

Specifications Guide

European Electricity

Latest update: December 2020

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DETAILED SPECIFICATIONS

All the assessments listed here employ Platts Assessments Methodology, as published at https://www.spglobal.com/platts/plattscontent/_assets/_files/en/ourmethodology/methodologyspecifications/plattsassessmentsmethodologyguide.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.

PLATTS UK ASSESSMENTS (GTMA, GBP/MWh)

	Base	Peak	--Euro Equivalents--	
	Base	Peak	Base	Peak
Day ahead	AADET00	AADFC00	AADEY00	AADFE00
Day ahead + 1	AADET27	AADFC27	AADEY27	AADFE27
Day ahead + 2	AADET28	AADFC28	AADEY28	AADFE28
Weekend	AADNN00		AADNP00	
Month ahead	AADGP00	AADGV00	AADGT00	AADIJ00
Month ahead + 1	AADNS00	AADXH00	AADNU00	AADXJ00
Month ahead + 2	AADXL00	AADXP00	AADXN00	AADXR00
Quarter ahead	AADXU00	AADXZ00	AADXW00	AADYB00
Quarter ahead + 1	AADYD00	AADYK00	AADYF00	AADZP00
Season ahead	AADZS00	AAEYV00	AAESW00	AAEZB00
Season ahead + 1	AAEZD00	AAFPM00	AAFPL00	AAFPN00
Season ahead + 2	AAIJX00	AAIJY00	AAIKB00	AAIKC00
Season ahead + 3	AAIJZ00	AAIKA00	AAIKD00	AAIKE00
Season ahead + 4	AASTR00	AASTT00	AASTQ00	AASTS00
Year ahead	FUKZY01	FUKY01	FUKXY01	FUKWY01

Platts UK electricity standard specifications

Platts assesses over-the-counter trade under the Grid Trade Master Agreement contract for the day ahead, weekend, next three months, next two quarters, next five seasons and the year ahead.

Standard contract definitions

Platts assessments are based on standard contract definitions and volumes.

Delivery: Prices are for firm delivery on the high-voltage grid network of England, Wales and/or Scotland. This includes the Scotland-Northern Ireland interconnector but not Northern Ireland itself. Distribution network costs are not included. All prices are for physically delivered trades.

Lot size: Qualifying trades are 50-100 MW for prompt (day-ahead and weekend delivery) and 5 MW-20 MW for forwards.

Timing (London time): Baseload = 23:00-23:00, Peak = 07:00-19:00.

EFA Block definitions (London time)

Block 1 = 23:00-03:00

Block 2 = 03:00-07:00

Block 3 = 07:00-11:00

Block 4 = 11:00-15:00

Block 5 – 15:00-19:00

Block 6 – 19:00-23:00.

Day-ahead = Baseload for delivery from 23:00 the day of trade until 23:00 the day after. Peaks for delivery 07:00-19:00 the day following trade.

NOTE: In the event of no confirmed peakload UK day-ahead trades before the 9:20 am London time market close, Platts will assess the implied value of the day-ahead peakload contract using OTC prices for Block 3+4 (07:00-15:00) and Block 5 (15:00-19:00). Following announced changes in key UK power exchange timings, Platts will amend the timestamp of its UK day-ahead baseload and peakload assessments to 9:20 am London time, effective January 1, 2021.

UK exchanges EPEX and N2EX have announced that they will amend their gate closure times from 11:00 am London time to 9:20 am and 9:30 am, respectively.

As a result of these changes, Platts believes that the bulk of market activity in the day-ahead power contracts will occur ahead of 9:20 am. Therefore, Platts is amending the timestamp of its own assessments from 11:00 am previously to 9:20 am for its Platts UK OTC DA assessments.

Weekend = Baseload for delivery from 23:00 Friday until 23:00 on Sunday.

All forward months, quarters and years are calendar months, quarters and years.

Winter = The period from October-March.

Summer = The period from April-September

NOTE: The UK market also has off-peak contracts (19:00-07:00 London time) and overnight contracts (23:00-07:00 London

time). These contracts do not form part of Platts assessments.

Platts assessment ranges

Platts publishes a single value for each of its UK electricity assessments in European Power Daily and on European Power Alert.

Platts also publishes a low-high range around its assessments for UK electricity symbols in Market Data categories EE and PE, unless otherwise stated. The low and high reflect a fixed value either side of the assessment. Low-high ranges are standardized as follows:

- Primary assessments in GBP/MWh: +/- 15 pence.

