	MT
Ammonia FOB Black Sea $/MMBTu	AMMOH00	c	AMO	ETR	2	DW	USD	MMB
Ammonia FOB Black Sea $/MMBTu MAvg	AMMOH03	c	AMO	ETR	2	MA	USD	MMB
Ammonia FOB Black Sea $/mt	AMMOG00	c	AMO	ETR	2	DW	USD	MT
Ammonia FOB Black Sea $/mt MAvg	AMMOG03	c	AMO	ETR	2	MA	USD	MT
Ammonia FOB Middle East $/MMBtu	AMMOJ00	c	AMO	ETR	2	DW	USD	MMB
Ammonia FOB Middle East $/MMBtu MAvg	AMMOJ03	c	AMO	ETR	2	MA	USD	MMB
Ammonia FOB Middle East $/mt	AMMOI00	c	AMO	ETR	2	DW	USD	MT
Ammonia FOB Middle East $/mt MAvg	AMMOI03	c	AMO	ETR	2	MA	USD	MT

Ammonia Assessments

Pricing Locations: Platts publishes ammonia assessments for CFR Far East Asia, FOB Middle East, CFR Northwest Europe, FOB Black Sea, and CFR US Gulf Coast.

The underlying specifications for these assessments can be found in the Fertecon Specifications Guide.

Low-Carbon Ammonia Symbols

Description	Symbol	Bates	MDC	MI MDC	Dec	Freq	Curr	UOM
Market-based assessments								
Japan/Korea Ammonia Price (JKAP) CFR spot $/mt	AJKCA00	c	AMO	ETR	2	DW	USD	MT
Japan/Korea Ammonia Price (JKAP) CFR spot $/MMBtu	AJKCB00	c	AMO	ETR	2	DW	USD	MMB
Japan Low Carbon Ammonia - Carbon Intensity Escalator USD/gCO2e/MJ	ADEKB00	c	AMO	ETR	4	DW	USD	gCO2e/MJ
Korea Low Carbon Ammonia - Carbon Intensity Escalator USD/gCO2e/MJ	ADEKA00	c	AMO	ETR	4	DW	USD	gCO2e/MJ

Low-carbon Ammonia assessments

Market-based assessments

Japan-Korea Low-carbon ammonia price assessment (JKAP)

For details on the Japan-Korea low-carbon ammonia price, please refer to the Fertecon methodology guide: Specifications Guide Fertecon

Carbon Intensity escalator

The Carbon Intensity (CI) escalator represents the price per gram of carbon saved in importing 1 Megajoule of low-carbon ammonia.

The CI escalators can be used to normalize bids/offers/trades of low carbon ammonia into Korea and Japan, with a carbon intensity below the JKAP threshold of 40gCO2e/MJ. The Japan and Korea CI escalators are published in USD/gCO2e/MJ.

For low-carbon ammonia cargoes bid/offered/traded into Korea the escalator will use daily values as published by Platts for Korea Allowance Units (KAUs). Cargoes bid/offered/traded into Japan will use the Japanese Carbon tax as per the official Japanese regulation.

Model-based assessments

Renewable power derived Ammonia assessments

Renewable power derived ammonia is often referred to as 'green ammonia'.

Pricing Locations: Platts publishes renewable power-based ammonia prices. The prices represent delivery into:

- Far East Asia on CFR basis originating from the Middle East, Australia and West Coast (WC) of Canada
- Northwest Europe on CFR basis originating from the Middle East, US Gulf Coast and East Coast (EC) of Canada.

Assessment window: Weekly assessments basis CFR Far East Asia and CFR Northwest Europe are based on latest information sourced from the market up to the close of the assessment window at 4:30 pm London time.

Timing: Weekly assessments for CFR Far East Asia and CFR Northwest Europe are for parcels to be delivered 15-45 days forward from the date of publication.

Basis and locations:

- **CFR Far East Asia:** Major ports that can accommodate ammonia cargoes in China, Japan, South Korea, and Taiwan
- **CFR Northwest Europe:** Major ports that can accommodate ammonia cargoes in Belgium, Germany, the Netherlands, and northern France

Platts assessments represent duty-free cargoes. Cargoes incurring any duty may be normalized as part of the assessment process.

Cargo Size:

- **CFR Far East Asia:** 20,000-40,000 mt
- **CFR Northwest Europe:** 20,000-25,000 mt.

Platts may use information with different cargo sizes after normalization.

Units: Platts assesses renewable power derived ammonia in US dollars per metric ton and US dollars per MMBtu.

Credit terms: Assessments are cash prices, net of any credit. Platts may use information with longer credit terms after normalization.

Quality specifications: Minimum purity of 99.5% of anhydrous ammonia by weight, a maximum water content of 0.5% by weight, and a maximum oil content of 10 ppm by weight.

Further Assumptions: The Platts renewable power derived ammonia valuations are published to two decimal places. In the absence of spot market activity, 'green' ammonia prices would consider the cost of production of ammonia using an alkaline electrolyzer and renewable electricity, adding freight cost to calculate CFR price for Far East Asia and Northwest Europe.

Representative electricity costs for the relevant region are taken from S&P Global Commodity Insight's Levelized Cost of Electricity (LCOE) to match the duration of the electrolyzer and ammonia plant, where the average cost of onshore wind and solar photovoltaic underpins the cost of ammonia production calculation.

How the Cost of Production is produced can be found below:

Origination	Delivery	Cost of Production (Calculated using renewable electricity prices)	Cost of Freight of transporting ammonia
Australia	Far East	Australia	From Western Australia to Japan
Middle East	Far East	Saudi Arabia	From Saudi Arabia to Japan
Middle East	Northwest Europe	Saudi Arabia	Cost of freight transporting ammonia from Saudi Arabia to the Netherlands
West Coast Canada	Far East	Canada	Cost of freight of transporting ammonia from the West Coast of Canada to Japan
US Gulf Coast	Northwest Europe	Texas	Cost of freight of transporting ammonia from Texas to the Netherlands
East Coast Canada	Northwest Europe	Canada	Cost of freight of transporting ammonia from the East Coast of Canada to the Netherlands

The feedstock water cost is constant for all regions. The operational parameters for alkaline electrolysis across all hubs are identical and include electrolyzer efficiency of 60%. The ammonia plant capacity across locations is assumed to be 500,000 mt per year at a high-capacity capacity factor of 90%. The capital cost of alkaline electrolyzers for all origin regions is given in the tables below.

Blue Ammonia Premiums

Pricing Locations: Platts publishes Blue Ammonia Premiums for CFR Far East Asia, FOB Middle East, CFR Northwest Europe, and the US Gulf Coast.

Assessment window: Daily assessments basis CFR Far East Asia, FOB Middle East, CFR Northwest Europe are based on latest information sourced from the market up to the close of the assessment window at 4.30 pm London time. Daily assessment basis CFR US Gulf Coast is based on latest

information sourced from the market up to the close of the assessment window at 4:30 pm Sao Paolo time.

Timing: Daily assessments for all locations for parcels to be delivered 1-6 weeks forward from the date of publication.

Basis and locations:

- **CFR Far East Asia:** Ammonia-importing ports/terminals in China, Indonesia, Japan, South Korea, Malaysia, Philippines, Taiwan, Thailand, Singapore and Vietnam
- **CFR Northwest Europe:** Ammonia-importing ports/terminals in Belgium, Finland, France, Germany, Netherlands, Norway, Sweden and the United Kingdom
- **CFR USGC:** Ammonia-importing ports/terminals in the US Gulf states of Texas, Louisiana and Mississippi
- **FOB Middle East:** Ammonia-exporting ports/terminals in Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates

For all regions, other locations may be used when reflective of the market and normalized. For the European market, Platts assessments represent duty-free and duty paid cargoes. Cargoes incurring any duty may be normalized as part of the European assessment process.

Cargo Size:

- **CFR Far East Asia:** 6,000-15,000 mt
- **CFR Northwest Europe:** 10,000-25,000 mt
- **CFR USGC:** 10,000-25,000 mt
- **FOB Middle East:** 10,000-25,000 mt

Platts may use information with different cargo sizes after normalization.

Units: Platts assesses ammonia in US dollars per metric ton and US dollars per MMBtu.

Credit terms: Assessments are cash prices, net of any credit. Platts may use information with longer credit terms after normalization.

