



# Continental Gas Snapshot Methodology

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ICIS publishes Continental Gas Snapshots (CGS) on every working day of the year in Britain. CGS assesses and records prices and market activity on the liquid markets in Britain and Europe, including but not limited to:

- Britain
- Belgium
- The Netherlands
- France
- Germany
- Italy

The financial value of natural gas is established by two methods:

**1. Price Assessments:** ICIS assesses the market closing prices on the day of publication and publishes a price range for each delivery period on a number of liquid markets. This is known as the BID-OFFER RANGE, representing the highest buyer's bid and the lowest seller's offer at the relevant close of each market.

**2. Indexation (Heren Index):** Indices are published for a variety of delivery periods and delivery points. Each Heren Index is a transaction-based price, calculated using the volume-weighted average of eligible transactions (trades) for the relevant delivery period reliably reported to ICIS.

More precise details of ICIS's Price Assessments and Heren Indices, together with further information about our service, will be found below.

## ESGM Price Assessments - General Definitions

The European wholesale Over-The-Counter (OTC) gas markets are assessed each working day during the period 16:30 to 18:00 London time, when ICIS contacts by telephone a wide range of active market participants.

All price assessments published in ESGM are formulated by ICIS at the conclusion of this process and represent ICIS's close-of-day bid-offer ranges for flat gas (no swing, 100% take-or-pay) delivered at a number of hubs. Day-ahead and prompt closing prices are assessed as closely as possible to 16:30 London time on all UK working days, except on the final working day immediately preceding 25th December and 1st January each year, when these prices are assessed as closely as possible to 12:00 London time. Curve price assessments are assessed as closely as possible to 16:30 London time at the earliest, or at the time of the latest liquid market if this is after 16:30, on all UK working days, except on the final working day immediately

preceding 25th December and 1st January each year, when these prices are assessed as closely as possible to 12:00 London time. Prices reported are based on bids and offers widely available to the market at the close. Closing price assessments are not based on deals done during the day (listed separately in ESGM).

**"Bid"** is deemed to be the highest price bid by buyers at the close of business on the trading day in question.

**"Offer"** is deemed to be the lowest price offered by sellers at the close of business on the trading day in question.

Prices on the ESGM price assessment (on page 1 of ESGM) – which currently covers the NBP and Zeebrugge hubs – are given in UK pence per therm to three decimal places (1 therm = 100,000 British Thermal Units = 29.3071 kWh).

Prices quoted are for gas flowing to the specified hub at a flat rate (100% take-or-pay, zero swing) throughout the specified delivery period.

## ESGM Price Assessments - Definitions of Hubs

**NBP:** The British virtual gas hub operated by TSO National Grid, covering all entry and exit points in mainland Britain.

**Zeebrugge:** The physical gas hub at the Zeebrugge gas terminal in Belgium operated by Huberator, a 100% subsidiary of Belgian TSO Fluxys.

**TTF:** The virtual gas hub covering all high calorific entry and exit points in the Netherlands, operated by Dutch TSO Gas Transport Services, a subsidiary of N.V. Nederlandse Gasunie.

**BEB VP:** The virtual gas hub covered by the high calorific entry/exit market zone of north-German based integrated energy company BEB.

**PEG Nord:** The virtual gas hub covered by the high calorific entry/exit north market zone operated by GRTgaz, the wholly-owned transport arm of Gaz de France.

**PSV:** The virtual hub run by Italian network operator Snam Rete Gas.

**EGT Nord:** The northern high calorific entry-exit zone operated by Eon Gastransport, a subsidiary of Eon Ruhrgas.

# ESGM Price Assessments - Definitions of Periods

The periods, from one day to one year, are based on the standard definition of the “gas day” used in Britain. That is, gas flowing from 06:00:00 on the day in question (the day on which the report is published) for 24 hours until 05:59:59 on the following day.

**“Day-ahead”:** Day-ahead prices are for flat gas (no swing, 100% take-or-pay) to be delivered for the working gas day following the date of the report. Thus, in a report published on Friday, the Day-ahead quote would normally apply to the following Monday, provided that Monday is not a public holiday in Britain (in which case Day-ahead would refer to the next working day after that). Day-ahead prices represent gas to be delivered at a flat rate, beginning at 06:00:00 London time on the next working day after the date of publication and ending at 05:59:59 on the day following the start date of delivery.

**“Weekend”:** Weekend prices are for the first Saturday and Sunday following the date of the report, as well as other non-working days contiguous with the weekend, and the Christmas and Boxing Day (25th-26th December) holidays, and New Year’s Day (1st January) when these fall midweek. Thus, if there is a UK public holiday on a Monday or a Friday, this extra day would be included in the Weekend period which immediately precedes or follows it. Similarly, if Christmas Day and Boxing Day fall on a Tuesday and Wednesday, the Weekend contract quoted on the Monday of the same week would refer to Christmas Day and Boxing Day. Weekend prices represent flat gas (no swing, 100% take-or-pay) with delivery beginning at 06:00:00 London time on the first day of the Weekend period and ending at 05:59:59 on the day following the end of the Weekend. Thus, for a normal weekend, the Weekend price is for gas delivery starting at 06:00:00 on Saturday and ending at 05:59:59 on the following Monday.

