

ENERGINET

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EMERGENCY PLAN

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General information

The emergency plan is an element in complying with the EU Regulation concerning security of gas supply ("the Regulation").¹ The emergency plan is prepared by the Danish national competent authority for security of supply, the Danish Energy Agency, with assistance from the Danish TSO, Energinet, who has operational responsibilities relating to security of supply in Denmark.

In Article 8(2) of the Regulation it is stated that the national competent authority shall establish: *"an emergency plan containing the measures to be taken to remove or mitigate the impact of a disruption of gas supply in accordance with Article 10."*

According to Article 8(6)-8(7) of the Regulation the *"competent authorities of neighbouring Member States shall in due time consult each other with a view to ensuring consistency between their preventive action plans and their emergency plans"* and *"the preventive action plans and the emergency plans shall be made public and notified to the Commission by 1 March 2019."*

The emergency plan must, according to the Regulation, be updated every four years (at the latest 1 March 2023). This emergency plan thus covers the period where the main supply source to Denmark and Sweden, the Tyra complex, is closed due to reconstruction. Non-production from the Tyra complex is planned from 19 September 2019 to 1 July 2023 but production will decrease gradually from spring 2019.

The security of supply situation varies from year to year during the reconstruction period. However, in this plan the focus has been on the years 2020 and 2021 being the years expected to be the most critical for the Danish and Swedish market.

Denmark and Sweden are dependent on supply from the Danish North Sea and Germany and are therefore involved in different risk groups:

- Baltic Sea: Belgium, Czech Republic, Denmark, Germany, France, Luxembourg, Netherlands, Austria, Slovakia, Sweden
- Norway: Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Luxembourg, Netherlands, Portugal, Sweden, United Kingdom
- Denmark: Denmark, Germany, Luxembourg, Netherlands, Sweden

Denmark is Sweden's only source of gas. In many ways, this makes the two systems physically interdependent. In 2019, a joint balancing zone (JBZ) integrating the Danish and Swedish market will be implemented. The effects hereof are described in this emergency plan.

This emergency plan lays down the measures necessary to ensure the security of gas supply in the Danish gas market in normal operation and the three crisis levels as defined by Article 11(1) in the Regulation.

¹ REGULATION (EU) 2017/1938 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010.

1. Definition of crisis levels

According to Article 3(2) of the Regulation *“Member States may allow the competent authority to delegate specific tasks set out in this Regulation to other bodies. Where competent authorities delegate the task of declaring any of the crisis levels referred to in Article 11(1), they shall do so only to a public authority, a transmission system operator or a distribution system operator. Delegated tasks shall be performed under the supervision of the competent authority and shall be specified in the Preventive Action Plan and in the Emergency Plan.”*

The Danish competent authority, the Danish Energy Agency, has delegated the responsibility of specific tasks to Energinet.

The responsibility for declaring a crisis level is split between Energinet (national crisis) and the Danish Energy Agency (Union or Regional crisis).

1.1 National crisis

In a national crisis, Energinet decides on the crisis level. The Danish Energy Agency is immediately informed about the nature of the incident and effects on the supply situation.

The Danish Energy Agency may, as the competent authority, change the level of the crisis and may in a crisis situation instruct Energinet and other involved parties to adjust their actions in order to secure coordinated and prioritized handling of the crisis, including implementation of decisions made by the authorities in the national crisis management.

Significant supply decisions in Emergency are made on the basis of a close dialogue between the Danish Energy Agency and Energinet.

1.2 Union or Regional crisis

The EU-Commission is responsible for declaring Emergency at Union or Regional level. If the Danish Energy Agency receives notification of declaration of an Emergency from the Commission, this is communicated to Energinet and other relevant authorities.

The objective is to ensure optimal functioning of the mechanisms in the internal gas market, including the essential cross-border infrastructure. There will be no limitation of the gas supply to the market or the cross-border infrastructure in case of a Union or Regional Emergency. In a national crisis, limitation of the gas supply to the market or the cross-border infrastructure might be affected in order to ensure supply to the protected customers.

2. Measures to be adopted per crisis level

2.1 The Danish security of supply model

The Danish security of supply model (Figure 1) contains a number of measures that Energinet can use at the three crisis levels. Furthermore, the model includes measures that can be used in normal operation to ensure balance in the Danish gas transmission system. The choice of measure depends on the situation. The measures that are essential for Energinet's ability to safeguard security of supply in Denmark and Sweden are presented in this chapter. The Danish Energy Agency is responsible for security of supply in Denmark. The Swedish competent Authority is responsible for security of supply in Sweden.

All shippers pay transmission tariff in the Danish gas transmission system. Furthermore, Danish customers pay an emergency tariff to cover the security of supply costs. Protected customers pay a higher tariff than non-protected customers.

The security of supply model has been approved by the Danish Utility Regulator in accordance with section 36a of the Danish Natural Gas Supply Act², after which the Danish Utility Regulator shall approve the methodology used by Energinet to determine prices and conditions.

The security of supply model and the consequences of the security of supply model were formulated in collaboration with the Swedish competent authority (Swedish Energy Agency) and the Swedish system operator (Nordion Energi) in mutual agreement to the model. Accordingly, the emergency plan has been prepared in close collaboration between these organizations. When the joint balancing zone is implemented the former agreed principles are the same as before.

