




***ATSOI***


***UKTSO***

29th October 2007

# WINTER OUTLOOK
# 2007 - 2008

# EXECUTIVE SUMMARY

The Winter Outlook report, prepared at European level, presents the summary of the national or regional power balances between forecast generation and peak demand on a weekly basis for the winter period from the end of November 2007 until the end of March 2008.

The generation capacities, peak load forecasts and the interconnection capacities are generally set to typical winter values. No specific approach has been carried out at this stage to estimate the power flows on the whole European High Voltage interconnected network.

The results rest on data collection and information available by UCTE, Nordel, Baltic countries, GB and Ireland's TSOs at the end of September 2007.

The survey shows that on the whole, **no particular risk of power shortage is expected for the winter under normal conditions.**

The national generation-load balances forecast in each country are generally considered as suitable.

Only a few countries may depend on imports from their neighbours in some specific periods: Belgium, Portugal, Greece, Romania, Slovenia and the Slovak Republic.

Finland, Former Yugoslav Republic of Macedonia, Serbia and Latvia need imports to reach adequate margins.

In these cases the transmission capacities allow for the required imports if intact. Availability of the simultaneous export capability in the neighbouring countries or regions has not been analysed.

Conversely, **under severe conditions,** due mainly to low temperature or unfavourable hydro-conditions, **the power systems might be stressed,** especially when the same periods are critical for neighbouring countries as well.

The most critical period is the annual winter peak period (December-January, usually excepting the holiday period but in some cases may also extend to February).

In such periods, unfavourable conditions could reduce the export capabilities from exporting countries and could lead to tight situations at the regional level in Central Western Europe (Great-Britain, France, Belgium and The Netherlands) and South Eastern Europe (Former Yugoslav Republic of Macedonia, Serbia, Greece, Romania). Among the Nordic countries, Finland, Sweden and Eastern Denmark will have a deficit under severe conditions, but the total Nordic generation capability exceeds the simultaneous peak demand.

In addition Spain, Austria, Italy and Hungary stress **the risks linked to the gas market.**

This survey contributes to improve operational cooperation between TSOs and gives signals for further enlarged analysis on a bilateral or multilateral basis in order to assess the global adequacy of the interconnected systems and to verify that congestions on the transmission grid do not limit the exchange capacity. The TSOs also utilise the information as a background in planning possible actions to meet the objectives for security of supply in critical situations.

The market players may also use this preliminary assessment for further discussion.

# 1. INTRODUCTION AND METHODOLOGY

## 1.1. Presentation of the involved countries

This report has been drawn up with the contribution of the following countries:

- **UCTE members :**

| |
|---|
| Belgium |
| Germany |
| The Netherlands |
| Luxembourg |
| France |
| Spain |
| Portugal |
| Switzerland |
| Italy |
| Austria |
| Slovenia |
| Poland |
| Slovak Republic |
| Czech Republic |
| Hungary |
| Western Ukraine |
| Bosnia Herzegovina |
| Serbia |
| Montenegro |
| Former Yugoslav Republic of Macedonia |
| Greece |
| Romania |

No contributions were received from Bulgaria or Croatia.

- **NORDEL countries : Denmark, Finland, Norway, Sweden**

- **BALTSO members: Estonia, Latvia, Lithuania**

- **UKTSOA and ATSOI members : Great Britain, Republic of Ireland**
  Although no individual contribution was received from Northern Ireland, it is catered in contributions from GB and the Republic of Ireland

*NB: Although part of the Denmark is synchronously connected to UCTE and Energienet is Member of UCTE, the whole contribution of Denmark is included in NORDEL.*

## 1.2. Aim and methodology

1.2.1 General considerations

The aim of this report is to present UCTE, UKTSOA, ATSOI, BALTSO and NORDEL TSOs' views as regards national or regional System Adequacy Forecast for the coming winter and possibilities of

the neighbouring countries to contribute to the balance in critical situations. The survey gives them the opportunity to share information and gives impetus to further studies on a bilateral basis.

The information is based on the answers to a questionnaire sent to every TSO in September. The questions concerned the TSOs' practices as well as some quantitative elements in order to present every country's forecasts on a common basis.

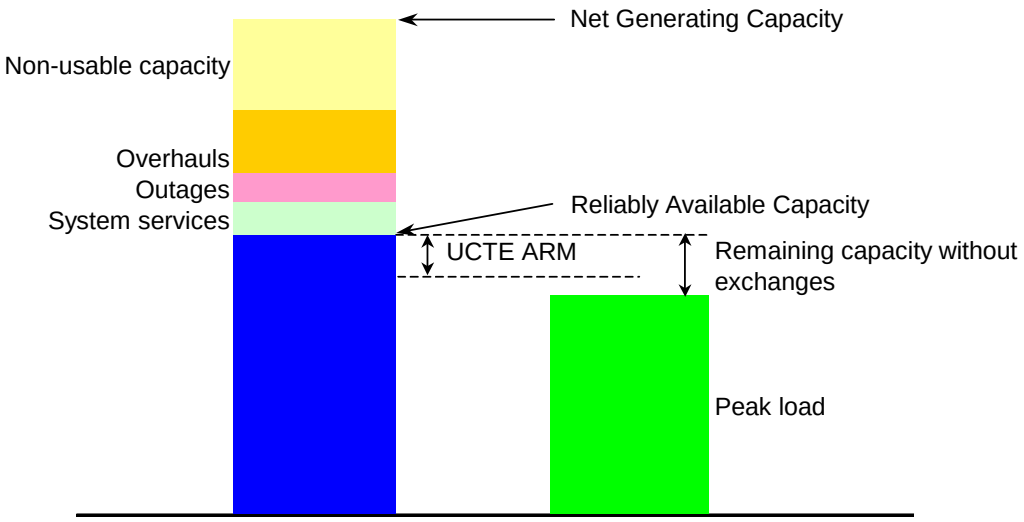
Available generation and peak load data were sought for each week, from end of November 2007 (week 48) until end of March 2007 (week 13). The TSOs were also questioned on whether the generation–demand balance should be considered at risk or not for the winter 2007/08. No specific analysis was carried out to simulate the power flows on the whole European High Voltage interconnected network. Moreover, interconnection capacities were in most cases set to typical winter values.

**N.B.: The data used for this Report represents the information available to TSOs at the end of September.**

### 1.2.2 Methodology

The methodology consists in identifying the ability of generation to meet the demand by calculating the so-called "remaining capacity".

For UCTE countries, an Adequacy Reference Margin (ARM) has been used as adequacy index; it corresponds to a proportion of the Net Generating Capacity, set between 5% and 10% according to the country considered depending on its electric system characteristics.




The figures of the Appendix show the National Generating Capacity, the Reliably Available Capacity and the peak load under normal and severe conditions. The remaining capacity is calculated for normal conditions and compared with the Adequacy Reference Margin (ARM) for UCTE Members. The remaining capacity is also evaluated with firm import/export contracts and for severe conditions.

The Nordic countries refer to the forecast national and simultaneous regional peak demand, not to the demand at a given date or hour.

1.2.3 Structure of the report

**Section 2** gives the main risks factors that come out of the contributions (§ 2.1) and presents the main features (§ 2.2), completed by additional comments, country by country (§ 2.3).

**Section 3** deals with blocks or regions according to mini-fora splitting.

**Section 4** is the conclusion.

Last, the **Appendix** collects each country's comments, completed by schemas illustrating the Generation – Demand Balance.

# 2. MAIN RESULTS

## 2.1 Risk factors

Before drawing the main features of the generation-load forecasts of the different countries, it should be pointed out that the basis of the analysis is the so-called "normal" conditions, which means that the generation forecasts (generation capacity, planned outages) rests on the information made available to TSOs and that the different statistical elements that have an influence on the balance are set to average or typical winter values.

Among these elements, the ***temperature*** has a particular place, since it influences directly the level of the load. Therefore, to illustrate the sensitivity of the balance to this parameter, a severe winter scenario was built, showing the load level and the relative generation-load balance that could be experienced week by week in case of low temperatures.

Other factors have a direct influence on the generation level, namely:

- ***Outages of large units***, including of course overhauls and unplanned unavailability, but also extension of the duration of planned outages ;
- ***Hydrologic conditions,*** low inflows leading to reduced generation of hydro units,
- Market conditions on fuels, especially ***gas***, with possible effect on the energy that could be generated by Combined Cycle Gas Turbines.

The last set of important factors is linked to the network conditions, such as:

- ***Extreme climatic conditions***, that could affect the availability of the network,
- ***Congestions*** that limit the possible use of generation or in extreme cases the supply of local loads,
- ***Loop-flows***, due to the physical laws of electricity transmission, which may stress the network and/or limit transfer capacities,
- ***Generation-load imbalances in other countries*** of the same interconnected block that can lead to unforeseen flows through the country.

## 2.2. Main features

The more stressed period is generally the peak period (December-January) apart from the end of the year's holiday period.
But for some countries, the generation-load balance is also to be watched on a longer period, e.g. until the end of February.

**On the whole, TSOs expect no generation-load balance problems for the coming winter under normal conditions.** However, most TSOs consider that the national generation-load balance could deteriorate in case of cold temperature or higher than expected generation outages.

**Belgium** encounters tight margins during weeks 48 to and 51 of 2007 and 2 to 11 of 2008, which would make imports necessary.
**Portugal** has tight margins during weeks 3-4 of 2008.
Even under normal conditions and taking into account a firm import contract, **Serbia** shows tight margins from mid-December to the end of February. Under severe conditions, the risk extends to the whole winter period.
**The Former Yugoslav Republic of Macedonia** has to rely on firm imports.
**Greece** needs to import in order to meet its operational criterion, especially in December, January and February.
The **Netherlands** rely on imports to reach some margins; the commissioning of NorNed interconnector to Norway at the end of the year will significantly increase the import capacity.
**Slovenia** needs some import to reach adequate margins until the end of February.
The **Slovak Republic** shows tight margins under severe conditions at the end of 2007 and import may be needed.
Although significant exports will be available from the beginning of 2008, the **Czech Republic** expects export capabilities reductions for weeks 48-51.
**Republic of Ireland** may need imports from Northern Ireland during the peak week of the winter period. The remaining margins for the winter period will be sufficient provided that the generation availability remains at forecast levels.
**Latvia** needs imports from neighbouring power systems to cover peak loads during the winter season.
In the Nordic countries**, Finland** relies on imports from the neighbouring countries to meet the peak demand even under some normal conditions.
**Spain, Austria, Italy and Hungary** stress the risk linked to the gas market. In such circumstances, they would reduce the exports or rely on import contracts.

The load-flows have not been analysed in the study, but the TSOs in Belgium, Austria and the Netherlands foresee a risk of internal congestion in the grid or reduced cross-border capacities due to loop-flows.

### 2.3. Additional comments

Great Britain
Improvements to the gas infrastructure, with increased gas import and storage facilities, reduce the likelihood of a reduction in generation availability as a result of gas shortages. On the basis of currently notified generation, demand should be able to be met even under severe conditions.

Ireland
Generation capacity will be sufficient this winter to ensure the appropriate level of security of supply is maintained. The risks associated with the winter period are that Forced Outage Probabilities exceed the predicted levels or there is a significant reduction in the assumed level of installed generation that will be available. These risks will be exacerbated if interconnection is limited and wind generation is low. This could lead to a possible inability to maintain appropriate security of supply standards for periods of peak demand.

NORDEL

The available Nordic generation capacity can meet the simultaneous Nordic peak demand even during cold spells that can occur once a decade. However, Finland has a deficit of capacity during normal and cold spells, and Sweden and Eastern Denmark during cold spells, whereas Norway and Western Denmark have a surplus even during cold spells. Demand response may positively contribute to the forecast balance at peak.

The water reservoir levels are more than 30TWh higher than at the same time last year. No risk of energy shortage is foreseen during the winter period.

Estonia

In the upcoming 2007-2008 winter season Estonian power system is expected to be in balance.
The Estonian transmission grid is sufficient to guarantee enough transmission capacity for domestic needs and transit, also to provide adequate security of supply.

Latvia

The Latvian power system is expected to be in deficit this winter. It will be covered by imports from neighbouring systems (Russia, Estonia and Lithuania). The Latvian transmission grid is sufficient to guarantee enough transmission capacity for domestic needs. The main risk for potential imports is posed by any unplanned outage of the Ignalina NPP combined with cold weather.

Lithuania

For the coming winter the projected level of generation availability would be sufficient to meet demands expected under normal and under severe conditions. The planned generation-demand balance of the Lithuanian system is not considered at risk, so some exports (about 0.29GW) should be available.

Belgium

The desired safety level of 1000 MW for the generation-load balance is not reached during the peak of weeks 48 to 51 of 2007 and during the peak of weeks 2 to 11 of 2008; it is assumed that system adequacy will be respected when taking into account the current available simultaneous import capacity. In order to assure a maximum level of available simultaneous import capacity, the outages of 380kV international lines are minimized during the critical winter periods. However, they can be annulled if required for the security of the system. The additional import capacity that results from this action would be given to the market players during the day-ahead or intra-day auctions. The first analysis of the system adequacy for the coming winter is positive, assuming a net import during periods when there is a generation-load imbalance.

The two main risk factors for the Elia grid that might jeopardize the current positive winter adequacy assessment are:

- atypical winter loop flows from the South to the North causing congestion problems in the Elia grid;
- generation-demand imbalance for the whole of the UCTE-main block.

Germany

The remaining capacity under normal condition should meet the UCTE ARM of 5% of the national generation capacity. Germany does not expect any extraordinary critical situation concerning generation and transmission adequacy in the coming winter. According to the data available, risks in terms of the generation/demand balance are not likely to occur.
In the event of heavy wind power feed-in in Germany, a limitation of NTC values may occur between Germany and Western Europe.
The main problem in Germany is the difficulty to obtain reliable data from many market players.

Netherlands

The remaining generation margins come out at only 2% of the national capacity. Nevertheless, in TenneT's opinion, the adequate criterion would be the average available and/or offered reserve capacity.

Therefore, the Netherlands rely on the generation reserves available in neighbouring countries to guarantee the supply. Cross-border transmission capacity will be increased by 700 MW when commissioning the NorNed cable to Norway at the end of the year.

Nevertheless, the import capacity could be reduced due to two phenomena : the high transit flows through the Dutch network originating from high wind generation in Germany and. the congested flows on the French-Belgian border which on return reduce the import capacity on the Belgian-Dutch border.

To manage better these phenomena a regional consultation with the German Belgian and French TSOs and authorities was started. This consultation resulted in more detailed operational arrangements, which by using better the available information and forecasting methods for wind generation, facilitated secure cross-border transmission flows and maximum cross-border transmission capacity on a daily basis.

Luxembourg

Due to the special situation of the two grids in Luxembourg, an industrial grid and a public grid, and the fact that the line capacity is sufficient to import the major part of energy, the TSO considers that there is no risk for problems during the coming winter.

France

Under normal conditions, the generation – load balance on the French system is not considered at risk for the coming winter, so that exports should be available.

Nevertheless, under severe conditions, the last week of November and the month of January will show tighter margins; therefore for this period the export capacity is likely to be reduced to a lower value and some imports may even be needed, especially in the second and third weeks of January.

The end of the winter is expected to be less stressed.

The main risk factors are the sensitivity of load to temperature, the unplanned outages of generating units and the level of water inflows.

Spain

The forecast situation for supplying demand for the coming winter in the Spanish peninsular system is not critical. If average conditions are considered, remaining capacity will be around 12.900 MW. Minimum value will decrease to 10.000 MW.

Only in case of simultaneous extreme peak demand, very drought conditions and a very high thermal forced outage rate, we can find values of remaining capacity of 5.000 MW.

However, the most important risk factors for this next winter in the Spanish system are hydro and wind conditions, very high sensitivity of load to temperature in extreme weather conditions and fuel, specially gas, availability to combined cycle and gas thermal plants.

Portugal

For the next winter, the studies do not evidence special problems for the operation of the Portuguese system. Under normal conditions the remaining capacity stays in comfortable levels, with only two weeks under 10%. Under severe temperature conditions the margins may lead to more reduced levels in weeks 3 and 4, but even so without resorting to imports.

Switzerland

The main result of the Winter Outlook Assessment is that under foreseeable conditions Switzerland won't have any problem with the electricity supply during the winter 2007/08. Even in critical load situations as well as in the case of disturbed interconnections the risk of lacking supply is very low, because the inland generation capacity should be sufficient to cover the expected load.

Italy:
The adequacy evaluations for 2007-2008 winter period do not show particular risks for capacity adequacy and peak load cover expect where power plants have been dismissed.
In relation with the gas national supply systems, possible risks can be expected due to the increasing trend in gas consumption in thermoelectric sector, especially in case of adverse climatic condition all over Europe (as it occurs during the 2005-2006 winter).

Austria
Verbund-APG points out that about 50% of the Austrian thermal power plants are fired by natural gas. In case of problems concerning natural gas delivery, this can cause critical situations especially during cold periods.
Furthermore, Austria underlines the strong North to South congestions in their network. Two new 380 kV lines are planned, but meanwhile, countermeasures are needed, among which the operation of phase shifters.
Congestions are also expected on the Czech-Austrian tie-lines, needing countermeasures in the short term and the installation of a second circuit on an existing 380 kV line in the long term.

Slovenia
Forecast generation should be sufficient to meet the load over the period, but some imports are needed to reach adequate margins until the end of February (except week 52).

Poland
Taking into account the expected load and level of remaining capacity for the period under consideration no troubles with covering the demand are foreseen, however value of remaining capacity may decrease due to unexpected growth of level of outages and non-usable in connection with extreme weather conditions.

Slovak Republic
Forecast level of generation capacity should be sufficient for most of the winter period, but the situation seems to be rather tight for several weeks at the end of 2007 when UCTE ARM criterion is not fulfilled and imports are expected. Transmission system is sufficient to guarantee capacity for imports and transits.

Czech Republic
CEPS does not anticipate significant balance problems in the Czech power system during the upcoming winter period, even at potentially severe conditions; however, reduction of export capability is expected during weeks 48 through 51.

Hungary
It is a historical feature of the Hungarian electric power system, that most of the time the required adequacy margin can only be guaranteed with a considerable amount of import. Several years are needed to overcome this handicap.
After liberalisation, import is mainly an issue of the traders, available interconnection capacity is satisfactory. Access is possible via yearly, monthly and even daily capacity tenders on some border sections. The only limitation is due to high transit flows through the interconnections.
Critical factors of the winter period are availability of fuel (natural gas in first place), some risks of availability of generation capacities in a few large power plants, as well as uncertainties in operation strategy of intermittent generators (biomass, co-generation gas engines).
The most consideration is required under severe conditions.