Quality specifications: Minimum purity of 99.5% of anhydrous ammonia by weight, a maximum water content of 0.5% by weight, and a maximum oil content of 10 ppm by weight.

Further Assumptions: The Platts ammonia valuations are published to two decimal places.

In the absence of spot market activity, the Blue Ammonia premiums considers the difference in cost of production pathways between ammonia with and without carbon capture and sequestration (CCS). For the Far East Blue Ammonia premium, this calculation considers the difference in cost of production pathways between ammonia with and without CCS in the Middle East. For the Middle East, this premium considers the difference in cost of production pathways between ammonia with and without CCS in Saudi Arabia. For Northwest Europe, this premium considers the difference in cost of production pathways between ammonia with and without CCS in the Netherlands. For the US, this premium considers the difference in cost of production pathways between ammonia with and without CCS in in the US Gulf Coast area (Texas and Louisiana).

The calculations for the spread between ammonia produced from fossil fuels with and without CCS include the following parameters based on industry research by the S&P Global Commodity Insights Analytics team:

Operational parameters for ammonia without CCS include plant energy usage of 32.71 gigajoule per produced metric ton of ammonia, while for a facility with CCS this is 35.09 gigajoule per produced metric ton of ammonia.

Capital expenses (capex) for ammonia production without CCS are valued at $1,179 per metric ton of design capacity for Northwest Europe (Netherlands), $1,252/mt for the US (Texas and Louisiana), and at $848/mt for the Middle East (Saudi Arabia). For ammonia production with CCS, capex is valued at $1,283/mt for Northwest Europe (Netherlands), $1,362/mt for the US (Texas and Louisiana), and at $910/mt for the Middle East (Saudi Arabia).

Platts also utilizes the following assumptions:

- **Carbon Capture Rate for pathway with CCS:** 90%
- **Plant Lifespan:** 40 years
- **Daily Production Capacity:** 3,225 mt/day
- **Operating Factor:** 85%

Costs associated related to the storage, transportation, and sequestration of the carbons that occur after the gate of production facility are not included.

For capital expenses, the Platts ammonia cost valuations use a levelized fixed charge rate, which is the product of a capital recovery factor and a project finance factor, in line with those used for hydrogen cost evaluations. Details on the specifics can be found under the header “Further Assumptions.”

The feedstock inputs consist of a fixed water price as well as the natural gas prices, and the on- and off-peak electricity assessments most geographically relevant. A table of daily variable inputs for ammonia can be found below.

Assessment Region	Location	With/ Without CCS	Energy Usage	Capital Expenses
Far East	Middle East	With CCS	35.09 gigajoule per produced metric ton of ammonia	$910/mt
Far East	Middle East	Without CCS	32.71 gigajoule per produced metric ton of ammonia	$848/mt
Middle East	Saudi Arabia	With CCS	35.09 gigajoule per produced metric ton of ammonia	$910/mt
Middle East	Saudi Arabia	Without CCS	32.71 gigajoule per produced metric ton of ammonia	$848/mt
Northwest Europe	Netherlands	With CCS	35.09 gigajoule per produced metric ton of ammonia	$1,283/mt
Northwest Europe	Netherlands	Without CCS	32.71 gigajoule per produced metric ton of ammonia	$1,179/mt
US Gulf Coast	Texas and Louisiana	With CCS	35.09 gigajoule per produced metric ton of ammonia	$1,362/mt
US Gulf Coast	Texas and Louisiana	Without CCS	32.71 gigajoule per produced metric ton of ammonia	$1,252/mt

Blue Ammonia Price Assessments

Pricing Locations: Platts publishes Blue Ammonia Price Assessments for CFR Far East Asia, FOB Middle East, and CFR Northwest Europe.

Assessment window: Daily assessments basis for all locations are based on latest information sourced from the market up to the close of the assessment window at 4.30 pm London time.

Timing: Daily assessments for all locations for parcels to be delivered 1-6 weeks forward from the date of publication.

Basis and locations:

- **CFR Far East Asia:** Ammonia-importing ports/terminals in China, Indonesia, Japan, South Korea, Malaysia, Philippines, Taiwan, Thailand, Singapore and Vietnam
- **CFR Northwest Europe:** Ammonia-importing ports/terminals in Belgium, Finland, France, Germany, Netherlands, Norway, Sweden and the United Kingdom
- **CFR USGC:** Ammonia-importing ports/terminals in the US Gulf states of Texas, Louisiana and Mississippi
- **FOB Middle East:** Ammonia-exporting ports/terminals in Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates

For all regions, other locations may be used when reflective of the market and normalized. For the European market, Platts assessments represent duty-free and duty paid cargoes. Cargoes incurring any duty may be normalized as part of the European assessment process.

Cargo Size:

- **CFR Far East Asia:** 6,000-15,000 mt
- **CFR Northwest Europe:** 10,000-25,000 mt
- **CFR USGC:** 10,000-25,000 mt
- **FOB Middle East:** 10,000-25,000 mt

Platts may use information with different cargo sizes after normalization.

Units: Platts assesses ammonia in US dollars per metric ton and US dollars per MMBtu.

Credit terms: Assessments are cash prices, net of any credit. Platts may use information with longer credit terms after normalization.

Quality specifications: Minimum purity of 99.5% of anhydrous ammonia by weight, a maximum water content of 0.5% by weight, and a maximum oil content of 10 ppm by weight.

Further Assumptions: The Platts ammonia valuations are published to two decimal places.

In the absence of spot market activity, the Blue Ammonia price assessments are calculated by adding the Platts Blue Ammonia Premiums to the Platts price assessments for conventional ammonia (“grey”). For the Middle East, the Blue Ammonia Premium for FOB Middle East is added to the conventional Platts FOB Middle East ammonia price for the same day. For the Far East, the Blue Ammonia Premium for FOB Middle East is added to the conventional Platts CFR Far East Asia ammonia price for the same day. For Northwest Europe, the Blue Ammonia Premium for CFR Northwest Europe is added to the conventional Platts CFR Northwest Europe ammonia price for the same day.

