

CEER

**Council of European
Energy Regulators**



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Recommendations on Dynamic Price Implementation

**Innovation and Retail Markets
Work Stream**

Ref: C19-IRM-020-03-14

03 March 2020

INFORMATION PAGE

Abstract

This document (C19-IRM-020-03) presents CEER's recommendations on dynamic price implementation.

This document seeks to support the implementation of provisions in Directive (EU) 2019/944 of 5 June 2019, on common rules for the internal market for electricity and amending Directive 2012/27/EU, related to the entitlement to a dynamic electricity price contract.

Target audience

European Commission, energy suppliers, traders, electricity customers, electricity industry, consumer representative groups, network operators, Member States, academics and other interested parties.

Keywords

Clean energy package; dynamic price; implementation guidelines; information and customer protection; monitoring.

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Related documents

CEER Documents

- C19-DSG-09-04 [CEER Conclusions Paper on Dynamic Regulation to Enable Digitalisation of the Energy System](#)
- C19-CEM-120-03 [Implementing Consumer Rights of the Clean Energy for All Europeans Package](#)
- C19-IRM-16-04 [Implementing Technology that Benefits Consumers in the Clean Energy for All Europeans Package](#)
- C18-CRM9_DS7-05-03 [Report on Regulatory Aspects of Self-Consumption and Energy Communities](#)
- C19-MRM-99-02 [CEER Monitoring Report on the Performance of European Retail Markets in 2018](#)
- C18-BM-124-04 [CEER's 3D Strategy \(2019-2021\)](#)
- C17-RMF-101-04 [Report on Smart Technology Development](#)
- C17-SC-59-04 [Roadmap to 2025 Well-Functioning Retail Energy Markets](#)
- [CEER White Paper on the European Commission's Clean Energy Proposals – \(paper # II\) Technology that Benefits Consumers](#)

External Documents

- [Directive \(EU\) 2019/944 of 5 June 2019, on common rules for the internal market for electricity and amending Directive 2012/27/EU](#)
- National regulatory authority's annual report to the European Commission https://www.ceer.eu/eeer_publications/national_reports

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EXECUTIVE SUMMARY

Background

Dynamic price contracts could be beneficial for the consumer as they enable those who can manage and adjust their consumption, in response to price signals, to save money on their electricity bill. Besides shifting their load to avoid consuming during peak price hours, customers could also benefit from the lower margins applied to contracts based on these spot-related prices. Finally, dynamic contracts may enable customers to participate in demand response, either individually or through aggregation.

Dynamic price contracts will give market participants a price signal that reflects the scarcity on the market used for reference. Generation, consumption and network data needs to be given a clear market value to incentivise prosumers and their intermediaries to profit from using the data to optimise their behaviour¹. Directive (EU) 2019/944 of 5 June 2019, on common rules for the internal market for electricity and amending Directive 2012/27/EU (hereafter the Directive), introduces new provisions that entitle all final customers who have a smart meter installed to conclude a dynamic electricity price contract with at least one supplier in their market and with every supplier that has more than 200,000 final customers.

CEER recognises that implementing the following recommendations can be challenging in Member States where customers are not necessarily familiar with such contracts. The specific characteristics of each wholesale market, such as the volumes negotiated on the reference markets and the make-up of the energy mix, will influence the general design and price volatility of each individual product.

It is important to note that no customer will be forced to adopt a dynamic price contract. Market conditions will therefore determine to what extent such offers will be attractive to the consumers and the resultant take-up rates. In this sense, it is not the role of the regulators to interfere with the choices made by consumers.

Objectives and content of the document

The objective of this document is to provide national authorities and suppliers with recommendations on the implementation of these new provisions, with a view to their transposition into national law.

This document addresses:

- The general design of dynamic price contracts, including the reference price;
- Information and customer protection;
- Monitoring and enforcement; and
- Potential barriers to dynamic price implementation.

Brief summary of the conclusions

Regarding their general design, CEER recommends that dynamic price contracts refer to day-ahead market prices. As provided in Article 2 of the Directive, contracts can also make use of wholesale prices on the intraday market, however, these tariffs will be more complex to implement. While the Directive is not explicit on whether a dynamic price contract could include

¹ C19-DSG-09-03, CEER Consultation on Dynamic Regulation to Enable Digitalisation of the Energy System

any ceiling or floor to the reference price variation, CEER cautions against the use of such restrictions.