Western Ukraine
The remaining generation capacity exceeds by far the UCTE ARM, even under severe conditions; nevertheless, the margins are considerably reduced taking into account the firm export contracts.

Bosnia Herzegovina
The system is expected to balance well over the whole period, even under severe conditions.

Serbia
Serbia is surrounded by eight countries, so its transmission grid is influenced by high transit flows from North to South and from East to West. In order to provide stable and reliable operation without congestions, Serbia uses methods in compliance with UCTE rules for calculating NTC on its borders.
Under normal conditions and taking into account a firm import contract of 400 MW (long term agreement on HPP Piva in Montenegro plus contracted import by national Generation and Distribution Company), the margins are sufficient that the system should not be considered at risk. But, under severe conditions, the risk exists and extends to the whole period from mid-December to mid-March.
It is important to point out that the risk could not endanger interoperability of the UCTE interconnected network, for General supply Conditions and Load Shedding Plans allow load reduction of up to 1 GW on tariff consumers connected to the distribution system (this load is beyond tertiary control).

Montenegro
The UCTE ARM criterion is met under normal conditions over the whole winter period. The system is not considered at risk, especially taking into account a firm import contract.

Former Yugoslav Republic of Macedonia
Data is available only for the period until the end of 2007. The system clearly relies on imports.

Greece
For the winter 2007-2008, it is considered that the adequacy and security of the Greek Interconnected System is not threatened, under normal weather conditions, taking into account the available importable capacity of interconnections.
There were severe conditions last summer (extra high temperatures, high demand). At present, the available hydro capacity in the reservoirs is low, mainly due to the severe drought period encountered last year and the high water consumption last summer.
All the schedules about the maintenance works on the grid changed and shifted.
The most critical period is December, January and February. Under normal conditions, the operating criterion of the HTSO is not met so it is necessary to use at least the firm imports.
Under severe conditions, the available import capacity of the interconnections is adequate to meet requirements. If it is necessary, additional measures may be applied in extreme conditions, such as modifications in the planned outages of the units, decrease of the exports, or voluntary load reduction.

Romania
The national generating capacity in the Romanian Power System will be able to ensure the coverage of the consumption and the eventual export requirements. The increase of Romanian consumption for the winter in comparison with the last winter is around 2% in a normal winter and around 5% in a severe winter. For the next winter, in both situations, the generation – consumption balance will be equable.

# 3. ADDITIONAL ANALYSIS BY BLOCKS

This analysis aims at comparing the situation in neighbouring countries and at identifying the potential difficulties, especially the periods where tight margins are identified on both sides of the border.

It will give signals on the respective possibilities of imports or on the reliability of these imports in case of severe conditions affecting some parts of the European system simultaneously.

This comparison is made on a regional basis which is derived from the regional fora organization.

At this time, the analysis is indicative as deeper investigations would be needed to check the consistency of the hypotheses made by the different TSOs. This is not the aim of the present report.

**Ireland – Great-Britain – France**

The current forward prices are higher in Britain than in France, but this differential is lower than at the corresponding stage in September 2006. Expected interconnector flows are, therefore, more sensitive this winter to relative GB and French/German prices. There is a possibility that the direction of flow may change more frequently from import to export over the winter period. However, our assumption is that at times of typical peak demand in GB, GB electricity prices will be higher than in France, the interconnector will be fully available and power will flow to the UK at the full 2GW rate at the peak periods of the day. Under average weather conditions, anticipated GB plant margins are adequate to meet forecast demand (including export to Northern Ireland) without the need for imports from France.

Exports from France may be reduced in case of low temperature, especially in January, the end of which is also stressed in GB.

In Ireland, the most critical period will be week 51 during which the peak of the winter period is expected to occur. At all other times, the capacity margin is expected to be sufficient with minimal reliance on imports from Northern Ireland.

**France – Spain – Portugal**

In **Portugal**, the most stressed period is weeks 48-50 and the period mid January-mid February, especially weeks 3-4.

**Spain** does not expect any critical situation in the generation-load balance for the coming winter under average conditions, so that margins should be available except under extreme conditions with a combination of unfavourable hazards. The most stressed periods are weeks 50 and 2 to 4.

Exports should also be available in **France** under normal conditions, one of the main stressed period being also weeks 2 and 3.

**Nordel – Baltic countries – Russia**

The Nordel system is interconnected via one HVDC link – Estlink (350MW) – with the Baltic countries and 1400MW can be imported from Russia. Normally the import capacity has been fully utilized and can be considered as a generation resource connected to the Nordic system and increasing the capacity of the Nordic system. However, experience has shown some reductions during peak hours. This can be the case particularly during long simultaneous cold spells.

**Nordel – Poland – Germany – The Netherlands**

Poland should have generation available for exports over the period.

A new NorNed HVDC link of 700MW between Norway and the Netherlands will be brought into operation in November 2007 increasing opportunities for power exchange. The Netherlands will rely on imports on unpredictable periods of the year 2008.
Germany does not expect any extraordinary critical situation concerning generation and transmission adequacy in the coming winter. According to the data available, risks in terms of the generation/demand balance are not likely to occur.

**Baltic countries**

There are no significant additions of generation capacity forecast during the 2007/2008 winter period in Baltic countries.

Taking into account the expected load and level of remaining capacity balance, the Baltic power systems should not be exposed to extraordinary events for the coming winter. Thanks to the availability of surplus generation capacity in Estonia, Lithuania and neighbouring power systems and adequate transmission capacity, the Baltic countries' TSOs should be able to manage system balancing.

**France – Belgium – Luxembourg – the Netherlands – Germany**

**Belgium** clearly relies on imports to reach an adequate safety margin at peak load of weeks 48 to 51 of 2007 and 2 to 11of 2008.

**The Netherlands**, while they do not mention any particular risk, indicate that they rely on imports on non-predictable moments of the year 2008.

Exports should be available from **France**, but with reduced values if low temperatures are encountered.

**Luxembourg** expects no particular risk for the whole period.

**Germany** does not expect any extraordinary critical situation concerning generation and transmission adequacy in the coming winter. According to the data available, risks in terms of the generation/demand balance are not likely to occur.
Nevertheless, TSOs stress the possible reduction in exchange capacity due to congestions on the grid. In particular, in case of high wind generation in Germany, the export from Germany to Western Europe could be reduced.

Whilst exports should be available in France under normal conditions over the period, the export capacity is likely to be reduced in the last week of November and January; imports may even be needed on weeks 2-3 of 2008.

**France – Switzerland – Austria – Slovenia – Italy**

**Slovenia** should need some imports to reach adequate margins until the end of February (except week 52).

**Austria** mainly stresses the congestions in their internal network as well as the risk on gas supply.

**Italy** remarks possible transmission constraints due to particular grid configuration as important maintenance or development works.

**Switzerland** has high interconnection capacities. It could import at least 3 GW and export at least 5 GW. These values could be theoretically even surpassed if the external generation for import or external load to be covered by export were well distributed. However, as imports are mostly coming from France and Germany and exports are directed to Italy as well as due to high transits from France and Germany to Italy through the Swiss transmission network this special distribution case is not given. Therefore, the above values of 3 GW and 5 GW for imports and exports respectively are restrictions which are calculated in relation to the trading situation as it exists nowadays and not to the actual physical network conditions which are better. Nevertheless, the system adequacy in winter or during other seasons is in no case influenced by trading issues.

Whilst exports should be available in France under normal conditions over the period, the export capacity is likely to be reduced in the last week of November and January; imports may even be needed on weeks 2-3 of 2008.

**North Eastern Block**

The **Slovak Republic** relies on imports to reach some margins until the end of 2007.

**Slovenia** should need some imports to reach adequate margins until the end of February (except week 52).

**Hungary** balances well over the whole period.

**Poland** and the **Czech Republic** have generation available for exports over the period, but the Czech system expects some reduction of export capability for weeks 48-51.

**Croatia - Bosnia & Herzegovina - Serbia – Montenegro – Former Yugoslav Republic of Macedonia**

**Serbia** relies on imports to reach a secure operation over the period; the system is at risk under high-demand scenarios; however the risk is under control of the TSO and does not threaten the rest of the interconnected network.

Under normal conditions, the system in **Montenegro** is not considered at risk.

**FYROM** clearly relies on imports

**Bosnia & Herzegovina** are expected to be in balance (but margins only 200-300 MW).

On the whole, these 5 countries are likely to rely on imports. The availability of export capacities from the neighbours is crucial (as last year).

In the absence of a data submission from Croatia, discussions regarding assessments of Winter 2007/08 in this block are ongoing.

**Greece – Romania– Bulgaria**

In **Greece** most critical period for the generation-load balance is from December to February. HTSO relies on firm imports to meet its criterion on minimum operational margin. In severe conditions, additional imports would be necessary for the whole period.

The generation-load balance is not at risk in **Romania**, even under severe conditions, and export capacity should be available.

Considering the need of imports in Serbia, FYROM and Greece, the general balance of the region can become tight in case of severe conditions. Romania has reported that it expects export capacity to be available.

In the absence of a data submission from Bulgaria, discussions regarding assessments of Winter 2007/08 in this block are ongoing.

# 4. CONCLUSION

This “Winter Outlook” exercise provides an overview of the national generation-load balances expected for the coming winter. This could be used as the starting point for further bilateral contacts of neighbour countries in order to assess the global adequacy of their systems and carry out the appropriate network analyses.

The survey shows that, on the whole, no particular risk of power shortage is expected for the winter under normal conditions. The generation-load balances forecast in each country are generally considered to be suitable. Some countries may depend on imports from their neighbours, and in these cases the transmission capacity allows for import if intact.

Conversely, under severe conditions such as low temperature or gas-supply crisis, the power systems become more stressed, especially if the same period is critical for neighbouring countries.

The risk period is the annual winter peak period (December-January usually excepting the holiday period), but may also extend until the end of February in some cases.

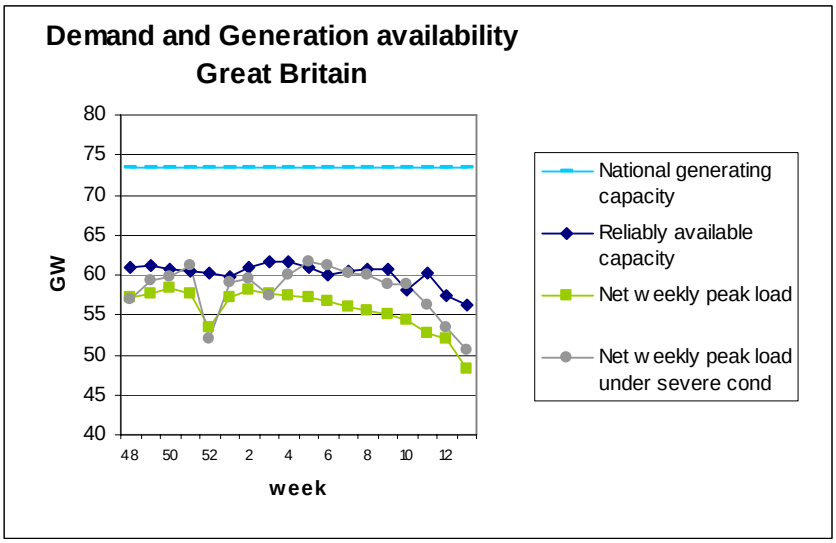
The risk relative to the availability of gas supply is particularly mentioned by Spain, Austria, Italy and Hungary.

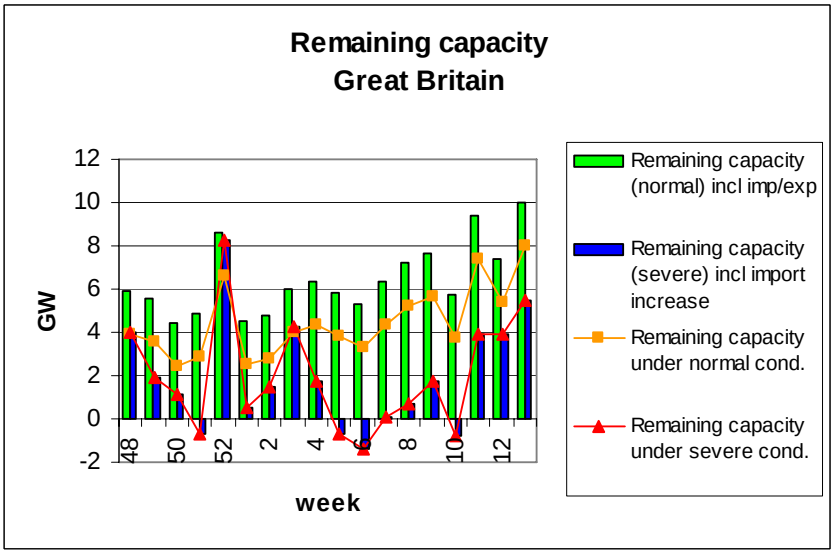
# APPENDIX

**CONTENTS**

**Great Britain**
**Republic of Ireland**

**Great Britain**




## Synopsis

The notified generation background for 2007/8 appears broadly similar to that observed prior to the 2006/7 winter. Provided the electricity market continues to make plant available in response to the appropriate price signals, demand should be able to be met in full even under severe conditions.

Last winter the operation of the electricity market was characterised by gas-fired generation displacing coal-fired generation, and coal increasingly providing the marginal capacity. Combined Cycle Gas Turbine (CCGT) gas demand was well above the level implicit in our unrestricted demand forecasts. At current fuel prices for winter 2007/8, we expect coal-fired generation to be preferred to gas-fired generation, and this is reflected in our forecast of the CCGT gas burn, which is forecast to be around 54 mcm/d. This forecast is considerably lower than the outturn CCGT demand during Q1 2007, but is similar to our winter 2006/7 Base Case. While the gas market remains dependent upon imported supplies, the swing in gas consumption by CCGT stations continues to be key in achieving a balance between gas supply and demand.

**Method**

National Grid produces a Winter Consultation Document which addresses both Gas and Electricity supply for the coming winter. This document undergoes a series of revisions in consultation with interested parties, mainly the generating companies. Electricity generation availability is taken from 52 week-ahead availability forecasts provided to National Grid every week by the generating companies. Demand forecasts are produced by National Grid, for both normal winters and severe winters. Scenario modelling mainly addresses the area of gas-electricity interaction. Plant availabilities are assumed by fuel type, based on historic performance of the different fuel types, combined with any known issues for the forthcoming winter.

The modelling includes an assumption that 14% of generation plant will be unavailable, based on historical analysis. Within this figure is an assumption of 80% nuclear availability. Current nuclear availability is the same as it was at this time in 2006.

**Generation – Demand balance**

As noted above, the demand data is forecast by National Grid. The availability data is based on weekly resolution forecasts made by the generating companies for each individual generator. The data for the next 52 weeks is updated and provided to National Grid every week. National Grid then publishes this data to the electricity market.

In the event of severe weather conditions, high levels of plant loss and no imports from France, it is possible that the remaining generation would not meet short-term operating margin requirements, but would still be adequate to meet demand. This combination of events is considered to be unlikely.

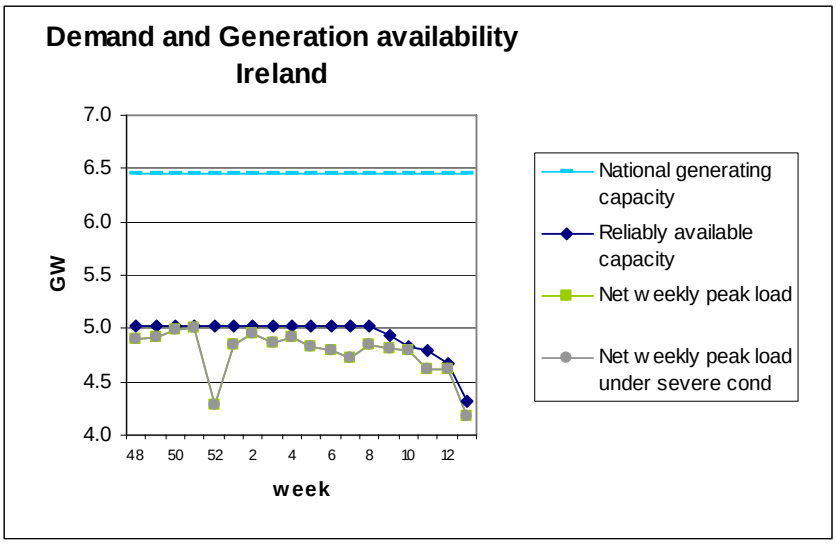
The winter daily demand peak in GB occurs later than the rest of Europe due to the time difference. It is common for interconnector flows to go from GB to France at European peak and then reverse towards GB for the GB peak. It is highly unlikely that parties in GB would export to France at times of GB peak demand, due to market price differentials.

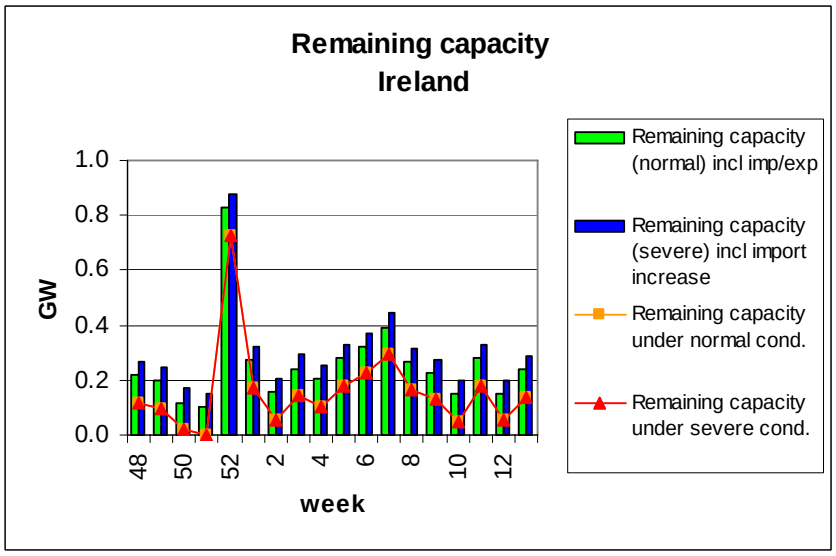
**Role of Interconnection**

Modelling assumes a 2GW flow from France to GB at peak demand times. However, under average weather conditions the anticipated plant margin, allowing for plant outages and breakdown, is adequate to meet forecast demand, including export to Northern Ireland, without the need for imports from France. Under severe weather conditions, the availability of imports from France would be required to cover fully the short term operating reserve requirements.

