



## Technical regulation 5.1.2

# Definition of plant status for thermal power stations connected to the transmission grid

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## Revision view

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## Reading instructions

This technical regulation includes definitions of the concepts used when specifying operating status for thermal power stations connected to the transmission grid.

Operating status is used in connection with Energinet.dk's responsibility for ensuring the security of supply, see section 27b (2) of the Danish Electricity Supply Act (Elforsyningsloven), and must be submitted in accordance with Regulation C3 'Handling of notifications and schedules – daily procedures'. This covers i.a. four-week forecasts, daily forecasts, etc.

The regulation is structured in such a way that section 1 contains the terminology and definitions used, section 2 describes the regulatory provisions and relevant references, while sections 3 and 4 contain the specific technical, functional and operational requirements.

In the regulation, terminology and definitions are written in *italics*.

The regulation is also published in English. In case of doubt, the Danish version applies.

The regulation is published by the *transmission system operator* and is available at [www.energinet.dk](http://www.energinet.dk).

## 1. Terminology and definitions

### 1.1 Conditioned ready state

The *plant* is not yet in *ready state* due to capacity limitations (the active power) caused by, for instance, the reasons stated below.

*Plants* which are limited by their inability to start up at the *start-up time* specified in the technical data for the *plant*, staff-related factors, market conditions, *plant* defects, fuel conditions or environmental issues, or plants which are only in service periodically due to compulsory heat production or other seasonal factors.

### 1.2 Decommissioned

The production *plant* is in the process of being *decommissioned* and will no longer be available.

Significant parts of the *plant* will be removed, such as boilers, turbines, generators and other utilities. The *plant* will never be in operation again.

The condition must be approved by the Danish Energy Agency.

### 1.3 Electricity-generating unit

An *electricity-generating unit* comprises one or more units which generate electricity and which are connected to the *public electricity supply grid*.

### 1.4 Electricity supply undertaking

The *electricity supply undertaking* is the enterprise to whose grid an *electricity-generating unit* is electrically connected. Responsibilities in the *public electricity supply grid* are distributed onto several grid companies and one transmission enterprise.

The grid company is the company licensed to operate the *public electricity supply grid up to* 100 kV.

The transmission enterprise is the enterprise licensed to operate the *public electricity supply grid above* 100 kV.

### 1.5 ESA

The abbreviation *ESA* refers to the 'Danish Electricity Supply Act'.

### 1.6 Forced outage

Unintentional outage time or limitations which occur at a *ready state* or *conditioned ready state plant* due to a technical defect.

### 1.7 Full-load test

A *full-load test* is a *plant* test carried out at the reported maximum load for the *plant*.

### 1.8 Mothballed

*Plants* which are taken out of operation for a longer period of time following the decision of the owner must be given the operational status *mothballed*.

A *plant* can be *mothballed* for an indefinite period of time.

The condition must be approved by Energinet.dk. Every third year, the approval must be reassessed with regard to whether the *plant* can still be categorised as *mothballed*.

### **1.9 Not commissioned**

The production *plant* is under construction. The commissioning test has not yet been approved.

### **1.10 Operation on market terms**

*Plants* that produce at fixed tariffs, for instance the time-of-day tariff, and *plants* that sell their production on market terms are referred to as *operation on market terms*.

### **1.11 Permanently out of operation**

The production *plant* has been taken *permanently out of operation* with a view to subsequent decommissioning. *The plant* can only be put into commercial operation following major investments.

The condition must be approved by the Danish Energy Agency.

### **1.12 Planned outage**

The production *plant* is being inspected and maintained in accordance with an approved plan for inspection and maintenance, see TR 5.4.1 [ref. 2].

The maintenance period must be specified in the description in the four-week forecast.

### **1.13 Plant**

A *plant* consists of one or more *electricity-generating units* that supply electricity to the *public electricity supply grid*.

### **1.14 Plant capability**

Scope of services agreed for the *plant* (stated in base data).

### **1.15 Plant operator**

The *plant operator* is the enterprise responsible for the operation of the *plant*, either through ownership or contractual obligations.

### **1.16 Plant owner**

The *plant owner* is the legal owner of the *plant*. In certain situations, the term 'company' is used instead of *plant owner*. The *plant owner* is entitled to hand over the operational responsibility to a *plant operator*.

### **1.17 Plant status**

*Plant status* is a *plant's* ability to deliver services to the electricity system. Status is divided into the following categories:

- A. *Plant* under construction:
  - 1. *Not commissioned*
  
- B. *Plant* in operation:
  - 1. *Ready state*
  - 2. *Conditioned ready state*
  - 3. *Planned outage*
  - 4. *Forced outage*
  - 5. *Mothballed*
  
- C. *Plant* taken out of operation:
  - 1. *Preserved*
  - 2. *Permanently out of operation*
  - 3. *Decommissioned*

The condition of the individual *plants* is defined separately in this section.