Energinet continuously works to improve the security of supply model based on experience such as handling of non-protected customers in the Danish and Swedish market, matters related to the Swedish market, the changes resulting from the expansion of the infrastructure to Germany, as well as the European Commission's experience with the implementation of the Regulation. The security of supply model will be revised as needed and in close cooperation with the market and the authorities.

2.1.1 Action in the event of a significant supply disruption

The Danish security of supply model uses a designed case with basic assumptions to describe an interruption of the largest supply source in February or March. Energinet calculates the emergency storage on the basis of such event and the assumption of the declaration of Emergency as well as the supply to non-protected Danish customers for three days. In case of an Emergency, supply to the non-protected Danish and Swedish customers will be maintained unless it is deemed necessary to fully or partially (see section 2.5.3.1 about "the priority model") disconnect them in order to secure the supply to protected customers.

2.1.2 Action in the event of exceptionally high gas demand

Extremely low temperatures or other situations resulting in unexpected exceptionally high gas demand from the Danish, Swedish, and German markets may also occur, making it impossible to maintain the physical balance in some parts of the gas transmission system. In 2017/18, however, the Danish gas transmission system was assessed to be very robust in situations of exceptionally high gas demand in the gas market. It is the assumption that market mechanisms will regulate the demand through the gas price requiring no further action. This will also be the

² Consolidated Act No 1127 of 5 September 2018 on Natural Gas Supply.

case in 2020 to 2022 during the reconstruction of the Tyra complex when Germany is the only main supply to the Danish and Swedish market.

2.1.3 Measures in the security of supply model

Figure 1 shows that most of the measures in the model can be used during normal operation to reduce the risk of Energinet having to declare a crisis level.

According to the security of supply model, the measures available at Emergency are emergency storage, emergency withdrawal, as well as filling requirements in the storage facilities. Ultimately, the measure of full or partial (see section 2.5.3.1 about “the priority model”) interruption of non-protected customers will be applied, if necessary. These measures support the ability to maintain supplies to the protected customers in Denmark and Sweden.

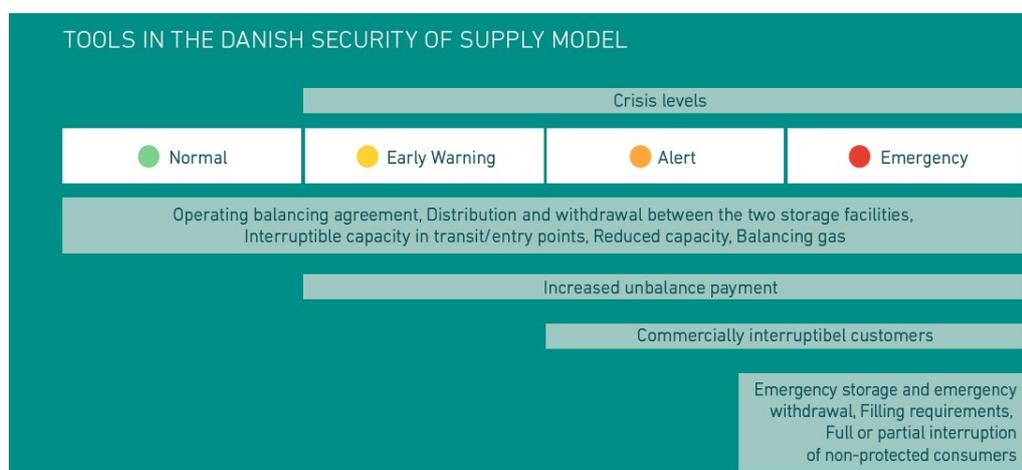


Figure 1. Measures in the Danish security of supply model.

Exceptionally high gas demand or significant interruptions of supplies may occur at both the Alert and Emergency levels. Basically, the difference between these two crisis levels is determined by the ability of the market to handle the gas demand. If the market is unable to handle the gas demand, Emergency must be declared in order to use non-market based measures to safeguard supplies to the protected customers - It depends on the specific situation whether it is necessary to interrupt supply to the non-protected customers.

2.1.4 Expected impact of the measures and the management of exceptional situations

Energinet estimates that with the security of supply model it will under almost all circumstances be possible to avoid declaring Emergency potentially involving the full or partial disconnection of non-protected customers (section 2.5.3.1). However, when Tyra is closed down the supply situation will be more tense in spite of mitigation actions, and the risk is higher than today.

In most circumstances, Emergency is declared after a period at the Alert level during which the market mechanisms are expected to have significantly aligned the market with the available sources of supply. In Emergency, supply to the non-protected customers will be maintained unless it is deemed necessary to disconnect them in order to safeguard the supply to protected customers. It might be necessary to disconnect the non-protected customers fully or partly (section 2.5.3.1 about “the priority model”).

At the Alert crisis level, based on a concrete assessment taking into account the need to avoid fast pressure drop in the Danish transmission system which compromise the supply to protected customers (hydraulic incidents), it might be necessary to reduce supplies to the Swedish market to maintain supply to protected customers. The need for disconnection of non-protected customers in Sweden will be determined on the basis of a concrete assessment by the Swedish authority.

In the event of Alert and activation of commercially interruptible customers in Denmark and Sweden Energinet informs Nordion Energi if the declaration of Emergency in Denmark is necessary to secure the supply to protected customers. The level of realisable supplies in Dragør (interconnection point Denmark-Sweden) will be determined by the situation and communicated to Nordion Energi by Energinet. Following an evaluation of the situation, the Swedish Energy Agency assesses the crisis level to be declared in Sweden.