Low-Carbon Ammonia Symbols

Description	Symbol	Bates	MDC	MI MDC	Dec	Freq	Curr	UOM
Model-based assessments								
Australia Renewable derived Ammonia dlvd into Far East Asia - High CF $/MMBtu Wkly	GADAA04	c	AMO	ETR	2	WA	USD	MMB
Australia Renewable derived Ammonia dlvd into Far East Asia - High CF $/MMBtu MAvg	GADAA03	c	AMO	ETR	2	MA	USD	MMB
Australia Renewable derived Ammonia dlvd into Far East Asia - High CF $/mt Wkly	GADAB04	c	AMO	ETR	2	WA	USD	MT
Australia Renewable derived Ammonia dlvd into Far East Asia - High CF $/mt MAvg	GADAB03	c	AMO	ETR	2	MA	USD	MT
WC Canada Renewable derived Ammonia dlvd into Far East Asia - High CF $/MMBtu Wkly	GADAC04	c	AMO	ETR	2	WA	USD	MMB
WC Canada Renewable derived Ammonia dlvd into Far East Asia - High CF $/MMBtu MAvg	GADAC03	c	AMO	ETR	2	MA	USD	MMB
WC Canada Renewable derived Ammonia dlvd into Far East Asia - High CF $/mt Wkly	GADAD04	c	AMO	ETR	2	WA	USD	MT
WC Canada Renewable derived Ammonia dlvd into Far East Asia - High CF $/mt Mavg	GADAD03	c	AMO	ETR	2	MA	USD	MT
Middle East Renewable derived Ammonia dlvd into Far East Asia - High CF $/MMBtu Wkly	GADAG04	c	AMO	ETR	2	WA	USD	MMB
Middle East Renewable derived Ammonia dlvd into Far East Asia - High CF $/MMBtu MAvg	GADAG03	c	AMO	ETR	2	MA	USD	MMB
Middle East Renewable derived Ammonia dlvd into Far East Asia - High CF $/mt Wkly	GADAH04	c	AMO	ETR	2	WA	USD	MT
Middle East Renewable derived Ammonia dlvd into Far East Asia - High CF $/mt MAvg	GADAH03	c	AMO	ETR	2	MA	USD	MT
Middle East Renewable derived Ammonia dlvd into Northwest Europe - High CF $/MMBtu Wkly	GADAE04	c	AMO	ETR	2	WA	USD	MMB
Middle East Renewable derived Ammonia dlvd into Northwest Europe - High CF $/MMBtu MAvg	GADAE03	c	AMO	ETR	2	MA	USD	MMB
Middle East Renewable derived Ammonia dlvd into Northwest Europe - High CF $/mt Wkly	GADAF04	c	AMO	ETR	2	WA	USD	MT
Middle East Renewable derived Ammonia dlvd into Northwest Europe - High CF $/mt MAvg	GADAF03	c	AMO	ETR	2	MA	USD	MT
US Gulf Coast Renewable derived Ammonia dlvd into Northwest Europe - High CF $/MMBtu Wkly	GADAI04	c	AMO	ETR	2	WA	USD	MMB
US Gulf Coast Renewable derived Ammonia dlvd into Northwest Europe - High CF $/MMBtu MAvg	GADAI03	c	AMO	ETR	2	MA	USD	MMB
US Gulf Coast Renewable derived Ammonia dlvd into Northwest Europe - High CF $/mt Wkly	GADAJ04	c	AMO	ETR	2	WA	USD	MT
US Gulf Coast Renewable derived Ammonia dlvd into Northwest Europe - High CF $/mt MAvg	GADAJ03	c	AMO	ETR	2	MA	USD	MT
EC Canada Renewable derived Ammonia dlvd into Northwest Europe - High CF $/MMBtu Wkly	GADAK04	c	AMO	ETR	2	WA	USD	MMB
EC Canada Renewable derived Ammonia dlvd into Northwest Europe - High CF $/MMBtu MAvg	GADAK03	c	AMO	ETR	2	MA	USD	MMB
EC Canada Renewable derived Ammonia dlvd into Northwest Europe - High CF $/mt Wkly	GADAL04	c	AMO	ETR	2	WA	USD	MT
EC Canada Renewable derived Ammonia dlvd into Northwest Europe - High CF $/mt MAvg	GADAL03	c	AMO	ETR	2	MA	USD	MT
Blue Ammonia Premium CFR Far East Asia $/MMBtu	AMMOV00	c	AMO	ETR	2	DW	USD	MMB
Blue Ammonia Premium CFR Far East Asia $/mt	AMMOK00	c	AMO	ETR	2	DW	USD	MT
Blue Ammonia Premium CFR Far East Asia $/MMBtu MAvg	AMMOV03	c	AMO	ETR	2	MA	USD	MMB
Blue Ammonia Premium CFR Far East Asia $/mt MAvg	AMMOK03	c	AMO	ETR	2	MA	USD	MT
Blue Ammonia Premium CFR Northwest Europe $/MMBtu	AMMOX00	c	AMO	ETR	2	DW	USD	MMB
Blue Ammonia Premium CFR Northwest Europe $/mt	AMMON00	c	AMO	ETR	2	DW	USD	MT
Blue Ammonia Premium CFR Northwest Europe $/MMBtu MAvg	AMMOX03	c	AMO	ETR	2	MA	USD	MMB
Blue Ammonia Premium CFR Northwest Europe $/mt MAvg	AMMON03	c	AMO	ETR	2	MA	USD	MT
Blue Ammonia Premium FOB Middle East $/MMBtu	AMMOU00	c	AMO	ETR	2	DW	USD	MMB
Blue Ammonia Premium FOB Middle East $/mt	AMMOL00	c	AMO	ETR	2	DW	USD	MT
Blue Ammonia Premium FOB Middle East $/MMBtu MAvg	AMMOU03	c	AMO	ETR	2	MA	USD	MMB
Blue Ammonia Premium FOB Middle East $/mt MAvg	AMMOL03	c	AMO	ETR	2	MA	USD	MT
Blue Ammonia Premium USGC $/MMBtu	AMMOY00	c	AMO	ETR	2	DW	USD	MMB
Blue Ammonia Premium USGC $/mt	AMMOO00	c	AMO	ETR	2	DW	USD	MT
Blue Ammonia Premium USGC $/MMBtu MAvg	AMMOY03	c	AMO	ETR	2	MA	USD	MMB
Blue Ammonia Premium USGC $/mt MAvg	AMMOO03	c	AMO	ETR	2	MA	USD	MT
Blue Ammonia CFR Far East Asia $/MMBtu	AMMPB00	c	AMO	ETR	2	DW	USD	MMB

Low-Carbon Ammonia Symbols

Description	Symbol	Bates	MDC	MI MDC	Dec	Freq	Curr	UOM
Blue Ammonia CFR Far East Asia $/mt	AMMOQ00	c	AMO	ETR	2	DW	USD	MT
Blue Ammonia CFR Far East Asia $/MMBtu MAvg	AMMPB03	c	AMO	ETR	2	MA	USD	MMB
Blue Ammonia CFR Far East Asia $/mt MAvg	AMMOQ03	c	AMO	ETR	2	MA	USD	MT
Blue Ammonia CFR Northwest Europe $/MMBtu	AMMPD00	c	AMO	ETR	2	DW	USD	MMB
Blue Ammonia CFR Northwest Europe $/mt	AMMOT00	c	AMO	ETR	2	DW	USD	MT
Blue Ammonia CFR Northwest Europe $/MMBtu MAvg	AMMPD03	c	AMO	ETR	2	MA	USD	MMB
Blue Ammonia CFR Northwest Europe $/mt MAvg	AMMOT03	c	AMO	ETR	2	MA	USD	MT
Blue Ammonia FOB Middle East $/MMBtu	AMMPA00	c	AMO	ETR	2	DW	USD	MMB
Blue Ammonia FOB Middle East $/mt	AMMOR00	c	AMO	ETR	2	DW	USD	MT
Blue Ammonia FOB Middle East $/MMBtu MAvg	AMMPA03	c	AMO	ETR	2	MA	USD	MMB
Blue Ammonia FOB Middle East $/mt MAvg	AMMOR03	c	AMO	ETR	2	MA	USD	MT

Monthly Hydrogen Pump Price Symbols

Description	Symbol	Bates	MDC	Dec	Freq	Curr	UOM
California H2 Pump Price	HYPUC00	c	HY	2	MA	USD	KG
California H2 Pump Price	HYPUD00	c	HY	2	MA	Eur	KG
Germany H2 Pump Price	HYPUE00	c	HY	2	MA	USD	KG
Germany H2 Pump Price	HYPUF00	c	HY	2	MA	Eur	KG
Japan Metropolitan H2 Pump Price	HYPUM00	c	HY	2	MA	USD	KG
Japan Metropolitan H2 Pump Price	HYPUN00	c	HY	2	MA	Yen	KG

Hydrogen Pump Prices

On a monthly basis, Platts assesses the price of hydrogen at refueling stations in the California market based on source data from hydrogen fuel station operators, and republishes posted pump prices for Germany and Japan hydrogen fuel stations.

Prices for German markets are sourced from H2 Mobility Deutschland, a consortium of hydrogen retail station operators, and for Japan are sourced from the gas company, Iwatani.

Prices for California and Germany are published in US dollars per kilogram and Euros per kilogram. For Japan, prices are published in Yen per kilogram and USD per kilogram. Prices are published on the first working day of every month.

Hydrogen Production Cost Valuations

Platts publishes hydrogen price valuations on each business day covering several production pathways listed below, such as Steam Methane Reforming without Carbon Capture and Sequestration (SMR w/o CCS), Steam Methane Reforming with Carbon Capture and Sequestration (SMR with CCS), Alkaline Electrolysis, etc.

The Platts hydrogen valuations at each hub are based on the calculated cost of production from various production pathways and are not based on observed or reported market transactions. Relevant natural gas and electricity prices, carbon prices and assumptions for water, capital expenses and operating expenses are used to derive valuations. Platts considers the Lower Heating Value (LHV) of hydrogen.

Platts reviews the variable and fixed inputs including capital and operating assumptions such as energy conversion efficiency and plant capacity factor on an annual basis to ensure they are representative of current market dynamics.