Authorisation is required from the Danish Energy Agency for group C *plants*.

### **1.18 Preserved**

The *plant* is taken out of operation for a longer period of time and can only be put into commercial operation again after considerable or prolonged repairs or conversions.

The condition must be approved by the Danish Energy Agency.

### **1.19 Public electricity supply grid**

Transmission and distribution grids the purpose of which is to transmit electricity for an indefinite group of electricity suppliers and consumers on the terms laid down by public authorities.

The transmission grid is defined as the *public electricity supply grid* with a nominal voltage above 100 kV, while the distribution grid is defined as the *public electricity supply grid* with a maximum nominal voltage of 100 kV.

### **1.20 Ready state**

The production *plant* is in *ready state* and capable of delivering the reported capacity as specified in the four-week forecast and starting up at the *start-up time* indicated in the technical data for the *plant*.

### **1.21 Start-up time**

*Start-up time* is the time taken from when the *transmission system operator* orders the start-up of a *plant*, until the *plant* delivers the agreed service as specified in the four-week forecast.

### **1.22 Start-up warning**

*Start-up warning* is the time taken from when the order to synchronise the *plant* with the electricity system is given, until the *plant* delivers the agreed service as specified in the four-week forecast.

### **1.23 Transmission system operator**

Enterprise entrusted with the overall responsibility for maintaining security of supply and ensuring the efficient utilisation of an interconnected electricity supply system.

## 2. Objective, scope and regulatory provisions

### 2.1 Objective

The objective of Technical regulation 5.1.2 is to define the condition of a *plant* when connected to the *public electricity supply grid*.

The regulation is aimed at *plant owners of electricity-generating plants* connected to the transmission grid.

Pursuant to section 7(1) of Danish Executive Order no. 891 of 17 August 2011 regarding the Danish Act on Energinet.dk (Lov om Energinet.dk), this regulation has been prepared following discussions with relevant players, and it has also been subject to public consultation before being registered with the Danish Energy Regulatory Authority.

This regulation lays down detailed requirements for the *capability* of production *plants* connected to the transmission grid, the duration of *start-up warnings* and the consequences for the *plant* in terms of planning, depending on the *plant status* reported by the player in the four-week forecast.

This regulation is effective within the framework of the Danish Electricity Supply Act, see Consolidated Act no. 1275 of 11 November 2013 as amended.

### 2.2 Scope of application

A *plant* connected to the *public electricity supply grid* must throughout its lifetime comply with the provisions of this regulation.

### 2.3 Delimitation

This technical regulation is part of the complete set of technical regulations issued by the *transmission system operator*, Energinet.dk.

The technical regulations contain the technical rules applicable to the *plant owner*, *plant operator* and *electricity supply undertaking* regarding the operation and connection of *plants* to the *public electricity supply grid*.

Together with the market regulations, the technical regulations – including the system operation regulations – constitute the set of rules to be complied with by the *plant owner*, *plant operator* and *electricity supply undertaking*.

### 2.4 Statutory authority

This regulation is issued pursuant to:

- Section 26(1) of Consolidated Act no. 1275 of 11 November 2013 concerning the Danish Electricity Supply Act
- Section 7(1), paras 1, 3 and 4 of the Danish Executive Order no. 891 of 17 August 2011, Executive Order on transmission system operation and the use of the electricity transmission grid, etc. in the Danish Act on Energinet.dk.

## 2.5 Effective date

This regulation becomes effective on 25 March 2015.

Questions and requests for additional information on this technical regulation can be directed to Energinet.dk.

Contact information is available at

<http://energinet.dk/EN/EI/Forskrifter/Technical-regulations/Sider/Forskrifter-for-systemdrift.aspx>

The regulation has been notified to the Danish Energy Regulatory Authority as set out in section 76 of the Danish Electricity Supply Act and section 7 of the Executive Order on transmission system operation and the use of the electricity transmission grid, etc.

## 2.6 Complaints

Any complaints in respect of this regulation may be lodged with the Danish Energy Regulatory Authority, Carl Jacobsens Vej 35, DK-2500 Valby.

Complaints about the *transmission system operator's* enforcement of the provisions of the regulation can also be lodged with the Danish Energy Regulatory Authority.

Questions regarding the enforcement of the provisions of the regulation can be directed to the *transmission system operator*.

## 2.7 Breach

The *plant owner* must ensure that the provisions of this regulation are complied with throughout the lifetime of the *plant*.

The *plant owner* must pay any expenses incurred to ensure compliance with the provisions of this regulation.