The interconnector consists of two pairs of 500MW circuits and has annual availability over 95% (including over winter periods). There are no planned outages of more than one day over the winter period. If an unplanned outage were to occur, then availability would be reduced in increments of 500MW, and this is regarded as being included in the overall assumption of 86% generation availability.

**Republic of Ireland**




**Comments**

Data provided by EirGrid, independent electricity Transmission System Operator (TSO) in Ireland.

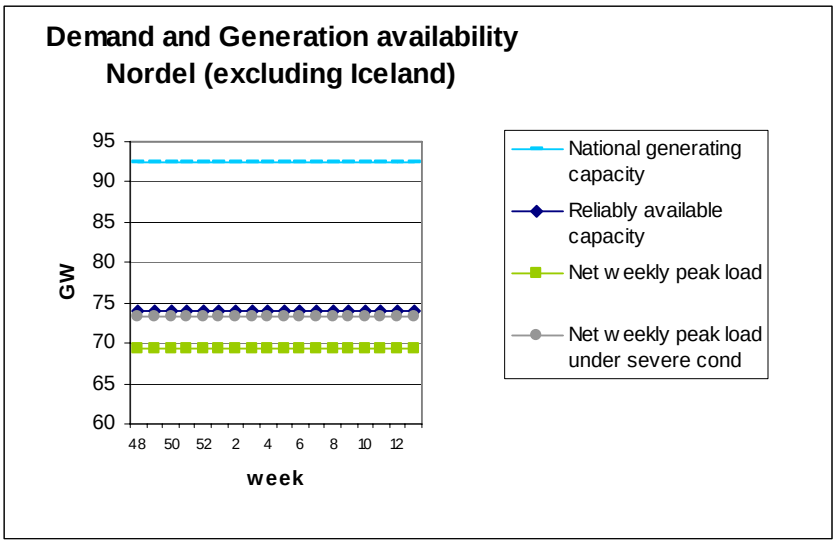
**Generation-Demand Balance**

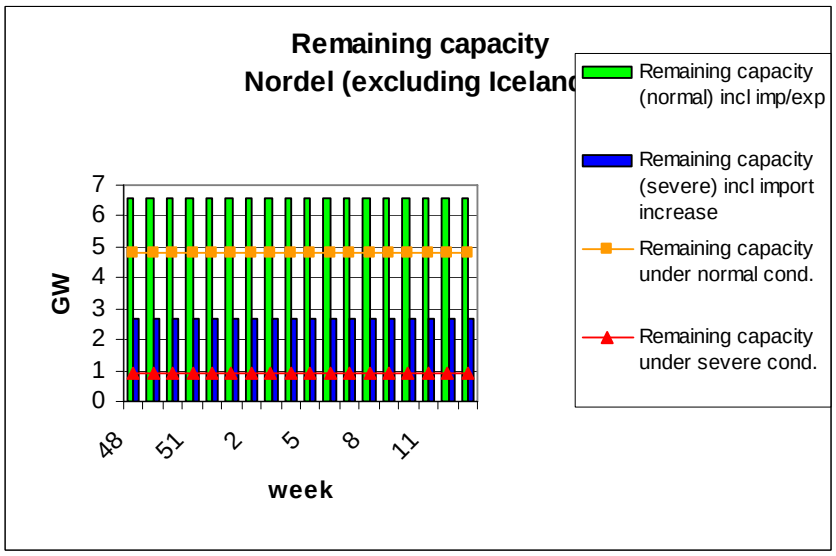
Ireland has a peak demand under normal conditions of ~4.8GW. The National Generating Capacity is 6.5GW and the Reliably Available Capacity each week varies between 4.32GW and 5.01GW. The system services reserve is 0.42GW.

**Role of Interconnection**

There is low dependence on imports from Northern Ireland. Capacity will be sufficient this winter to ensure that forecast demand is met, unless the forced outage rates deviate from the expected levels or there is a significant reduction in the assumed level of available capacity for an extended period.

**NORDEL COUNTRIES**
**Denmark**
**Finland**
**Norway**
**Sweden**




**Method used for Winter Outlook**

The Nordic TSOs within Nordel annually estimate the Nordic power balance for the coming winter. The estimates are made for the hourly peak demand corresponding normal winter temperature or a cold winter day that can occur once in ten years (severe conditions). The peak demand may come true in any week during the winter period although the probability is highest during the period from December to the beginning of March. The same estimates for the peak demand have been used for all weeks included in this report.

The available generation capacity is based on the current hydrological situation and experiences from earlier peak demand situations. Operational reserves in generation have been excluded from the available capacity. The output of nuclear power is expected to be 100 % of the capacity. Wind power output is expected to be 0% for each country, but 6% for Nordel due to non-coincidence of

calm weather. The total peak demand in Nordel is expected to be 2 % lower than the sum of peak demand for all countries due to non-coincidence of cold weather. There are no planned maintenances of the big power stations during the winter period.

**Generation - Demand Balance and the Role of Interconnections**

The Nordel system is in a positive balance (900 MW) even under severe winter peak load conditions without import assuming undisturbed operation of the grid and key generation.

The import from Russia is expected to be 1400 MW, although experience from previous years shows some reduction during peak hours. The HVDC-link Estlink is expected to give an import of 350 MW. These values are valid if the peak only lasts for a few days. This import can be considered as a generation resource in Finland and will thus increase the remaining capacity in the Nordel system.

The new HVDC-link NorNed will increase the import capacity to Nordel with 700 MW. The capacity on the HVDC-link Skagerrak is reduced due to a fault by 500 MW until the end of 2007.

The estimated peak demand corresponds to the current price level in the Nordic market. Higher prices can activate demand response and contribute positively to the balance. The import from continental Europe will also be driven by the prices. The transmission capacity from continental Europe, that is Poland, Germany and the Netherlands, allows for an import of about 3400 MW.

Nationally without import, there is a deficit of generation capacity in Finland both under normal and severe conditions (1980 MW) and in Sweden under severe conditions (170 MW). Eastern Denmark also has a deficit under severe conditions (260 MW), while Western Denmark has a surplus (500MW). Norway has a positive power balance under severe conditions (880 MW).

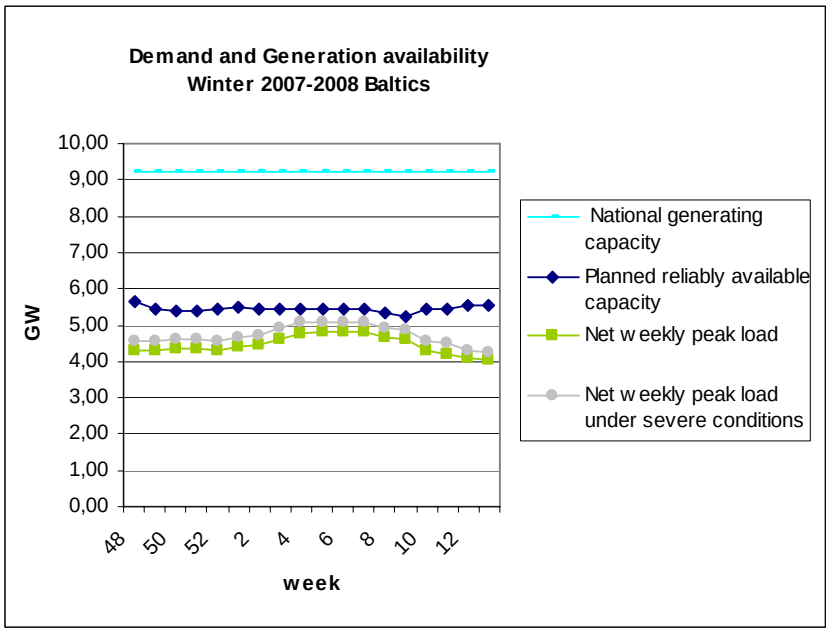
**Generation - Energy Consumption Balance**

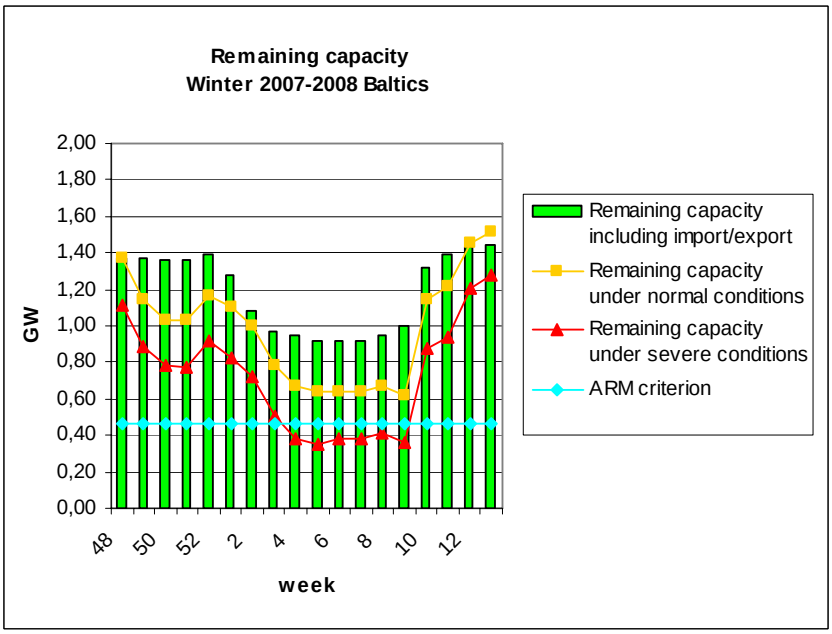
About half of the energy produced in the Nordic countries is based on hydropower. The Nordic TSOs also make an estimate of the energy balance for the winter period before the flood season begins.

Due to large amounts of precipitation during the past months, the water reservoir levels are generally higher than normal, especially in Southern Norway.

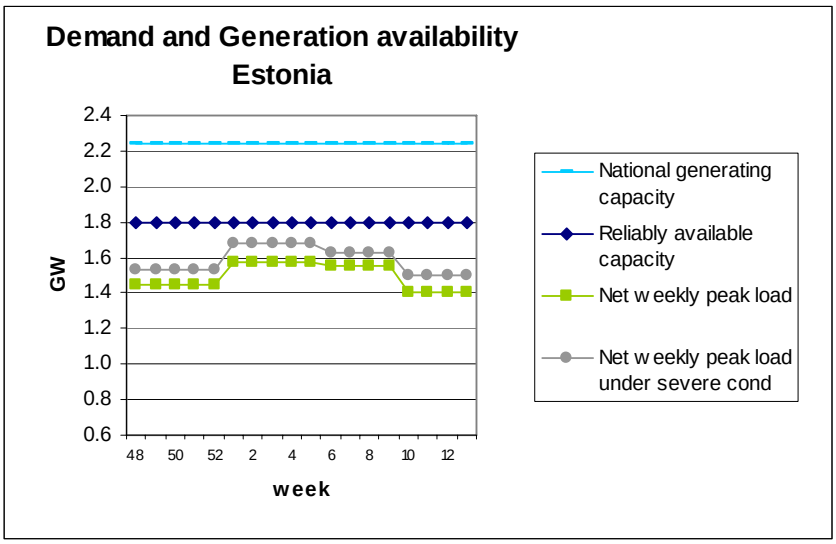
**BALTIC COUNTRIES**
**Estonia**
**Latvia**
**Lithuania**

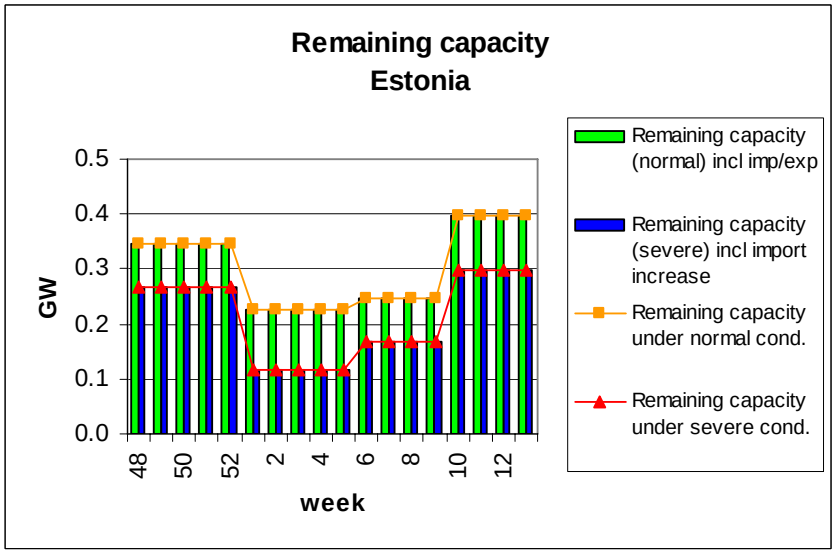
**BALTIC COUNTRIES**


Demand and Generation availability
Winter 2007-2008 Baltics
10,00
9,00
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00
0,00
GW
48
50
52
2
4
6
8
10
12
week
National generating capacity
Planned reliably available capacity
Net weekly peak load
Net weekly peak load under severe conditions


Remaining capacity
Winter 2007-2008 Baltics
2,00
1,80
1,60
1,40
1,20
1,00
0,80
0,60
0,40
0,20
0,00
GW
48
50
52
2
4
6
8
10
12
week
Remaining capacity including import/export
Remaining capacity under normal conditions
Remaining capacity under severe conditions
ARM criterion

**ESTONIA**




In the upcoming 2007-2008 winter season Estonian power system is expected to be in balance.

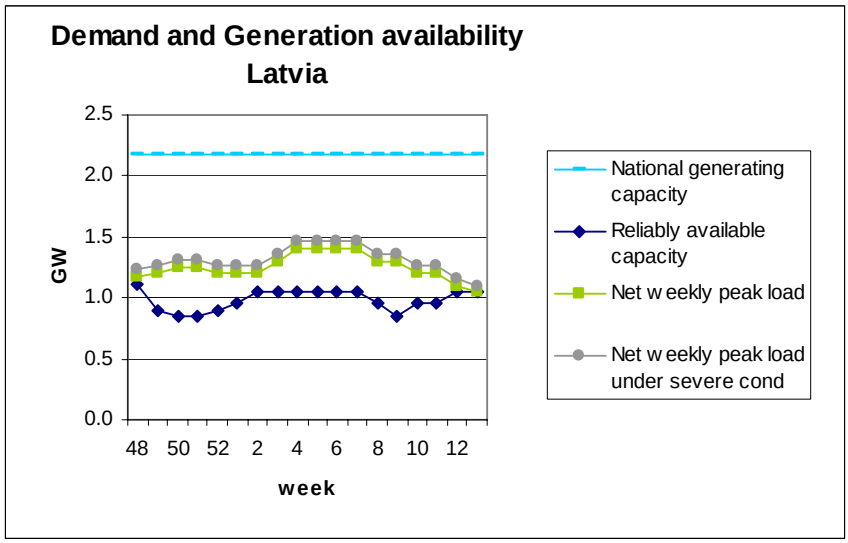
Domestic generation capacity is considered sufficient to cover peak loads during the winter season. There is no significant addition of generation capacity forecast during this period.

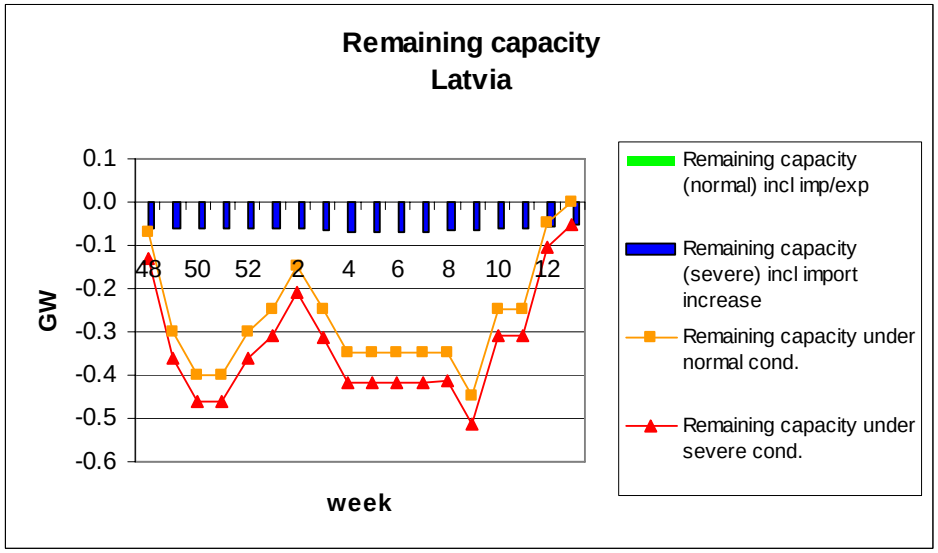
Considering the peak load of last winter and the statistics the expected peak load for the approaching winter season is around 1570 MW, the average load will probably rise 3% similarly to the last years.

The estimation of electricity demand and supply balance for Estonia power system does not consider the probable extraordinary events (uncommonly cold winter etc.).

The Estonian transmission grid is sufficient to guarantee enough transmission capacity for domestic needs and transit, also to provide adequate security of supply.

**LATVIA**


Demand and Generation availability
Latvia
2.5
2.0
1.5
1.0
0.5
0.0
GW
48 50 52 2 4 6 8 10 12
week
National generating capacity
Reliably available capacity
Net weekly peak load
Net weekly peak load under severe cond


Remaining capacity
Latvia
0.1
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
GW
48 50 52 2 4 6 8 10 12
week
Remaining capacity (normal) incl imp/exp
Remaining capacity (severe) incl import increase
Remaining capacity under normal cond.
Remaining capacity under severe cond.