In certain hubs, including Alberta (Canada), Japan and most US hubs, some hydrogen valuations via alkaline electrolysis may continue to publish during respective holiday periods due to the automated collection of electricity inputs from third parties. In Australia, the daily hydrogen valuations for all pathways are following the Singapore holiday schedule, with the assessments published after 1 pm Singapore time each business day, using the previous business day's variable data inputs, with the hydrogen assessments databased as the previous day's assessments. Otherwise, the Platts hydrogen valuations follow the respective holiday calendars for each region.

The capex values are based on data from the S&P Global Commodity Insights Analytics team, industry feedback reflecting the inflation and change in financing costs based on industry sources, with reference to publications from the United States Federal Reserve, the European Commission, and Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO).

SMR w/o CCS

Platts publishes valuations for hydrogen produced via Steam Methane Reforming w/o Carbon Capture and Sequestration (SMR w/o CCS).

The feedstock inputs consist of a fixed water price as well as natural gas and the on-and off-peak electricity assessments most geographically relevant. In some hubs, Platts averages additional electricity or gas assessments.

The operational parameters across all hubs are identical, and include plant efficiency of 76%, a capacity factor of 95% and a carbon dioxide (CO2) emission rate of 8.9 kg/kg of hydrogen.

Capital expenses (capex) may differ by location and are included in a separate table at the end of the section.

Annual non-fuel operating expenses are assumed at 4.7% of capital cost.

CO2 prices are considered for the Netherlands and the UK.

SMR with CCS

Platts publishes valuations for hydrogen produced via Steam Methane Reforming with Carbon Capture and Sequestration (SMR with CCS).

The feedstock inputs consist of a fixed water price, natural gas and the on- and off-peak electricity assessments most geographically relevant.

The operational parameters for SMR with CCS include plant efficiency of 69%, a capacity factor of 95% and a CO2 capture rate of 78%.

Annual non-fuel operating expenses are assumed at 3% of capital cost.

ATR with CCS

Platts publishes hydrogen valuations for hydrogen produced via Autothermal Reforming (ATR) with CCS.

The feedstock inputs consist of a fixed water price as well as natural gas and the on-and off-peak electricity assessments most geographically relevant.

The operational parameters for ATR with CCS include plant efficiency of 68%, a capacity factor of 95% and a CO2 capture rate of 93%.

Annual non-fuel operating expenses are assumed at 3.5% of capital cost.

Coal Gasification with CCS

Platts publishes hydrogen valuations for hydrogen produced using coal gasification with CCS.

The feedstock inputs consist of a fixed water price as well as a coal price and the electricity prices most geographically relevant.

The operational parameters for Coal Gasification with CCS include plant efficiency of 60.50%, a capacity factor of 95% and a CO2 capture rate of 90%.

Annual non-fuel operating expenses are assumed at 5% of capital cost.

Lignite Gasification with CCS

Platts publishes hydrogen valuations for hydrogen produced using lignite gasification with CCS.

The feedstock inputs consist of a fixed water price as well as a lignite price and the electricity prices most geographically relevant.

The operational parameters for Lignite Gasification with CCS include plant efficiency of 57.90%, a capacity factor of 95% and a CO2 capture rate of 90%.

Annual non-fuel operating expenses are assumed at 5% of capital cost.

PEM Electrolysis

Platts publishes hydrogen valuations for Proton Exchange Membrane (PEM) electrolysis.

The feedstock inputs consist of a fixed water price as well as the on- and off-peak electricity assessments most geographically relevant.

The operational parameters for PEM electrolysis across all hubs are identical and include an electrolyzer efficiency of 63% and a capacity factor of 95%.

Annual non-fuel operating expenses are assumed at 1.5% of capital cost, and stack refurbishment every 7.8 years at 35% of capital cost.

Alkaline Electrolysis

Platts publishes hydrogen valuations for alkaline electrolysis.

The feedstock inputs consist of a fixed water price as well as the on- and off-peak electricity assessments most geographically relevant.

The operational parameters for alkaline electrolysis across all hubs are identical and include electrolyzer efficiency of 60% and a capacity factor of 95%.

A table of daily variable inputs is listed below. Annual non-fuel operating expenses are assumed at 1.5% of capital cost, and stack refurbishment every 9.2 years at 45% of capital cost.

Pricing Locations

North America

In North America, Platts publishes daily hydrogen price valuations in Alberta, Canada along with 5 locations in the United States: Appalachia, Gulf Coast, Northern California, Southern California, and Upper Midwest at 9:00 am US Central Time.

The US prices are published in US dollars per kilogram ($/kg) and US dollars per thousand standard cubic feet ($/Mcf). Alberta prices are published in Canadian dollars per kilogram (C$/kg) and Canadian dollars per thousand standard cubic feet (C$/Mcf).

All North American values are published across the following three production pathways: SMR w/o CCS and Alkaline Electrolysis and. Some locations are also assessed for the SMR with CCS production pathway.

The hydrogen valuations in North America are calculated on a previous day basis due to timing issues related to the collection of day-ahead power prices from the Independent System Operators (ISOs) relevant to the particular hubs.

Europe

In Europe, Platts publishes daily hydrogen valuations in the Netherlands and the UK for the month-ahead price after 5:00 pm London time each business day. The Netherlands prices are published in Euros per kilogram (Eur/kg) and Euros per Kilowatt hour (Eur/KWh). The UK prices are published in GBP per kilogram (GBP/kg) and GBP per Kilowatt hour (GBP/KWh).

The Netherlands values are published across the following five production pathways: ATR with CCS, SMR w/o CCS, SMR with CCS, and Alkaline Electrolysis.

The UK values are published across the following four production pathways: ATR with CCS, SMR with CCS and Alkaline Electrolysis.

The hydrogen valuations in the Netherlands and the UK are published using same day assessments for the component feedstock inputs, which include month-ahead power and gas prices.

Asia-Pacific

In the Asia-Pacific region, Platts publishes daily hydrogen valuations in Japan, which are published after 5:00 pm Singapore time each business day. In Australia, the daily hydrogen valuations for all pathways are published after 1:00 pm Singapore time each business day using the previous day's variable data inputs. Valuations are databased for the previous day's date. The Japan prices are published in Yen per kilogram (yen/kg) and US dollars per kilogram ($/kg). The Australia prices are published in Australian dollars per kilogram (A$/kg) and Australian dollars per Metric Million British Thermal Units (A$/MMBtu), and in US dollars per kilogram ($/kg) and US dollars per Metric Million British Thermal Units ($/MMBtu).

All Japan values are published across the following two production pathways: SMR w/o CCS and Alkaline Electrolysis. For Australia, Platts publishes assessments for the following locations and pathways:, Queensland (Coal Gasification w CCS and Alkaline Electrolysis), South Australia (Alkaline Electrolysis and PEM Electrolysis), and Western Australia (SMR w CCS and Alkaline Electrolysis).

The hydrogen valuations in Japan and Australia are published using current assessments for the component feedstock inputs.

Middle East

In the Middle East, Platts publishes daily hydrogen valuations in Oman, Saudi Arabia, and the United Arab Emirates, which are published after 4:30 pm Singapore time each business day. The daily hydrogen valuations for all pathways follow the Singapore holiday schedule.

Prices are published in US dollars per kilogram ($/kg) and in US dollars per Metric Million British Thermal Units ($/MMBtu).

Middle East values for Oman, Saudi Arabia, and the United Arab Emirates are published across at least one of the following production pathways: SMR with CCS and Alkaline Electrolysis.

Further Assumptions

Across all pathways, Platts hydrogen valuations consist of variable natural gas, coal and electricity assessments, as well as carbon allowances where applicable, most geographically relevant to each hub. A fixed water cost is also included. A second set of hydrogen valuations at each hub adds fixed assumptions for capital and operating expenses. The Platts hydrogen valuations reflect a "snapshot in time" of a theoretical long-term supply contract, rather than a levelized cost. A levelized cost, either in real or nominal terms, would account for long-term escalation of the underlying cost components. Many of the underlying cost components, such as natural gas, do not escalate at the same rate as general inflation; therefore, the Platts hydrogen valuations do not represent a levelized cost but rather the daily price that might be paid to a hydrogen producer to cover the fixed and variable costs of hydrogen production under a long-term supply contract.

For capital expenses, the Platts hydrogen valuations use a levelized fixed charge rate, which is the product of a capital recovery factor and a project finance factor, to account for inflation, depreciation, return on equity, debt service, insurance as well as income and property taxes. Platts cited the US National Renewable Energy Laboratory's Annual Technology Baseline report for many of the financial assumptions, including inflation, return on equity and debt service.