## 2.8 Sanctions

If a *plant* does not comply with the provisions of this regulation, the *electricity supply undertaking* is entitled as a last resort, and following the decision of Energinet.dk, to cut off the electrical connection to the *plant* until the provisions are complied with.

## 2.9 Exemptions and unforeseen events

The *transmission system operator* may grant exemption from specific requirements in this regulation.

An exemption can only be granted if:

- special conditions exist, for instance of a local nature
- the deviation does not appreciably impair the technical quality and balance of the *public electricity supply grid*
- the deviation is not inappropriate from a socio-economic viewpoint.

In order to obtain an exemption, a written application must be submitted to the *electricity supply undertaking*, stating which provisions the exemption concerns and the reason for the exemption.

The *electricity supply undertaking* has the right to comment on the application before it is submitted to the *transmission system operator*.

If events not foreseen in this technical regulation occur, the *transmission system operator* must consult the parties involved to agree on the course of action.

If an agreement cannot be reached, the *transmission system operator* must decide on the course of action.

The decision must be based on what is reasonable, taking where possible the views of the parties involved into consideration.

Complaints about the decisions of the *transmission system operator* can be lodged with the Danish Energy Regulatory Authority, see section 2.6.

## 2.10 References

1.	<b>Regulation C3:2011:</b> Handling of notifications and schedules – daily procedures
2.	<b>Technical regulation 5.4.1:2008:</b> Outage planning
3.	<b>ENTSO-E Network Code RfG</b> – Requirements for Grid Connections Applicable to all Generators

### 3. Operational requirements – depending on plant status

*Plant status* is a *plant's* ability to deliver the agreed services to the electricity system. Status is divided into the following three categories:

- |   |  |  |
|---|--|--|
| <p>A. <i>Plant</i> under construction:</p> <ol style="list-style-type: none"> <li>1. <i>Not commissioned</i></li> </ol> | <p>B. <i>Plant</i> in operation:</p> <ol style="list-style-type: none"> <li>1. <i>Ready state</i></li> <li>2. <i>Conditioned ready state</i></li> <li>3. <i>Planned outage</i></li> <li>4. <i>Forced outage</i></li> <li>5. <i>Mothballed</i></li> </ol> | <p>C. <i>Plant</i> taken out of operation:</p> <ol style="list-style-type: none"> <li>1. <i>Preserved</i></li> <li>2. <i>Permanently out of operation</i></li> <li>3. <i>Decommissioned</i></li> </ol> |
|---|--|--|

To place a *plant* in category C – *preserved, permanently out of operation or decommissioned* – requires authorisation from the Danish Energy Agency.

The reporting of *plant status* to Energinet.dk must be in accordance with Regulation C3: Handling of notifications and schedules – daily procedures [ref. 1].

Depending on *plant status*, different requirements apply to the properties and operational reporting of the individual *plants* as described in the following sections.

#### 3.1 Requirements for plants with 'Not commissioned' status

The expected time of commissioning must be specified in the description in the four-week forecast.

#### 3.2 Requirements for plants with 'Ready state' status

The production *plant* is readily *ready state*, and activation from a cold condition must be possible within the period of time specified in the technical data sheet for the *plant*.

#### 3.3 Requirements for plants with 'Conditioned ready state' status

For a *plant* to be characterised as *conditioned ready state*, the following operational requirements apply.

The consequences of the conditioned circumstances, i.e. one or more limitations on the *plant*, must be described briefly in the four-week forecast.

Furthermore, the expected duration of such limitations must also be stated in the four-week forecast.

*Conditioned ready state plants* may not have a *start-up warning* exceeding three months.

The reported *start-up warning* takes effect one week after the first reporting in the four-week forecast.

*Conditioned ready state plants* are considered fully operational units which can be activated and follow a normal operating pattern.

### 3.4 Requirements for plants with 'Planned outage' status

A maintenance period must be specified in the description in the four-week forecast for *plants* with the *planned outage* status.

### 3.5 Requirements for plants with 'Forced outage' status

A timetable for repair and commissioning must be included in the description in the four-week forecast.

### 3.6 Requirements for plants with 'Mothballed' status

The *plant owner* must submit a request to the *transmission system operator* no later than three months before the *mothballing* is intended to be realised. All terms and conditions for *mothballing* must be agreed with the *plant owner*, such as *start-up warning* and commencement date, no later than two months after submitting the request for *mothballing*.

In connection with *mothballed plants*, the *plant owner* must state *start-up warning* and known limitations in the four-week forecast [ref. 1].

When a *plant* changes status to *mothballed*, the terms and conditions must be added to the four-week forecast four weeks prior to commencement.

A *mothballed plant* must be reassessed every third year.

(Note: This period is related to the requirements for regular inspection of production *plants* every third year in accordance with ENTSO-E NC RfG [ref. 3]).