**“Working Days Next Week (WDNW)”:** Working Days Next Week prices are for flat gas (no swing, 100% take-or-pay) to be delivered throughout every working day in the week following the date of the report, i.e. contiguous working days following the next Weekend period. WDNW prices represent flat gas with delivery beginning at 06:00:00 London time on the first day of the WDNW period and ending at 05:59:59 on the day after the last working day of the period. Thus, for a typical WDNW contract, delivery begins at 06:00:00 on the first Monday after the date of publication and ends at 05:59:59 on the following Saturday.

**“Balance-of-month (BOM)”:** Balance-of-month prices are for flat gas (no swing, 100% take-or-pay) to be delivered throughout each of the remaining days of the current month, excluding the next immediate Day-ahead or Weekend contract, whichever is the sooner. Thus, in a report published on Thursday, the BOM quote would normally apply from the following Saturday to the end of the month (remaining days of the month minus Day-ahead). In a report published on Friday, the BOM quote would normally apply from the following Monday to the end of the month (remaining days of the month minus Weekend). The number of days contained in BOM thus declines through the month. BOM prices represent gas to be delivered at a flat rate, beginning at 06:00:00 on the first day of the contract and ending at 05:59:59 on first day of the succeeding month.

**Months:** Month prices represent flat gas (no swing, 100% take-or-pay) to be delivered at a flat rate throughout each day of the month, beginning at 06:00:00 on the first day of the month and ending at 05:59:59 on the first day of the succeeding month.

**Quarters:** A Quarter is the three-month period beginning on 1st January (Q1), 1st April (Q2), 1st July (Q3) and 1st October (Q4). Quarter prices represent gas to be delivered at a flat rate throughout each day of the quarter, beginning at 06:00:00 on the first day of the quarter and ending at 05:59:59 on the first day of the succeeding quarter.

**Seasons:** A Season is the six-month period running from either 1st April to 30th September of a particular calendar year (known as Summer) or running from 1st October of one year to 30th March of the following year (known as Winter). Season prices represent gas to be delivered at a flat rate throughout each day of the season, beginning at 06:00:00 on the first day of the season and ending at 05:59:59 on the first day of the succeeding season.

**Years:** A Year is the twelve-month period 1st January-31st December. Year prices represent gas to be delivered at a flat rate throughout each day of the twelve-month period, beginning at 06:00:00 on the first day of the calendar year and ending at 05:59:59 on the first day of the succeeding calendar year.

**Gas Year:** A Gas Year is the twelve-month period starting on 1st October of a particular calendar year and ending on 30th September of the following calendar year. The title of the gas year always refers to the year in which the contract commences, so that for example, Gas year 08 means the period 1st October 2008 to 30th September 2009. Gas Year prices represent gas to be delivered at a flat rate throughout each day of the twelve-month period, beginning at 06:00:00 on the first day of the gas year and ending at 05:59:59 on the first day of the succeeding gas year.

# ESGM Price Assessments - Contracts Assessed at Individual Hubs

As liquidity expands at the various hubs across Europe, ICIS successively adds new periods to the price assessments at different hubs. Currently, ICIS quotes the following periods at each hub:

**ESGM Price Assessment** (published every UK working day on page 1, UK p/th):

**NBP** - Day-ahead, Weekend, WDNW, BOM, six months ahead, eleven quarters ahead, ten seasons ahead, two gas years ahead, two calendar years ahead.

## ESGM Price Assessments: Hubs quoted and past dates

Trading point	Country	Start Dates
Bacton	Uk	13 Jan 1994
Fergus	UK	31 Jan 1994
NBP	UK	18 Mar 1996
Zeebrugge	Belgium	12 Mar 1999
Bunde	Germany	25 Apr 2001
TTF	Netherlands	21 Jan 2003
PEG Nord	France	02 Oct 2006
BEP VP	Germany	02 Oct 2006
EGT Nord	Germany	23 Mar 2007

**Bacton and St. Fergus** - Under the heading “Midpoint differentials”, values are indicated for gas to be delivered at Bacton terminal and St. Fergus terminal by reference to the midpoint of the bid and offer at the NBP for the delivery period in question.

**Zeebrugge** - Day-ahead, Weekend, WDNW, BOM, three months ahead, six quarters ahead, one gas year ahead, one calendar year ahead.