When the situation stabilises, enabling the transmission system to supply more than the protected customers, the situation will be handled through measures within the scope of the security of supply model (see section 2.5.3.1 about “the priority model”).

Energinet and Nordion Energi will exchange specific details of the volumes considered to be necessary to meet the needs of the protected market and of the size of the market that can be supplied in addition to the protected market. These volumes will be made available to the non-protected customers on non-discriminatory terms.

2.1.5 Joint Balancing Zone (JBZ)

A new balancing area and joint exit zone for Denmark and Sweden was introduced per 1 April 2019. Consequently, capacity agreements relating to the Danish exit point to Sweden (Dragør) will be converted to equivalent capacity agreements for the joint exit zone. More details can be found in Rules for Gas Transport.

According to Rules for Gas Transport, in the event of both Alert and Emergency, the following applies:

“Energinet and the operator of the Non-domestic Transmission System will exchange relevant information. On the basis of such information and the crisis plans, discussions on proper measures to solve the situation will take place. If such discussions should not lead to any acceptable result, Energinet is entitled to give reasonable instructions to the operator of the Non-domestic Transmission System, including but not limited to instructions associated to the gas flow through the Network Separation Point³. Noncompliance with these instructions implies that Energinet is entitled to take certain reasonable and necessary measures. These measures will be communicated to all relevant players along with further instructions, if needed.”

2.2 Normal operation

A number of measures can be applied already in normal operation and are also available at the three crisis levels.

³ The physical separation point between the Danish and Swedish transmission system.

2.2.1 Buffer - Operating balancing agreements

The operating balancing agreements between Energinet and the neighbouring systems (inter-connection points Ellund and Nybro and storage facilities in Stenlille and Ll. Torup) specify certain buffer limits and principles for the maximum permitted differences between physical supplies and commercial orders, as well as under which circumstances the buffer may be used. The difference between physical and commercial supplies is calculated hourly, and the size of the buffer is determined daily.

The buffer account is continuously reassessed on the basis of operating experience and if necessary the buffer account maximum is adjusted. If both parties in the neighbouring systems agree, the buffer limit may be exceeded.

2.2.2 Sharing of withdrawal and injection between the gas storage facilities

The combined storage bookings can to some extent be shared between the two storage facilities (Stenlille and Ll. Torup) in the transmission system.

In certain situations, the different physical characteristics and geographical locations of two gas storage facilities can contribute to stabilizing the gas transmission system across the country. A situation of low pressure in the eastern part of Denmark may therefore be balanced by replacing withdrawal from Ll. Torup gas storage facility with withdrawal from Stenlille gas storage facility.

2.2.3 Interruptible capacity at exit and entry points

Interruptible capacity is only offered if firm capacity in the transmission system is sold out.

Interruptible capacity can be offered, based on the following:

- Reverse flow
- Unutilized firm capacity
- Scenario based (not firm in all flow scenarios)

Rules for Gas Transport define interruptible capacity as capacity that can be fully or partially interrupted if Energinet is short on capacity.

2.2.4 Reduced capacity

Energinet's ability to declare reduced capacity is set out in Rules for Gas Transport and is described as follows:

"If physical or operational matters result in temporarily reduced capacity in all or parts of the Transmission System, Energinet may issue a reduced capacity notice to the Shippers.

If a reduced capacity notice is issued, Energinet is entitled to order Shippers to reduce on pro rata basis or interrupt deliveries and demand in the Danish Gas System for as long as capacity is reduced in all or parts of the Transmission System. Via the Gas Suppliers the Shipper shall ensure that the Customers relevant to the Shipper comply with the order.

Energinet shall distribute the part of the available capacity among the affected Shippers and other parties along the following lines:

1. *Customers with Hyper3-interruptibility [commercially interruptible customer] must be reduced before non-protected customers and protected customers (in the order mentioned)*
2. *The consequences for the Customers must be minimized, including avoiding interrupting deliveries to Customers sensitive to irregularities in their supply of Natural Gas."*

In principle, the crisis level Emergency will be declared for the transmission system as a whole. However, reduced capacity can be applied for a section of the transmission system if it is necessary to temporarily reduce the operating pressure in that section of the transmission system, for example in event of a pipeline damage only affecting parts of the Danish transmission system.

2.2.5 Balancing gas

Within the gas day, the shipper is required to supply a volume of gas to the transmission system which corresponds to the volumes transported by the shipper on the same gas day. If the total daily volume supplied to the system differs from the total transportation, the resulting positive or negative volume is called balancing gas. This volume is settled with Energinet.

The price charged for imbalances is based both on the particular shipper's imbalance for the gas day and on the overall market imbalance during and at the end of the gas day. Settlement of imbalances based on Energinet's trades plus/minus an adjustment provides an incentive for the market to maintain balance. This way, the market helps Energinet manage the balance.

The shippers purchase or sale of balancing gas from/to Energinet is settled at the so-called neutral gas price⁴ which is calculated for each gas day. However, there is a cap on the neutral gas price.

2.3 Early Warning

The Danish security of gas supply model contains one measure, which can be activated in Early Warning: Increased imbalance payment.

2.3.1 Increased imbalance payment

The increased imbalance payment measure can be activated in Early Warning and is accessible in all three crisis levels. The purpose of the measure is to ensure that the gas transmission system maintains balance.