When Platts assessments are published

Platts market-on-close assessments reflect market value at the end of the normal trading cycle. For UK power we define this as:

All day-ahead contracts – 9:20 am London time.

All daily prompt and forward contracts – 16:30 London time.

Day-ahead assessments are published after 16:30 London time alongside Platts forward electricity assessments.

On certain days ahead of some UK Public Holidays, such as Christmas Eve and New Year's Eve, Platts assesses the 16:30 market-on-close price earlier than normal, at 12:00 noon London time. This is to take account of typically much lower liquidity and the earlier end of trade.

Units: All UK prices are quoted in GBP/MWh with Eur/MWh equivalents.

Platts converts its UK electricity assessments from GBP/MWh to Eur/MWh to allow for ease of comparison or analysis in regional

markets. Such conversions are done using published exchange rates.

Platts day-ahead assessments are databased both by trade date and by flow date.

Platts publishes day-ahead power market assessments for Monday to Friday and a single weekend assessment for Saturday and Sunday. On Fridays, the day-ahead price reflects Monday's delivery date.

Platts publishes forward power assessments for the UK on all UK working days. Assessments for UK public holidays and the first working day following a UK public holiday weekend are published on the last working day before the public holiday.

European Power Daily: UK Monthly Averages

Platts publishes monthly averages for day-ahead and month-ahead. For day-ahead, monthly averages are calculated on a flow-date and trade-date basis.

For a flow-date monthly average an August 1 day-ahead assessment would be included in the August average, although the contract traded on July 31. UK flow-date averages calculate Saturday and Sunday values based on Friday assessments of weekend delivery.

UK day-ahead assessments cover working days only and the trade-date monthly averages therefore include Friday assessments of Monday delivery but do not include weekends. The trade-date calculations do not include day-ahead+1, day-ahead+2, day-ahead+3 and day-ahead+4 prices assessed ahead of UK public holidays.

Roll dates

All weekly, monthly, quarterly, seasonal and annual power contracts roll on the first working day of each new calendar period.

PLATTS DAILY SPARK SPREADS

	45% Efficiency	50% Efficiency
UK (GBP/MWh)		
Day ahead	UKHDA00	AAKBA00
Month ahead	UKHMA00	AAKBC00
Month ahead + 1	UKHM200	UKFM200
Quarter ahead	UKHQ100	UKFQ100
Quarter ahead + 1	UKHQ200	UKFQ200
Season ahead	UKHS100	UKFS100
Season ahead + 1	UKHS200	UKFS200
Season ahead + 2	UKHS300	UKFS300
Season ahead + 3	UKHS400	UKFS400

	45% Efficiency	50% Efficiency
UK (Eur/MWh)		
Day ahead	UEHDA00	UEFDA00
Month ahead	UEHMA00	UEFMA00
Month ahead + 1	UEHM200	UEFM200
Quarter ahead	UEHQ100	UEFQ100
Quarter ahead + 1	UEHQ200	UEFQ200
Season ahead	UEHS100	UEFS100
Season ahead + 1	UEHS200	UEFS200
Season ahead + 2	UEHS300	UEFS300
Season ahead + 3	UEHS400	UEFS400
German (Eur/MWh)		
Day ahead	GEHDA00	AAKBI00
Month ahead	GEHMA00	AAKBK00
Month ahead + 1	GEHM200	GEFM200
Quarter ahead	GEHQ100	GEFQ100
Quarter ahead + 1	GEHQ200	GEFQ200
Year ahead	GEHYA00	GEFYA00

	45% Efficiency	50% Efficiency
Italian (Eur/MWh)		
Month ahead	ITKMA00	ITFMA00
Quarter ahead	ITKQA00	ITFQA00
Year ahead	ITSYA00	ITSYB00
Spanish (Eur/MWh)		
Day ahead	PVSPA00	PVSPB00
Month ahead	SPHMA00	SPFMA00
Month ahead + 1	GAPDE00	GAPDF00
Quarter ahead	GAPDA00	GAPDB00
Quarter ahead + 1	GAPEA00	GAPEB00
Year ahead	GAPFA00	GAPFB00
Year ahead+1	GAPFE00	GAPFF00

Continental European power coverage

Platts publishes power settlement prices from the European Energy Exchange (EEX) for Germany, France and Italy, with specifications and roll dates as listed on EEX. Platts publishes power settlement prices from OMIP for Spain, with specifications and roll dates as listed on OMIP.