**Continental Price Assessment** (published every UK working day, normally on page 6, EUR/MWh):

**TTF** - Day-ahead, Weekend, WDNW, BOM, three months ahead, six quarters ahead, six seasons ahead, one gas year ahead, three calendar years ahead, all assessed as quoted to ICIS Heren in euros per megawatt hour (EUR/MWh).

**Zeebrugge and NBP** - These are simply a conversion into EUR/MWh of the Zeebrugge and NBP prices quoted

in pence per therm in the ESGM Price Assessment on page 1 of the report. Forward currency exchange rates are calculated using 29 pricing points, sourced from Bloomberg, at 16:30 London time every day. The pricing points used are all of those available: spot, one week ahead, 24 months ahead, and 3 to 5 years ahead. Using these points, we calculate a smooth curve which provides us with rates for each day out to 5 years. From these values, we then create appropriate rates for the contracts quoted by us in our gas market assessment tables.

**BEB Price Assessment** (published every UK working day, normally on page 6, EUR/MWh): Day-ahead and one month ahead assessed as quoted by ICIS in euros per megawatt hour (EUR/MWh).

**PEG Price Assessment** (published every UK working day, normally on page 6, EUR/MWh): Day-ahead, one month ahead assessed as quoted to ICIS in euros per megawatt hour (EUR/MWh).

**EGT Nord Price Assessment** (published every UK working day, normally on page 6, EUR/MWh): Day-ahead, one month ahead assessed as quoted to ICIS in euros per megawatt hour (EUR/MWh).

**Italian Formula and Spot Price Values** (normally published weekly on a Wednesday, EUR/MWh): Contracts quoted are not stable as liquidity is thin and shifts from week to week. BOM and two months ahead plus the next season will normally appear. The assessment shows the Eni oil-linked contract price, the differential of the spot value to this price and the TTF price for comparison. All are assessed in euros per megawatt hour (EUR/MWh) at the Punto di Scambio Virtuale (PSV).

Bunde: ICIS continues to assess gas prices at the Bunde physical entry point into Germany. A full price history at Bunde can be obtained from ICIS Heren, but the Bunde Price Assessment does not currently appear in the report, as liquidity at the trading point has deteriorated significantly since the development of the Dutch virtual TTF hub. At present, the ICIS Bunde price assessment covers the identical range of contracts quoted at TTF. Bunde lies near the border with the Netherlands and is about 50 kilometres east of Groningen.

## Heren Volatility Index

The Heren Volatility Index, published in the ESGM Price Assessment on page 1 of ESGM is the 20-trading day rolling volatility by contract for the NBP natural gas forward curve. Volatility is defined as the annualised standard deviation of the percentage change in price between periods. The Heren Volatility Index is the standard deviation of the percentage change in the daily prices for the last 20 trading days multiplied by the square root of 252. There are on average 252 trading days in the year. The index is calculated and reported for each contract traded in the UK except the balance of month contract because it is rarely traded for more than 20 days.

## The Heren Index - General Definition

ICIS's various market indices share a number of common characteristics, regardless of market or time period. They are all volume-weighted averages of trades reported to ICIS during the course of its market reporting activities. All of the trades on which the indices are based are published in ESGM on a daily basis as part of its list of trades reported.

### Indices published and start dates

	NBP (UK)	Zeebrugge (Belgium)	TTF (Netherlands)
Day-ahead	01 May 1988	10 Dec 2001	04 Jan 2005
Within-Day	01 May 1988	-	-
Weekend	08 Jan 1999	02 Aug 2002	10 Mar 2006
Month	01 April 1995	02 May 2000	30 Jun 2005

All Heren Indices, with the exception of the Bacton Monthly Index, are based on actual deals reported to ICIS.

All trading information is subject to ICIS's usual tests of reliability:

1. Confirmation is sought from both parties to the deal.
2. If, as is often the case, both counter-parties are unwilling to confirm, confirmation is accepted from one side only. However, corroboration is also sought from other market participants.
3. If no confirmation is available, the deal may still be

included if it is accepted by the wider market, and if ICIS itself regards it as reliable.

4. In addition to price and volume, which are essential for inclusion in the Index, ICIS ensures that deals include in the Index are stand-alone deals.

5. In the event that reported trades fall noticeably above or below the traded range for that contract on a given day, and in the absence of any reasonable explanation, ESGM would discard the deal or deals. Deals would be liable for rejection if they were 1% above or below the highest or lowest deals reported to ESGM on that day. Evidence of the traded range given by market participants during the market reporting process would also be taken into account when assessing whether to include or discard a deal. Any discarded deals would not be entered into ICIS's database and would not appear in the reported deals tables in ESGM. They would therefore also be excluded from any Heren Index.