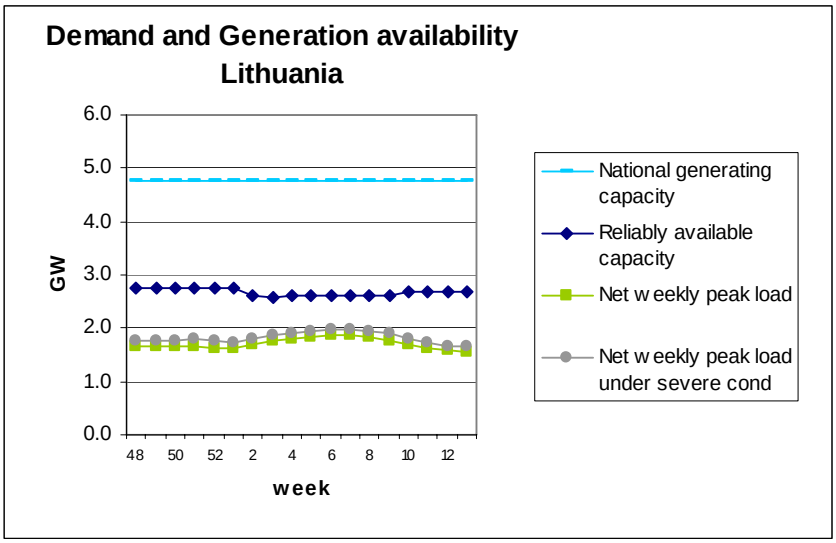
Latvia has higher than peak demand installed capacity but due to fact that most of it (75%) is hydro power plants placed on one river with weekly regulation and they are directly dependent from water flow in the river Daugava, then energy-wise Latvia is deficit most of the year. In addition, a large generation share during the winter is from CHP's but in case of cold weather their output may decrease because their primary objective is to provide capital's area district heating.

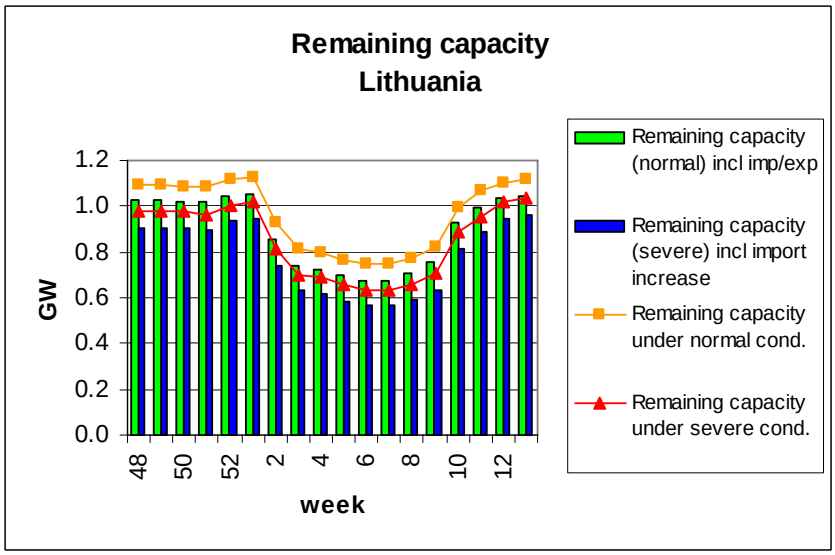
As real contracts are not in the place we made this prognosis on the previous year's base.

Generation and demand balance is directly dependent upon the ambient temperatures and water inflow in the river Daugava. The water inflow is temperature-dependent as well.

If import will be required it seems that there will be no problems in transmission connections with Estonia, Lithuania, Russia and Belarus because Ignalina NPP in Lithuania will operate and that reduces loading of boundaries (especially Russia - Belarus and Belarus-Lithuania) that affect ability of Latvian power system to import energy from Russia. Imports of electricity from Estonia and Lithuania may be in place as well. The main risk for import possibilities is presented by an unplanned outage of Ignalina NPP combined with cold weather.

**LITHUANIA**




The increase in demand under severe conditions is inversely correlated with the temperature. Concerning the winter months the experience is that the situation is most severe in January and February. March is usually not critical.

During the past 3 years final electricity consumption in the economic sectors has increased on average about 3% per annum.

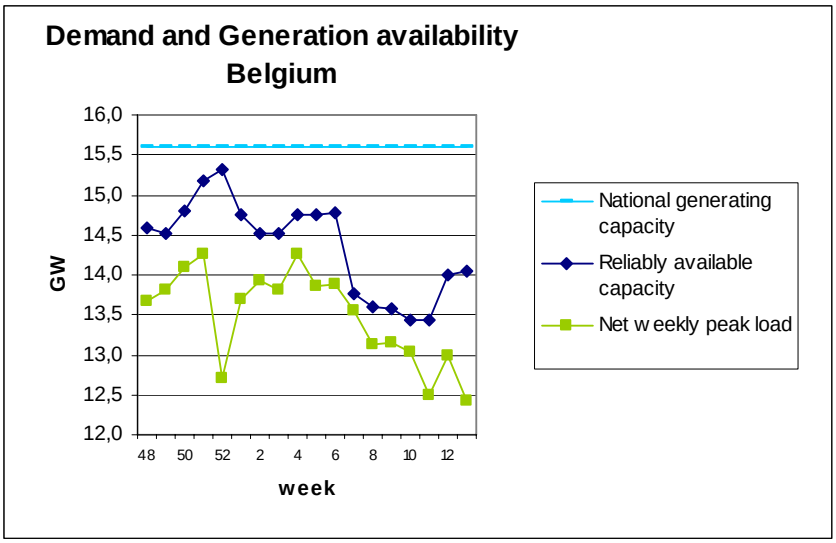
In normal conditions the Lithuanian system can meet demand without need of imports. This winter it is forecast that Lithuania will have a peak demand under normal conditions of about 1.86 GW excluding export, and under severe conditions of about 1.97 GW excluding export. Under severe conditions the remaining capacity is positive – average about 0.86 GW.

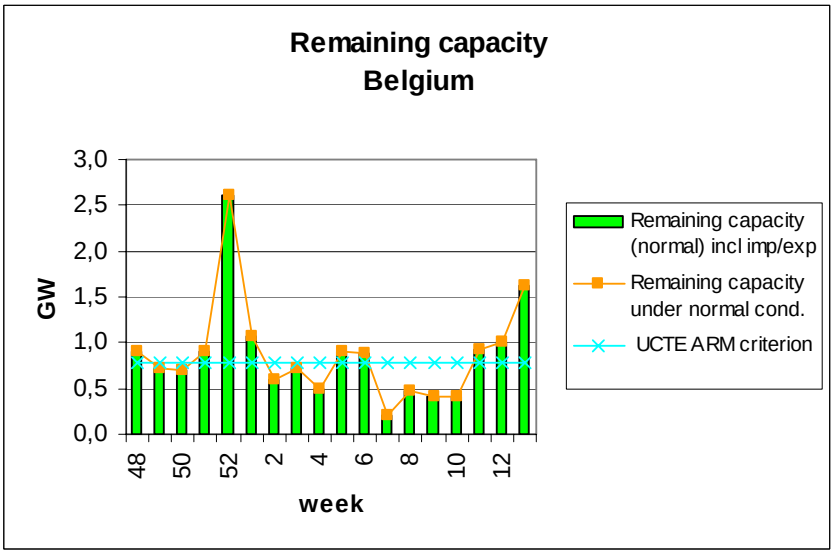
The assumptions used in the Winter Outlook Report are that there will be the export to neighbouring countries of about 0.29 GW in normal and severe conditions.

Taking into account the above assumptions, the projected level of generation availability would be sufficient to meet demands expected under normal and under severe conditions.

**UCTE MEMBERS**

**BELGIUM**




**Comments**

**Synopsis**

The desired safety level of 1000 MW for the generation-load balance is not reached during the peak of weeks 48 to 51 of 2007 and during the peak of weeks 2 to 11 of 2008; it is assumed that system adequacy will be respected when taking into account the current available simultaneous import capacity. In order to assure a maximum level of available simultaneous import capacity, the outages of 380kV international lines are minimized during the critical winter periods. Only the 380kV international line Gramme (BE)-Maasbracht (NL) will be taken out of service in week 8 and 9 of 2008. This will reduce the simultaneous import capacity by approximately 200 MW. However, this outage can be cancelled if required for the security of the system. The additional import capacity that results from this action would be given to the market players during the day-ahead or intra-day auctions. The first analysis of the system adequacy for the coming winter is positive, assuming a net import during periods when there is a generation-load imbalance.

The two main risk factors for the Elia grid that might jeopardize the current positive winter adequacy assessment are:

- atypical winter loop flows from the South to the North causing congestion problems in the Elia grid;
- generation-demand imbalance for the whole of the UCTE-main block.

**The Framework and Method Used for adequacy assessment**

An adequacy forecast study is carried out each year for the Elia control area, which comprises Belgium and the SOTEL area (a part of the G-D Luxembourg).
Deterministic methods are used to fulfil this analysis. Although the assessment is based on only one scenario, it is modified and reassessed several times. The assessment takes into consideration the following items:

1. Total installed capacity of the generators that are connected to the Elia grid. Mothballed plants arte not taken into account when assessing the total installed generating capacity.
2. The actual, announced overhaul and outage schedules of the generator units connected to the Elia grid. These programs are communicated to Elia in week 34 of the year preceding the considered year.
3. The non-usable capacity of the generators connected to the Elia grid. This non-usable capacity results from either a reduction in electrical capacity in favour of heat extraction (CHPs) or a temporary lack of primary energy (run-of-river units, windmills and biomass/waste fired units).
4. The daily peak load values of the Elia control area are foreseen to increase with 4.33 percent compared to the peak load values measured in 2006 (November, December) and with 3.65 percent compared to the peak load values measured in 2007 (January, February, March). This high growth is explained by the mild winter 2006–2007. (The temperature during the previous winter 2006-2007 was on average 1.8°C higher than the decennial average winter temperature (1997-2006).)
5. The planned outages of lines.
6. Long-term contracts resulting from investments of local generators in neighboring control areas still exist. These contracts can no longer benefit from a preferential cross-border capacity allocation. Consequently, these long-term contracts were no longer considered in this assessment.

The final result of this assessment is available in week 45 of the year preceding the considered year. The complete following year is examined on a weekly basis. For each week, two moments are assessed. A first revision of the assessment takes place 8 weeks before the beginning of a quarter. At this time the assessment is carried out for the peak of each day of the considered trimester. The same analysis, but using each time an adapted generation-demand balance, is also made for the peak of every day of the considered week, from 8 weeks until 1 week before the considered week. Finally, for every day of that week, the situation is reassessed two days and one day before the actual day.

A remaining capacity margin of 1000 MW (equivalent to the biggest unit in the grid) for the generation-load balance is judged as the desired safety level for the short-term adequacy analysis. This deterministic criterion reflects the highest risk due to a single incident for the Elia grid taking into account the total generating capacity minus a reduction for non-usable capacity as well as the actual, announced overhaul and outage schedules. The main objective of this short-term analysis is to assess whether the Elia grid can remain autonomously when this incident occurs. The system will rely on net imports during periods of non-respect.

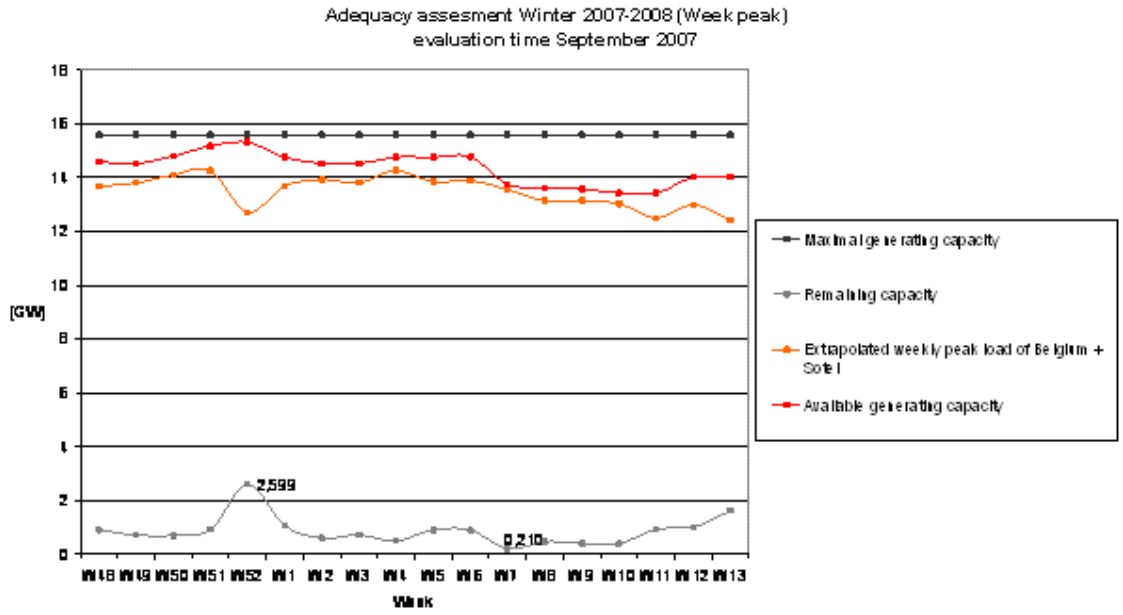
The UCTE approach for medium and long-term system adequacy applies a stricter probabilistic criterion. This approach indicates the dependency on possible net imports to face contingencies and to allow some freedom in maintenance planning during non-respect.

In the Annex a complete overview of the differences between both methodologies is presented.

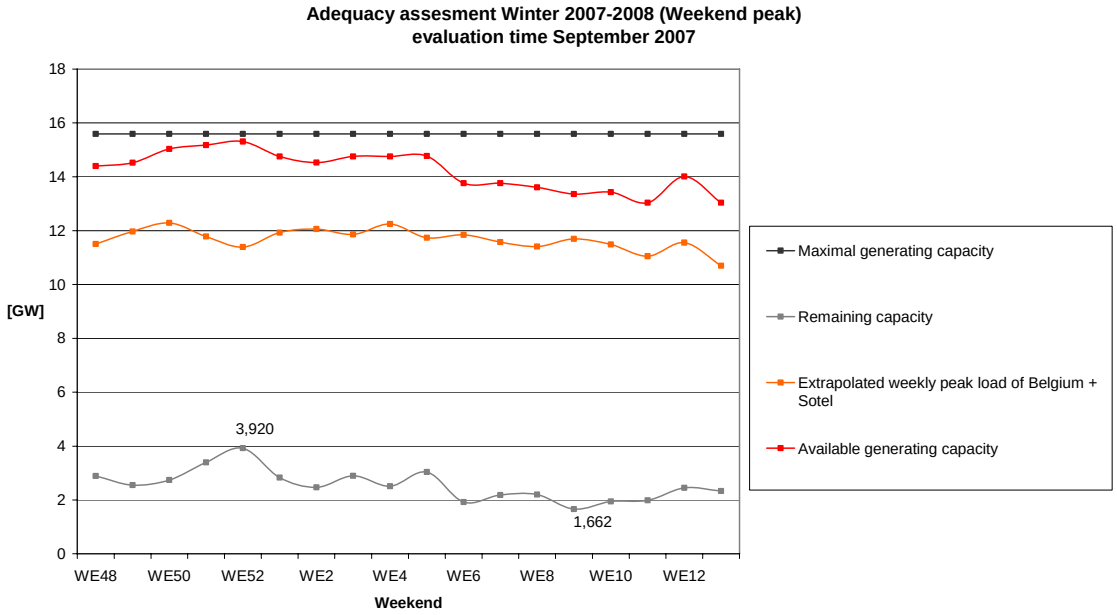
**Generation – Demand Balance**

In the figure below an overview is given of the result of the assessment of winter 2007-2008 for the week peak. The lowest level of overhauls combined with a low level of forecast demand for the week peak of week 52 of 2007, result for that week in the highest remaining capacity level for the coming winter for the week peak. On the contrary a high level of overhauls, combined with a high level of forecast demand for the week peak of week 7 of 2008, result for that week in the lowest remaining capacity level for the coming winter for the week peak.

The desired safety level of 1000 MW for the generation-load balance is not reached during the peak of weeks 48 to 51 of 2007 and during the peak of weeks 2 to 11 of 2008. However, system adequacy should be respected when taking into account the current available simultaneous import capacity. In order to assure a maximum level of available simultaneous import capacity, the outages of 380kV international lines are minimized during the critical winter periods. Only the 380kV international line Gramme (BE)-Maasbracht (NL) will be taken out of service in week 8 and 9 of 2008. This will reduce the simultaneous import capacity with approximately 200 MW. However, this outage can be annulled if required for the security of the system.




The next figure gives an overview of the result of the assessment of winter 2007-2008 for the weekend peak. The desired safety level of 1000 MW is reached for all weekend peaks the coming winter. The lowest level of remaining capacity for the weekend peaks the coming winter is 1662 MW.




At the moment, the analysis set out above does not take into consideration severe load conditions. Load and generation modification based on meteorological forecasts are only considered for the assessments made as from one week before the considered week. The load is reversely correlated with the temperature. Hence a negative deviation of the meteorological prevision of 1 degree Celsius from the temperature measured the year before for this specific time, results in a positive correction of the load by 52 MW.

## Role of Interconnection

At the moment the Elia control area structurally depends on import within the UCTE-main block in order to obtain the desired safety level of 1000 MW during the coming winter. Last winter period (from week 48 of 2006 until week 13 of 2007), on average an import of 424 MW was measured during week peak times (from 5:15 pm until 8 pm) on the Belgian South border (F-B border) and an import of 407 MW was measured during week peak times (from 6 pm until 7 pm) on the Belgian North border (NL-B border). Taking into account the electricity flows on both Belgian borders (B-NL and F-B borders), the average net import during peak times last winter period totalled 831 MW. During 50 percent of the peak times of last winter period a level between 479 MW and 1187 MW of import was attained.

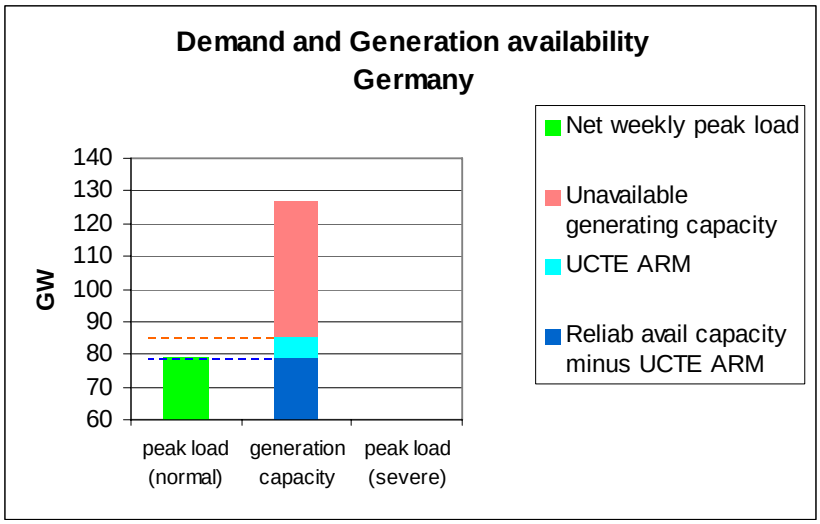
The simultaneous import capacity for the coming winter is situated between 2520 MW and 3080 MW while the simultaneous export capacity is situated between 1540 and 1960 MW. The simultaneous import and export capacities are obtained by adding the NTC-values (according to the ETSO definition) of both borders and multiplying this sum with a simultaneous coefficient of 70 percent.