Accordingly, each production pathway is 40% equity financed, and 60% debt financed, with nominal rates of return of 11.26% and 6.12%, respectively, and real rates of return of 8.55% and 3.53%, respectively, across a 25-year loan and equity recovery period. A seven-year depreciation schedule is assumed, along with an inflation rate of 2.5%, an income tax rate of 26%, a property tax rate of 1% and an insurance rate of 0.5%.

Capex costs are all-in, fixed assumptions and do not represent an aggregation of component costs. Capex assumptions for Alberta, Japan, the Netherlands and the UK are converted from a base value in USD to their respective currencies using Platts foreign exchange assessments. Capex assumptions in Australia for SMR w CCS, coal gasification w CCS and lignite gasification w CCS, are in USD, and converted into AUD as well using Platts foreign exchange assessments. Capex assumptions in Australia for Alkaline electrolysis are in AUD, and converted in USD as well using Platts foreign exchange assessments. The Capex costs are reviewed on an annual basis.

Other assumptions for capital and operating expenses were largely drawn from reports published by the International Energy Agency (IEA) and the Energy Information Administration (EIA) and are identical across all hubs. Labor is considered in the annual operating expenses for each production pathway.

The operational parameters for each production pathway were collected from reports published by a variety of sources, including the IEA, the National Renewable Energy Laboratory (NREL) and the International Renewable Energy Agency.

The Platts hydrogen valuations are published to 4 decimal places.

Daily Hydrogen Cost Valuations

Description	Symbol	Bates	MDC	Dec	Freq	Curr	UOM
Alberta Hydrogen Alkaline Electrolysis Inc. Capex	IGZCS00	c	HY	4	DW	CAD	KG
Alberta Hydrogen Alkaline Electrolysis Inc. Capex	IGYDK00	c	HY	4	DW	CAD	MCF
Alberta Hydrogen SMR w/o CCS Inc. Capex	IGCCA00	c	HY	4	DW	CAD	KG
Alberta Hydrogen SMR w/o CCS Inc. Capex	IGYAA00	c	HY	4	DW	CAD	MCF
Appalachia Hydrogen Alkaline Electrolysis Inc. Capex	IGZCW00	c	HY	4	DW	USD	KG
Appalachia Hydrogen Alkaline Electrolysis Inc. Capex	IGYDO00	c	HY	4	DW	USD	MCF
Appalachia Hydrogen SMR w/o CCS Inc. Capex	IGCCE00	c	HY	4	DW	USD	KG
Appalachia Hydrogen SMR w/o CCS Inc. Capex	IGYAE00	c	HY	4	DW	USD	MCF
Gulf Coast Hydrogen Alkaline Electrolysis Inc. Capex	IGZDA00	c	HY	4	DW	USD	KG
Gulf Coast Hydrogen Alkaline Electrolysis Inc. Capex	IGYDS00	c	HY	4	DW	USD	MCF
Gulf Coast Hydrogen SMR w/o CCS Inc. Capex	IGCCL00	c	HY	4	DW	USD	KG
Gulf Coast Hydrogen SMR w/o CCS Inc. Capex	IGYAI00	c	HY	4	DW	USD	MCF
Japan Hydrogen Alkaline Electrolysis Inc. Capex	IGYFV00	c	HY	4	DW	JPY	KG
Japan Hydrogen Alkaline Electrolysis Inc. Capex	IGYFU00	c	HY	4	DW	USD	KG
Japan Hydrogen SMR w/o CCS Inc. Capex	IGYGD00	c	HY	4	DW	JPY	KG
Japan Hydrogen SMR w/o CCS Inc. Capex	IGYGC00	c	HY	4	DW	USD	KG
Netherlands Hydrogen SMR w/o CCS (inc. CAPEX) Eur/kg MA	HXNMA00	c	HY	4	DW	EUR	KG
Netherlands Hydrogen SMR w/o CCS (inc. CAPEX and Carbon) Eur/kg MA	HZNMA00	c	HY	4	DW	EUR	KG
Netherlands Hydrogen SMR w/o CCS (inc. CAPEX) Eur/KWh MA	HBNMA00	c	HY	4	DW	EUR	KWh
Netherlands Hydrogen SMR w/o CCS (inc. CAPEX and Carbon) Eur/KWh MA	HDNMA00	c	HY	4	DW	EUR	KWh
Netherlands Hydrogen SMR with CCS (inc. CAPEX and Carbon) Eur/kg MA	HHNMA00	c	HY	4	DW	EUR	KG
Netherlands Hydrogen SMR with CCS (inc. CAPEX and Carbon) Eur/KWh MA	HLNMA00	c	HY	4	DW	EUR	KWh
Netherlands Hydrogen Alkaline Electrolysis (inc. CAPEX) Eur/kg MA	HSNMA00	c	HY	4	DW	EUR	KG
Netherlands Hydrogen Alkaline Electrolysis (inc. CAPEX) Eur/KWh MA	HTNMA00	c	HY	4	DW	EUR	KWh
Northern California Hydrogen Alkaline Electrolysis Inc. Capex	IGZDM00	c	HY	4	DW	USD	KG
Northern California Hydrogen Alkaline Electrolysis Inc. Capex	IGYEE00	c	HY	4	DW	USD	MCF
Northern California Hydrogen SMR w/o CCS Inc. Capex	IGZBL00	c	HY	4	DW	USD	KG
Northern California Hydrogen SMR w/o CCS Inc. Capex	IGYAU00	c	HY	4	DW	USD	MCF
Oman Hydrogen SMR with CCS (incl CAPEX) $/kg	HYSBL00	c	HY	4	DW	USD	KG
Oman Hydrogen SMR with CCS (incl CAPEX) $/MMBtu	HYSBN00	c	HY	4	DW	USD	MMB
Oman Hydrogen Alkaline Electrolysis (incl CAPEX) $/kg	HYSBT00	c	HY	4	DW	USD	KG
Oman Hydrogen Alkaline Electrolysis (incl CAPEX) $/MMBtu	HYSBV00	c	HY	4	DW	USD	MMB
Queensland Hydrogen Alkaline Electrolysis (inc. CAPEX) A$/kg	HYADL00	c	HY	4	DW	AUD	KG
Queensland Hydrogen Alkaline Electrolysis (inc. CAPEX) $/kg	HYADN00	c	HY	4	DW	USD	KG
Queensland Hydrogen Alkaline Electrolysis (inc. CAPEX) A$/MMBtu	HYADP00	c	HY	4	DW	AUD	MMB
Queensland Hydrogen Alkaline Electrolysis (inc. CAPEX) $/MMBtu	HYADR00	c	HY	4	DW	USD	MMB
Queensland Hydrogen Coal Gasification with CCS (inc. CAPEX) A$/kg	HYAAJ00	c	HY	4	DW	AUD	KG
Queensland Hydrogen Coal Gasification with CCS (inc. CAPEX) $/kg	HYAAL00	c	HY	4	DW	USD	KG
Queensland Hydrogen Coal Gasification with CCS (inc. CAPEX) A$/MMBtu	HYAAN00	c	HY	4	DW	AUD	MMB
Queensland Hydrogen Coal Gasification with CCS (inc. CAPEX) $/MMBtu	HYAAP00	c	HY	4	DW	USD	MMB
Saudi Arabia Hydrogen SMR with CCS (incl CAPEX) $/kg	HYSAB00	c	HY	4	DW	USD	KG
Saudi Arabia Hydrogen SMR with CCS (incl CAPEX) $/MMBtu	HYSAD00	c	HY	4	DW	USD	MMB
Saudi Arabia Hydrogen Alkaline Electrolysis (incl CAPEX) $/kg	HYSAJ00	c	HY	4	DW	USD	KG