## The Heren NBP Within-Day Index

The Heren NBP Within-day Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing, 100% take-or-pay) traded on a within-day basis and is published by ICIS in ESGM each UK working day. The NBP Within-Day Index is a volume-weighted average of all Within-day transaction prices for gas to be delivered at the British National Balancing Point (NBP), the virtual hub operated by TSO National Grid. The Index day is the date of publication. Within-day delivery begins at 06:00:00 London time on the date of publication and ends at 05:59:59 on the day after the date of publication. Thus, the Index published on 1st October 2007 values gas traded on 1st October 2007 for delivery from 06:00:00 on 1st October 2007 to 05:59:59 on 2nd October 2007.

The Heren NBP Within-day Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions, the Index is published as the arithmetical average of the previous twenty Indices.

### The Heren NBP Cumulative Within-Day Index

The Heren NBP Cumulative Within-day Index is contained in the Heren NBP Within-day Index table. The Cumulative Within-day Index is calculated every UK working day and

is a volume-weighted average price of all the Within-day trades included in ESGM so far that calendar month, up to and including the publication date. The Cumulative Within-day Index provides some indication of the price of OTC traded Within-day gas so far during the current calendar month. On the first UK working day of a new month, the NBP Within-day Index will be identical to the Cumulative Within-day Index figure.

## The Heren NBP Day-Ahead Index

The Heren NBP Day-Ahead Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing, 100% take-or-pay) traded for delivery on the next working day to the date of publication, and is published by ICIS Heren in ESGM each UK working day. The NBP Day-ahead Index is a volume-weighted average of all Day-ahead transaction prices for gas to be delivered at the British National Balancing Point (NBP). The Index day is the first working day following the date of publication. Day-ahead delivery begins at 06:00:00 London time on the first working day after the date of publication and ends at 05:59:59 on the day after the delivery start day. Thus, the NBP Day-ahead Index published on 1st October 2007 values gas traded on 1st October for delivery from 06:00:00 London time on 2nd October 2007 to 05:59:59 on 3rd October 2007. The Day-Ahead Index published on a Friday values gas to be delivered on the gas day which starts on the following Monday, or on Tuesday when the Monday is a public holiday.

The Heren NBP Day-Ahead Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions, the Index is published as the arithmetical average of the previous twenty Indices.

## The Heren NBP Cumulative Day-Ahead Index

The Heren NBP Cumulative Day-ahead Index is contained in the Heren NBP Day-ahead Index table. The Cumulative Day-ahead Index is calculated every UK working day and is a volume-weighted average price of all the Day-ahead trades included in ESGM so far that calendar month, up to and including the publication date. The Cumulative Day-ahead Index provides some indication of the price of OTC traded Day-ahead gas so far that calendar month.

On the first UK working day of a new month, the NBP Day-ahead Index will be identical to the Cumulative Day-ahead

Index figure. It should be noted that, in terms of delivery, the Cumulative Day-ahead Index figure published on the final UK working day of a month excludes any Day-ahead gas that was traded on the final working day of the previous month and delivered on the very first working day of the Cumulative Index month. The Cumulative Index published on the final working day of a month will, for the same reason, also include gas that has been traded Day-ahead on the final working day of the Cumulative Index month and will be delivered on the first working day of the succeeding month.

## The Heren Zeebrugge Day-Ahead Index

The Heren Zeebrugge Day-ahead Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing, 100% take-or-pay) traded for delivery on the next working day to the date of publication, and is published by ICIS Heren each UK working day in ESGM. The Zeebrugge Day-ahead Index is a volume-weighted average of all Day-ahead transaction prices for gas to be delivered at the Belgian Zeebrugge physical hub. The Index day is the first working day following the date of publication. Day-ahead delivery begins at 06:00:00 on the next working day after the date of publication and ends at 05:59:59 on the day after the delivery start day. Thus, the Zeebrugge Day-ahead Index published on 1st October 2007 values gas traded on 1st October for delivery from 06:00:00 on 2nd October to 05:59:59 on 3rd October. The Day-ahead Index published on a Friday values gas to be delivered on the gas day which starts on the following Monday, or on Tuesday when the Monday is a public holiday in the UK.

The Heren Zeebrugge Day-ahead Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions, the Index is published as the arithmetical average of the previous twenty Indices.

## The Heren Zeebrugge Cumulative Day-Ahead Index

The Heren Zeebrugge Cumulative Day-ahead Index is contained in the Heren Zeebrugge Day-ahead Index table. The Cumulative Day-ahead Index is calculated every UK working day and is a volume-weighted average price of all the Day-ahead trades included in ESGM so far that calendar month, up to and including the publication date. The Cumulative Day-ahead Index provides some indication of the price of OTC traded Day-ahead gas so far that calendar month.

On the first UK working day of a new month, the Zeebrugge Day-ahead Index will be identical to the Cumulative Day-ahead Index figure. However, in terms of delivery, it should be noted that the Cumulative Day-ahead Index figure published on the final UK working day of a month excludes any Day-ahead gas that was traded on the final working day of the previous month and delivered on the very first working day of the Cumulative Index month. The Cumulative Index published on the final working day of a month will, for the same reason, also include gas that has been traded Day-ahead on the final working day of the Cumulative Index month and will be delivered on the first working day of the following month.