By having the option to increase the imbalance payment, the shippers will have an incentive to balance their portfolio. This may be the case in a crisis situation, where the ability of the market to balance is limited. The increased imbalance payment measure may thereby help avoid the necessity of having to escalate to a higher crisis level (e.g. from Early Warning to Alert).

The measure is activated by Energinet and involves the shippers. All relevant market actors, including shippers, who are the ones facing the possible increased imbalance payments is informed via Gas Market Messages.

2.4 Alert level

The Danish security of gas supply model contains one measure in Alert level: Commercially interruptible customers, which is a market-based demand-side measure.

⁴ The within-day reference price listed at Gaspoint Nordic, expressed in DKK/kWh. However the neutral gas price cannot deviate more/less than 10 % from the European Gas Spot Index for the gas day.

2.4.1 Commercially interruptible customers

The commercial interruptible customers measure can be used as a system balancing measure in Alert, where the purpose of the measure is to rapidly decrease consumption in the system. The commercially interruptible customers must reduce their consumption three hours after they have been given notice and for a period of up to 69 hours.

A supply interruption causes loss of pressure in the transmission system. If consumption is not reduced, the pressure might drop to a level where it is no longer hydraulically possible to supply gas to customers in the eastern part of Denmark and in Sweden. It is therefore necessary to activate commercially interruptible customers in order to reduce demand and safeguard sufficient capacity in the transmission system.

If needed, Energinet will notify the commercially interruptible customers to reduce their gas consumption according to the agreed level between Energinet and the customer. When the customer has fulfilled the terms of the agreement the customer will no longer be restricted towards their gas consumption. If the supply situation improves before the 69 hours, Energinet will notify the commercially interruptible customers to no longer have to reduce their gas consumption.

To participate in the concept of being a commercially interruptible gas customer, the customer must consume a minimum of 2 mcm gas a year as well as being physically placed in the eastern part of Denmark or in Sweden. The large gas customers are reimbursed for voluntarily reducing or interrupting their gas consumption. If a supply interruption occurs, Energinet assesses that declaration of the crisis level Emergency often can be avoided, if gas consumption can be reduced within a few hours.

Energinet will inform the commercially interruptible customers if the crisis level Alert is declared. If needed, the commercially interruptible customers will be activated. When the crisis level Alert has been declared, Energinet will request hourly data on gas consumption from the distribution companies. The data helps Energinet to assess whether the commercial interruptible measure has an effect. If the commercial interruptible measure is being used, the hourly data on gas consumption is also used for monitoring the commercially interruptible customers' gas consumption.

2.5 Emergency level

The Danish security of gas supply model contains three measures in Emergency level: Emergency storage and emergency withdrawal, filling requirements, and full or partial interruption of non-protected customers.

2.5.1 Emergency storage and emergency withdrawal

Storage facilities constitute an essential part of the measures available for Energinet in Emergency. Energinet stores gas for Emergency alongside with the gas reserved by commercial storage customers.

In case of Emergency, Energinet needs both volume and withdrawal capacity in the gas storage facilities. Energinet reserves sufficient storage volumes to secure the necessary withdrawal capacity for hydraulic incidents and long term Emergency situations. The distribution of the emergency gas between the two storage facilities is considered every year.

The resulting impact of supplying the marked with emergency gas, depends on the situation. In the event where supply to a subsystem is interrupted the delivery point for emergency gas is critical. For instance in the event that the supply to the eastern part of Denmark is interrupted, it is critical that the Stenlille storage facility can supply the necessary amounts to the protected customers located east of Egtved until the connection to the eastern part of Denmark is re-established. The measure will ensure the gas supply to the protected customers and help to mitigate the situation. Mitigation of the situation also depends on the supply from commercial storage customers. The decision to use emergency withdrawal capacity can affect the commercial storage customers' use.

The decision to use emergency storage and withdrawal capacity is made by the actual crisis manager, cf. section 4. During an emergency situation the dialogue between Energinet and the gas storage company will be continuous to ensure the supply to the customers and the integrity of the system. Energinet will inform the gas storage company about what withdrawal capacity is needed and the distribution between the two storage facilities. The gas storage company will then contact the storage customers whose withdrawal capacities are affected.

2.5.2 Filling requirements

Energinet can include natural gas volumes in storage covered by the storage customers in the security of supply model as the so-called filling requirements. Energinet concludes contracts with commercial customers regarding volumes and period for the stored volumes. Energinet purchases filling requirements in tenders open to all storage customers.

An agreement on filling requirements is an agreement between Energinet and the storage customers. Energinet pays storage customers to keep gas in the storage facilities for defined periods (November – March), which will be made available to Energinet in Emergency. The demand for emergency storage peaks during this period.

The filling requirements are a way of utilizing synergies between the gas stored for normal supply and for security of supply. Energinet uses filling requirements to ensure that the storage customers keep certain volumes of gas in storage at certain points in time. It is common practice that the storage customers keep excess quantities of gas in the storage facilities, and it is normally not until the end of the storage season (March) that filling requirements restrict the actual use of the storage facilities. The gas stored under filling requirements contributes to maintaining the required withdrawal capacities during the period with peak demand.