Daily Hydrogen Cost Valuations

Description	Symbol	Bates	MDC	Dec	Freq	Curr	UOM
Saudi Arabia Hydrogen Alkaline Electrolysis (incl CAPEX) $/MMBtu	HYSAL00	c	HY	4	DW	USD	MMB
South Australia Hydrogen PEM Electrolysis A$/kg	HYABW00	c	HY	4	DW	AUD	KG
South Australia Hydrogen PEM Electrolysis (inc. CAPEX) A$/kg	HYABX00	c	HY	4	DW	AUD	KG
South Australia Hydrogen PEM Electrolysis $/kg	HYABY00	c	HY	4	DW	USD	KG
South Australia Hydrogen PEM Electrolysis (inc. CAPEX) $/kg	HYABZ00	c	HY	4	DW	USD	KG
South Australia Hydrogen Alkaline Electrolysis A$/kg	HYADS00	c	HY	4	DW	AUD	KG
South Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) A$/kg	HYADT00	c	HY	4	DW	AUD	KG
South Australia Hydrogen Alkaline Electrolysis $/kg	HYADU00	c	HY	4	DW	USD	KG
South Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) $/kg	HYADV00	c	HY	4	DW	USD	KG
South Australia Hydrogen Alkaline Electrolysis A$/MMBtu	HYADW00	c	HY	4	DW	AUD	MMB
South Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) A$/MMBtu	HYADX00	c	HY	4	DW	AUD	MMB
South Australia Hydrogen Alkaline Electrolysis $/MMBtu	HYADY00	c	HY	4	DW	USD	MMB
South Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) $/MMBtu	HYADZ00	c	HY	4	DW	USD	MMB
Southern California Hydrogen Alkaline Electrolysis Inc. Capex	IGZEC00	c	HY	4	DW	USD	KG
Southern California Hydrogen Alkaline Electrolysis Inc. Capex	IGYEU00	c	HY	4	DW	USD	MCF
Southern California Hydrogen SMR w/o CCS Inc. Capex	IGCDG00	c	HY	4	DW	USD	KG
Southern California Hydrogen SMR w/o CCS Inc. Capex	IGYBK00	c	HY	4	DW	USD	MCF
UAE Hydrogen SMR with CCS (incl CAPEX) $/kg	HYSAZ00	c	HY	4	DW	USD	KG
UAE Hydrogen SMR with CCS (incl CAPEX) $/MMBtu	HYSBB00	c	HY	4	DW	USD	MMB
UAE Hydrogen Alkaline Electrolysis (incl CAPEX) $/kg	HYSBH00	c	HY	4	DW	USD	KG
UAE Hydrogen Alkaline Electrolysis (incl CAPEX) $/MMBtu	HYSBJ00	c	HY	4	DW	USD	MMB
UK Hydrogen Alkaline Electrolysis (incl CAPEX) (GBP/Kg)	HYUKJ00	c	HY	4	DW	GBP	KG
UK Hydrogen Alkaline Electrolysis (incl CAPEX) (GBP/KWh)	HYUKL00	c	HY	4	DW	GBP	KW
UK Hydrogen SMR with CCS inc. CAPEX and Carbon (GBP/kg)	HUKHD00	c	HY	4	DW	GBP	KG
UK Hydrogen SMR with CCS inc. CAPEX and Carbon (GBP/KWh)	HUKHH00	c	HY	4	DW	GBP	KW
UK Hydrogen ATR with CCS (GBP/Kg)	HYUKA00	c	HY	4	DW	GBP	KG
UK Hydrogen ATR with CCS inc. CAPEX (GBP/Kg)	HYUKB00	c	HY	4	DW	GBP	KG
UK Hydrogen ATR with CCS (GBP/KWh)	HYUKC00	c	HY	4	DW	GBP	KW
UK Hydrogen ATR with CCS inc. CAPEX (GBP/KWh)	HYUKD00	c	HY	4	DW	GBP	KW
Upper Midwest Hydrogen Alkaline Electrolysis Inc. Capex	IGZEI00	c	HY	4	DW	USD	KG
Upper Midwest Hydrogen Alkaline Electrolysis Inc. Capex	IGYEY00	c	HY	4	DW	USD	MCF
Upper Midwest Hydrogen SMR w/o CCS Inc. Capex	IGCDK00	c	HY	4	DW	USD	KG
Upper Midwest Hydrogen SMR w/o CCS Inc. Capex	IGYFF00	c	HY	4	DW	USD	MCF
Western Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) A$/kg	HYAER00	c	HY	4	DW	AUD	KG
Western Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) $/kg	HYAET00	c	HY	4	DW	USD	KG
Western Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) A$/MMBtu	HYAEV00	c	HY	4	DW	AUD	MMB
Western Australia Hydrogen Alkaline Electrolysis (inc. CAPEX) $/MMBtu	HYAEX00	c	HY	4	DW	USD	MMB
Western Australia Hydrogen SMR with CCS (inc. CAPEX) A$/kg	HYAAZ00	c	HY	4	DW	AUD	KG
Western Australia Hydrogen SMR with CCS (inc. CAPEX) $/kg	HYABB00	c	HY	4	DW	USD	KG
Western Australia Hydrogen SMR with CCS (inc. CAPEX) A$/MMBtu	HYABD00	c	HY	4	DW	AUD	MMB
Western Australia Hydrogen SMR with CCS (inc. CAPEX) $/MMBtu	HYABF00	c	HY	4	DW	USD	MMB

Daily Hydrogen Variable Input Symbols

Description	Symbol	Hydrogen Location
ICE NGX AB NIT	ANGXA00	Alberta
AESO Peak Price	LALBM01	Alberta
AESO Off Peak Price	LALBP01	Alberta
Texas Eastern, M-3	IGBEK00	Appalachia
Eastern Gas South TDt Com	IGBDC00	Appalachia
PJM West Hub Peak Price	IPWHM00	Appalachia
PJM West Hub Off Peak Price	IPWHP00	Appalachia
Henry Hub	IGBBL00	Gulf Coast
Platts CRC	ACRCM00	Australia
California Carbon Allowance	ARECB04	California
Platts CRC	ACRCA00	California, Gulf Coast
Houston Ship Channel	IGBAP00	Gulf Coast
ERCOT North Hub Day Ahead On Peak	IERNM00	Gulf Coast
ERCOT North Hub Day Ahead Off Peak	IERNP00	Gulf Coast
MISO Louisiana Hub Day Ahead On Peak	IMLAM00	Gulf Coast
MISO Louisiana Hub Day Ahead Off Peak	IMLAP00	Gulf Coast
LNG JKM DES Spot Price	AAOVR00	Japan
Platts CRC	ACRCO00	Japan
NGPL, Midcontinent	IGBBZ00	Midcontinent
Panhandle, Tx.-Okla.	IGBCE00	Midcontinent
SPP South Hub Peak Price	ISSOM00	Midcontinent
SPP South Hub Off Peak Price	ISSOP00	Midcontinent
EUA CO2e nearest December	EADLP00	Netherlands
EU Wind Guarantees of Origin (GO) Current Yr	EWGY004	Netherlands
NL Sys Base 1-Mo Euro	AADMN00	Netherlands
NL Sys Pk 1-Mo Euro	AADMP00	Netherlands
Platts TTF month-ahead ($/MMBtu)	GTFWM10	Netherlands
Platts CRC	ACRCC00	Netherlands
Coal FOB Newcastle	AAVVB00	New South Wales
Transco, zone 6 non-N.Y.	IGBEL00	Northeast
Tenn, zone 6 delivered	IGBEI00	Northeast
NEISO Internal Hub Peak Price	IINIM00	Northeast
NEISO Internal Hub Off Peak Price	IINIP00	Northeast
NYISO Zone G Peak Price	INYHM00	Northeast
NYISO Zone G Off Peak Price	INYHP00	Northeast
PG&E, city-gate	IGBEB00	Northern California
CAISO NP15 Peak Price	ICNGM00	Northern California
CAISO NP15 Off Peak Price	ICNGP00	Northern California
California Carbon Allowance	ARECB04	Northern California