## The Heren TTF Day-Ahead Index

The Heren TTF Day-Ahead Index, calculated in euros per megawatt hour, values flat gas (no swing, 100% take-or-pay) traded for delivery on the next working day to the date of publication, and is published by ICIS in ESGM each UK working day. The TTF Day-ahead Index is a volume-weighted average of all Day-ahead transaction prices for gas to be delivered at the TTF virtual gas hub. The Index day is the first working day following the date of publication. Day-ahead delivery begins at 06:00:00 on the first working day after the date of publication and ends at 05:59:59 on the day after the delivery start day. Thus, the TTF Day-ahead Index published on 1st October values gas traded on 1st October for delivery from 06:00:00 on 2nd October to 05:59:59 on 3rd October. The Day-ahead Index published on a Friday values gas to be delivered on the gas day which starts on the following Monday, or on Tuesday when the Monday is a public holiday in the UK.

The Heren TTF Day-Ahead Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions, the Index is published as the arithmetical average of the previous twenty Indices.

## The Heren TTF Cumulative Day-Ahead Index

The Heren TTF Cumulative Day-ahead Index is contained in the Heren TTF Day-ahead Index table. The Cumulative Day-ahead Index is calculated every UK working day and is a volume-weighted average price of all the Day-ahead trades included in ESGM so far that calendar month, up to and including the publication date. The Cumulative Day-ahead Index provides some indication of the price of OTC traded Day-ahead gas so far that calendar month.

On the first UK working day of a new month, the TTF Day-ahead Index will be identical to the Cumulative Day-ahead Index figure. However, in terms of delivery, it should be noted that the Cumulative Day-ahead Index figure published on the final UK working day of a month excludes any Day-ahead gas that was traded on the final working day of the previous month and delivered on the very first working day of the Cumulative Index month. The Cumulative Index published on the final working day of a month will, for the same reason, also include gas that has been traded Day-ahead on the final working day of the Cumulative Index month and will be delivered on the first working day of the following month.

## The Heren NBP Weekend Index

The Heren NBP Weekend Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing, 100% take-or-pay) traded during the week preceding the Index weekend, and is published by ICIS Heren each Friday in ESGM, or on Thursday if the Friday is a UK public holiday. The NBP Weekend Index is a volume-weighted average of transaction prices for gas to be delivered at the British National Balancing Point (NBP), the virtual hub operated by UK TSO National Grid. The Index weekend is the first weekend following the date of publication.

“Weekend” also includes other UK non-working days contiguous with the weekend, as well as Christmas and Boxing Day (25th-26th December) holidays, and New Year’s Day (1st January) when these fall midweek. Thus, if Christmas Day and Boxing Day fall on a Tuesday and Wednesday, this period will count as a Weekend and the Weekend Index will be based only on deals reported on Monday of the same week for delivery on 25th-26th December.

Weekend delivery begins at 06:00:00 London time on the first day of the contract and ends at 05:59:59 on the day after the end of the contract. Thus, the Index published on for example Friday, 5th October values flat gas traded from 1st to 5th October for delivery beginning at 06:00:00 London time on Saturday 6th October and ending at 05:59:59 on Monday, 8th October.

Each Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions for the Weekend Index, that Index is published as the average of the midpoints of the bid/offer spreads published

in ESGM's NBP OTC gas price assessment table during all the working days which fall in the same calendar week as the Weekend Index and precede the Index weekend.

## The Heren NBP Spot Weekend Index

The Heren NBP Spot Weekend Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing, 100% take-or-pay) traded during the final working day immediately preceding the Index weekend, and is published by ICIS each Friday in ESGM, or on Thursday if the Friday is a UK public holiday. The NBP Spot Weekend Index is a volume-weighted average of transaction prices for gas to be delivered at the British National Balancing Point (NBP), the virtual hub operated by UK TSO National Grid. The Index weekend is the first weekend following the date of publication.

“Weekend” also includes other UK non-working days contiguous with the weekend, as well as Christmas and Boxing Day (25th-26th December) holidays, and New Year's Day (1st January) when these fall midweek. Thus, if Christmas Day and Boxing Day fall on a Tuesday and Wednesday, this period will count as a Weekend and the Heren NBP Spot Weekend Index will be based only on deals reported on Monday of the same week for delivery on 25th-26th December.

Weekend delivery begins at 06:00:00 London time on the first day of the contract and ends at 05:59:59 on the day after the end of the contract. Thus, the Heren NBP Spot Weekend Index published on for example Friday, 5th October, values flat gas traded on 5th October for delivery beginning at 06:00:00 London time on Saturday 6th October and ending at 05:59:59 on Monday, 8th October.