The date of *mothballing* and possible start-up date after the *mothballing* must be stated in the comment field in the four-week forecast [ref. 1].

It must be possible to reinstate the *plant* within the agreed *start-up warning* period.

A *mothballed plant* is included in the preconditions for grid planning.

If *plant status* switches to category C after the expiry of the *mothballing* period, the *plant* must be removed from the preconditions for grid planning.

*Start-up warning* for a *mothballed plant* must be agreed between the parties and stated in the four-week forecast.

If a *plant* is no longer *mothballed*, *plant* properties must be demonstrated in the same way as after *planned outage* [ref. 2], and a 24-hour *full-load test* must be carried out as a minimum. If the *mothballing* period is less than 12 months, a two-hour *full-load test* must be carried out as a minimum. Once the preparatory steps have been taken, the *plant* must as a minimum be reported as *conditioned ready state*.

If the *transmission system operator* orders a *plant* to no longer be *mothballed* due to the risk of the security of supply, the order must be followed immediately and no later than at the time for the agreed *start-up warning* for the *plant*.

If a *plant owner* decides that a *plant* is no longer to have the status *mothballed*, a renewed status as *mothballed* must be approved by Energinet.dk, see section 27(b) of the Danish Electricity Supply Act (*ESA*).

### **3.7 Requirements for plants with 'Preserved' status**

The *plant status preserved* must be approved by the Danish Energy Agency, see Danish Executive Order no. 493.

The *plant* falls outside the scope of the operational framework, and thus it is not subject to any operational requirements.

### **3.8 Requirements for plants with 'Permanently out of operation' status**

The *plant status permanently out of operation* must be approved by the Danish Energy Agency, see Danish Executive Order no. 493.

The *plant* falls outside the scope of the operational framework, and thus it is not subject to any operational requirements.

### **3.9 Requirements for plants with 'Decommissioned' status**

The *plant status decommissioned* must be approved by the Danish Energy Agency, see Danish Executive Order no. 493.

Significant parts of the *plant* have been removed, such as boilers, turbines, generators and other utilities. It will never be possible to activate the *plant* again.

The *plant* falls outside the scope of the operational framework, and thus it is not subject to any operational requirements.

## 4. Access to the public electricity supply grid

A *plant's* ability to deliver the agreed services to the electricity system is conditional on access to the *public electricity supply grid*. *Plants* are divided into the following three categories:

- |   |  |  |
|---|--|--|
| <p>A. <i>Plant</i> under construction:</p> <ol style="list-style-type: none"> <li>1. <i>Not commissioned</i></li> </ol> | <p>B. <i>Plant</i> in operation:</p> <ol style="list-style-type: none"> <li>1. <i>Ready state</i></li> <li>2. <i>Conditioned ready state</i></li> <li>3. <i>Planned outage</i></li> <li>4. <i>Forced outage</i></li> <li>5. <i>Mothballed</i></li> </ol> | <p>C. <i>Plant</i> taken out of operation:</p> <ol style="list-style-type: none"> <li>1. <i>Preserved</i></li> <li>2. <i>Permanently out of operation</i></li> <li>3. <i>Decommissioned</i></li> </ol> |
|---|--|--|

The requirements for the *transmission system operator* to ensure access to the *public electricity supply grid* are specified in the following section.

### 4.1 Plant category A

For *plants* within this category, the *electricity supply undertaking* is obliged to ensure access to the *public electricity supply grid* at the agreed time for voltage restoration.

### 4.2 Plant category B

For *plants* within this category, the *transmission system operator* must, to the greatest extent possible, ensure access to the *public electricity supply grid* 24 hours a day, 366 days a year, with the below exceptions.

For *ready state* and *conditioned ready state plants*, full access to the *public electricity supply grid* must be maintained for *plants* in normal operation.

A *mothballed plant* must be continuously included in the preconditions for grid planning for three years. Access to the *public electricity supply grid* is thus maintained for the full exploitation of the *plant*, see the grid planning rules applicable at the time, for the first three years.

For *plants* with status *mothballed*, full access to the *public electricity supply grid* will not be automatically maintained for the relevant *plant* for an unlimited period of time.

If the status has been changed to *conditioned ready state* or *ready state*, the *plant* will be included in the preconditions for grid planning in future, which means that full access is given to the *public electricity supply grid* for the *plant*.

### 4.3 Plant category C

For *plants* within this category, the *transmission system operator* is not obliged to ensure access to the *public electricity supply grid* in the absence of any agreement to the contrary and subject to the conditions set out below.

If a *preserved plant* becomes operational again, the *plant* is considered a new *plant*. Therefore, access cannot be guaranteed to the *public electricity supply grid* from the time of commissioning, and commissioning tests must be carried

out in accordance with the applicable technical regulations and legislation in this area.