Gas stored under filling requirements will be made available to Energinet with an option to buy in case of Emergency caused by gas deficiency in the system (volume incident). Energinet shall contact the storage customers and inform them that Energinet needs to take over the gas. There also needs to be a dialogue with the gas storage company to ensure that Energinet has full right of disposal over the stored gas. Taking over the stored gas will contribute to the security of supply to protected customers. The degree of mitigation also depends on the supply from commercial storage customers. The decision to use filling requirements can affect the commercial storage customers' use.

2.5.3 Full or partial interruption of non-protected customers

In case of Emergency at national level or Union or Regional level, supply to the non-protected customers will be maintained unless it is deemed necessary to interrupt the supply to them in order to safeguard the supply to protected customers.

Depending on the development and duration of the situation it may be necessary to fully or partially interrupt the non-protected customers. The decision is made by Energinet based on an assessment of the situation and the ability to supply the gas market, including extended duration, etc. The assessment is submitted by Energinet in written form to the Danish Energy Agency for the purpose of the Agency's coordination with other authorities. Energinet's decision on possible interruption of customers must be based on the following considerations:

- Define whether it is a national Emergency or a Union or Regional Emergency;
- The expected duration of the crisis situation, as well as the likeliness of the situation to develop either in a positive or negative direction;
- The ability to supply both the Danish and the Swedish protected gas customers;
- The ability to also supply the non-protected gas customers in Denmark and Sweden;
- The options for reducing the consequences of potential interruptions, both the direct consequences for the affected gas customers, and also the indirect consequences for the society, and on the basis of overall considerations for the society;

The following procedures are followed in respect of non-protected customers:

- Every year Energinet identifies the non-protected customers based on metered data from the distribution companies and town gas companies, as well as the cubic metre limit defined by the Danish Energy Agency.
- The distribution companies and town gas companies can interrupt the non-protected customers' gas supply if they fail to reduce or stop their gas consumption at Energinet's request.

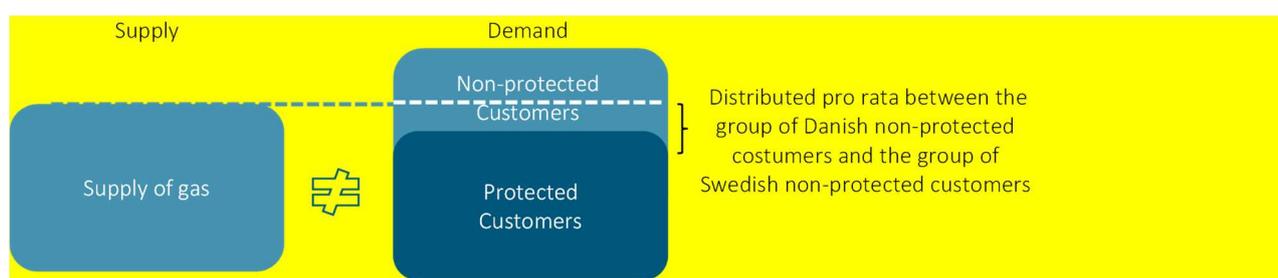
In case it becomes necessary to interrupt supply to the non-protected customers, a 72 hours' notice will be given. The exact level of interruption will be communicated to each non-protected customer at the earliest possible time during the notice period.

Based on the specific supply situation, Energinet assesses the volume of gas to be interrupted in order to maintain the supply to protected customers. The gas consumption of the non-protected customers is interrupted according to the priority model described below.

2.5.3.1 "The priority model"

The modified pro rata model

As of 1 October 2015 Energinet has implemented a pro rata model which in case of an Emergency can be applied for partial supply to the non-protected customers. The pro rata model is now modified so that the pro rata distribution applies to the division between the group of Danish non-protected customers and the group of Swedish non-protected customers, see the illustration below:



The pro rata distribution also applies to the group of non-protected customers who are on the list containing -socially non-critical consumption. The list is described below.

The priority model

The distribution of available gas between the Danish non-protected customers takes place according to a priority list which is determined by the Danish sectoral authorities.

The priority list divides the non-protected customers in socially critical consumption and socially non-critical consumption.

The socially critical consumption has first priority. The list will determine the degree of socially critical consumption of each non-protected customer. The list will further determine the order of priority in case there is not enough available gas to supply all of the socially critical consumption.

If gas volumes are available beyond the volumes needed to supply the socially critical consumption on the priority list, such gas volumes are offered to the socially non-critical consumption based on pro rata basis.

Some customers may be classified as having both socially critical and socially non-critical consumption.

The gas supply to Danish non-protected customers can be partially or fully interrupted with a 72 hours' notice. The exact level of interruption will be communicated to each non-protected customer at the earliest possible time during the notice period.

This modified model for the Danish gas market is hereafter named the "priority model".

The priority model will apply if the available gas volumes are insufficient to supply all of the non-protected Danish customers after securing the necessary supply to all protected customers.

An exception from the priority model will be made if:

- 1) Production of biomethane in a particular part of the distribution system is higher than the volumes distributed to protected and non-protected customers in that part of the distribution system according to the priority model and
- 2) The surplus of biomethane production in that particular part of the distribution system cannot be sufficiently transferred from the distribution system to the transmission system due to the size of the reverse flow capacity etc.

In that case, the non-protected customers in that particular part of the distribution area will be supplied beyond the volumes specified by the priority model to avoid biomethane going to waste. The principles in the priority model are still used when dividing volumes between the non-protected customers taking into account the need to balance production of biomethane production and gas consumption in the particular part of the distribution system.