Each Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions for the Weekend Index, that Index is published as the midpoint of the bid/offer spreads published in ESGM's NBP OTC gas price assessment table during the final working day immediately preceding the Index weekend.

## The Heren Zeebrugge Weekend Index

The Heren Zeebrugge Weekend Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing, 100% take-or-

pay) traded during the week preceding the Index weekend, and is published by ICIS Heren each Friday in ESGM, or on Thursday if the Friday is a UK public holiday. The Zeebrugge Weekend Index is a volume-weighted average of transaction prices for gas to be delivered at the Zeebrugge Hub. The Index weekend is the first weekend following the date of publication.

“Weekend” also includes other UK non-working days contiguous with the weekend, as well as Christmas and Boxing Day (25th-26th December) holidays, and New Year's Day (1st January) when these fall in midweek. Thus, if Christmas Day and Boxing Day fall on a Tuesday and Wednesday, this period will count as a Weekend and the Weekend Index will be based only on deals reported on Monday of the same week for delivery on 25th-26th December.

Weekend delivery begins at 06:00:00 on the first day of the contract and ends at 05:59:59 on the day after the end of the contract. Thus, the Index published on a Friday, 5th October values flat gas traded from 1st to 5th October for delivery beginning at 06:00:00 on Saturday 6th October and ending at 05:59:59 on Monday, 8th October.

Each Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions for the Weekend Index, that Index is published as the average of the midpoints of the bid/offer spreads published in ESGM's NBP Zeebrugge gas price assessment table during all the working days which fall in the same calendar week as the Weekend Index and precede the Index weekend.

## The Heren TTF Weekend Index

The Heren TTF Weekend Index, calculated in euros per megawatt hour, values flat gas (no swing, 100% take-or-pay) traded during the week preceding the Index weekend, and is published by ICIS Heren each Friday in ESGM, or on Thursday if the Friday is a UK public holiday. The TTF Weekend Index is a volume-weighted average of transaction prices for gas to be delivered at the TTF virtual gas hub. The Index weekend is the first weekend following the date of publication.

“Weekend” also includes other UK non-working days contiguous with the weekend, as well as Christmas and Boxing Day (25th-26th December) holidays, and New Year's Day (1st January) when these fall in midweek. Thus, if Christmas Day and Boxing Day fall on a Tuesday

and Wednesday, this period will count as a Weekend and the Weekend Index will be based only on deals reported on Monday of the same week for delivery on 25th-26th December.

Weekend delivery begins at 06:00:00 on the first day of the contract and ends at 05:59:59 on the day after the end of the contract. Thus, the Index published on a Friday, 5th October values flat gas traded from 1st to 5th October for delivery beginning at 06:00:00 on Saturday 6th October and ending at 05:59:59 on Monday, 8th October.

Each Index requires a minimum of three transactions. On days when there are fewer than three eligible transactions for the Weekend Index, that Index is published as the average of the midpoints of the bid/offer spreads published in ESGM's TTF Zeebrugge gas price assessment table during all the working days which fall in the same calendar week as the Weekend Index and precede the Index weekend.

## The Heren NBP Monthly Index

The Heren NBP Monthly Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing and 100% take or pay) traded during the preceding month of the Index month for continual delivery at a given rate in the following month. The Index month is the month succeeding the current month of publication and is published by ICIS on the last UK working day of each month.

The Index is a volume-weighted average of transaction prices for gas to be delivered at the British National Balancing Point. Month delivery begins at 06:00:00 London time on the first day of the month following the current month of publication and ending at 05:59:00 London time on the first day of the month after that. Thus, the Monthly Index published on a Friday, 28th September, values flat gas traded during the month of September for delivery beginning 06:00:00 London time on Monday, 1st October, and ending at 05:59:59 on Thursday, 1st November.

The Index requires a minimum of ten transactions. When there are fewer than ten eligible transactions, the Index is published as the arithmetical average of the all the month-ahead assessment midpoints published during the calendar month prior to the delivery month.

## The Heren NBP Monthly Cumulative Index

The Heren NBP Monthly Cumulative Index is published by ICIS on the front page of ESGM every UK working day. The Cumulative Monthly Index is calculated every UK working day and is a volume-weighted average price of all the Month-ahead trades included in ESGM so far that month, up to and including the publication date. The Cumulative Monthly Index provides some indication of the price of OTC traded Month-ahead gas so far that month.

## The Heren Bacton Monthly Index

The Heren Bacton Monthly Index, expressed in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), is calculated by reference to the Heren NBP Monthly Index, usually by adding or subtracting the current market differential between Bacton and the NBP. The Index is calculated and published on the last UK working day of every month.