Elia does not expect any congestion problems on its grid for the coming winter due to the minimization of planned outages of international lines during critical winter periods. This expectation is based on the assumption that the observed loop flows will be from the North to the South.
In the reverse, but less probable, case of significant Northbound loop flows during critical system conditions, additional precautionary measures regarding the short term allocation of cross border capacity might be necessary.

**Annex: Comparison between Elia's Short-Term Winter Outlook and the Medium & Long-Term System Adequacy - UCTE Approach**

| **ELIA's short term winter outlook** | | | | **Medium and long term system adequacy – UCTE approach** | | | |
|---|---|---|---|---|---|---|---|
| | | | MW | | | | MW |
| 1. | Load of the system | Load observed by the TSO (after netting of generation embedded in distribution) including the SOTEL area (a part of the G-D Lux.). | Le | 1. | Load of the system | Load observed by the TSO (after netting of generation embedded in distribution) including the SOTEL area (a part of the G-D Lux.). | Le |
| 2. | Generation capacity | Total generation capacity expected to be available, based on actual, announced overhaul and outage schedules**,** taking account of winter conditions (minimum maintenance in peak winter conditions) and a reduction for non-usable capacity. | Ge | 2. | Generation capacity | Total generation capacity expected to be available, based on actual, pre-determined overhaul schedules**,** taking account of winter conditions (minimum maintenance in peak winter conditions) and a reduction for non-usable capacity. | Ge |
| 3. | margin | To account for unexpected outage of largest unit. Margin includes system service reserves. | 1000 | 3. | Margins | System service reserves | 1150 |
| | | | | | | Probabilistic part of Ge, expected to be unavailable for outages | 424 |
| | | | | | | Additional margin of 5 % of Ge | 780 |
| | | | | | Total margin | | 2354 |
| 4. | **Criterion** | ***Short term autonomy*** | Ge-1000-Le >0 | 4. | **Criterion** | **Medium and long term System Adequacy** | Ge – 2354 – Le > 0 |
| 5. | Non-respect of the above criterion means : | ***The system will definitely rely on net imports during periods of non-respect.*** | | 5. | Non-respect of the above criterion means: | ***The system is not able to comply with security criteria during non-respect: it has to rely on net imports to face contingencies and to allow some freedom in maintenance planning.*** | |
| 6. | Duration that the criterion is not respected in winter 07-08 in Belgium: | ***Approximately fourteen week.*** | | 6. | Duration that the criterion is not respected in winter 07-08 in Belgium: | ***Approximately the whole winter period (with exemption of week 52)*** | |

**GERMANY**



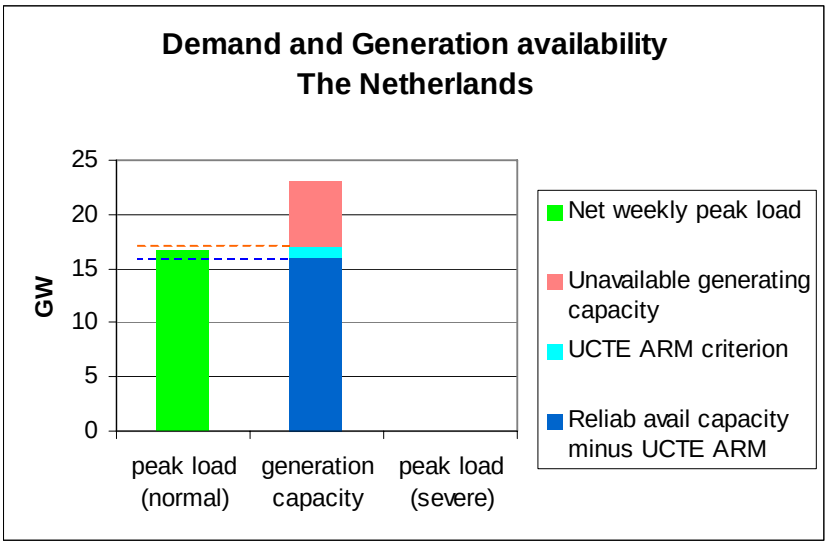

**Comments**

The German contribution to the ETSO Winter Outlook Report 07/08 has been prepared on the basis of the 3rd Wednesday figures of January 2008 which have been delivered to UCTE in the framework of the current inquiry for the UCTE System Adequacy Forecast 2008-2020 (according to the UCTE Methodology). The result is that the peak load is expected to be 79.4 GW (i.e. peak load at reference time + margin against peak load). Taking the different elements of the Power Balance Forecast into account, this will result in a so called "Remaining Capacity" of around 6 GW which means that the "Adequacy Reference Margin" will be met. Concerning the other winter months, the experience is that the situation is most severe in December and January and that the figures for January can be applied for December too. The remaining months of October, November, February and March are usually not critical, so that the given values are likely to represent the worst case.

Generally, it has to be pointed out that due to unbundling detailed generation data have not been available to the German TSOs and thus a great many of the data required for the Power Balance are estimations and approximations. However, as we have a very large number of players in the market, the situation is getting more and more difficult every year. As compared to the last decades we have an increasing number of generators and especially embedded and renewable generation (about 40 GW, 20% of energy generation). We are not sure about the quality of the data concerning the large number of small generation companies. Consequently, it is almost impossible to make a weekly assessment.

In conclusion, Germany does not expect any extraordinary critical situation concerning generation and transmission adequacy in the coming winter. According to the data available, risks in terms of the generation/demand balance are not likely to occur.
In the event of heavy wind power feed-in in Germany, a limitation of NTC values may occur between Germany and Western Europe.

**THE NETHERLANDS**




**Comments**

For the Netherlands no forecast of winter adequacy assessment is made. In TenneT's opinion the supply-demand balance will realise itself on the basis of the price-driven demand principle and is not a task of the TSO. The TSO's task is balancing the system and supply emergency power when necessary.

Nevertheless, TenneT TSO assesses on request of the Ministry of Economic Affairs every year for a period of 8 years the Reliability of Supply in the Electricity Market in the Netherlands.
The last report for the period 2005-2013 is published in 2007 (see http://www.tennet.org/english/transmission_system_services/technical_publications/report_reliability_supply/monitor_reliability_supply_2005_2013.aspx.
The main conclusion for the coming two years is that the Netherlands will still be depending on foreign production capacity. There is a minor increase of mainly small-scale production capacity; however this increase is similar to the increase in demand for electricity. During these two years there will be sufficient reserve production capacity in neighbouring countries as well as cross-border transmission capacity to import, which ensures that the supply guarantee will not be threatened. Moreover, at the end of this year and based on the commissioning of the NorNed cable to Norway, there will be even more import possibilities.

**Framework and Method Used for Winter Outlook**
No winter forecast is done by TenneT TSO because there are no specific data available for this period from week to week. Only are given the data for the third week of January in accordance with the system adequacy forecast 2008-2020.

**Generation – Demand Balance**

In the aforementioned monitoring report the balance is not considered at risk for the coming winter-period 2007-2008. The Netherlands will rely on imports in the year 2008, but nothing specific can be said in advance about when or how these imports will be needed.

***Demand***
Load forecast for a medium-long period is not carried out by TenneT-TSO, because the load on itself on each moment is not their concern, but of market parties. The main role of the TSO is to order and supply control and reserve capacity to balance the system at each moment.

***Remaining Capacity in Normal Conditions***
To TenneT's opinion the remaining capacity is not an indicator for generation adequacy. The average available and/or offered reserve capacity says more about actual market conditions.

***Severe Load Conditions***
TenneT TSO does not use scenarios for extreme weather conditions, as temperature dependency of load is limited. In most years, the peak loads happened in the late afternoon hours in the last days of December.

**Role of Interconnection**

***Interconnection capacity***
Up from November 2007 the DC-connection between the Netherlands and Norway will be taken into service. That means that the import/export capacity will rise by 700 MW.

***Firm Import/Export Contracts***
As a consequence of the decision of the European Court of Justice to not longer allow preferential import-capacity, since the 1st of September 2005 there are no longer firm import/export contracts. That means that there is no longer reduction of import capacity.

***Comments on expected additional loads of interconnections due to transit-flows which affect the import/export capacity***
In past winter periods TenneT experienced vast transit flows through the Dutch network, originating from wind generation in Germany. Analysis of these transit flows has shown that this could happen in the coming winter periods in an even stronger way. Surprisingly, however, last winter it appeared that these transits were reduced although there was an increase in wind generation in Germany. It can not be predicted if these transits will be less the coming winter period too.

**Potential Additional Areas for Comments**

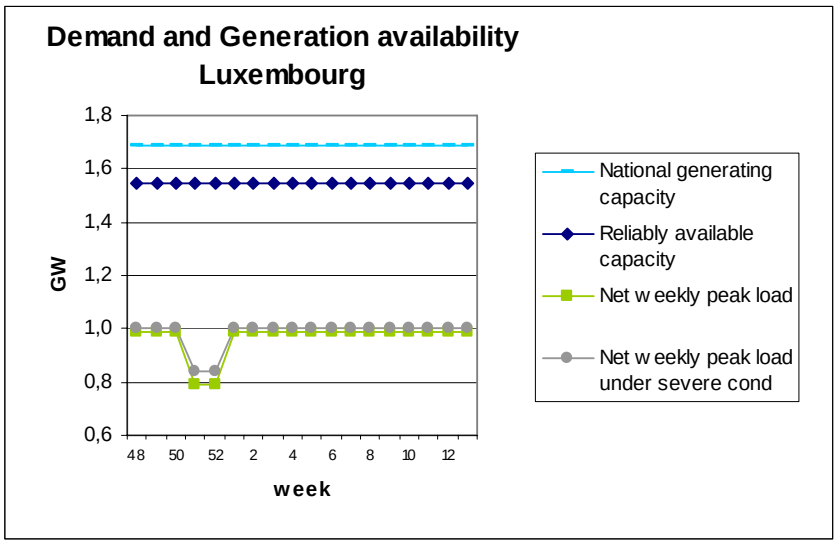
***Treatment and amount of mothballed plant***
At the moment there are no large mothballed plants.

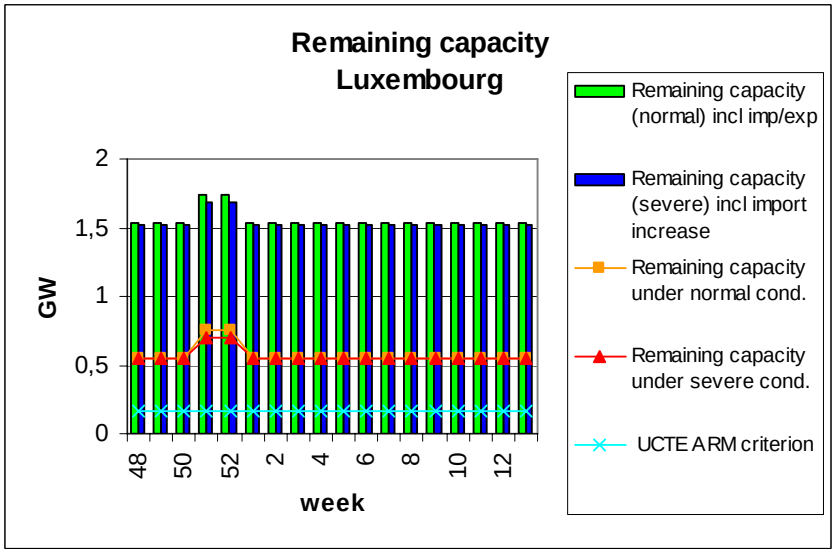
***Interconnection Capacity***
There are two phenomena which could affect the import capacity of the Netherlands in the sense of reductions or congestions:
The first is the high transit flows through our network originating from high wind generation in Germany. Last winter periods these flows threatened at some moments the (n-1) security of the cross border lines and TenneT TSO had to reduce import capacity for the market.
The second one is the congested flows on the French-Belgian border which on return reduce the import capacity on the Belgian-Dutch border.
To manage better these phenomena, a regional consultation with the German, Belgian and French TSOs and authorities was started. This consultation resulted in more detailed operational arrangements, with improved use of the available information and forecasting methods for wind generation, which facilitates secure cross-border transmission flows and maximum cross-border transmission capacity on a daily basis. The reduction is realised on forehand as an operational measure, in dependency of the wind-generation forecast in Germany.

***Any other fuel supply issues which could affect availability e.g. gas supply issues***
Still under study in relation to gas infrastructure.

***Other issue***
In the Dutch market system of "Program Responsibility" each participating PR-party has the obligation to assure its own reserve power. TenneT TSO in their role as balancing manager only requires that enough balancing power will be offered in the bidding system that they employ for this purpose. Frequently is offered less power than considered necessary and then requests for offering more power are sent to market parties. Until now no real shortage happened.

**LUXEMBOURG**




**Comments**

**Appreciation of the Generation – Load Balance**

The generation capacity in Luxembourg (including pump storage power) is much higher than the consumption. But as the whole energy of the 2 major generation plants is exported, Luxembourg has to re-import the main part of electricity to cover the consumption.
The generation – load balance for Luxembourg as isolated country is positive but it must be considered in the context of the UCTE community. The line capacity is sufficient to cover the national load also during severe winter conditions. It is sufficient to export the total generated energy simultaneously to the import of the national load without netting.

**Generation – Demand Balance**

**Synopsis**

Due to the special situation of the two grids in Luxembourg, an industrial grid and a public grid and the fact that the line capacity is sufficient to import the major part of energy, the TSO considers that there is no risk for problems during the coming winter.

**Generation – Demand balance**

Generation Available

- Luxembourg has two large generation plants, the pump storage of Vianden SEO (1.100 MW) whose start up is determined by RWE TSO, and the thermal plant of TWINerg (385 MW) whose production is injected to the Belgium grid. As counterpart, the major part of electric energy is imported from Germany and Belgium. It is practically impossible to determine a risk for generation.
- Non-usable capacity is mainly determined by the lack of wind but is relatively low.
- During all the weeks under consideration one unit of 100 MW of the pump storage of Vianden is out of service for maintenance and TWINerg has scheduled the overhaul of his plant during the weeks 16 and 17 in 2008
- As the two main power plants inject their energy directly to the neighboring TSO's RWE TSO and ELIA, outages of these power plants will have no effect to the grid in Luxembourg.
- System services reserve for the Luxembourg public grid is assumed by RWE TSO and for the industrial grid by Elia.

Demand

- The peak load in the public grid is generally located at 12h00. As at this moment the peak load in the industrial grid is not necessarily at his maximum because it depends largely from the production time of the three electrical arc furnaces of the steel plant (100, 90 and 60 MW). The peak load of the total grid may be different. In fact, as it is practically impossible to know in advance at what moment and how many of the electrical arc furnaces are in production, the peak load may vary in a range of 250 MW. To be secure, the worst case is considered, which is the sum of both loads.
- Possible load reduction is practically inexistent (~ 20 MW).

Remaining capacity in normal conditions

- The remaining capacity is largely influenced by the production of the pump storage of Vianden, whose start up is determined by RWE and whose production is exported to Germany.

Severe Load Conditions

- As detailed above, the maximum of the load is more influenced by the production of the three electrical arc furnaces than by extreme weather conditions. However as the possibility exists that the maximum of the peak load in the public and the industrial grid are in the same period combined with extreme weather conditions, we have taken into account this scenario.

**Role of Interconnection**

Interconnection Capacity

As Luxembourg imports the major part of electrical energy, the interconnection capacity is designed in accordance and will be sufficient to cover the whole consumption simultaneously to the export without netting of the total generation capacity or the import energy needed for the pumps in the pump storage power plant. No additional capacity is needed to cover the outage of one of the power plants.

During weeks 48 - 50 the interconnection capacity with Germany will be reduced because of maintenance works on one of the interconnection lines.

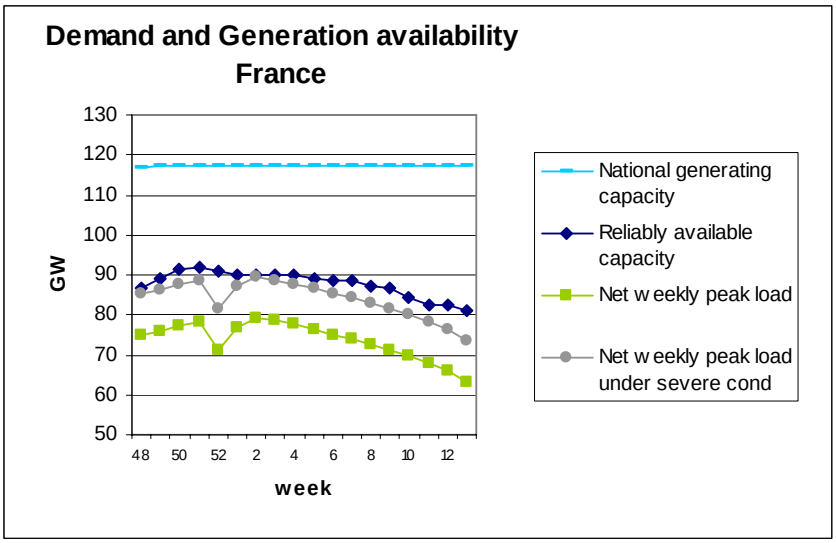
Firm Import/Export contracts

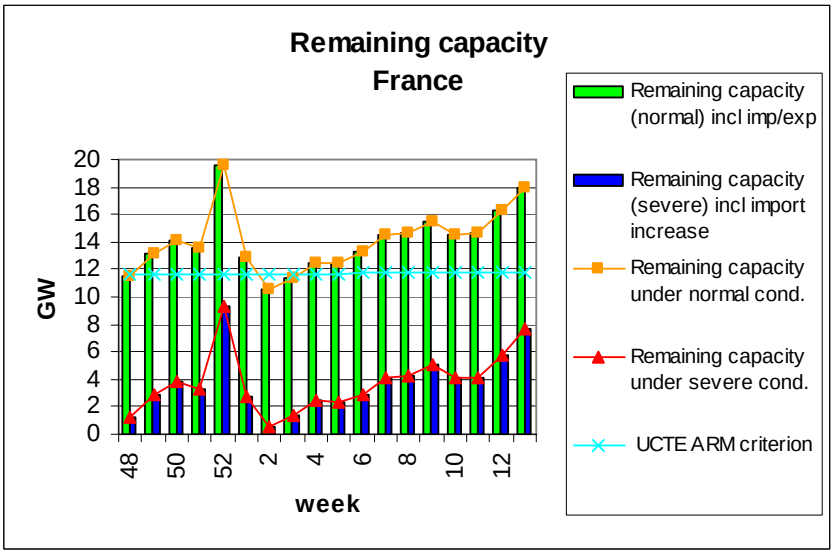
The existent import/export contracts cover the need for the whole internal consumption.