Actions in an Emergency situation:

- Energinet calculates the gas volumes that need to be interrupted in order to maintain supply to the Danish and Swedish protected customers.
- In case of gas volumes available beyond the volumes needed to supply the Danish and Swedish protected customers, such volumes are offered to the non-protected customers. The distribution of available gas between the group of Danish and the group of Swedish non-protected customers will be made on a pro rata basis.
- The volumes allocated to the Danish non-protected customers will be offered according to the priority model described above.
- The Danish competent authority will secure, that each non-protected customer is duly informed about the priority status of his consumption (critical or non-critical or both) and of any changes in this status.

If a non-protected customer is using more gas than approved, the distribution company is entitled to disrupt the gas supply to the non-protected customer.

A non-protected customer will be requested to reduce gas consumption to a maximal granted limit, either Nm³ for a day or Nm³ for a given period.

- Energinet requires information of the normal consumption in order to offer gas volumes according to the priority model
- Normal consumption is calculated as the average daily consumption each month in Nm³/day based on data from the previous two year's consumption.
- Energinet/Nordion Energi calculate this annually.

The above priority model will apply from March 19, 2022.

2.5.4 Gas price in Emergency

It is important that the balancing regime during Emergency fulfil the main purpose of giving sufficient incentive for shippers to secure gas for the end consumer market in all cases. The pricing regime for emergency gas must secure that the commercial players secures the supply of gas for the end-consumer market and the balance of the transmission system.

The formula for calculating the price of emergency gas, and thereby the price of being in an imbalance due to lack of gas towards a shippers end-consumer portfolio, will be changed. The price formula for emergency gas will be based on: "The highest Day-ahead Index set at either Gaspoint Nordic, Gaspool or Net Connect Germany during the current storage year"

2.6 Transit

In accordance with the Regulation, Denmark is not allowed to introduce measures which unduly restrict the flow of gas within the internal market, in particular the flow of gas to the affected markets, or which may severely endanger the gas supply situation in another Member State, unless there are indisputable reasons for doing so.

In addition, the cross-border infrastructure access must be maintained as much as it is technically and safely possible.

Depending on the specific situation, Energinet assesses the need for restricting gas flows to the market and cross-border infrastructure access to ensure that the gas supply can be maintained.

In a declared Union Emergency, there will be no restrictions in gas flows to the market or the cross-border infrastructure. In a declared national Emergency, there may be restrictions in gas flows to the market and cross-border infrastructure to safeguard supplies to the protected customers.

2.6.1 Supplies to Sweden

Denmark is Sweden's only source of gas. In many ways, this makes the two transmission systems physically interdependent.

In the event of a “hydraulic incident”, the Danish Emergency Plan and procedures will allow the flow in Dragør to be reduced so that the supply of gas to Sweden's non-protected customers is cut off completely at 2-4 hours' notice in an Emergency requiring a quick response, for example an outage at Stenlille gas storage facility on a cold winter's day. This is done to maintain the pressure in the Danish transmission system and thereby maintain the supply to the Danish and Swedish protected customers.

Sweden does not have a market-based measure that can help to sufficiently stabilise the transmission system in Denmark and Sweden in the event of Alert. However, it is possible for Swedish gas customers to be included in Energinet's concept of commercial interruptibility (as described in section 2.4.1). This means that participating Swedish gas customers can help stabilise the hydraulic situation in the transmission system in Denmark and Sweden in the event of Alert.

Continued supply to non-protected Swedish customers in a crisis situation may be a critical factor in determining whether it is possible to safeguard supplies to the protected customers in Denmark and Sweden. It may therefore be necessary to declare Emergency and thus fully or partly disconnect supplies to non-protected customers (see section 2.5.3.1 about “the priority model”).

At the Alert crisis level in Denmark supplies in Dragør might be reduced. This is done in order to avoid declaring Emergency in Denmark, which would otherwise entail the risk of interruption of supplies to all non-protected Swedish customers within a few hours. Information about the necessity of reduced supplies in Dragør will require Sweden to assess the supply situation, and whether the crisis level in Sweden should be changed.

Energinet is determined about avoiding having to declare Emergency if possible, which it achieves by activating the commercially interruptible customers (in Denmark and Sweden) as early as the Alert crisis level, and by aligning supplies to the Swedish market to the extent deemed necessary in the specific situation. Nevertheless, if it is necessary to declare Emergency, the transmission system is highly likely to be tensed there will not be any excess capacity (i.e. a sufficiently high pressure) to supply the non-protected customers in Sweden, even though there might be excess gas volumes in the storage facilities or the possibility of gas supplies from Germany.

If, unexpectedly, there is sufficient capacity in the Danish transmission system, Energinet will arrange the transport of gas to Sweden. The volumes will, as per pro rata allocation, be made available to the non-protected customers in Sweden.

3. Specific measures for the electricity and district heating

3.1 District heating

District heating installations have the status of protected customers and they will not be affected during Emergency.

3.2 Supply of electricity generated from gas

In a previous Energinet analysis⁵ from 2014 it was concluded that an interruption of the gas supply would not have a significant effect on the Danish Electric Power Supply. Since 2014 several central power plants in Denmark have been reconstructed to run on biomass and the dependency on gas as fuel has hence been reduced since 2014.

In the event of a major disruption of supply of gas, it is estimated that a maximum of 200 MW central power production would be missing. It is assumed that in such incident, the option of importing electrical power from Sweden would cover potential power shortage in Denmark, since the gas fuelled power plants in Sweden only represent a minor part of the production capacity.