Platts fuel spread calculations incorporate these power settlement prices.

Spark spreads

Platts spark spreads are indicative prices giving the average difference between the cost of gas and the equivalent price of electricity.

Prices are published daily for the UK, German, Italian, and Spanish markets and reflect a High Heating Value (HHV).

Spark spreads for each Continental European countries are based on Platts assessments of relevant national gas contracts with the exception of Germany which is based on TTF gas assessments, and third-party power price settlements. Spark

spreads for the UK are based on Platts assessments of power and gas contracts.

The day-ahead gas and power assessments used to calculate the UK and German day-ahead spark spreads reflect the next UK working day.

Platts calculates the spark spread for gas-fired plants with efficiencies of 45% and 50% for all of the markets listed above, and 60% for all markets except Spain.

The full formula is as follows: Power price – (Gas price/fuel efficiency)

PLATTS DAILY CLEAN SPARK SPREADS

	--Clean spark spread--		--Clean spark spread (CPS)--	
	45% Efficiency	50% Efficiency	45% Efficiency	50% Efficiency
UK (GBP/MWh)				
Day ahead	UEIDA00	CKFDA00	CKHDA00	CKGDA00
Month ahead	UEIMA00	CKFMA00	CKHMA00	CKGMA00
Month ahead + 1	UEIM200	CKFM200	CKHM200	CKGM200
Quarter ahead	UEIQ100	CKFQ100	CKHQ100	CKGQ100
Quarter ahead + 1	UKIM200	CKFQ200	CKHQ200	CKGQ200
Season ahead	UKIQ100	CKFS100	CKHS100	CKGS100
Season ahead + 1	UEIQ200	CKFS200	CKHS200	CKGS200
Season ahead + 2	UKIM300	CKFS300	CKHS300	CKGS300
Season ahead + 3	UEIS400	CKFS400	CKHS400	CKGS400
UK (Eur/MWh)				
Day ahead	UKIDA00	CEFDA00	CEHDA00	CEGDA00
Month ahead	UKIMA00	CEFMA00	CEHMA00	CEGMA00
Month ahead + 1	UKIQ200	CEFM200	CEHM200	CEGM200
Quarter ahead	UEIS100	CEFQ100	CEHQ100	CEGQ100
Quarter ahead + 1	UEIS200	CEFQ200	CEHQ200	CEGQ200
Season ahead	UKIS100	CEFS100	CEHS100	CEGS100
Season ahead + 1	UKIS200	CEFS200	CEHS200	CEGS200
Season ahead + 2	UKIS300	CEFS300	CEHS300	CEGS300
Season ahead + 3	UKIS400	CEFS400	CEHS400	CEGS400
German (Eur/MWh)				
Day ahead	GEIDA00	CGFDA00		
Month ahead	GEIMA00	CGFMA00		
Month ahead + 1	GEIM200	CGFM200		
Quarter ahead	GEIQ100	CGFQ100		
Quarter ahead + 1	GEIQ200	CGFQ200		
Year ahead	GEIYA00	CGFYA00		
Italian (Eur/MWh)				
Month ahead	ITIQA00	CIFMA00		
Quarter ahead	ITIMA00	CIFQA00		
Year ahead	CIFYA00	CIFYB00		

PLATTS DAILY CLEAN SPARK SPREADS

Spanish (Eur/MWh)

Day ahead	PVCSA00	PVCSB00
Month ahead	SPGMA00	SPIMA00
Month ahead+1	GAPDG00	GAPDF00
Quarter ahead	GAPDC00	GAPDD00
Quarter ahead + 1	GAPEC00	GAPED00
Year ahead	GAPFC00	GAPFD00
Year ahead+1	GAPFG00	GAPFH00

Clean spark spreads

Platts clean spark spreads are indicative prices giving the difference between the combined cost of gas and emissions, and the equivalent price of electricity on a HHV basis.

Prices are published daily for the UK, German, Italian and Spanish markets.

German clean spark spreads are based on TTF gas assessments, equivalent third-party German power assessments and EU emissions Allowance (EUA) prices.

Italian and Spanish clean spark spreads are based on Platts assessments of relevant national gas contracts and third-party power and EUA prices.