Dynamic price contracts should be based on actual meter data, as a profiled customer will not have the same level of incentive for demand response activities if they are not charged specifically for the times at which they consume. Therefore, in order to access a dynamic price contract, the customer must have a smart meter that records consumption data at the same granularity as the relevant reference price.

The Directive also requires that consumers must be fully informed by suppliers of the opportunities, costs and risks of dynamic price contracts, and suppliers must obtain each final customer's consent before that customer is switched to such a contract. For this purpose, CEER recommends a set of key information items that could be provided to consumers.

In order to provide clarity to customers, information on consumption levels and reference prices could be provided at an aggregated time interval on the main billing document, such as using daily or weekly averages. If the customer requires further information, the supplier must provide them free access to a data repository and adequate reporting tools, so that they can analyse their actual consumption and the prices charged at time intervals at least equal to the market settlement frequency.

In order to assess the risks and the benefits that the new products and services entail, and the impact on consumer's bills, Member States or their regulatory authorities must establish relevant indicators to allow for effective monitoring of their uptake and use. For this purpose, CEER recommends three different types of monitoring indicators.

Finally, it is important to note that the variation in retail market design, as well as the specifics of competition and consumer law in each individual Member State, must be taken into account when considering the recommendations in this report.

1 Definition

1.1 Rationale for dynamic price contracts

Dynamic price contracts could be beneficial for the consumer as they enable those who can manage and adjust their consumption in response to a price signal to save money on their electricity bill. Furthermore, assuming the consumer is able to adjust their consumption, they can avoid paying for peak-time price spikes, which they would have paid for indirectly if on a fixed price contract where such price spikes are factored into the overall pricing. Dynamic contracts also enable customers to participate in demand response, either individually or through aggregation.

Dynamic price contracts differ from existing time of use price contracts in that the prices within the different time periods vary and are not fixed in advance.

1.2 Legal provision

Article 2 (15) of the recast Electricity Directive defines a dynamic electricity price contract as:

“An electricity supply contract between a supplier and a final customer that reflects the price variation at the spot markets including day ahead and intraday markets, at intervals at least equal to the market settlement frequency.”

With respect to the above provisions, some of the terms require clarification in order to ensure proper implementation.

Furthermore, Article 11 on ‘Entitlement to a dynamic electricity price contract’ specifies four common implementation provisions as follows:

“1. Member States shall ensure that the national regulatory framework enables suppliers to offer dynamic electricity price contracts. Member States shall ensure that final customers who have a smart meter installed can request to conclude a dynamic electricity price contract with at least one supplier and with every supplier that has more than 200 000 final customers.

2. Member States shall ensure that final customers are fully informed by the suppliers of the opportunities, costs and risks of such dynamic electricity price contracts, and shall ensure that suppliers are required to provide information to the final customer accordingly, including with regard to the need to have an adequate electricity meter installed. Regulatory authorities shall monitor the market developments and assess the risks that the new products and services may entail and deal with abusive practices”.

3. Suppliers shall obtain each final customer’s consent before that customer is switched to a dynamic electricity price contract.

4. For at least a ten-year period after dynamic electricity price contracts become available, Member States or their regulatory authorities shall monitor, and shall publish an annual report on the main developments of such contracts, including market offers and the impact on consumers’ bills, and specifically the level of price volatility.”

1.3 General design of dynamic price contracts

According to the definition in the Directive, the price per kilowatt-hour of electricity within a dynamic price contract is defined by the wholesale market. In addition to the value of the energy itself, the customer pays the supplier for sourcing his electricity from the market (trading), handling the imbalance settlement, billing and other services such as policy costs. These general costs are reflected in an ‘add-on’ to the wholesale price. As is the case for

‘traditional’ retail contracts, the add-on reflects all of the costs of doing business for the supplier, as well as including a profit margin.

In the case of a dynamic price contract, the add-on can take different forms, including but not limited to one, or a combination of, the following:

- A fixed sum per month, irrespective of the customer’s consumption;
- An amount added to the kilowatt-hour price set by the wholesale market.

In theory, suppliers may also initially offer a price contract with no add-on or even a negative add-on. Such price structures are obviously not sustainable for the business in the long-term but may be offered over a short time to attract customers (discounts).

In principle the wholesale price should be the same across suppliers, whereas the add-on reflects the operational costs and profit margin for the individual supplier. The add-on is therefore the element of the price over which suppliers can compete for customers.

The impact of these add-ons on the final price of a dynamic price contract (e.g. structure, magnitude, etc.) should be made clear to the customer when they choose a supply contract, as this is one of the parameters, they will use to compare suppliers. Furthermore, this creates incentives for the suppliers to minimise their costs and operate efficiently, in order that they can provide as competitive a price to the customer as possible.