Based on the above, it is evaluated that a disruption of gas supply would not be critical to the security of power supply, but that a gas interruption would have a negative effect on sufficient power efficiency in the period.

In the 2018 presumptions of analysis it is estimated that the future gas consumption for production of electricity and heat will gradually decline moving toward year 2040, continuously reducing the impact of interrupted supply of gas for power supply in the future.

⁵ Analysis of the Electric Power Supply by disruption of gas supply in accordance with the Security of Gas Supply Regulation of 2014.

4. Crisis manager or team

The Danish crisis management team is described as follows:

- Energinet has a 24/7 crisis team to support the control centre. The objective is, to handle the crisis at the operational level.

The procedure for the crisis team is described in roles:

- SOS: handles security of supply and preparedness
- Market: handles market related issues
- Back office: handles commercial and IT issues

It is possible for the crisis team to escalate the crisis to the next level, being the crisis management organization.

The crisis management organization makes decisions in relation to the business areas crisis management, government reporting, and strategy for internal and external communications.

The responsibility of the crisis management organization is to ensure that all affected parts of the business area and the rest of Energinet have a complete overview of the situation ensuring effective coordination and handling of the situation.

Roles in the crisis management organization:

- Crisis manager: Lead and delegate tasks within the crisis team
- Logging (overview): Keep an overview and create a log on the crisis team's decisions, lead meetings, and ensure compliance with defined "staff methodology"
- Preparedness adviser: Support the crisis team with relevant contingency information
- Communication: responsible for communicating the crisis "position" to internal and external stakeholders (actors) and advise the crisis team in strategic communication
- Spokesperson: Responsible for public announcements
- Regulatory reporting: Keeping the authorities up to date on the situation
- Practical conditions: Facilitate the practicalities within the crisis team, such as IT, catering etc.

5. Roles and responsibilities of different actors

Energinet is responsible for the security of supply in the Danish gas system as described in the Natural Gas Supply Act.

Security of supply in the Danish gas market comprises mainly the following aspects:

1. Availability of gas, by which is understood that the accessibility of gas supplies (including gas from storage facilities) must be sufficient to meet the Danish customers' gas requirements in normal as well as extreme weather conditions
2. Sufficient network capacity, which means that the transmission system must have sufficient network capacity to cover the customers' gas requirements in both normal and extreme weather conditions
3. System integrity, which means that the operational functionality of the system from production to customer must be secured.

The availability of gas (point 1.) is the market players' responsibility.

Energinet is responsible for ensuring the necessary infrastructure (point 2.) that makes gas delivery to and from adjacent systems possible. Energinet is specifically responsible for securing adequate network capacity in the transmission system, including transportation capacity to and from the storage facilities and to the distribution systems via the M/R-stations.

To avoid Emergency situations, Energinet is committed to using market-based balancing tools. If it is impossible to maintain the balance in the transmissions system by means of market-based balancing tools, Energinet will declare a situation of Emergency and proceed to safeguard the gas supply in accordance with the Emergency Plan and the Danish security of gas supply model to counteract to that extent where the shippers prove unable to fulfil their obligations.

As the only Danish gas transmission company, Energinet is responsible for the system integrity (point 3.) in the Danish transmission system, i.e. the interaction between the 80-bar transmission system and the adjacent systems.

Furthermore, as stated in chapter 1 Energinet is responsible for declaring the relevant crisis level in case of a national crisis situation. Energinet handles the operative tasks related to the emergency plan. Energinet also carries out the general coordinating of planning and operational tasks related to the entire gas industry's preparedness. The storage company is committed to cooperate with the gas transmission company with regard to security of supply. The gas transmission company has priority of access to reserving capacity in the gas storage facilities.

The distribution companies are responsible for the security of supply in the distribution systems from immediately downstream of the transmission system's M/R-stations to the individual customer. The distribution companies must deliver data about the gas customers' consumption to the transmission company. In case of an Emergency situation in which Energinet estimates that interruption or reduction of the non-protected customers' consumption is necessary, the distribution company must stop the gas supply to any such customers that do not comply with the request for interruption/reduction of their consumption.

The competent authority is, as stated in chapter 1, responsible for declaring the relevant crisis level in case of a Union or Regional crisis situation.

According to the Regulation *“When the competent authority declares one of the crisis levels referred to in paragraph 1, it shall immediately inform the Commission as well as the competent authorities of the Member States with which the Member State of that competent authority is directly connected and provide them with all the necessary information, in particular with information on the action it intends to take. In the event of an emergency which may result in a call for assistance from the Union and its Member States, the competent authority of the Member State concerned shall without delay notify the Commission's Emergency Response Coordination Centre (ERCC).”*

The Danish Energy Agency notifies the authorities in Sweden and Germany. Likewise Energinet notifies the Swedish and German TSOs about the situation.

In a situation with a determined Emergency level, the Danish Energy Agency and Energinet stay in close contact.

If deemed necessary, meetings between the two parties will be established on a regular basis to evaluate the status and progress of the situation as well as other relevant conditions i.e. communication.

Energinet continuously informs the Danish Energy Agency about relevant circumstances, provides professional (technical) advice along with recommendations about overall decisions which have to be made by the authorities.

5.1 Reporting flow in incidents

With regard to reports from undertakings in the gas sector relating to national incidents, Energinet will initiate the reporting process and specify how reporting will take place. In Union/Regional crisis the Danish Energy Agency will initiate the reporting process.