## The Heren Zeebrugge Monthly Index

The Heren Zeebrugge Monthly Index, calculated in pence per therm (1 therm = 100,000 British thermal units = 29.3071 kWh), values flat gas (no swing and 100% take or pay) traded during the preceding calendar month to the Index month for continual delivery at a given rate in the following month. The Index month is the month succeeding the current month of publication and is published by ICIS Heren on the last UK working day of each month.

The Index is a volume-weighted average of transaction prices for gas to be delivered at Zeebrugge Hub. Month delivery begins at 06:00:00 on the first day of the month following the current month of publication and ending at 05:59:00 on the first day of the month after that. Thus, the Monthly Index published on a Friday, 28th September, values flat gas traded during the month of September for delivery beginning 06:00:00 on Monday, 1st October and ending at 05:59:59 on Thursday, 1st November.

The Index requires a minimum of ten transactions. When there are fewer than ten eligible transactions, the Index is published as the arithmetical average of the all the month-ahead assessment midpoints published during the calendar month prior to the delivery month.

## The Heren Zeebrugge Monthly Cumulative Index

The Heren Zeebrugge Monthly Cumulative Index is published by ICIS on the front page of ESGM every UK working day. The Cumulative Monthly Index is calculated every UK working day and is a volume-weighted average price of all the Month-ahead trades included in ESGM so far that month, up to and including the publication date. The Cumulative Monthly Index provides some indication of the price of OTC traded Month-ahead gas so far that month.

## The Heren TTF Monthly Index

The Heren TTF Monthly Index, calculated in euros per megawatt hour, values flat gas (no swing and 100% take or pay) traded during the preceding month of the Index month for continual delivery at a given rate in the following month. The Index month is the month succeeding the current month of publication and is published by ICIS on the last UK working day of each month.

The Index is a volume-weighted average of transaction prices for gas to be delivered at the TTF virtual gas hub. Month delivery begins at 06:00:00 on the first day of the month following the current month of publication and ending at 05:59:00 on the first day of the month after that. Thus, the Monthly Index published on a Friday, 28th September, values flat gas traded during the month of September for delivery beginning 06:00:00 on Monday, 1st October and ending at 05:59:59 on Thursday, 1st November.

The Index requires a minimum of ten transactions. When there are fewer than ten eligible transactions, the Index is published as the arithmetical average of the all the month-ahead assessment midpoints published during the calendar month prior to the delivery month.

## The Heren TTF Monthly Cumulative Index

The Heren TTF Monthly Cumulative Index is published by ICIS Heren on the front page of ESGM every UK working day. The Cumulative Monthly Index is calculated every UK working day and is a volume-weighted average price of all the Month-ahead trades included in ESGM so far that month, up to and including the publication date. The Cumulative Monthly Index provides some indication of the price of OTC traded Month-ahead gas so far that month.

## ESGM Trades Tables - General and Country-specific Definitions

Trading data is published for the UK, Belgian, Dutch, French and German markets on a daily basis. The trading tables list all the UK gas Over-the-counter (OTC) transactions reliably identified by ESGM on the date of the report. Deals are listed by delivery date, volume, and price. Counterparty names are not published. Where a deal has been fully confirmed with both buyer and seller, this is indicated by an asterisk.

**UK Deals Done:** This table lists all the British OTC gas transactions reliably identified by ESGM on the date of the report. Deals are listed by delivery date, daily and total volume, and price.

**Belgian Deals Done:** This table lists all Belgian high and low calorific OTC gas transactions (predominantly Zeebrugge Hub, operated by Huberator, a 100% subsidiary of Belgian TSO Fluxys) reliably identified by ESGM on the date of the report. Deals are listed by delivery date, daily and total volume, in therms, and prices are quoted in pence per therm.

**German Deals Done:** This table lists all high and low calorific German OTC gas transactions reliably identified by ESGM on the date of the report, the most common hubs currently being those operated by North-German based integrated energy company BEB and German gas incumbent Eon Ruhrgas. Deals are listed by delivery date, daily and total volume, in megawatt hours, and prices are quoted in euros per megawatt hour.

As of December 2006, all trades gathered for the three EGT high cal zones (Nord, Mid and Süd), have been published in ESGM. In anticipation of the merger of the three high cal zones from October 2007, some deals have also been recorded simply for EGT.

**Dutch Deals Done:** This table lists all high and low calorific Dutch OTC gas transactions reliably identified by ESGM on the date of the report, the most common hub being TTF, operated by Dutch TSO Gas Transport Services, a 100% subsidiary of N.V. Nederlandse Gasunie. Deals are listed by delivery date, daily and total volume, in megawatt hours, and prices are quoted in euros per megawatt hour.