1.4 Reference price for dynamic price contracts

Regarding the reference price, the Directive considers that dynamic electricity price contracts must reflect “the price variation in the spot markets, including the day-ahead and intraday markets”.

The use of day-ahead prices as a reference for the dynamic contract price variation may result in prices that are easier to respond to for customers, as these are published on the day before delivery and can therefore be communicated to the customer in advance. This makes it easier for consumers to adapt their electricity consumption, whether manually or automatically, to adapt their energy consumption to realise cost savings.

The use of intraday prices as the reference may be more challenging, as different prices will exist for the same delivery period depending on the trading window in which the electricity was procured. For most of Europe, following EU legislation to enable the harmonisation of wholesale markets, intraday trading will take place on a continuous basis, meaning that prices are being (re-)set constantly. Also, customers will only be notified of the actual price within a shorter window prior to delivery (relative to day-ahead prices) and will have less opportunity to respond and adjust their consumption.

Therefore, ideally, dynamic price contracts should refer to the day-ahead market prices for the sake of simplicity. Contracts can also make use of wholesale prices on the intraday market, although these tariffs will be more complex to implement.

The Directive is not explicit on whether dynamic price contracts could include any ceiling or floor on the variation of the reference price. Nevertheless, CEER recommends not to introduce such restrictions to the reference price. By their very nature, dynamic price contracts are intended to give consumers effective price signals, to incentivise them to manage and adjust their energy consumption. Placing ceilings and/or floors on these signals reduces their effectiveness as it waters down the price signal. However, considering the significant potential price variation that the consumer will be exposed to without a ceiling or floor, particularly severe spikes when electricity is extremely scarce or in extreme demand, and considering that this

may not be acceptable to a consumer, suppliers are permitted to offer alternative contracts with more limited volatility (see chapter 4.6).

1.5 Market settlement frequency

Spot and intraday markets usually have a settlement frequency of 1 hour, 30 minutes or 15 minutes. According to Article 53 'Imbalance settlement period' of EU Regulation 2017/2195 of 23 November 2017, establishing a guideline on electricity balancing, balancing markets will have a settlement frequency of 15 minutes in 2021, subject to exemptions.

As the Directive states that the price reflected within dynamic electricity price contracts should vary at least at the same frequency as the spot price on the day-ahead or the intraday markets, there is no need to necessarily align these types of contracts with the frequency of the balancing markets, as long as the consumer pays the same price on the reference market within consecutive periods.

The minimal settlement frequency should therefore be 1 hour, 30 minutes or 15 minutes, depending on the granularity of the spot and intraday market within each Member State. A 15-minute frequency could be possible, although it may be more challenging to implement.

1.6 Threshold of 200,000 final customers

The Directive states that "*Member States shall ensure that final customers who have a smart meter installed can request to conclude a dynamic electricity price contract with at least one supplier and with every supplier that has more than 200 000 final customers*". Member States will therefore need to identify which suppliers have more than 200,000 final customers and ensure they are offering a dynamic electricity price contract.

Currently, while some Member States consider that each metering point is directly linked to a final customer, others accept that the same final customer can have more than one metering point (for instance, by having several real estate properties at different locations). In this sense, Member States may apply differing definitions of a final customer to reach the 200,000-customer threshold per supplier.

In Member States where no supplier has more than 200,000 final customers, the Directive states that at least one supplier must offer a dynamic electricity price contract. When this is the case, Member States must select a specific supplier to comply with this requirement in accordance with its own rules and European regulation concerning public service obligations (PSOs).

There is no obvious common solution. It should be the discretion of each Member State, taking into account the national legal context, to ensure that at least one supplier offers dynamic electricity price contracts according to the Directive.

Furthermore, in Member States where dynamic price contracts are commonly offered, the need for a specific regulation on individual suppliers can be questioned.

1.7 Prerequisites to enable dynamic price contracts

In order to access a dynamic price contract, the customer must have a smart meter that records consumption data at the same granularity as the relevant reference price. This implies hourly or half-hourly metering in most countries, although 15 minutes may be required in some. This enables customers to react and shift consumption according to price signals.

Dynamic price contracts allow customers to provide demand responses. This benefits the electricity system as retail price increases usually reflect a supply shortage in periods of peak

demand, resulting from constraints on generation or transport of electricity (in Member States with zonal pricing), or a combination of both.