Daily Hydrogen Variable Input Symbols

Description	Symbol	Hydrogen Location
NW, Can border (Sumas)	IGBCT00	Northwest
PG&E, Malin	IGBDO00	Northwest
Mid-Col Peak Price	WEABF00	Northwest
Mid-Col Off Peak Price	WEACL05	Northwest
LNG FOB Mid East 25-45 Days	AARXQ00	Oman
LNG FOB Mid East 25-45 Days	AARXQ00	Qatar
Coal FOB Newcastle	AAVVB00	Queensland
Cheyenne Hub	IGBCO00	Rockies
Kern River/Opal plant	IGBCL00	Rockies
Mona Peak Price	AARLQ00	Rockies
Mona Off Peak Price	AARLO00	Rockies
LNG FOB Mid East 25-45 Days	AARXQ00	Saudi Arabia
Transco, zone 5 delivered	IGBEN00	Southeast
Into Soco Peak Price	AAMBJ00	Southeast
Into Soco Off Peak Price	AAMBC00	Southeast
SoCal Gas, city-gate	IGBGG00	Southern California
CAISO SP15 Day Ahead On Peak	ICSGM00	Southern California
CAISO SP15 Day Ahead Off Peak	ICSGP00	Southern California
LNG FOB Mid East 25-45 Days	AARXQ00	United Arab Emirates
Platts UK GTMA 1 mo Base	AADGP00	UK
Platts UK GTMA 1 mo Peak	AADGV00	UK
UK NBP MA	GNCWM10	UK
UK Allowance Nearest December	AIEUK00	UK
Chicago city-gates	IGBDX00	Upper Midwest
MISO Indiana Hub Peak Price	IMIDM00	Upper Midwest
MISO Indiana Hub Off Peak Price	IMIDP00	Upper Midwest
Coal FOB Newcastle	AAVVB00	Victoria
LNG FOB Australia Netback	AARXR00	Western Australia
NEM New South Wales RRP Average Daily Spot Price (AUD/MWh)	HYXAA00	New South Wales
NEM Queensland RRP Average Daily Spot Price (AUD/MWh)	HYXAB00	Queensland
NEM South Australia RRP Average Daily Spot Price (AUD/MWh)	HYXAC00	South Australia
NEM Tasmania RRP Average Daily Spot Price (AUD/MWh)	HYXAD00	Tasmania
NEM Victoria RRP Average Daily Spot Price (AUD/MWh)	HYXAE00	Victoria
Avg of Western Australia Daily Spot Price Cycle 48 Symbols (AUD/MWh)	HYXAF00	Western Australia
Saudi Arabia Electricity Price (SAR/KWh)	HYSBW00	Saudi Arabia
Qatar Electricity Price (QAR/KWh)	HYSBX00	Qatar
UAE Electricity Price (AED/KWh)	HYSBY00	United Arab Emirates
Oman Electricity Price (OMR/KWh)	HYSBZ00	Oman
JEPX Day Ahead 24 hour price (Yen/KWh)	JEPXA00	Japan

Daily Blue Ammonia Variable Input Symbols

Description	Symbol	Blue Ammonia Location
Henry Hub	IGBBL00	Gulf Coast
Houston Ship Channel	IGBAP00	Gulf Coast
ERCOT North Hub Day Ahead On Peak	IERNM00	Gulf Coast
ERCOT North Hub Day Ahead Off Peak	IERNP00	Gulf Coast
MISO Louisiana Hub Day Ahead On Peak	IMLAM00	Gulf Coast
MISO Louisiana Hub Day Ahead Off Peak	IMLAP00	Gulf Coast
NL Sys Base 1-Mo Euro	AADMN00	Netherlands
NL Sys Pk 1-Mo Euro	AADMP00	Netherlands
Platts TTF month-ahead ($/MMBtu)	GTFWM10	Netherlands
LNG FOB Mid East 25-45 Days	AARXQ00	Saudi Arabia

Platts Hydrogen Capital Cost Assumptions

	Units	Value
Alkaline Electrolysis		
Alberta	$/KW	$2,344
Appalachia	$/KW	$1,711
Gulf Coast	$/KW	$1,711
Japan	$/KW	$1,335
Midcontinent	$/KW	$1,711
Netherlands	$/KW	$1,711
New South Wales	A$/KW	AUD 2,592.00
Northeast	$/KW	$1,711
Northern California	$/KW	$1,711
Northwest	$/KW	$1,711
Oman	$/KW	$2,378
Qatar	$/KW	$2,378
Queensland	A$/KW	AUD 2,592.00
Rockies	$/KW	$1,711
Saudi Arabia	$/KW	$1,694
South Australia	A$/KW	AUD 2,592.00
Southeast	$/KW	$1,711
Southern California	$/KW	$1,711
Tasmania	A$/KW	AUD 2,592.00
United Arab Emirates	$/KW	$2,378
United Kingdom	$/KW	$1,677
Upper Midwest	$/KW	$1,711
Victoria	A$/KW	AUD 2,592.00
Western Australia	A$/KW	AUD 2,592.00
ATR w CCS		
Netherlands	Eur/KW	€ 1,257
United Kingdom	GBP/KW	£1,042
PEM Electrolysis		
Alberta	$/KW	$3,195
Appalachia	$/KW	$2,332
Gulf Coast	$/KW	$2,332
Japan	$/KW	$1,819
Midcontinent	$/KW	$2,332
Netherlands	$/KW	$2,332
New South Wales	A$/KW	AUD 3,532.00
Northeast	$/KW	$2,332
Northern California	$/KW	$2,332
Northwest	$/KW	$2,332
Oman	$/KW	$3,241
Qatar	$/KW	$3,241
Queensland	A$/KW	AUD 3,532.00

Platts Hydrogen Capital Cost Assumptions

	Units	Value
Rockies	$/KW	$2,332
Saudi Arabia	$/KW	$2,309
South Australia	A$/KW	AUD 3,532.00
Southeast	$/KW	$2,332
Southern California	$/KW	$2,332
Tasmania	A$/KW	AUD 3,532.00
United Arab Emirates	$/KW	$3,241
United Kingdom	$/KW	$2,285
Upper Midwest	$/KW	$2,332
Victoria	A$/KW	AUD 3,532.00
Western Australia	A$/KW	AUD 3,532.00
SMR W/O CCS		
Alberta	$/KW	$1,392
Appalachia	$/KW	$1,016
Gulf Coast	$/KW	$1,016
Japan	$/KW	$793
Midcontinent	$/KW	$1,016
Netherlands	$/KW	$1,016
Northeast	$/KW	$1,016
Northern California	$/KW	$1,016
Northwest	$/KW	$1,016
Rockies	$/KW	$1,016
Southeast	$/KW	$1,016
Southern California	$/KW	$1,016
Upper Midwest	$/KW	$1,016
SMR w CCS		
Gulf Coast	$/KW	$1,741
California	$/KW	$1,741
Japan	$/KW	$1,358
Oman	$/KW	$2,421
Qatar	$/KW	$2,421
Netherlands	$/KW	$1,741
Saudi Arabia	$/KW	$1,724
United Arab Emirates	$/KW	$2,421
United Kingdom	$/KW	$1,707
Western Australia	$/KW	$1,741
Coal Gasification w CCS		
New South Wales	$/KW	$3,063
Queensland	$/KW	$3,063
Lignite Gasification w CCS		
Victoria	$/KW	$3,865

Platts Ammonia Capital Cost Assumptions

	Units	Value
US Ammonia w/o CCS Capital Costs	$/mt	$1,252.00
US Ammonia w CCS Capital Costs	$/mt	$1,362.00
Northwest Europe Ammonia w/o CCS Capital Costs	$/mt	$1,179.00
Northwest Europe Ammonia w CCS Capital Costs	$/mt	$1,283.00
Middle East Ammonia w/o CCS Capital Costs	$/mt	$848.00
Middle East Ammonia w CCS Capital Costs	$/mt	$910.00

Revision history

October 2025: Platts discontinued its Daily Hydrogen Cost Valuations for the PEM production pathway, its Ammonia Forward Curves for the US Gulf Coast and the Middle East, and its Japan Hydrogen Pump Prices for Chubu, Chugoku and Kyushu, Kinki, and Tohoku. Platts also removed the Northwest Ammonia Forward Curve assessments, which can now be found in the Fertecon Specifications Guide. Platts also made minor edits to language throughout for consistency and clarity.

June 2025: Platts made several updates to its capital expenditure, WACC, and lifespan figures used in the calculation of cost of production for most of its Platts global hydrogen assessments.

February 2025: Platts completed the annual guide review. Platts reviewed all content and made edits to wording and layout for clarity. In addition, removed a number of Hydrogen Production Cost Valuations in North America, Europe, Japan, Australia and the Middle East following a discontinuation. Updated the variable input for Appalachia natural gas to Eastern Gas South TDt Com. Updated the timestamp for the USGC Blue Ammonia Premium and Ammonia Forward Curve.