UK clean spark spreads are based on Platts assessments of UK national power and gas contracts and third-party EUA prices.

Platts calculates the clean spark spread for gas-fired plants with efficiencies of 45% and 50% for all markets, and 60% for all

markets excluding Spain, and an emissions intensity of 0.053942 tCO₂e/MMBtu HHV (thermal basis, before combustion).

The full formula for German, Italian and Spanish clean spark spreads is as follows: Platts spark spread – (EUA emissions price * emissions intensity factor 0.053942 * energy conversion 3.412141 / fuel efficiency)

The full formula for UK clean spark spreads is as follows: Platts UK spark spread in GBP/MWh – (EUA emissions price in euro/mt converted to GBP * emissions intensity factor 0.053942 * energy conversion 3.412141 / fuel efficiency)

Platts also publishes UK CPS clean spark spreads that incorporate the cost of the UK government's Carbon Price Support (CPS) levy at the following confirmed rates:

Year	Levy in GBP/mt
April 1, 2014- March 31, 2015	9.55
April 1, 2015- March 31, 2016	18.08
April 1, 2016 - March 31, 2017	18.00
April 1, 2017 - March 31, 2018	18.00
April 1, 2018 - March 31, 2019	18.00
April 1, 2019 - March 31, 2020	18.00

The full formula for UK CPS clean spark spreads is: Platts UK spark spread in GBP/MWh – (EUA emissions price in euro/mt converted to GBP + CPS levy in GBP/mt * emissions intensity factor 0.053942 * energy conversion 3.412141 / fuel efficiency)

Emissions roll dates

The EUA component of Platts clean fuel spreads reflects a December annual expiry date. Platts clean fuel spread calculations will typically reference the emissions contract most relevant to the delivery period for the fuel legs of the spread. In the UK, seasonal clean fuel spreads that include delivery during winter periods which touch on two calendar years will use an average of two emissions contracts for the 'clean' component of the spread.

Platts clean fuel spread calculations incorporate three emissions contracts ahead with specifications and roll dates as listed on European Energy Exchange (EEX).

PLATTS DAILY DARK SPREADS**35% Efficiency**

UK (Eur/MWh)	
Month ahead	CDUTM00
Month ahead + 1	CDUTM27
Quarter ahead	CDUTQ00
Quarter ahead + 1	CDUTQ27
Season ahead	CDUTS00

35% Efficiency

UK (GBP/MWh)	
Month ahead	CDUZM00
Month ahead + 1	CDUZM27
Quarter ahead	CDUZQ00
Quarter ahead + 1	CDUZQ27
Season ahead	CDUZS00

35% Efficiency**45% Efficiency**

German (Eur/MWh)		
Month ahead	CDGTM00	CDGUM00
Month ahead + 1	CDGTM27	CDGUM27
Quarter ahead	CDGTQ00	CDGUQ00
Quarter ahead + 1	CDGTQ27	CDGUQ27
Year ahead	CDGTY00	CDGUY00
Year ahead + 1	CDGTY27	CDGUY27
Year ahead + 2	CDGTY28	CDGUY28

Dark spreads

Platts dark spreads are formula prices giving the average difference between the cost of coal and the equivalent price of electricity on any given day.

UK dark spreads are based on Platts CIF ARA coal assessments and UK electricity assessments. German dark spreads are based on Platts CIF ARA coal assessments and third-party EEX German electricity settlement prices.

The formula for UK and German dark spreads uses an energy conversion factor of 6.978 (converting 1 metric ton of coal into MWh) and a fuel efficiency factor (coal) of 35% and 45% (Germany only).

The full formula is as follows: Baseload power price in Euro – (((coal price in US dollar ÷ exchange rate) ÷ energy conversion factor) ÷ fuel efficiency factor)

PLATTS DAILY CLEAN DARK SPREADS

	35% Efficiency	CPS
UK (Eur/MWh)		
Month ahead	CCUTM00	CCHTM00
Month ahead + 1	CCUTM27	CCHTM27
Quarter ahead	CCUTQ00	CCHTQ00
Quarter ahead + 1	CCUTQ27	CCHTQ27
Season ahead	CCUTS00	CCHTS00