In order to be effective, dynamic price contracts should be based on actual time-of-use meter data, as a profiled customer will not have the same level of incentive for demand response activities if they are not charged specifically for the times at which they consume.

2 Information and customer protection

2.1 Pre-contractual and contractual information

Dynamic price contracts differ from fixed price offers in that the price of electricity is not known well in advance, instead, it depends on the price variation on the wholesale day-ahead or intraday market. Therefore, it is crucial that the supplier discloses the exact pricing formula. All parameters used in the formula, especially the wholesale price, should be made easily accessible to consumers as soon as possible and free of charge.

It is also important to note that intraday prices are set at different timeframes, some of them very close to the time of delivery. In this context, it is important that the customer is notified in due time about the actual reference price to allow for manual or even automatic consumption adjustment.

This information could be made accessible on an interoperable electronic platform, allowing for automation. Compatibility information with consumption management devices should also be provided, so that the consumer can choose the most appropriate supplier given the energy management equipment in his property.

In order to be able to adapt their consumption pattern, it would also be useful for the consumer to know the prices set by the market for the forthcoming periods, at least on the day before delivery.

2.2 Consumer consent

The Directive states that final consumers must be fully informed by suppliers of the opportunities, costs and risks of dynamic price contracts, and that suppliers shall obtain each final customer's consent before that customer is switched to such a contract.

Prices on the wholesale markets can vary widely, typically from -€500/MWh to +€3000/MWh on the day-ahead or even +/- 10,000 €/MWh on the intraday market, compared to a yearly average of €30 to €50/MWh in 2018 in Central and Western Europe. The immediate near-term range may even increase in the future up to the Value of Lost Load (VoLL). Hence, it is difficult for the consumer, as well as the supplier, to evaluate the opportunities, costs and risks associated with dynamic price contracts.

These extreme price events are likely to occur only on limited occasions and for a limited duration in relation to weather events, technical issues on the generation side, geopolitical situations etc. Conversely, such weather events could also lead to over-production and reduce the price paid for the benefit customers; thus, their overall impact on the customer's bill should be assessed on a monthly or annual period.

Moreover, the price paid by the customer will depend on their consumption profile, particularly, their ability to adjust consumption in accordance with the price signal.

There is a risk that some suppliers may promote these contracts during off-peak periods of the year, when the price and consumption levels are usually low and the contract may appear artificially more competitive to the consumer than traditional time-of-use or baseload contracts that set a predetermined price. Suppliers should be reminded to accurately inform the consumer about the likely price increase in peak season, when consumption is significantly higher.

When complying with the requirements in the Directive regarding consumer information and consent, it is therefore recommended that the supplier:

- Informs the consumer that the spontaneous price of such a contract is subject to a wide range of variation over time, within the year and from one year to another, according to the wholesale price variation;
- Provides an estimate of the magnitude (maximum/minimum) of past dynamic prices that a consumer would have paid per month / per year etc. based on his consumption over the previous year, if such data is available to the supplier, and the prices recorded historically over a long period of time (typically 5 years minimum). If such historic consumption data is not available to the consumer, an average consumption profile could be used. Even then, the customer should be informed that the price may still exceed these limits in the future;
- If actual customer consumption data is not available then the supplier should provide access to a tool that would enable the consumer to predict their approximate consumption profile, depending on property type, number of occupants (including children), equipment owned, consumption characteristics, etc., in order to better estimate the suitability of the dynamic price contract for them;
- Informs the consumer of the importance of managing consumption in order to prevent potential bill increases, and that automation devices could be useful in this regard;
- Registers explicit consumer consent, including explicit acknowledgement of having received relevant information as provided, on a safe register for the duration of the contract, in line with the requirements of GDPR.

2.3 Billing information

In a broad understanding, a bill containing proper billing information should disclose data on consumption levels and price at time intervals at least equal to the market settlement frequency. In practice, this would represent an excessive amount of information for a monthly or annual bill, likely leading to consumer disengagement.

Therefore, information on consumption levels and reference prices could be provided at an aggregated time interval on the main billing document, such as daily or weekly averages. The essential information for the consumer for the average time interval period is the level of consumption and the price average over the period weighted by the consumption.

It is also essential that consumers receive frequent information on their consumption and price. Therefore:

- Billing information should be provided on a frequent basis, no less than monthly;
- The supplier must give the consumer free access to a data repository and adequate reporting tools in order to analyse their actual consumption and price at time intervals at least equal to the market settlement frequency, for example through a consumer login on the supplier's website.