May 2024: S&P Global Commodity Insights has added new Regulation compliant hydrogen assessments for Europe. In addition, made several updates to capital expenditure figures, weighted average cost of capital, blue ammonia plant efficiency and electrolyzer efficiencies used in the calculations of cost of production for most of its Platts global hydrogen and ammonia assessments, as part of a yearly review of the Platts hydrogen methodology.

October 2023: S&P Global Commodity Insights added new market-based Japan-Korea low-carbon ammonia price assessment (JKAP) and Carbon Intensity escalator for Japan and Korea delivery.

June 2023: S&P Global Commodity Insights has made several updates to its capital expenditure figures and PEM efficiency used in the calculations of cost of production for most of its Platts global hydrogen assessments, as part of a yearly review of the Platts hydrogen methodology. In addition, the electricity inputs used in Australian, Middle Eastern and Japanese prices have been added to the guide for better visibility.

March 2023: S&P Global Commodity Insights aligns ammonia coverage globally with legacy Fertecon ammonia assessments. Completed annual review guide.

December 2022: S&P Global Commodity Insights added new Renewable power derived Ammonia assessments for delivery into Far East Asia and Northwest Europe.

April 2022: S&P Global Commodity Insights added new Blue Ammonia Premiums for Far East Asia, the Middle East, Northwest Europe, and US Gulf Coast, and added Blue Ammonia Price Assessments for Far East Asia, the Middle East, and Northwest Europe. Launched three months ammonia physical forward curves for Northwest Europe, the US Gulf Coast and the Middle East. Added euro per kilogram and US Dollar per kilogram assessments for the h-OC price assessments in Europe and the US, respectively.

April 2022: S&P Global Commodity Insights has made several updates to its capital expenditure figures used in the calculations of cost of production for most of its Platts global hydrogen assessments, as part of a yearly review of the Platts hydrogen methodology.

March 2022: Platts launched daily implied hydrogen origin certificate (h-OC) assessments for NW Europe, California, and the US Gulf Coast. February 2022: Platts completed an annual review of this guide, reviewing all content, correcting typos, and making edits to language throughout.

January 2022: Added UK hydrogen PEM and Alkaline Electrolysis product description and symbol codes to the methodology guide.

December 2021: Platts launched Carbon Neutral Hydrogen (CNH) assessments on an Ex-Works basis for Northwest Europe, the Middle East, Far East Asia, Australia, California and the US Gulf Coast. Reorganized methodology guide, including removal of S&P Global Platts description of methodologies Parts I-VI and replacement with a link to the methodologies.

November 2021: Platts launched Middle East hydrogen assessments for Oman, Qatar, Saudi Arabia, and the United Arab Emirates, across the following production pathways: SMR with CCS, Alkaline Electrolysis and PEM Electrolysis.

October 2021: Added new ammonia assessments for CFR Far East Asia, CFR Northwest Europe, CFR US Gulf Coast, FOB Middle East, and FOB Black Sea.

September 2021: Added new Steam Methane Reforming and Autothermal Reforming price valuations for the UK and the Netherlands, respectively, both including CCS.

September 2021: Platts launched monthly Hydrogen Pump Prices for the California market based on source data from hydrogen fuel station operators, and began to republish posted pump prices for Germany and Japan hydrogen fuel stations, based on publicly available source data from each of those respective markets.

August 2021: Platts launched Australia hydrogen assessments for the following locations and pathways: New South Wales (Coal Gasification w CCS, Alkaline Electrolysis and PEM Electrolysis), Queensland (Coal Gasification w CCS, Alkaline Electrolysis and PEM Electrolysis), South Australia (Alkaline Electrolysis and PEM Electrolysis), Tasmania (Alkaline Electrolysis and PEM Electrolysis), Victoria (Lignite Gasification w CCS, Alkaline Electrolysis and PEM Electrolysis), and Western Australia (SMR w CCS, Alkaline Electrolysis and PEM Electrolysis).

August 2021: Replaced existing European Commission's carbon spot auction prices as a daily input for Dutch and UK hydrogen assessments with Platts assessed EU Emission Trading System (EUAs) and UK Emission Trading Scheme (UKAs) daily prices.

April 2021: Platts completed an annual review of this guide, reviewing all content, correcting typos, and making edits to language throughout. In this update, Platts also made several methodology changes, including the adoption of a fixed charge rate, defined as the product of a capital recovery factor and a project finance factor, to more accurately incorporate inflation, depreciation, return on equity, debt service, insurance as well as income and property taxes. Increased the capital costs for ($/KW) for proton exchange membrane (PEM) electrolysis from $900/KW to $1,382/KW and alkaline electrolysis from $702/KW to $891/KW. Increased steam methane reforming (SMR) plant efficiency from 70% to 76%, SMR with carbon capture and sequestration (CCS) plant efficiency from 63% to 69%; and alkaline electrolysis efficiency from 65% to 67%. Increased the cost of stack refurbishment as a percent of capital cost for PEM electrolysis from 15% to 35% for PEM electrolysis, and from 15% to 45% for alkaline electrolysis. Adjusted the percentage of Dutch peak and base electricity prices from 80% base and 20% peak to 50% base and 50% peak. Changed the method for calculating carbon dioxide emissions by adopting the emission factor of 8.9 kg CO2/kg H2. Launched new UK hydrogen assessments for autothermal reforming with carbon capture and sequestration (ATR w CCS), alkaline electrolysis and PEM electrolysis. Adjusted the cadence of its methodology review from quarterly to annual.

January 2021: Replaced Dutch EEX month-ahead settlements with Platts Dutch first-month (peak) power assessments and replaced EEX EU Emission Trading System input data with data from the European Commission's Carbon Auction Platform. Reactivated Platts Dutch month-ahead Base and Peak power price assessments for use as the power component in the full suite of Dutch hydrogen prices.

December 2020: Discontinued the duplicative hydrogen assessments for North America and Japan in the ES market data category and moved the surviving North America and Japan hydrogen assessments in the GD market data category to a new HY market data category. The Netherlands hydrogen assessments were also moved to the new HY market data category from their original EG market data category.

October 2020: Platts launched Netherlands PEM and Alkaline Grid-Only price assessments and backfilled to January 2018.

April 2020: Added Capex costs to methodology guide.

April 2020: Changed California location names to Northern California. Added daily SMR w/o CCS prices for Alberta, Appalachia, Midcontinent, Northeast, Northwest, Rockies, Southeast, Southern California, Upper Midwest, and Japan. Added daily PEM Electrolysis prices for Alberta, Appalachia, Midcontinent, Northeast, Northwest, Rockies, Southeast, Southern California, Upper Midwest, and Japan. Added daily Alkaline Electrolysis prices for Alberta, Appalachia, Midcontinent, Northeast, Northern California, Northwest, Rockies, Southeast, Southern California, Upper Midwest, and Japan. Added Netherlands month ahead SMR with CCS, SMR with CCS (includes Capex), SMR with CCS (includes Carbon), SMR with CCS (includes Capex and carbon), PEM Electrolysis, PEM Electrolysis (includes Capex), Alkaline Electrolysis, and Alkaline Electrolysis (includes Capex) prices. Added refurbish cost to PEM Electrolysis prices. Noted European hydrogen fixed capital costs are converted to Euros from USD using Platts daily forex assessments.

February 2020: Platts has added a table of constant input symbols used for calculations for its Dutch hydrogen SMR assessments

January 2020: Platts has corrected typos for Capex cost for USGC SMR w/o CCS, California SMR w/o CCS, and California PEM Electrolysis.

December 2019: Platts launched Hydrogen Inc. Capex USGC SMR w/o CCS, Hydrogen USGC SMR w/o CCS, Hydrogen Inc. Capex California SMR w/o CCS, Hydrogen California SMR w/o CCS, Hydrogen Inc. Capex California PEM Electrolysis, Hydrogen California PEM Electrolysis, and Hydrogen Netherlands SMR w/o CCS valuations. Platts also launched Hydrogen Inc. Netherlands SMR (H2 99.9%) w/o CCS MA, Netherlands SMR (H2 99.9%) w/o CCS (inc. Capex) MA, Netherlands SMR (H2 99.9%) w/o CCS (inc. Carbon) MA, Netherlands SMR (H2 99.9%) w/o CCS (inc. Capex & Carbon) MA valuations.