	35% Efficiency	CPS
UK (GBP/MWh)		
Month ahead	CCUZM00	CCHZM00
Month ahead + 1	CCUZM27	CCHZM27
Quarter ahead	CCUZQ00	CCHZQ00
Quarter ahead + 1	CCUZQ27	CCHZQ27
Season ahead	CCUZS00	CCHZS00

	35% Efficiency	45% Efficiency
German (Eur/MWh)		
Month ahead	CCGTM00	CCGUM00
Month ahead + 1	CCGTM27	CCGUM27
Quarter ahead	CCGTQ00	CCGUQ00
Quarter ahead + 1	CCGTQ27	CCGUQ27
Year ahead	CCGTY00	CCGUY00
Year ahead + 1	CCGTY27	CCGUY27
Year ahead + 2	CCGTY28	CCGUY28

Clean dark spreads

Platts clean dark spreads are formula prices giving the average difference between the cost of coal and emissions, and the equivalent price of electricity on any given day.

Prices are published for the UK and German markets.

UK clean dark spreads are based on Platts CIF ARA coal assessments and UK electricity assessments and third-party EUA prices. German clean dark spreads are based on Platts CIF ARA coal assessments and third-party EEX German electricity settlement prices and EUA prices.

The formula for the UK and German clean dark spreads uses an energy conversion factor of 6.978 (converting 1 metric ton of coal into MWh), a fuel efficiency factor (coal) of 35% and 45% (Germany only) and an emissions intensity factor of 0.973

mtCO₂/MWh for 35% efficiency and 0.757 mtCO₂/MWh for 45% efficiency.

The full formula is as follows: Baseload power price in Euro – (((coal price in US dollar ÷ exchange rate) ÷ energy conversion factor) ÷ fuel efficiency factor) – (EUA price in euro x carbon intensity factor)

Platts also publishes UK CPS clean dark spreads that incorporate the cost of the UK government's Carbon Price Support (CPS) levy at the following confirmed rates:

Year	Levy in GBP/mt
April 1, 2014 - March 31, 2015	9.55
April 1, 2015 - March 31, 2016	18.08
April 1, 2016 - March 31, 2017	18.00
April 1, 2017 - March 31, 2018	18.00
April 1, 2018 - March 31, 2019	18.00
April 1, 2019 - March 31, 2020	18.00

The full formula for UK CPS clean dark spreads is: Platts UK dark

spread in GBP/MWh at 35% fuel efficiency - (EUA emissions price in euro/mt converted to GBP + CPS levy in GBP/mt * emissions intensity factor 0.973).

Emissions roll dates

The EUA component of Platts clean fuel spreads reflects a December annual expiry date. Platts clean fuel spread calculations will typically reference the emissions contract most relevant to the delivery period for the fuel legs of the spread. In the UK, seasonal clean fuel spreads that include delivery during winter periods which touch on two calendar years will use an average of two emissions contracts for the 'clean' component of the spread.

Platts clean fuel spread calculations incorporate three emissions contracts ahead with specifications and roll dates as listed on EEX.

PLATTS COAL SWITCHING PRICE INDICATOR (CSPI)

	UK (p/th)	UK (Eur/MWh)	Netherlands (Eur/MWh)
Month ahead	EUKVM00	EUKTM00	EDUTM00
Quarter ahead	EUKVQ00	EUKTQ00	EDUTQ00
Year ahead	EUKVY00	EUKTY00	EDUTY00

Coal switching price indicator (CSPI)

Platts Coal Switching Price Indicator (CSPI) calculates the threshold at which gas prices are more competitive than coal prices as input fuel in power generation. When the gas price is higher than the CSPI, CCGT generation is more expensive than coal-fired generation and vice versa.

Platts CSPI data is published for the UK and the Netherlands and is expressed in Eur/MWh and for the UK only in p/th.

Platts CSPI data is based on the Platts CIF ARA coal forward curve assessment that corresponds to each CSPI delivery period and on third-party EUA prices (see “Emissions roll dates” above).

For the UK CSPI, Platts incorporates the cost of the UK government’s CPS levy (see table in CPS clean dark spreads section above). For the calendar year ahead UK CSPI, a time-weighted average of the CPS will be used to reflect the presence of two confirmed UK CPS rates for any given calendar year.

For the Dutch CSPI, Platts incorporates the cost of the Dutch coal tax at Eur0/mt.

Previous Dutch coal tax rates were Eur14.40/mt for calendar year 2015 and Eur14.27/mt for calendar year 2014.