3 Monitoring and enforcement

Article 11 (2) of the Directive specifically mandates regulatory authorities to monitor market developments and assess the risks that the new products and services may entail, as well as deal with abusive practices.

Additionally, paragraph (4) mandates Member States or their regulatory authorities to publish an annual report on the main developments of dynamic electricity price contracts for at least a ten-year period. The report must include an overview of market offers, the impact on consumers' bills and, more specifically, the level of price volatility.

Regulatory authorities are already tasked with several market monitoring responsibilities. These provisions are an additional obligation for a very specific type of product. Indeed, regulatory authorities already provide an annual report on the developments in their internal energy market to the European Commission². Rather than providing an additional national report, national authorities could consider adding a chapter in the existing national report to the European Commission.

In order to perform their duties, Member States or their regulatory authorities should be able to collect data on all dynamic price offers on the market. This could be achieved by an obligation on the suppliers to report those offers to the responsible authorities, or through a compulsory reporting requirement on public comparison tools.

3.1 Indicators for the annual report on the main developments of dynamic price contracts

In order to assess the risk that the new products and services entail and the impact on consumer bills, Member States or their regulatory authorities should establish relevant indicators. Individual Member States/NRAs should compile their own list of indicators informed by their prevailing market conditions. However, they may wish to consider some of the following:

- Comparison between the cost of a dynamic price offer with one or several other contract types, including the most common offers available on the market, or a similar reference (special attention should be placed on the time of fixed price contract signature, as it might have a significant effect on the result of the comparison);
- Year on year variation of the cost of dynamic price offers;
- Volatility of price:
 - Within the year,
 - Year on year for specific time periods (seasonal, peak / off-peak / etc.).

In order to capture the specificity of the most common consumption patterns, the analysis should be performed for a diverse range of consumption profiles, in terms of consumption volume and load curve shape, taking into account different electricity usage purposes (e.g. electric heating), usage of an electric vehicle, PV self-consumption, etc.

Finally, it would be insightful to measure how far the consumption profile of consumers on dynamic price contracts differ from the average. This metric could be added to the report, although it seems challenging to calculate for most NRAs.

² See: https://www.ceer.eu/eeer_publications/national_reports

3.2 Indicators used to monitor market developments and risks that the new products and services may entail and abusive practices

Member States or regulatory authorities must monitor market developments and abusive practices. This should include:

- Development of new products and services, including bundled offers, and feedback on the risks identified for consumers;
- Availability of pre-contractual information, compliance of contractual provisions with consumer laws and energy-specific provisions, such as minimum contract length and respect of consumer consent.

Member States should also consider reporting on these indicators in their annual report to the Commission.

4 Potential difficulties in realising the benefits of dynamic prices

4.1 Challenging price comparison

In terms of dynamic price contracts, consumers might find it challenging to assess which is the best market offer for them as they would need some wholesale trading expertise in order to compare pre-defined prices with dynamic offers whose price is only known ex-post. Furthermore, the benefits of dynamic price offers may vary from one consumer to another as they strongly depend on the consumer's consumption profile and their ability to adjust it in response to price variations.

Comparison tools (CTs) are often not able to facilitate this:

1. CEER has not identified any CT that offers a comparison between dynamic offers and offers at a predefined price for a forthcoming period. This is because it is difficult and highly speculative to predict future prices and then compare them to fixed price contracts where the price is known beforehand. Therefore, these two different types of offers are usually presented separately in comparison tools. Nevertheless, some CTs presents various offers according to their level of risk.
2. Some CTs can use the historical consumption data of each individual consumer to refine the comparison. However, CEER has not identified any CT able to provide any valuable information to the customer on the potential savings related to their individual ability to adjust consumption.

Consequently, there is a significant risk that the potential benefits related to dynamic offers are not properly valued by CTs, and so information provided could mislead the consumer when making their choice. Therefore, price CTs are required to communicate effectively on the difference between contracts.

Finally, the choice between dynamic price offers and fixed price offers relies on the consumer's aversion to risk and their ability to absorb potential price increases, such as higher economic margin, in order to capture potential lower prices.

4.2 Limited market potential

The benefits of dynamic price offers for the system relate to the ability of consumers to adjust their consumption patterns according to the spot price variation. This impact can only be achieved at a system wide level if a critical mass of consumers opts for this type of offer.

Conversely, the benefits of a dynamic price offer for the consumer is strongly related to their ability to adjust consumption, based either on the anticipated price or on a short-term basis according to the actual spot price – this may require flexibility. Many households might not be able to adjust consumption because of constraints inherent to their way of life, their awareness of the market functioning and/or a lack of appropriate energy management devices.