In Early Warning Energinet informs the market about the development of the situation.

During a long-lasting incident at the Alert and Emergency crisis levels, the gas undertakings must update and report the information to Energinet about every two hours during the progress of the incident. In case of a national incident, the reporting schedule will be announced when the procedure is initialised. During the restoration phase, gas undertakings must provide status reports at least once daily.

Information from the sector must give authorities and undertakings a common, up-to-date overview of the situation, both during the incident and afterwards.

In case of major incident, Energinet will provide information about the situation to the press and public, i.e. through www.energinet.dk and press releases.

The information will indicate:

- how many customers are without gas in the country as a whole and in particular in parts of the country
- expected duration until supply is restored
- when the next information update will take place
- where customers can get more detailed information about their situation
- where and how customers can contact their local gas undertaking

Summary information is provided while the incident is on-going and until the situation is considered normalized. Normalization does not necessarily mean that all customers have gas again, but that the supply situation is under control.

In their Emergency Preparedness Plans, all undertakings must indicate how they will inform the authorities (including the police district), partners, gas customers, the press, the general public etc., cf. section 7(3) of Executive Order No 1025 of 21 August 2007.

At all crisis levels Energinet informs all actors in the market, gas customers and other relevant parties along with all parties relevant to the operational tasks, including adjacent systems, companies and other relevant actors/bodies.

In case of a Danish or a Union or Regional Emergency, the Danish Energy Agency has the overall responsibility for handling the media.

5.2 Notification of potential risk of interruption of gas supply to customers

If a complete or partial interruption of non-protected or protected customers becomes necessary, the Danish Energy Agency handles and coordinates the overall management of media and notification of other authorities, media, etc. and ensures the coordination with the communication from other authorities;

Affected gas customers in the gas market will be informed by the distribution companies.

Energinet handles the operational actions related to a potential risk of interruption of gas supply to gas customers and continuously informs the Danish Energy Agency about the progress of the situation.

6. Measures regarding undue consumption by customers who are not protected customers

In case of the need to interrupt the non-protected customers to ensure the supply to the protected customers, Energinet declares the crisis level Emergency as a REMIT on gas market message and contacts the distribution companies in order for them to inform the non-protected customers to reduce their demand.

Then Energinet receives hourly data of the non-protected customers from the distribution companies to monitor all the non-protected customers' demand or rather the reduction in demand. Monitoring is handled in an IT-system.

In case a non-protected customer doesn't reduce its use of gas, Energinet will contact the distribution company so they can cut the supply to the customer manually.

7. Emergency tests

Once a year in October/November when the auction for the commercial interruptible customers and the appointment of the non-protected customers is held, data and communication tests are carried out to ensure correctness of the master data. Furthermore, if there is a new commercially interruptible customer, a full-scale reduction test is required.

Energinet sends an e-mail to all the commercial interruptible customers and the distribution companies describing the procedure for the test. Furthermore an automatic phone call is activated to the commercial interruptible customers in order to reach them directly, referring to the forwarded e-mail. Also a text message is sent out.

The commercial interruptible customers need to acknowledge the automatic phone call in order for Energinet to verify they have received the message.

The distribution companies then sends hourly data regarding the commercial customers demand to verify correct EAN number.

8. Regional dimension

8.1 Measures to be adopted per crisis level

A number of the measures in Energinet's security of supply model include agreements with TSOs and customers in other gas transmission systems. These measures are buffer (normal operation), cf. section 2.2.1, and commercially interruptible customers (Alert level), cf. section 2.4.1.

8.2 Cooperation mechanisms

Denmark is a member of the risk groups Denmark, Norway, and Baltic Sea. Denmark is directly connected to the Swedish and German gas systems at the respective interconnection points at Dragør and Ellund. From a regional cooperation point of view close cooperation with Sweden and Germany is important to mitigate risk of curtailment of national gas supply and across the borders and to ensure an effective functioning of the internal gas market.

Energinet, being the Danish TSO, has entered into operation agreements with the German TSO (Gasunie Deutschland) and the Swedish TSO (Nordion Energi). These agreements include among others mutual obligations with regard to exchange of information and measures to tackle situations where the security of gas supply might be threatened on each of the three crises levels.

It is the intention of the Danish Energy Agency as competent authority to facilitate regular consultations between the three competent authorities, regulators and TSO's in order to exchange information and discuss all relevant issues in relation to security of gas supply. The Danish Energy Agency is responsible for contact to the authorities. Energinet has regular operational meetings with connected system operators.

8.2.1 ReCo

Denmark is a member of the Regional Coordination Group for Gas (ReCo) North-West. The North West team covers incidents in the North West supply corridor with gas from Norway and the North Sea. ReCo provides procedures and a system for communication between TSO's in the event of a gas supply crises in order to support efficient crises management between TSO's.

8.3 Solidarity among Member States

Denmark shall enter into agreements with Germany for delivery of solidarity gas in both directions and an agreement with Sweden for delivery of Danish solidarity gas to Sweden. Denmark is working on a legal and a practical track in order to set up the needed national legal system and develop an integrated transport, allocation, and nomination system to ensure delivery of solidarity gas to Germany and Sweden. An amendment to the Danish Natural Gas Supply Act is under preparation and is planned to be presented for the Danish Parliament in beginning of 2019.