Platts calculates the CSPI using the following carbon emission factors: gas 0.18404 mtCO2/MWh; coal 0.34056 mtCO2/MWh (thermal basis, before combustion).

Platts calculates the CSPI using the following efficiencies: UK CCGT 45% and 50% HHV; UK coal 35% LHV; Dutch CCGT 45% and 50% HHV; Dutch coal 40% LHV.

The full CSPI formula is as follows:

$$\text{UK CSPI_EUR (Eff = 50\%, Eff = 45\%)} = \text{Eff} * [\text{Coal_Price}/35\% + (\text{EF_Coal}/35\% - \text{EF_CCGT}/\text{Eff}) * (\text{EUA_Price} + \text{UK_CPS})]$$

$$\text{UK CSPI_p (Eff = 50\%, Eff = 45\%)} = \text{UK CSPI_EUR (Eff = 50\%, Eff = 45\%)} * \text{EURGBP} * 2.9307$$

$$\text{Dutch CSPI (Eff = 50\%, Eff = 45\%)} = \text{Eff} * [\text{Coal_Price}/40\% + (\text{EF_Coal}/40\% - \text{EF_CCGT}/\text{Eff}) * (\text{EUA_Price} + \text{Dutch_CT}/40\%)]$$

Formula Definitions:

Coal_Price = Platts CIF ARA coal price assessment as quoted in USD/mt and converted into Eur/MWh

EUA_Price = EUA prices as listed on EEX and quoted in Eur/mt

EF_CCGT = Emissions factor CCGT

EF_Coal = Emissions factor coal

UK_CPS = UK Carbon Price Support

Dutch_CT = Dutch coal tax

UK CSPI_EUR = UK Coal Switching Price Indicator, expressed in Eur/MWh

UK CSPI_p = UK Coal Switching Price Indicator, expressed in p/th

Dutch CSPI = Dutch Coal Switching Price Indicator, expressed in Eur/MWh

GENERATING FUEL COST COMPARISONS

	/MWh	Plus CO2	Total /MWh	GBP	--Profit/loss-- Eur	\$
UK baseload (GBP)						
Gas						
Next month	AANFJ00	AANFK00	AANFL00	AANFM00	AANFN00	AANFP00
Next quarter	AANFW00	AANFX00	AANFY00	AANFY00	AANFZ00	AANGA00
Coal						
Next month	AANGG00	AANGH00	AANGJ00	AANGK00	AANGL00	AANGM00
Next quarter	AANGU00		AANGV00	AANGW00	AANGX00	AANGY00
Fuel oil 1%S (peak load)						
Next month	AANHE00	AANHF00	AANHG00	AANH000		
Next quarter	AANHN00c		AANHP00	AANHQ00		
NW Europe baseload (Eur)						
Gas						
Next month	AANFQ00	AANFR00	AANFS00	AANFU00	AANFT00	AANFV00
Next quarter	AANGB00		AANGC00	AANGE00	AANGD00	AANGF00
Coal						
Next month	AANGN00	AANGP00	AANGQ00	AANGS00	AANGR00	AANGT00
Next quarter	AANGZ00		AANHA00	AANHC00	AANHB00	AANHD00
Fuel oil 1%S (peak load)						
Next month	AANHJ00	AANHL00	AANHK00		AANHM00	
Next quarter	AANHR00		AANHS00		AANHT00	

Cross-fuel comparisons

Platts cross-fuel comparisons are indicative prices of the costs of burning oil, gas and coal in power stations. In each case, the price of the fuel for spot and forward delivery is converted into an equivalent electricity price, expressed in Eur/MWh, GBP/MWh and \$/MWh. The conversions assume the following plant efficiencies:

Natural Gas: 50%, Coal: 35%, Fuel Oil: 32%.

The data uses the following kg CO2/MMBtu rates: 53.937 for natural gas, 99.64 for coal, and 72.5 for oil.

Coal and distillates are priced at ARA.