This could limit the market potential of dynamic price offers, at least in the short term. It is important that households whose consumption pattern is less flexible, which could include vulnerable consumers, should not be disproportionately disadvantaged by the introduction of dynamic price offers.

4.3 Limited impact of the energy component on the energy bill

Dynamic price offers only differ from other offers in the pricing methodology of the energy component. In addition to the “add-ons” explained in Section 1.3, the consumer is still billed for their share of the cost of the whole energy system, including distribution fees, taxes and levies. These costs are regulated and are usually the same for all offers that a customer might choose.

CEER market monitoring reports show that the energy component now represents less than a third of the overall value chain for residential consumers in many Member States³. This situation acts to limit the magnitude of the overall price differentiation between dynamic price offers and other offers, and may reduce the incentive for consumers to adjust their consumption according to the spot price signal.

Considering the weight of this non-contestable component in the overall bill and in order to get higher benefits from dynamic price contracts, NRAs could consider combining them with time of use or dynamic network fees, where feasible.

4.4 Insufficient smart meter roll-out

Despite ambitious targets, CEER market monitoring reports illustrate the smart meter roll-out to be behind schedule in many Member States⁴. To unlock the potential of dynamic price offers on the market, it is critically important to complete the smart meter roll-out according the targets set by Member States.

4.5 Relevance of the spot market price signal

As noted above, the benefits of dynamic price offers for the system relate to the ability of consumers to adjust their consumption according to the magnitude of the spot price variation. This advantage might be limited by the fact that the energy could be sourced on alternative markets, such as future markets.

It is commonly acknowledged that a risk-adverse sourcing strategy for suppliers to propose pre-defined price offers to their consumers is largely based on physical future wholesale markets or over-the-counter contracts. In theory, there should be a close relationship between the price on future markets and the anticipated price on the spot market.

³ ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2018 – Electricity and Gas Retail Markets Volume, figure 9

⁴ ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2018 – Consumer Empowerment Volume, figure 10

Therefore, if a large market share of consumers remain on offers at pre-determined prices, sourcing electricity on the spot market will not form a large share of the overall sourcing strategy of the supplier. Hence, the relevance of the price signal for managing scarcity could be questioned, especially in the case of unanticipated events. This reduces the potential benefits of such offers for the system.

4.6 A narrow price definition

According to the definition in the Directive, dynamic price offers are only those whose price reflects price variation on the spot market. As previously mentioned in its white papers on the Clean Energy Package⁵, CEER tends to consider that this definition is unduly restrictive.

Thus, the mandate for suppliers to propose dynamic price offers, according to the definition set by the Directive, do not prevent them from proposing additional spot-based offers that could better mitigate the risks through, for instance, price caps while adding a hedging cost.

⁵ Technology that Benefits Consumers, CEER White Paper series (paper # II) on the European Commission's Clean Energy Proposals, 26 May 2017

Annex 1 – List of abbreviations

Term	Definition
CEER	Council of European Energy Regulators
CT	Comparison Tool
GDPR	General Data Protection Regulation
GGP	Guidelines of Good Practice
MS	Member States
NRAs	National Regulatory Authorities
PV	Photovoltaic
VoLL	Value of Lost Load

Annex 2 – Comparison between forward and spot prices in France and Germany

The following tables display the price difference between spot average price and forward average (over the previous year) for the six last years on the French and German markets for baseload and peak products, for illustration purposes⁶. A positive gap means that the average spot price over the corresponding period is higher than forward prices.

These tables show that, on average, the relative benefit of a spot price-based contract (i.e. a dynamic price contract), compared to a forward price-based contract (i.e. a pre-determined price contract), varies strongly over time. Nevertheless, the actual advantage for an individual consumer still depends on their consumption profile.

Prices are expressed in €/MWh.

Baseload

Year	Spot average (1)		Forward average (2)		Gap (1) – (2)	
	FR	DE	FR	DE	FR	DE
2013	43.12	37.72	50.54	49.24	-7.42	-11.52
2014	34.73	33.30	43.27	39.07	-8.54	-5.77
2015	38.48	31.63	42.35	35.07	-3.87	-3.44
2016	36.72	29.10	38.18	30.96	-1.46	-1.86
2017	44.96	34.29	33.38	26.59	11.58	7.70
2018	50.18	44.63	38.19	32.33	11.99	12.30