**French Deals Done:** This table lists all French OTC gas transactions, reliably identified by ESGM on the date of the report on the five French market zones known as PEG

Nord, PEG Sud, PEG Est, PEG Ouest — all operated by French incumbent GDF — and TIGF's south western zone. Deals are listed by delivery date, daily and total volume, in megawatt hours, and prices are quoted in euros per megawatt hour. French gas typically trades in EUR/MWh/day. Most of the volumes published in ESGM will have been calculated by dividing the original traded volumes by 24 to obtain a EUR/MWh figure consistent with neighbouring countries' trading units.

## Spark Spreads

The UK and German gas and power prices quoted in ESGM's Spark Spread tables are derived from the price assessment tables and daily indices in ESGM and European Daily Electricity Markets (EDEM). All the power prices quoted are for baseload delivery and, with the exception of Day-ahead, are the midpoint of the closing price assessment of the respective contract on the day of publication. The Day-ahead price is the UK Day-ahead Index price.

Gas prices and indices quoted in the Spark Spread table are NBP for the UK and the Dutch TTF for Germany. The TTF hub is currently the most liquid gas market in the region and is widely used as a reference for German gas prices. With the exception of Day-ahead, all gas prices quoted are the midpoint of the closing price assessment of the respective contract on the day of publication. The Day-ahead price is the NBP Day-ahead Index price for the UK and the TTF Day-ahead Index price for Germany.

For a full explanation of how the power and gas prices are derived please see the relevant sections of the EDEM/ESGM methodologies.

Both the UK and German Spark Spread tables use a fuel efficiency factor of 49.13% for the gas conversion. In reality, each gas-fired plant has a different fuel efficiency, but 49.13% is used as a standard in the UK market because it provides an easy conversion between gas and power volumes (25,000 therms of gas = 15 MW of power). This is based on a conversion rate of 1 kWh = 0.034121 therms or, alternatively, 1 therm = 29.3071 kWh.

The spark spread value is therefore the power price minus the gas price divided by 0.4913, i.e. Spark Spread = Power Price – (Gas price/0.4913).

## Other Tables in ESGM

### ICE Natural Gas Futures:

This table shows the closing (“settle”) prices for the natural gas futures contracts traded on the Intercontinental Exchange, ICE, (formerly the International Petroleum Exchange). Prices and other data are passed to ESGM by ICE at close of futures business, currently at about 16:00-16:15 London time. “Change” is the change from the previous working day's settlement price. “High” and “Low” represent the high and low traded prices for the day in question. “Lots” represents the volume of trade for each contract: 1 lot = 1,000 therms per day, although it should be noted that under current exchange rules the minimum trade size is 5 lots. “Mn th total” represents the total number of therms traded, expressed in millions of therms. “Open interest” represents the open interest for each contract at the previous day's close. For further information, visit ICE's website: [www.theice.com](http://www.theice.com)

### Day-Ahead Beach Terminal Capacity Prices:

These are secondary market prices for NTS entry capacity at the most active beach terminals for the following working day. Prices are assessed by ESGM in the same manner and at the same time as spot commodity prices.

### OCM SMP/SAP Report/OCM Trading figures:

These tables provide a snapshot of the previous day's activity on the On-the-day Commodity Market (OCM), which is operated by exchange group APX in order physically to balance the NTS. All information presented in the table comes from TSO National Grid, and represents the OCM activity on the previous “gas day” (06:00 – 05:59): gas day 1, for instance, runs from 06:00 London time on the 1st day of the month to 05:59 on the 2nd day. “SAP” (System Average Price) is the volume-weighted average of all OCM buys and sells on the day. “SMP Buy” is the highest price at which National Grid bought gas for the system (SMP = System Marginal Price). “SMP Sell” is the lowest price at which National Grid sold gas out of the system. SAP 7-day and SAP 30-day are seven-day and 30-day rolling averages. For further information, please contact APX: [www.apxgroup.com](http://www.apxgroup.com)

## National Grid Daily Capacity Summary:

These are National Grid daily auction average prices for Within-day firm and interruptible entry capacity at the nine most active UK beach terminals. The table lists the average price paid, in pence per kilowatthour (p/kWh), for both firm and interruptible capacity, as well as the total volume of capacity available as well as booked in kWh. For further information please contact National Grid:

[www.nationalgrid.com](http://www.nationalgrid.com)

## Weather:

Pan-European weather forecasts on a 1-5 day and 6-10 day basis are provided to ESGM by Weather Services International. For more information, please e-mail

[energy@wsieurope.com](mailto:energy@wsieurope.com) or visit the company's website –

[www.wsieurope.com](http://www.wsieurope.com)

## Currency Conversions

Forward currency rates are calculated using 29 pricing points, sourced from Bloomberg, at 16:30 London time every day. The pricing points used are all of those available: spot, one week ahead, 24 months ahead, and 3 to 5 years ahead. Using these points, we calculate a smooth curve which provides us with rates for each day out to 5 years. From these values, we then create appropriate rates for the contracts quoted by us in our gas market assessment tables.