



# European Daily Carbon Markets Methodology

August 2013



ICIS publishes European Daily Carbon Markets (EDCM) on every UK working day of the year. EDCM is a concise and easy to digest carbon news snapshot, providing readers with key OTC and exchange prices, UK and German clean spark and dark spreads and the latest European Union Emissions Trading Scheme (EU ETS) market developments. EDCM also tracks the wider global carbon market, with focus on Kyoto projects and their interactions with the ETS. The publication additionally provides regular updates on low-carbon technologies with emphasis on research, investments and competitiveness. Launched in February 2006, EDCM is tailored for the smaller market participants as well as those trading on a daily basis and aims to build a bridge between the ETS and the wider European energy markets.

## EDCM Price Assessments

### General definition

Over-the-Counter (OTC) contract prices for the EU ETS are assessed each working day during the period 16:00 to 17:30 London time, when ICIS contacts by telephone active market participants.

Price assessments published in EDCM are formulated by ICIS at the conclusion of this process and represent ICIS' close-of-day bid-offer ranges for carbon allowances, more commonly known as European Union Allowances (EUAs), for delivery in holding registry accounts in December of each quoted yearly contract. The spot contract price represents ICIS' close-of-day bid-offer ranges for EUAs with quasi-immediate (same day or Day+1) delivery in holding registry accounts. Price assessments are not based on deals done during the day.

"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.

Units: All prices are in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) with one EUA equivalent to one tonne of carbon dioxide equivalent (tCO<sub>2</sub>e).

### Periods

Spot: The EUA spot contract allows the near-immediate delivery of EUAs into holding accounts and can be traded OTC or via an exchange.

Years: EDCM quotes closing bid-offer ranges for four yearly contracts, with relevant contracts from the first phase of the emissions trading scheme (2005-2007), as well as second phase (2008-2012) with delivery in December of each year. EUAs are interchangeable within each phase of the EU ETS but not between phases, implying an EUA can start its life as a 2005 EUA and can be used for compliance in 2007. The history of each EUA is tracked within the registry account.

### EDCM Price Assessments - Price indication - Heren CO<sub>2</sub>

To give the reader a general overview of the daily movement of the front year contract, ICIS averages the OTC front year contract price, the Nord Pool front year contract and the ICE front year contract.

## Exchanges for Futures

ICE manages the product development and marketing for ICE Financial Instruments (ICE CFIs), listed and admitted to trading on the ICE Futures electronic platform. Participants can trade listed monthly contracts until March 2008. Thereafter, December (delivery period) contract months are listed from December 2008 to December 2012. For more details on delivery dates, visit [www.europeanclimateexchange.com](http://www.europeanclimateexchange.com).

Exchanges for SpotPowernext: The French exchange Powernext offers a continuous carbon spot trading platform. EDCM publishes the daily closing price as well as the total traded volume, including OTC cleared volumes. For more details, visit [www.powernext.fr](http://www.powernext.fr).

EEX: The German exchange offers a daily EUA auction as well as a continuous carbon spot trading platform. EDCM publishes the daily auction price and the total daily traded volumes, including both the auction and OTC trades.

Climex Alliance: The Alliance provides a cleared pan-European Spot market for ETS carbon allowances. Comprised of regional partners throughout Europe, the Climex Alliance includes:

- New Values (based in The Netherlands)
- SENDECO2 (based in Spain)
- Vertis Environmental Finance (trading as euets.com, based in Hungary)
- STX Services (based in The Netherlands)
- APX Power Limited (trading as APX Power UK, based in the UK)
- APX B.V. (based in The Netherlands)

EDCM publishes on a weekly basis the value weighted adjusted price for all transactions through Climex Alliance, both exchange and OTC, as well as a weekly total traded volume. For more details, visit [www.newvalues.net](http://www.newvalues.net).

## Spark and dark spreads

ICIS calculates its spark and dark spreads as the cost of power per MWh minus the cost of the fuel needed to generate that power. The cost of fuel is calculated using industry standard plant efficiencies to take account of energy not converted into electrical energy and therefore lost.