Transit Flows

The grid in Luxembourg has no active interconnections that allow transit flows between countries.

**FRANCE**




## Comments

### Framework and Method Used for Winter Outlook

An adequacy forecast study is carried out each year for the October-March period, using a probabilistic approach to simulate random situations of load and generation.
This is an internal study, but the results are communicated to the Ministry of Energy and to the Regulation Authority (Commission de Régulation de l'Energie) and published on the RTE website.

The study considers the weekly peak loads and estimates the remaining generation margin. This margin is compared to a minimum level corresponding to a probability of 1% of not meeting the load. This level is calculated for each week.

The main risk factors are:

- The sensitivity of the load to low temperatures;
- Unplanned events;
- Random levels of inflows to hydro generating units.

These studies are reviewed at different time horizons (monthly, weekly, intra-weekly and day-ahead).

**Generation-Demand Balance**

The generating capacity includes 2.5 GW of wind energy farms, with an average availability of 24.5%.

Non-usable capacity comprises, in addition to mothballed plants and wind power unavailability, reductions on hydro available power as well as on embedded generation.

For each week, the hydro inflows are supposed at their average value.

Overhauls are consistent with the last schedule given by the Generators to RTE at the beginning of the winter outlook study (i. e. end of August). A sensitivity analysis can be carried out if needed.

Outages capacity is calculated considering the unavailability rates of thermal units.

The weekly peak load is calculated for normal conditions.

The net weekly peak load takes into account load restrictions corresponding to the statistical value of load reduction available for customers with special contracts. It does not account for customers' offers on the Balancing Mechanism.

The severe load scenario is built considering a temperature lower by 5°C than the season normal temperature, which corresponds to a probability of around 4%.

System services are composed of primary, secondary and 15 minutes reserve.

RTE considers that the acceptable risk level is for a remaining capacity between 12 GW and 14.5 GW under normal conditions.

**Role of Interconnection**

In case of climatic conditions much colder than the average, RTE may reduce the export capacity from France to Spain, due to low voltage problems.

The export capabilities to Belgium could be reduced should loop flows happen on the French-Belgian border. This situation, which occurs when the wind energy generation is low in Northern Germany, is potentially expected for the coming winter.

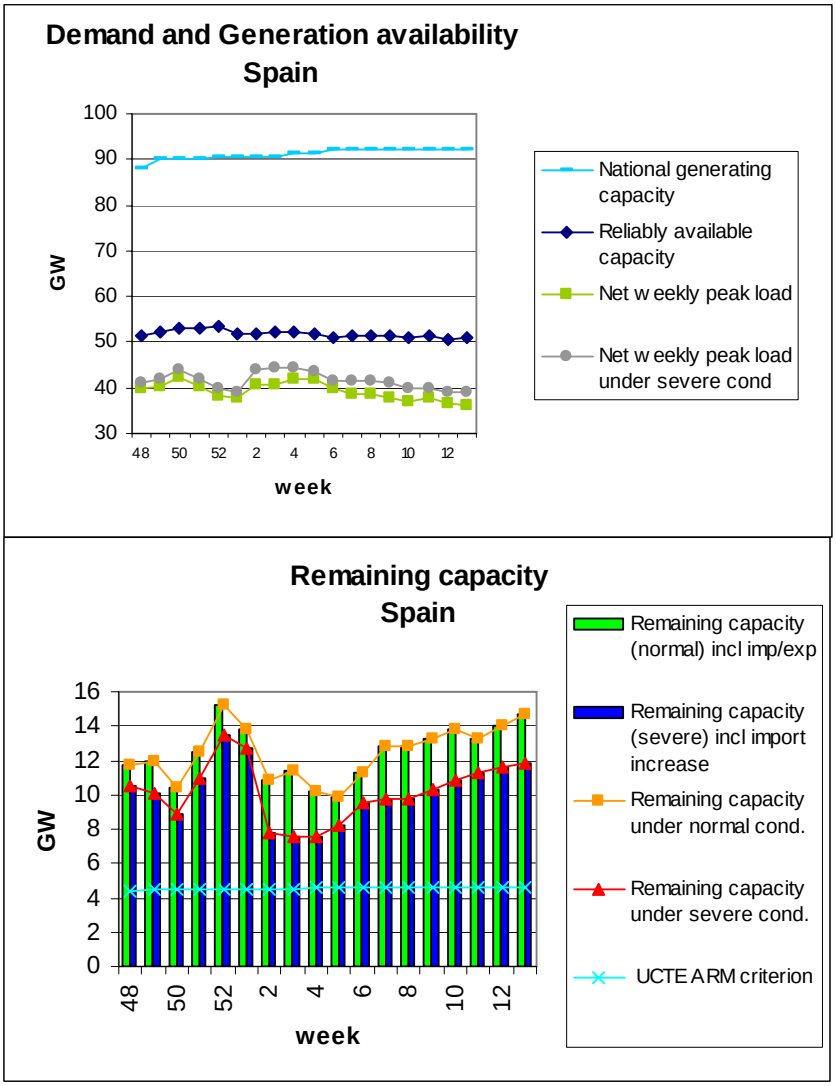
**Conclusion**

Under normal conditions, the generation – load balance on the French system is not considered at risk for the coming winter, so that exports should be available.

Nevertheless, under severe conditions, the last week of November and the month of January will show tighter margins; therefore for this period the export capacity is likely to be reduced to a lower value and some imports may even be needed, especially in the second and third weeks of January.

The end of the winter is expected to be less stressed.

**SPAIN**




## Comments

## Synopsis

The forecast situation for supplying demand for the coming winter in the Spanish peninsular system is not critical. If average conditions are considered, remaining capacity will be around 12.900 MW. Minimum value will decrease to 10.000 MW.
Only in case of simultaneous extreme peak demand, severe drought conditions and a very high thermal forced outage rate, we can find values of remaining capacity of 5.000 MW.
The adequacy index is defined as the relationship between available capacity and peak demand. Available capacity is defined as generating capacity minus non usable capacity at peak load, overhauls and outages. In case of normal conditions the forecast adequacy index is always over 1.26. Only in case of severe conditions as described before, it could decrease down to 1.19. In Spain, the adequacy reference index is 1.10 (10% of margin between available capacity and peak load).
However, the most important risk factors for this next winter in the Spanish system are hydro and wind conditions, very high sensitivity of load to temperature in extreme weather conditions and fuel, especially gas, availability to combined cycle and gas thermal plants.

**Framework and method used for making the winter assessment**

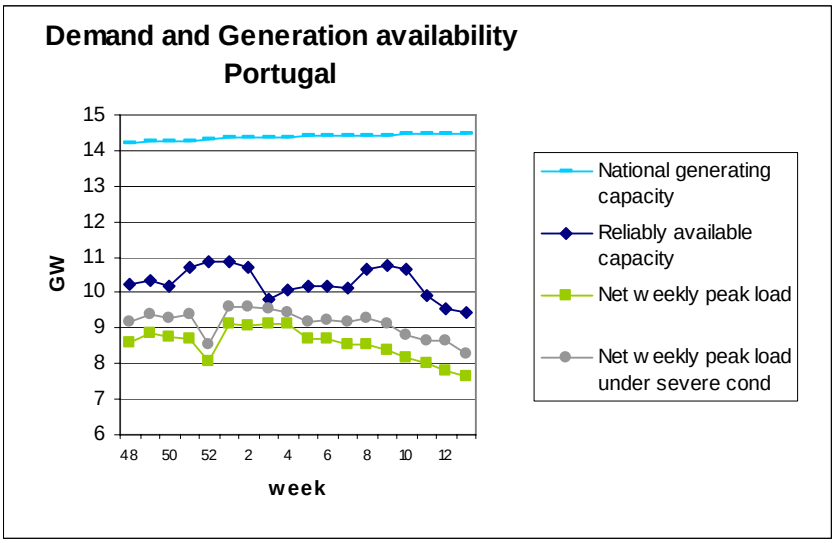
Among other reports, every month, a medium term system adequacy forecast report for the next 12 months is produced by REE (the Spanish TSO).
Medium term system adequacy forecast is carried out using a hydrothermal coordination model with stochastic dynamic programming that minimizes variable operation costs. The analysis is based on a probabilistic tool where hydro stochastic behaviour and non planned thermal outages are considered. In addition, regional studies are performed looking for congestions.
The medium term forecast considers several hydro conditions, available thermal capacity and wind production scenarios.
All scenarios are built under the following assumptions:

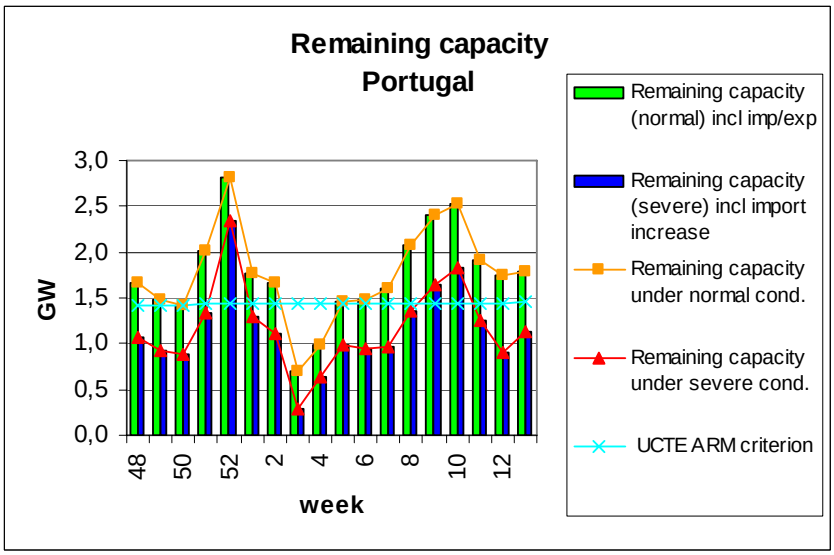
- Overhaul planning notified by generators for the incoming winter.
- Guaranteed fuel (gas) supply to combined cycle and gas thermal plants.
- Low wind conditions: wind generation considered is around 8% of available capacity. According to the historical probability distribution, wind generation has been above this rate with a probability of 95%.

Extremely severe conditions for the system are simulated as:

- Extreme demand due to severe weather conditions, typically very low temperatures
- Severe drought conditions. Significant non-usable hydro capacity resulting from lack of water in the reservoirs.
- No import capacity is considered in the study in severe conditions. So, it is not taken into account in the load – generation balance.
- Permanent non available thermal capacity of 2.000 MW is considered

**PORTUGAL**




**Comments**

*Main Results*

For the next winter, our studies do not evidence special problems for the operation of the Portuguese system. Under normal conditions the remaining capacity stays in comfortable levels, with only two weeks under 10%. In severe temperature conditions the margins may lead to more reduced levels namely in weeks 3 and 4, but even so without resorting to imports.

*Additional Information*

These results are based on studies made in the scope of the monitoring of the guarantee of consumption supply. These studies are made on a weekly basis, with internally developed tools that determine the water value of the reservoirs with a probabilistic approach, and optimize the hydro and thermal production, with the objective of minimizing the costs and guarantee the consumption. These studies are not public and are made for the horizon of up to the end of the following year.

In order to obtain a remaining capacity comparable to the UCTE Adequacy Reference Margin (ARM) criterion, the results presented in the spreadsheet are based on the average conditions. These average conditions correspond to:

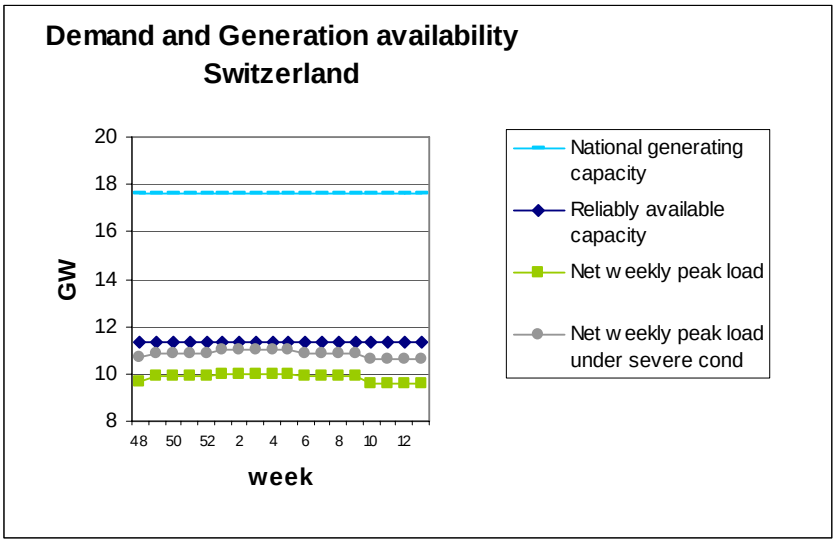
- Average hydro conditions (taking into account the actual levels of the reservoirs)
- Average wind production based on historical data (27% of utilization)
- Planned available capacity for the thermal power stations
- Average Outages based on historical data

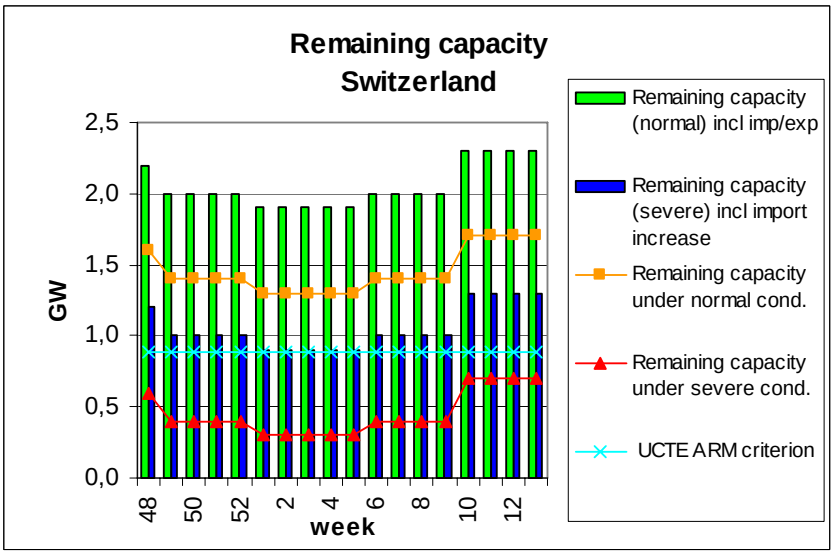
For internal purposes we usually produce other studies based on other scenarios, namely for dry conditions.

The peak demand in severe conditions has a very low probability of being exceeded, 1%.

We did not consider any possible measures related to load reduction.

**SWITZERLAND**




**Comments:**

The remaining capacity in Switzerland will amount to at least 0.1 GW even in critical situations during the winter 2007/08. Additional 0.6 GW are assured at any rate during severe weather conditions through firm import contracts. Therefore, Swissgrid appreciate the generation/load balance as unproblematic regarding the security of supply.

**Synopsis**

No critical period are expected during the winter 2007/08, because the load can be covered by the remaining plants even in critical situations.

However, the final criterion for the determination of the system adequacy is the comparison of the remaining capacity with the reference adequacy margin. The former should be equal or higher than the latter.

The Swiss System Adequacy Forecast 2008 – 2020 states that in January 2008 the Swiss remaining capacity will be as of 0.3 GW under normal weather conditions by taking into account the outage of the largest nuclear power plant (1.2 GW).

On the other hand, the Swiss reference adequacy margin amounts to 1.4 GW. It contains three elements:

- 1.0 GW for severe winter conditions (-15° C),
- 0.2 GW as an average expected value for bigger (>0.1 GW) hydro power plant outages (the sum of the latter two, i.e. 1.0+0.2=1.2 GW amounts to 7% of the national generating capacity and by coincidence it is equal to the power that can be lost at the outage of the largest nuclear power plant, i.e. 1.2 GW),
- 0.2 GW for the margin (i.e. excess) against the peak load measured at 11:00 hours.

As the most critical situation we consider either the case from the System Adequacy Forecast 2008 – 2020 i.e. normal weather conditions and the outage of the largest nuclear power plant (there are only 5 nuclear power plant units in Switzerland, i.e. this event is very rare) or an other case that is partially included into the reference adequacy margin i.e. a very cold winter (severe weather conditions) and the outage of an average bigger (>0.1 GW) hydro power plant (their number amounts to 36, i.e. this event is quite probable).

The Swiss remaining capacity in January 2008 as of 0.3 GW won't match the reference adequacy margin which amounts to 1.4 GW. However, one should consider the fact that 0.5 GW of Swiss system services reserves (tertiary reserve) have already been contracted abroad and that another 0.5 GW of this reserve will soon be contracted abroad as well. Besides, we chose a very conservative approach at determining the non-usable capacity at peak load, which means that additional 0.2-0.3 GW will be very probably available. From this it follows that Switzerland will match the reference adequacy margin during the winter 2007/08 even without taking into consideration the firm import contracts which assure a further 0.6 GW at least.

**Framework and method for the winter adequacy assessment**

In Switzerland the winter adequacy assessment is not undertaken on the national level. However, each of the 8 largest Swiss utilities has its own supply plan containing all the necessary considerations from technical and economical points of view. Since the reference adequacy margin doesn't present any considerable problem, in this plans the economic part prevails. Therefore, the winter itself is only a special case within the frame of economic calculations.

**Generation- demand balance**

The generation/demand balance won't be at risk during the winter 2007/08.

*Generation available*

In Switzerland there are 5 nuclear power units. Under normal conditions there is no maintenance or overhaul of nuclear power plants during the winter.

As to the other plants, they are all without significant exceptions hydro power plants. According to the UCTE definition their maintenance is a part of the non-usable capacity and should not be stated separately under maintenance, overhauls and outages.

*Demand*

According to the Swiss temperature statistic, January was the coldest month during the last 30 years with an average daily temperature in Bern as of -0.2°C. However, December and February are only about a single degree warmer (+1.2°C and +1.1°C respectively). In November the mean daily temperature is as of +3.9°C and in March as of +5.0°C. Our observations suggest that there is a

load temperature dependency that amounts to about 70 MW/°C. In table 5.1 the load is given in accordance to this finding.