The standard specifications and sources of each fuel type can be found in the following documents listed on <http://www.platts.com/methodology-specifications>:

Natural gas - Platts European Natural Gas Specifications

Coal - Platts Coal Specifications

Fuel oil - Platts European Oil Products Specifications

EUROPEAN GUARANTEES OF ORIGIN

Assessment	CODE	Generation	Origin	Vintage	Minimum Volume	Typical Volume	Currency	UOM	Frequency	Timestamp
Large Nordic Hydro	NHGY004	Unsupported Hydro	Denmark, Finland, Norway, Sweden	Current Year	5 GWh	100 GWh	Eur	MWh	Daily	4:30 PM
Large Nordic Hydro	NHGY104	Unsupported Hydro	Denmark, Finland, Norway, Sweden	Year Ahead	5 GWh	100 GWh	Eur	MWh	Daily	4:30 PM
EU Wind	EWGY004	Supported or unsupported Wind	EU27*	Current Year	5 GWh	50 GWh	Eur	MWh	Daily	4:30 PM
EU Wind	EWGY104	Supported or unsupported Wind	EU27*	Year Ahead	5 GWh	50 GWh	Eur	MWh	Daily	4:30 PM

*EU member states with EECS certification

European Guarantee of Origin (EuGo) Price Assessments

A Guarantee of Origin (GO) is an electronic tracking certificate that labels electricity attributes/technology behind generated electricity, as regulated in Article 15 of the European Directive 2009/28/EC. One GO certificate corresponds to one MWh of electricity produced using renewable sources.

The value of a GO is the premium to the wholesale price of electricity that a counterpart is willing to pay for the attributes of electricity generated from a renewable source when compared to undisclosed electricity.

A GO is physically used or consumed via the cancellation process which is the method of allocating specific electricity to a single end-user. Cancelling a GO from the relevant national

registry is the only way to remove a GO from the market and redeem its benefits.

The trading of GOs can be done on a spot, forward or term basis. The spot market involves the buying and selling of GOs generated during the current time period in question, while the forward market entails future delivery. The term market refers to a multi-year contract obliging one party to sell the GOs it generates to another party.

Platts assesses the value of European GO products on a daily basis.

Assessments reflect the transactable value in Eur/MWh prevailing at a specific timestamp on a market-on-close (MOC) basis. Trading activity, including bids/offers and transactions, is covered during the period of assessment with data cut off for

inclusion in the assessment precisely at the MOC timestamp, at 16.30 GMT on a daily basis.

Platts considers as relevant to the assessment process GOs in a defined range of specifications including but not limited to type of generation, origin of generation and period of generation (vintage) and are normalized to the standard specifications.

Volume: The assessments reflect a typical volume in MWh. All volumes are normalized to a typical volume.

Origin: The physical location of the specified generation.

Vintage: The period of generation for which the GO certificate is applicable.

REVISION HISTORY

December 2020: Platts to amend UK day-ahead assessments timing to 9:20 am London time, effective January 1, 2021.

October 2020: Platts completed an annual review of the Specifications Guide European Electricity. Platts reviewed all content, corrected typos and made minor edits to language.

October 2019: Platts completed an annual update to the European Electricity methodology and specifications guide. Platts reviewed all content and made minor edits throughout.

September 2019: Platts launched European Guarantee of Origin (EuGO) for current year and year-ahead vintage.

April 2019: Platts completed an annual update to sections 1 to 6 of Platts Methodology and Specifications Guides in April 2019, and moved these sections into a standalone Methodology Guide.

April 2019: Platts clarified the emissions intensity factor used in its German clean dark spreads with 45% efficiency.

October 2018: Platts has replaced the use of EEX German/Austrian (DE/AT) power price component in with Germany-only (DE-only Phelix) settlement prices. Platts also launched Spanish day-ahead spark spread and clean spark spreads with both 45% and 50% efficiency.

July 2018: Platts launched Spanish spark and clean spark spreads for the Month-ahead, +1, Year-Ahead +1 and Italian Year-ahead, with both 45% and 50% efficiency.

May 2018: Platts removed references to German, French, Italian and Spanish prompt and forward price assessments following the discontinuation of these markets on May 29, 2018. Platts also updated the fuel spread sections of this methodology guide to change the source of European power prices from Platts assessments to third-party exchanges.

May 2018: Platts completed an annual update to the European Electricity methodology and specifications guide. In this update, Platts revamped the guide to introduce greater consistency of layout and structure across Platts' published methodology guides. Platts also reviewed all content during this update.

March 2018: Platts removed references to Belgian and Dutch weekly power assessments and spark spreads following the discontinuation of these markets on March 5, 2018.