A positive spread means that it is theoretically profitable to generate electricity for the period in question, while a negative spread means that generation would be a loss-making activity. However, it is important to note that the spreads do not take into account additional generating charges beyond fuel and carbon, such as operational costs.

**Spark spreads** are calculated as the cost of power per MWh minus the cost of gas. ICIS uses the Day-ahead index for Day-ahead electricity and gas values in the UK and Germany, and the midpoint of baseload power price assessments for all other calculations from sister publication EDEM (please see EDEM methodology for an explanation of how those values are reached). Gas indices and price assessment values use data from sister publication ESGM, using the NBP for UK calculations and the TTF for German calculations, as the TTF hub is currently the most liquid gas market in the region, and is widely used as a reference for German gas prices (please see ESGM methodology for an explanation of how those values are reached).

ICIS uses the standard gas-fired plant efficiency factor of 49.13% for its spark spreads – an industry standard to allow for efficient spark spread trading – on the basis that 100,000 therms of gas could generate 60MW of power. The spark spread value is therefore the power price minus the gas price divided by 0.4913.

Spark spread = power price - (gas price/0.4913).

**Dark spreads** are calculated as the cost of power per MWh minus the cost of coal.

ICIS uses Baseload power price assessments for all contracts, and CIF ARA coal swaps price assessments from sister publication CSD (please see CSD methodology for an explanation of how those values are reached).

The cost of coal in US dollars per tonne is converted to local currency using forward rates constructed by ICIS using currency data from Bloomberg. The cost per tonne figure is converted to MWh by dividing by 6.978, based on the energy content of coal CIF ARA coal swaps represent, which is 6,000kCal/kg NAR (net as received), and converted to MWh using conversion factors from the International Energy Agency.

ICIS calculates its dark spreads using the industry standard of 35% plant efficiency.

Dark spread = power price – (((coal price converted to local currency)/6.978)/0.35).

The cost of emissions for **clean spark spreads** is calculated by multiplying the cost of carbon emissions allowances, converted to local currency where necessary, multiplied by the emissions intensity factor.

ICIS uses the UK government natural gas conversion factor (dating from June 2013) of 0.18404 tonnes of carbon dioxide equivalent emitted per MWh on the basis of gross calorific value, in line with how gas is traded (<http://www.transco.co.uk/services/cvalue/cvinfo.htm>).

The UK government figure has been chosen on the basis that the UK has the most liquid traded spark spread market. UK government carbon dioxide emissions conversion factors are issued by the Department for Environment, Food and Rural Affairs (DEFRA): <http://www.ukconversionfactorscarbonsmart.co.uk/>

The emissions intensity factor is calculated by dividing the carbon dioxide equivalent emitted per MWh by the standard

plant efficiency. For a clean spark spread for a 49.13% efficient gas plant, the emissions intensity factor used is therefore (0.18404 divided by a plant efficiency of 0.4913).

Clean spark spread = spark spread - (emissions price x (0.18404/0.4913)).

To calculate **clean dark spreads**, ICIS uses the Intergovernmental Panel on Climate Change (IPCC) emissions conversion factor (dating from 2006) of 0.34056 tonnes of carbon dioxide equivalent emitted per MWh of power generated from coal on the basis of net calorific value, in line with how coal is traded. The IPCC emissions conversion factor has been chosen as an international figure to reflect the coal market, and the resulting emissions factor is in widespread use within the power industry. The IPCC taskforce on national greenhouse gas inventories on energy emissions dating from 2006 can be found here: <http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html>

The emissions intensity factor is calculated by dividing the carbon dioxide equivalent emitted per MWh by the standard plant efficiency. For a clean dark spread for a 35% efficient coal-fired plant, the emissions intensity factor used is therefore (0.34056 divided by a plant efficiency of 0.35).

Clean dark spread = dark spread - (emissions price x (0.34056/0.35)).

**Methodology last updated  
19 August 2013**