Peak load⁷

Year	Spot average (1)		Forward average (2)		Gap (1) – (2)	
	FR	DE	FR	DE	FR	DE
2013	55.04	48.85	63.91	60.81	-8.87	-11.96
2014	43.7	41.29	56.64	49.71	-12.94	-8.42
2015	46.6	35.36	53.07	44.4	-6.47	-9.04
2016	45.67	35.36	46.91	39.05	-1.24	-3.69
2017	53.66	42.71	44.57	33.56	9.09	9.15
2018	59.07	52.27	49.89	40.45	9.18	11.82

⁶ Source: EPEX Spot for spot price / EEX for electricity future price

⁷ From 9:00 am to 9:00 pm

Annex 3 – Price variation in the United Kingdom

Wholesale price spikes

Wholesale prices may be subject to extreme spikes for a number of reasons, including shock weather events. For example, the 'Beast from the East' was a prolonged six-day period of cold temperatures and heavy snowfall across NW Europe in late February 2018, which acted to both increase system demand for heating and to reduce renewable generation (due to low temperatures and low wind speeds). As a result of requiring the ramping up of expensive baseload, wholesale prices rose by orders of magnitude above the typical winter prices of between £40-60/MWh, reaching as high as £990/MWh for one 30-minute settlement period on the evening of 1 March.

In total, the most expensive 72 settlement periods (36 hours in total) of 2018 occurred during The Beast from the East. The average wholesale price across the seven-day storm period was £131.07/MWh, compared with £48.53/MWh over the same period in 2017 and £46.00/MWh in 2019 (corrected for day of the week).