*Remaining capacity in normal conditions*

The remaining capacity in normal conditions will be sufficient during all the winter 2007/08.

*Severe load conditions*

Under severe load conditions we understand a drop of the daily mean temperature from about 0°C to -15°C that is beyond any doubt the worst scenario. Using the above mentioned load temperature dependency of 70 MW/°C one finds that under these conditions an additional load of about 1 GW will arise.

**Role of interconnection**

The interconnections are, of course, important for the functioning of the Swiss transmission network, but the Swiss power balance is given even without them. On the other hand the Swiss generation can via interconnections contribute to the power balance of the neighbouring systems, if necessary.

*Interconnection capacity*

We don't expect any variations of the interconnection capacities during the winter 2007/08.

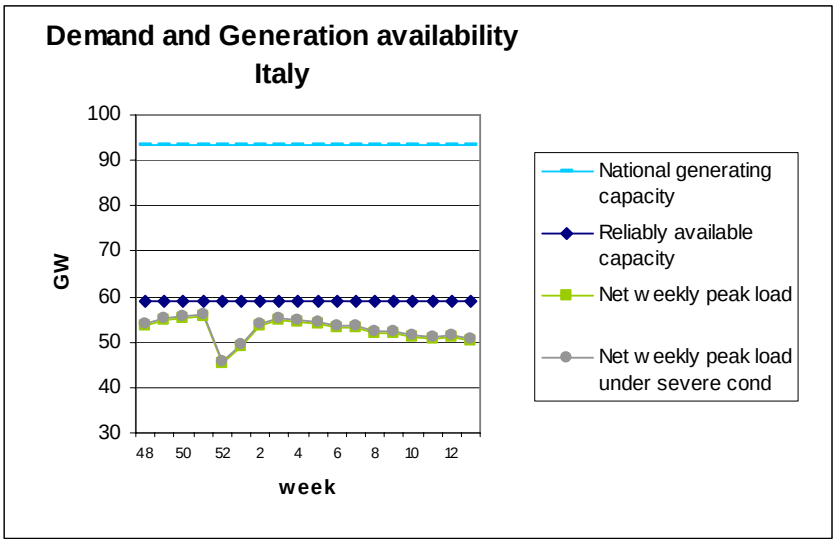
*Firm import/export contracts*

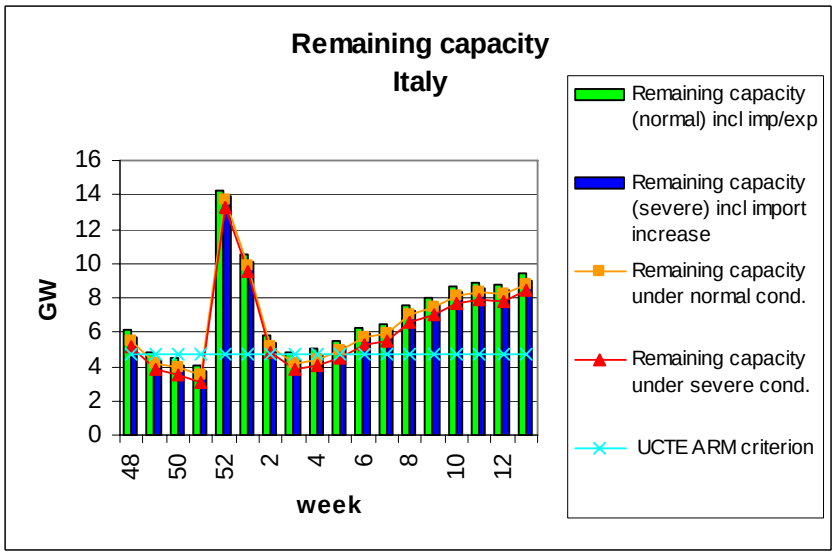
Swiss utilities have firm contracts with nuclear power plants mostly in France amounting to 2-3 GW. However, this capacity can be significantly reduced by the producers during a period of several weeks, so that in the end only 0.6 GW can be assumed as a guaranteed firm import capacity.

*Additional loads due to transits*

Additional flows due to transits are not expected during the winter 2007/08. However, the transit flows throughout the Swiss transmission network are permanent and high. If necessary they will be reduced by using the NTC procedures.

**ITALY**


Demand and Generation availability
Italy
GW
100
90
80
70
60
50
40
30
48
50
52
2
4
6
8
10
12
week
National generating capacity
Reliably available capacity
Net weekly peak load
Net weekly peak load under severe cond


Remaining capacity
Italy
GW
16
14
12
10
8
6
4
2
0
48
50
52
2
4
6
8
10
12
week
Remaining capacity (normal) incl imp/exp
Remaining capacity (severe) incl import increase
Remaining capacity under normal cond.
Remaining capacity under severe cond.
UCTE ARM criterion

**Framework and Method Used for Winter Outlook**

The mid term adequacy assessment, is conducted using a deterministic methodology in which are also considered statistical evaluations of some parameters.
On the basis of such methodology, remaining capacity for Italy continental zone and also for Sicily and Sardinia is determined, for each weekly peak load of one year of forecasts, considering the planned outages the transit's limits between the market's zones. This assessment is then generally refined on a monthly basis.
The sensible parameters of this procedure are:

1. Load, evaluated on "market perimeters" of all Italy market's zones;
2. Hydroelectric production, evaluated on statistical basis of last five years;
3. Wind, geothermic and others production, evaluated on statistical basis.
4. Thermoelectric production, evaluated on the basis of the installed capacity or, alternatively, mean production, considering planned unavailable capacity, forced unavailability on statistical basis, and long-term unavailability.
5. Import, considering the Italian northern border interconnection capacity (NTC): 7190 MW on winter peak hours, 6540 MW on winter off-peak hours, 6090 MW on summer peak hours and 5540 on summer off-peak hours.
6. Transmission constraints, in term of further reduction of available capacity determined on the basis of present and future production plants due to particular grid configuration or important maintenance and development works.

**Generation – Demand balance**

The adequacy evaluations for 2007-2008 winter period don't make in evidence particular risks for capacity adequacy and peak load cover expect in those regions where power plants were dismissed (on going specific analysis).
Instead, the analysis performed in order to evaluate energy adequacy, in relation with the gas national supply system's, predict possible risks due to the increasing trend in gas consumption in thermoelectric sector, especially in case of adverse climatic condition all over Europe (like 2005-2006 winter).

**Role of interconnection**

The values of NTC (just provided in methodology) will not be interested by significant variations in the next winter.
However, they could have low significance for adequacy evaluation, due to possible variations in import-export physical flows, as recorded in 2005-2006 winter, especially in case of adverse climatic condition and consequent tensions on international energy markets.

**AUSTRIA**

**Comments**

***North-South congestions***

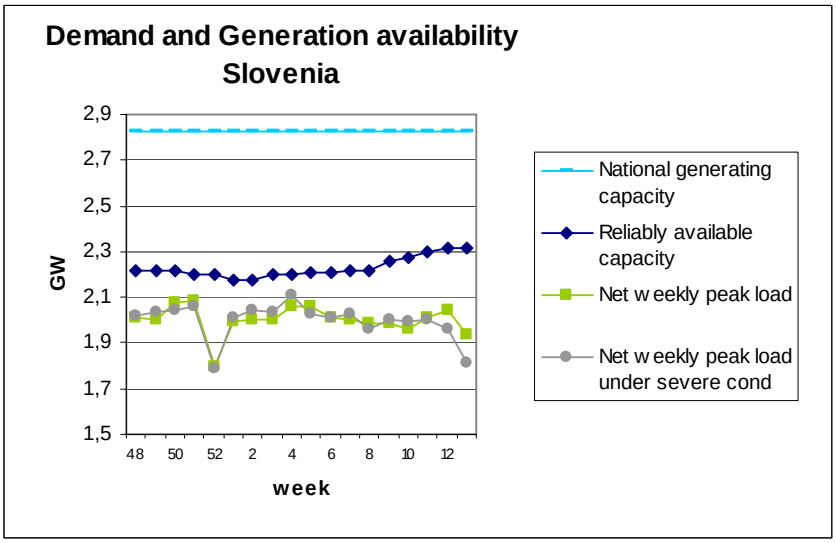
Since 2001 severe congestions occur on the weak 220 kV lines from the north to the south of Austria. Same as in the last years we expect a high utilization of these lines during winter 2007/2008.
For permanent improvement of these structural congestions, new 380 kV lines (Südburgenland - Kainachtal, St. Peter – Tauern) are planned to be put into operation.
Until then APG is prepared to take countermeasures in order to reduce these congestions. This can be done by phase shifting transformers (PST) in combination with redispatching of power plants (including restriction of pumping) and special switching in network operation. Especially the PSTs will allow for a better balanced distribution of load flows and thus for higher utilization of the existing three 220 kV north to south double circuit lines.

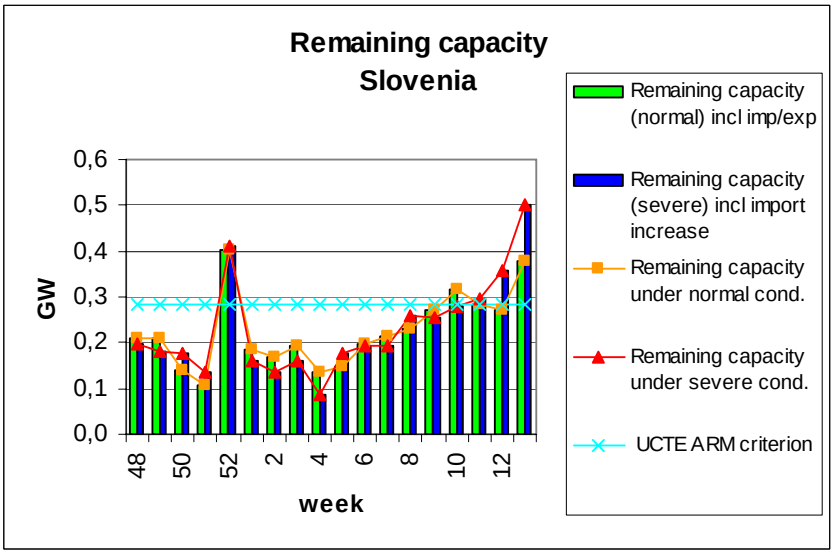
***Congestion on Czech-Austrian tie lines***

As shown in Winter 2006/2007 an unexpected low thermal generation (especially in the north of Austria) caused an additional congestion on the Czech-Austrian-tie lines.
For winter 2007/2008 we also expect high load flows.
To improve this situation a special switching in the Czech network is available and if needed also re-dispatching is planned.
For permanent improvement the installation of the second circuit Slavetice – Dürnrohr is planned.

Furthermore we point out that about 50% of Austrian thermal power plants are fired by natural gas. In case of problems concerning natural gas availability this can cause critical situations, especially during cold periods

**SLOVENIA**




**Comments**

The estimation of power balance for the coming winter is made each year. The calculations for the demand are made for hourly peak values corresponding to normal winter temperature and cold winter that can occur. The highest demand is realized usually in the months of December and January.

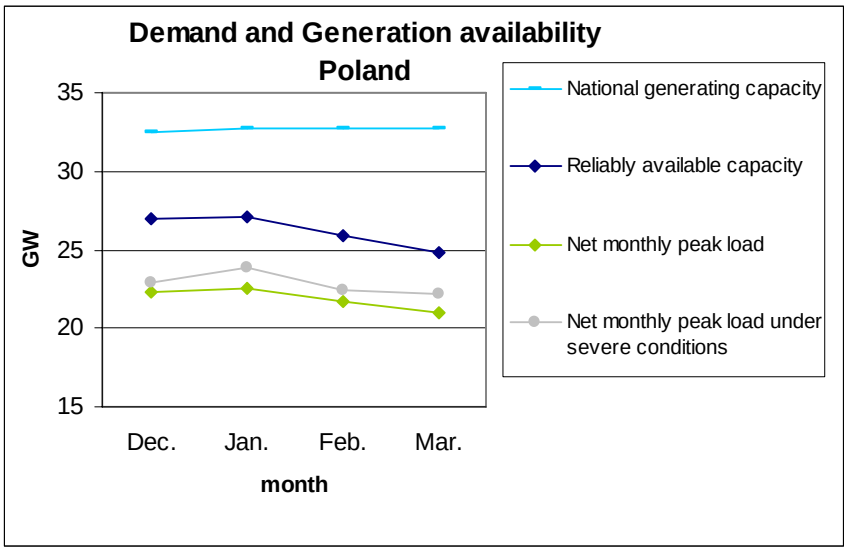
The available generating capacity is based on the forecast hydrological situation and past experience. The output from NEK nuclear power plant is expected to be 100% the rated power (696 MW), because the overhaul of this power plant has been made in October. According to the ownership agreement between Slovenia and Croatia, all the electricity generated by NEK is supplied 50:50 to both contracting parties. No other power station overhaul is planned for the winter period.

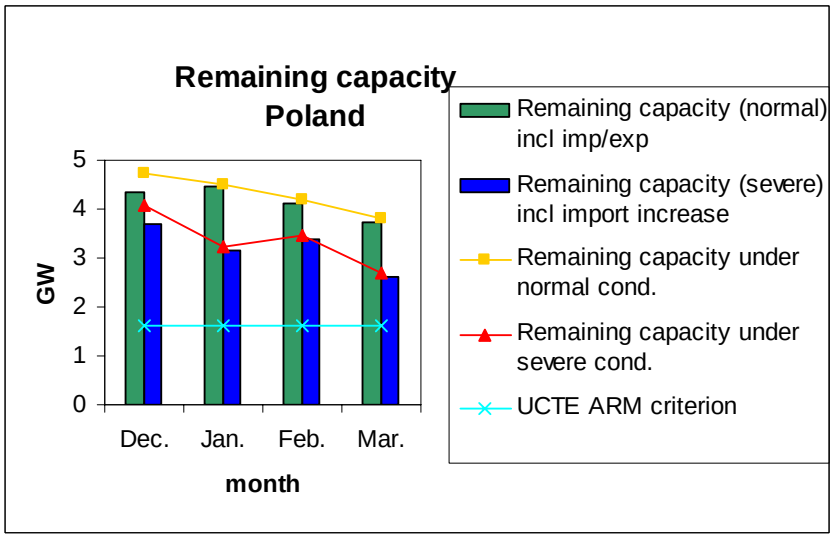
The load in the winter time is increasing approximately by 2.5 % per year; the same increase is observed for the winter peak load (2075 MW last year). The difference in peak consumption between normal and severe conditions is small (maximum increase 100 MW). Therefore for some weeks, the winter peak consumption for severe winter accounting for 50 MW load reduction becomes smaller than winter peak consumption under normal peak conditions.

Load reduction is not available under normal conditions. Under severe winter conditions, a reduction of 50 MW can be performed (this reduction affects industrial consumption).

About 30 % of electric energy in Slovenia is provided by hydro, 45 % from fossil fuel and 25 % from nuclear power plants. The national generating capacity during the winter should be approximately 2800 MW and the peak consumption may reach approximately 2100 MW.
The generation of hydro power stations depends on water inflows in rivers. During the winter period, the average production of hydro power stations is around 60 % of the nominal hydro power. During the last weeks of the winter period, when the flood period starts, hydro power plants average production starts to increase and reaches up to 80 % of the nominal power. Fossil fuel power stations and the nuclear power plant during the winter should operate close to their nominal power.

**POLAND**




Comments

Yearly peak load is observed in winter season, in December from statistics viewpoint, but operational conditions have became recently more difficult in January due to lower average temperatures than in December.

Data are prepared on the basis of the 3rd Wednesday for every month.

**Synopsis**

In spite of the mild winter last year (especially in January) PSE-Operator S.A. observed the growth of the demand at the level forecast for statistical winter, which means that the significant increase of the demand in the Polish system can be confirmed.
The amount of the outages of thermal power stations may increase during exceptionally cold periods.

**Framework and Method Used for Winter Outlook**

In Poland no special assessment is made for winter. Forecast Plans are being done for the whole year on a monthly basis – yearly coordinating plan. That is the reason why the data is not divided

into weeks. Yearly coordinating plans are published on the PSE-Operator web site at the end of November every year. On 26th of every month, PSE-Operator publishes the monthly coordinating plan, which includes the precise information for all the days of a given month. Further specification takes place in the operational planning.
PSE-Operator prepares one coordinating plan – no different scenarios.
Polish data is deterministic data, except the outages.

**Generation – Demand Balance**
Difficulties with covering system demand are not expected, though in case of long period of heavy winter (with low temperatures) the power balance can be quite tight.

*Generation Available*

- Non-usable capacity:

Contains mainly:
- heat production in combined heat and power plants,
- technical problems caused by low temperatures. During severe winter these values may rise.

The level of wind generation is assessed as the 25% of its generating capacity. The rest of its capacity (75%) is considered as non-usable.

- Overhauls:

Data for overhauls is based on the information provided by the generators.

- Outages:

Forecasts for outages are based on statistical data. During severe winter these values may significantly rise.

- System Services Reserves:

The figures for the "system reserves" are comprised of primary control reserve, secondary control reserve and intervention reserves (at pumped storage power plants) which are necessary to ensure a required margin in the day ahead operational planning.