October 2017: Platts launched Spanish spark and clean spark spreads for the Quarter-ahead, Quarter-Ahead +1 and Year-ahead, with both 45% and 50% efficiency.

October 2017: Platts discontinued French Month-ahead+1, Month ahead+2, Year ahead+1, and Year ahead+2 base and peak power assessments. Platts also replaced French Saturday and Sunday power prices with the Weekend assessment for the flow date price data set. In addition, Spanish Day-ahead, Weekend, Month-ahead+1 and Quarter-ahead +2 baseload assessments were also discontinued. From October 2, French and Spanish Week-ahead contracts are only assessed on the last working day of the week.

May 2017: Platts updated the clean fuel spread sections of this methodology guide to change the source of European emissions prices from Platts assessments to third-party exchange.

February 2017: Platts removed references to duplicate UK index symbols which were discontinued on February 3, 2017.

January 2017: Platts completed an annual update to the European Electricity methodology and specifications guide. In this update, Platts revamped the guide to introduce greater consistency of layout and structure across Platts' published methodology guides. Platts also reviewed all content during this update and introduced code lists. Methodologies for market coverage were not changed.

January 2017: Platts discontinued prompt power assessments for Switzerland, the Netherlands and Belgium. Platts also discontinued forward assessments of Dutch peakload contracts and Dutch quarter-ahead + 1 baseload and moved to weekly reporting for remaining Dutch and Belgian power assessments and associated spark and clean spark spreads. Platts discontinued the following calculated indices: Platts Power Index (German PPI); Continental European Forward Power Price indices; PEP and CONTI indices.

November 2016: Platts clarified the day-ahead definition for European spark spreads.

October 2016: Platts discontinued UK week-ahead and week-ahead+1 base and peak power assessments.

October 2016: Platts updated the Spark Spreads section of this guide to reflect the renaming of its Spanish gas assessments to PVB (formerly AOC).

September 2016: Platts updated the Currency conversions section of this guide. The source and timestamp for the foreign exchange data used to convert Platts European electricity assessments to foreign currency equivalents was revised from Tullett Prebon at 16:00 London time to Platts 16:30 London time assessment. Platts also removed references to the previous calculations for exchange rates. Prior to June 2014, exchange rates were published with a working-day time lag, with the previous day's exchange rate close used in calculations.

August 2016: Platts updated this guide to remove references to CEE and Turkish power assessments and to Turkish dark and spark spreads. Platts discontinued assessments of the Czech, Hungarian, Polish and Turkish power markets. Turkish dark and spark spreads were also discontinued. Price history remains available in Market Data categories EE, PE and EM.

November 2015: Platts introduced additional German dark spread indicators, with a fuel efficiency factor of 45%.

September 2015: Platts discontinued its assessments of German month-ahead+4 and month-ahead+5 baseload and peakload electricity contracts.

March 2015: Platts discontinued publishing cross-fuel comparisons containing Gasoil 0.1% sulfur content and Fuel Oil 3.5% sulfur content.

December 2014: Platts updated the plant efficiencies and rates in its cross-fuel comparisons on December 16, 2014. Previous plant efficiencies were: Gas 49% (UK) and 54% (western Europe), Fuel Oil: 32%, Gasoil: 32%, Coal: 34%. Previous kg CO₂/MMBtu rates were 101.5 for coal, 55 for natural gas and 72.5 for oil.

April 2014: Platts revised the emissions intensity factor used in its spark spreads to 0.053942 tCO₂e/MMBtu HHV from 0.055 with effect from April 1, 2014. The energy conversion factor (coal) used in dark spreads was revised to 6.978 from 7.1 and the emissions intensity factor used in clean dark spreads was revised to 0.973 mtCO₂/MWh from 0.96.

March 2014: Platts discontinued its assessment of the UK April Annual contract.

January 2014: Platts moved its day-ahead timestamp to 11:00 am from midday as of January 2, 2014.

November 2013 – September 2014: Platts transitioned its UK forward power assessments to the Gregorian calendar from the EFA calendar. The last EFA roll date was September 29, 2014, and the first Gregorian roll date was November 3, 2014.

November 2013: Platts launched assessments of EFA-Gregorian “gap” products covering the following dates: September 29-30, 2014 and March 30/31, 2015. Assessments were only published in the event of trade or firm and verifiable indications of market value.

November 2009: Forward time stamp alignment to 16:30 London time as of November 1.