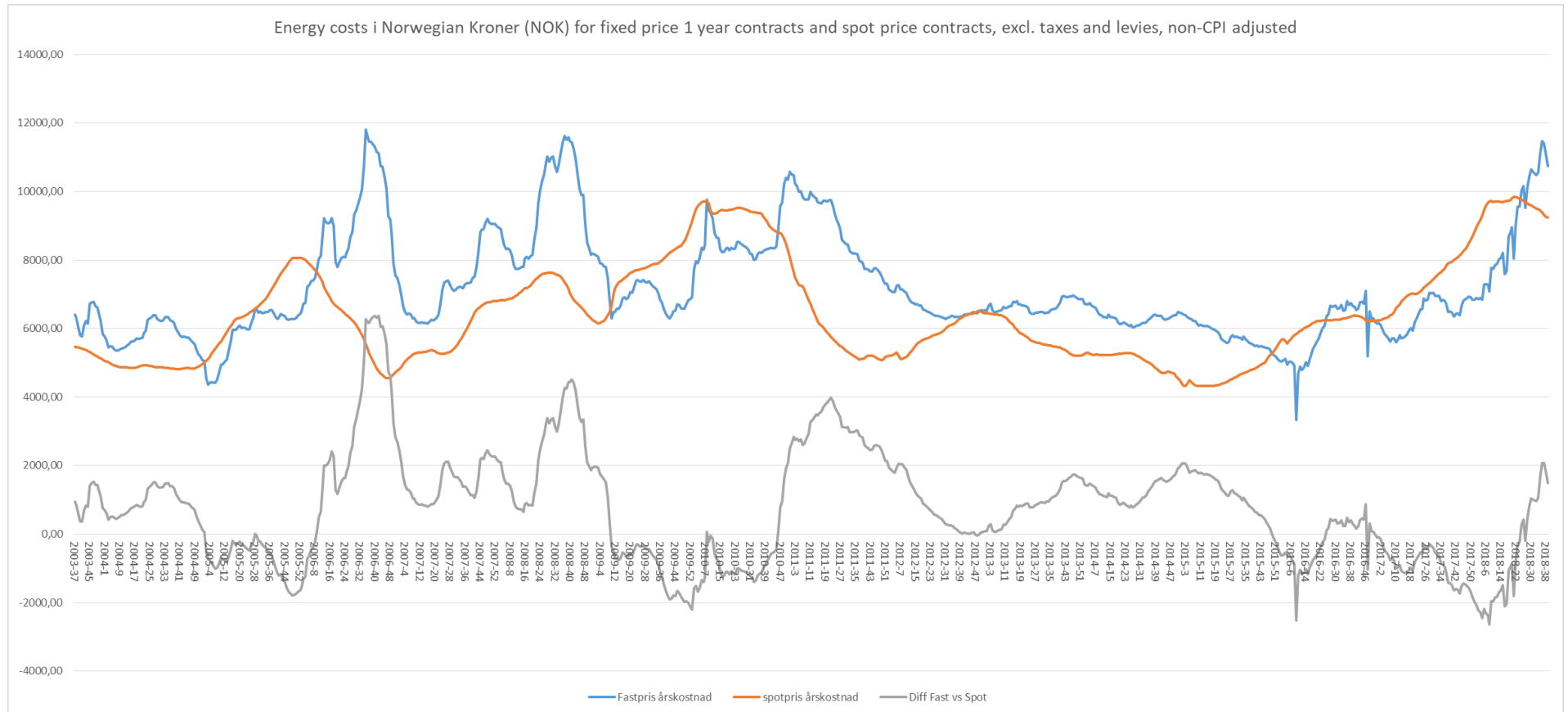
Negative wholesale prices

The UK has seen a number of episodes of negative wholesale prices in recent years. Such events usually occur when prolonged periods of sustained higher-than-forecast renewable generation coincide with lower-than-forecast levels of system demand. Such events usually result in the National Grid instructing renewable generators to turn off, particularly onshore and offshore wind farms, sometimes with financial compensation being paid to affected generators.

- January 2018 - A sustained four-day period of increased wind generation output (up to 13.6 GW, meeting over 40% of UK demand) combined with reduced consumer demand during the morning of 14 January 2018, resulted in two hours of negative wholesale prices between 06:00 – 08:00, reaching as low as -£68.43/MWh for the settlement period 07:00 – 07:30.
- March 2019 - Unseasonably warm and sunny weather led to negative wholesale prices between 10:00 – 16:30 on Sunday 24 March, reaching as low as -£70.24/MWh at 14:00 – 14:30. This was a result of the combination of renewable assets greatly exceeding forecasted output (solar and wind combined to provide over 49% of system demand), and the result of unexpectedly good weather changing behaviour and significantly reducing system demand.
- May 2019 - The UK experienced negative wholesale prices for nine consecutive hours between 10:00 and 19:00 on Sunday 26 May, reaching as low as -£71.26/MWh. Again, this was driven by a combination of high wind generation and low demand.

There are obvious benefits for those customers on dynamic price contracts who are able to shift consumption to these times or are able to charge batteries/EVs which can then be used or even discharge back to the grid during periods of higher prices.

Annex 4 – Comparison between fixed price contracts and spot price contract in Norway



Graph legend:

Blue line: cost for the next 12 months (52 weeks) for fixed price 1 year contracts

Orange line: cost for the next 12 months (52 weeks) for spot price contracts

Grey line: difference fixed price vs. spot price

The graph compares the electricity costs the next 52 weeks/12 months for a fixed price contract entered into in week X with a spot-based contract in the coming 52 weeks (week X to week X+51 weeks) for a weighted average consumption of 20,000 kwh per year.

During the 15-year period depicted in the graph, customers who bought an average fixed price contract saved money compared to if they had bought a spot-based product in 31% of the weeks. In the remaining 69% of the time, customers who bought spot-based contracts saved money compared to customers who bought an average fixed price product the same week. For the weeks when fixed price contracts were cheaper, average annual savings by choosing a fixed price contract were 972 NOK. For the weeks when spot price contracts were cheaper, average annual savings were 2045 NOK.

Annex 5 – About CEER

The Council of European Energy Regulators (CEER) is the voice of Europe's national energy regulators. CEER's members and observers comprise 39 national energy regulatory authorities (NRAs) from across Europe.

CEER is legally established as a not-for-profit association under Belgian law, with a Secretariat based in Brussels to assist the organisation.

CEER supports its NRA members/observers in their responsibilities, sharing experience and developing regulatory capacity and best practices. It does so by facilitating expert working group meetings, hosting workshops and events, supporting the development and publication of regulatory papers, and through an in-house Training Academy. Through CEER, European NRAs cooperate and develop common position papers, advice and forward-thinking recommendations to improve the electricity and gas markets for the benefit of consumers and businesses.

In terms of policy, CEER actively promotes an investment friendly, harmonised regulatory environment and the consistent application of existing EU legislation. A key objective of CEER is to facilitate the creation of a single, competitive, efficient and sustainable Internal Energy Market in Europe that works in the consumer interest.

Specifically, CEER deals with a range of energy regulatory issues including wholesale and retail markets; consumer issues; distribution networks; smart grids; flexibility; sustainability; and international cooperation.

CEER wishes to thank in particular the following regulatory experts for their work in preparing this report: Julien Janes (CRE), Jana Haasová (ERU), Pia Roll (NVE), Elsa Agua (ERSE), Gloria Marmol (CNMC), Eva Lacher (E-Control).

More information is available at www.ceer.eu.