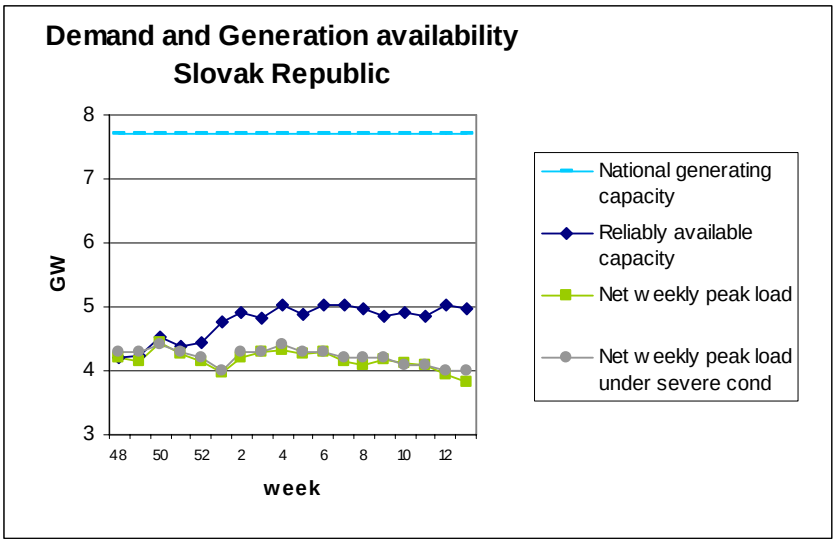
**Remaining capacity**

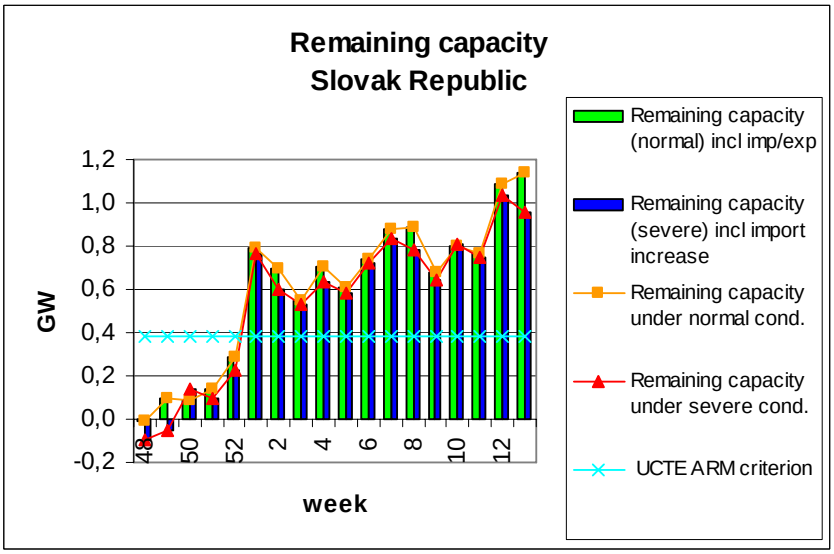
Taking into account the expected load and level of remaining capacity for the period under consideration no troubles with covering the demand are foreseen, however value of remaining capacity may decrease due to unexpected growth in the number of outages and unavailability in connection with extreme weather conditions.

**Role of Interconnection**
*Interconnection capacity*
Export and import capacities are available on the ETSO web site. Data used in the present report are the sum of all PL profiles – between UCTE and outside UCTE countries. NTC utilization depends on market parties needs.
It is important to mention that NTC in the import direction includes non-parallel connections only – radial connection with Ukraine and Poland-Sweden DC link.

Although under mild and normal winter conditions surplus of generation (remaining) capacity may still be observed in the Polish power system, it does not mean that this surplus can always be used to help other power systems to balance in emergency conditions because of transmission bottlenecks limiting transfer capacities towards other UCTE countries (usually fully utilized by market participants in normal situations) as well as towards Nordel (below the rating of DC link due to internal transmission constraints in the north of Poland).

**SLOVAK REPUBLIC**




## Comments

### Foreword

The TSO in Slovak Republic (SEPS, a.s.) estimates the national power balance yearly and states more precisely monthly, weekly and daily.
So-called yearly study on operation is finished in November for the next year. The document is for internal purposes mainly, but selected parts are distributed among market participants. Yearly estimations are made for Monday, Wednesday, Saturday and Sunday each week all the year. The estimation is based on one scenario - normal climatic conditions are considered.
For OCTE Winter Outlook Report, severe winter peaks were calculated considering data of the last ten years.

### Generation - Demand Balance

Forecast level of generation capacity should be sufficient for most of the winter period. The situation seems to be rather tight in several weeks at the end of 2007 when ARM is not fulfilled and import is expected. Load reduction (DSM) is not available at the moment. Firm contracts are not known yet

but taking into account what happened last winter, import is expected. Transmission system is sufficient to guarantee capacity for imports and transits.

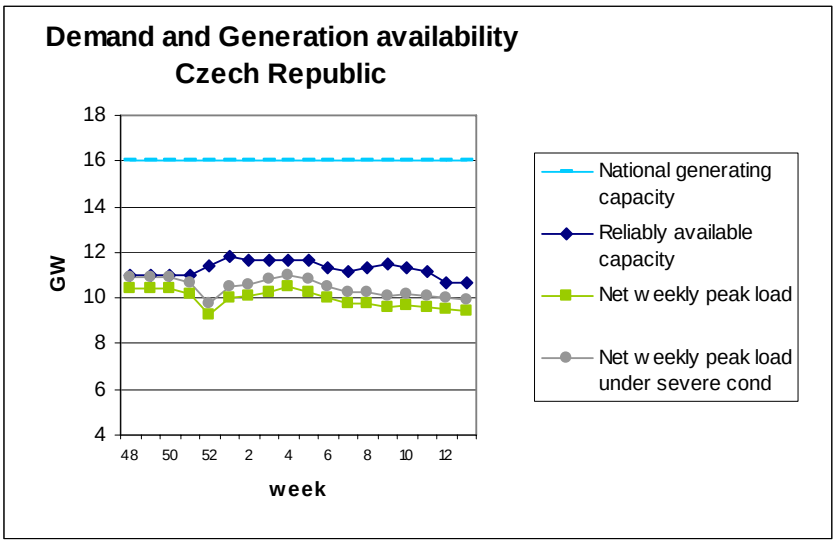
The data (capacities, loads) are given in gross values.

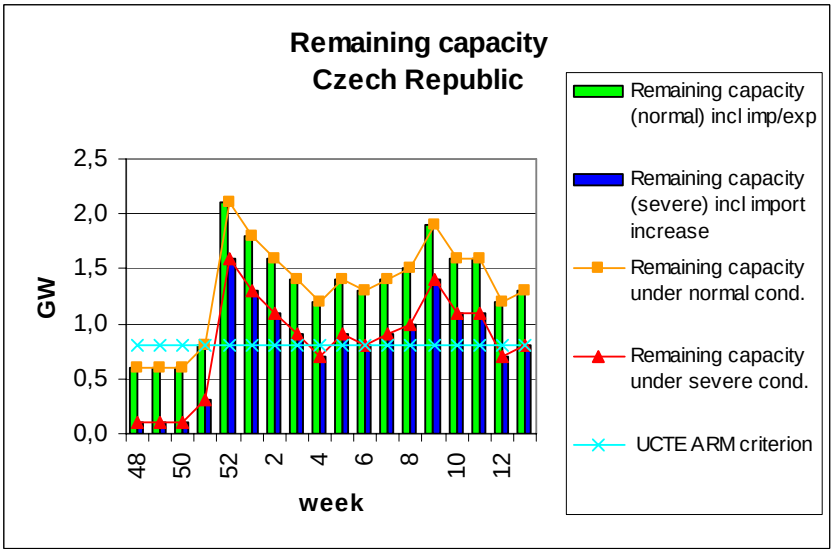
**Role of interconnection**

Interconnections are sufficient to meet the volumes of expected imports and transits

Unexpected transit flows sometimes occur in the direction CEPS - MAVIR and may cause congestion on the SEPS - MAVIR border. But no constraints are foreseen in import and export possibilities. The cross border capacities are considered sufficient for reliable operation of the power system in the next year.

**CZECH REPUBLIC**




**Comments**

**Synopsis**

CEPS does not anticipate significant balance problems in the Czech power system during the upcoming winter period, even at potentially severe conditions, however reduction of export capability is expected during weeks 48 through 51.
From the beginning of next year, balance analyses show export capability of 1000MW in normal conditions which might be reduced to 500MW in severe conditions scenario.
CEPS has no forward information on planed exports/imports from traders, as only mandatory time horizon for scheduling export/import contracts is day ahead.

**Framework and Method Used for Winter Outlook**

CEPS's regular operation planning horizons are: year (annual operation plan), month, week and day. The data presented here comes from the current Annual Operational Plan (AOP) for coming year, the final version of which will be approved in late November 2007.

The AOP is based on a model combining stochastic and deterministic approach. Its main task is to coordinate the annual schedule of units' outages and grid maintenance and operation needs. The AOP contains : demand and load forecast, system balance analysis and forecast, ancillary services needed in terms of structure a volume, planned outages of generation capacities, disconnection schedule (planned outages) of Transmission System (TS) facilities, analyses of transmission and short circuit conditions in the TS, overview of facilities, etc. Results of AOP provides information and data for: annual, monthly, weekly and daily operation scheduling of the CEPS control center and all market participants; price decisions of Energy Regulatory Office; tendering process for long-term contracts on ancillary services provisions; generators and other market participants seeking their opportunities in the market with ancillary services; evaluation of international interconnections in the electricity trade

**Generation-Demand Balance**

Compared with last year, the national generation capacity is lowered by 400 MW, due to ongoing complete reconstructions (retrofit) of some older coal units.

Overhauls are higher and have negative effect on the balance during weeks 48 – 50. However there is a possibility that they will be reduced in favour of better balance.

Forecast of demand and load takes into account forecast of GDP evolution, which of course is not certain. The other factors which can influence the precision of balance forecast is unavailability of information on long term export/import contracts and rising market trend towards sudden and significant changes in scheduled generation outages (mainly driven by short term market), which influence operation of TS, complicating ATC calculation and increasing the need for ancillary services.

At the present state of knowledge, it is expected, that even in the case of severe condition the generation capacity will allow some export.

An intra day market was opened on the profiles CEPS - SEPS and CEPS – VE-T, which allows market participants to change their exchange schedules during the day (formerly they could do that only on day to day basis).

**Role of Interconnection**

Interconnection capacity is sufficient to export spare generation capacity.
Values of firm export import contracts are not available to CEPS in advance. All export/import contracts are scheduled day ahead.

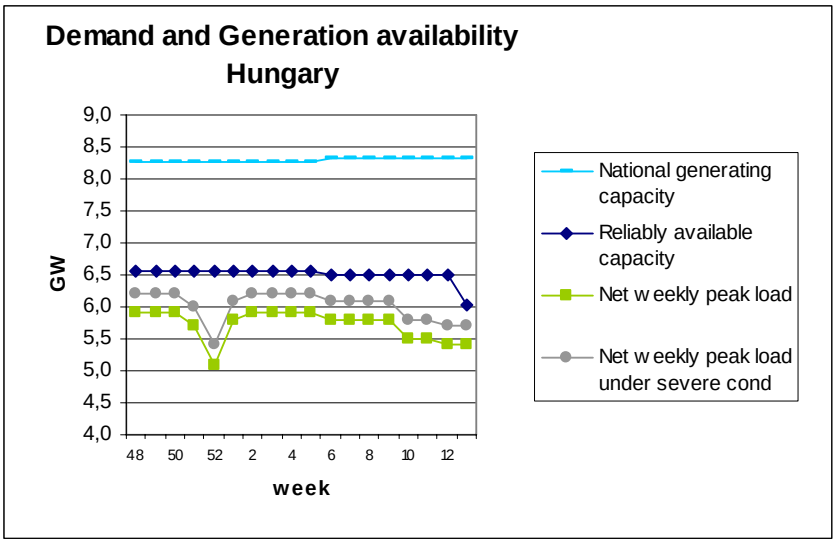
During the winter period, problems with unexpected flows may arise, especially in the North-South direction.

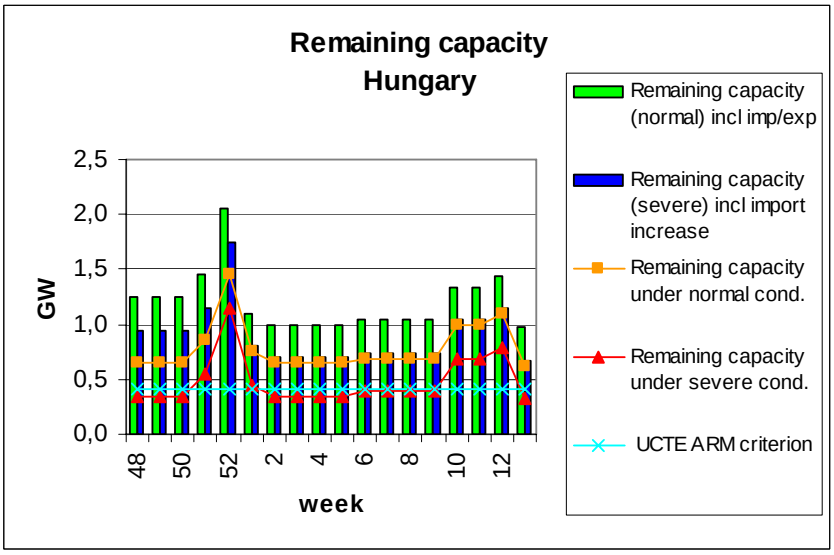
**Additional comments**

CEPS does not expect significant contribution or effects influencing TS from intermittent energy sources, as they are not significant in term of ratio intermittent to conventional sources yet.

There are no mothballed plants in Czech Republic.

**HUNGARY**




**Comments**

*Synopsis*

In spite of the growing demand and the growing uncertainty on both generation and demand side as a result of liberalisation on the one hand, and promotion of intermittent generation on the other, the Hungarian system is expected to be on the safe side during the next winter period.

However, there are a few risks that must be carefully followed by the TSO. These risks are:

- Availability of fuel, principally natural gas. During long-lasting cold winter periods, demand for natural gas becomes very high at households and at power plants at the same time. Therefore a well-functioning gas market, as well as satisfactory replacement fuel reserves at generators, is essential to keep the lights on;
- The required level of remaining capacity can only be guaranteed by a certain amount of import under severe conditions. There are existing firm import contracts, but allocation of cross-border capacity rights on the respective border sections is an issue. Occasional export based on price differences between domestic and neighbouring regional markets may eliminate reserves.

The reference adequacy margin at weekly peak is 0.5 GW, the capacity of the largest generation unit in the power system.

**********

**Introduction**

The Hungarian TSO (MAVIR Hungarian Transmission System Operator Co.) maintains a deterministic yearly rolling capacity plan.
For this purpose, load forecast, generation outage schedules, expected international exchange of electricity, forecast production of intermittent generators are determined on a daily basis. The necessary data and information comes from the statistical database of the TSO itself, or from the generating companies and other market participants.
There are three scenarios for average, minimum and maximum loads.
The necessary reserve level is determined in accordance with the procedure described in UCTE Operation Handbook, taking into consideration the specificities of the Hungarian power system.
The plan is updated and published monthly on the web-site of MAVIR, combined with actual data.

**Generation-Demand Balance**

Generation capacity – Hydro generation is not considerable for the time being. Mothballed capacities are practically not available under any circumstances. Renewable energy (mainly biomass) and co-generation have a growing portion in the generation mix (over 13 %), and their operation is very much legislation-sensitive, i.e. difficult to predict – take-off is obligatory, on regulated prices. Wind generation is growing (0.07 GW at the moment), but due to its low availability, it is not taken into account in the balance (i.e. included in non-usable capacity at peak load).

Demand – Overall demand level depends on the state of economy. Weather sensitive extremes can be handled by using different scenarios. Demand-side management is an efficient tool, but in the hands of the supply companies – therefore this is a considerable uncertainty for the TSO, resulting in higher reserve requirement.

System services reserves – Our requirement for primary, secondary and tertiary reserve is calculated with respect to the UCTE OH Policy 1, taking into consideration the Hungarian specificities. (See the note on demand)

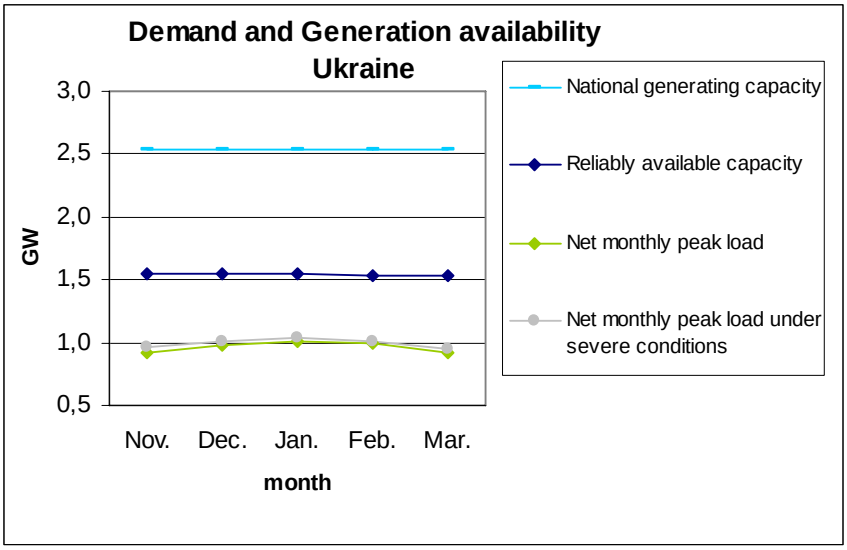
Remaining capacity – Secure operation requires at least 0.5 GW of remaining capacity during the weekly peak demand periods, even under severe conditions (i.e. the capacity of the largest generation unit in the power system).

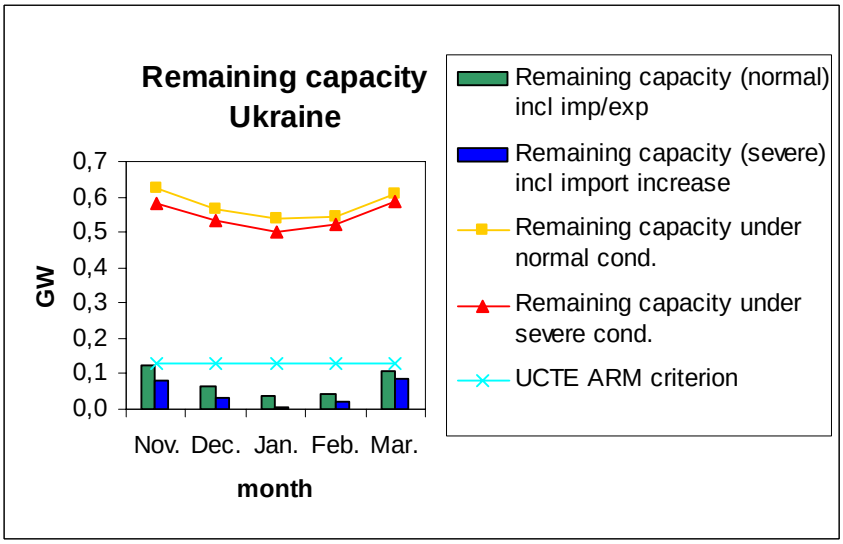
**Role of Interconnections**

Interconnection capacity – The import/export capacities are not NTC values. Since the Hungarian Power System is a part of the highly meshed Central-European network, transit flows are comparable to those values. Therefore import is considerably limited by those transit flows.

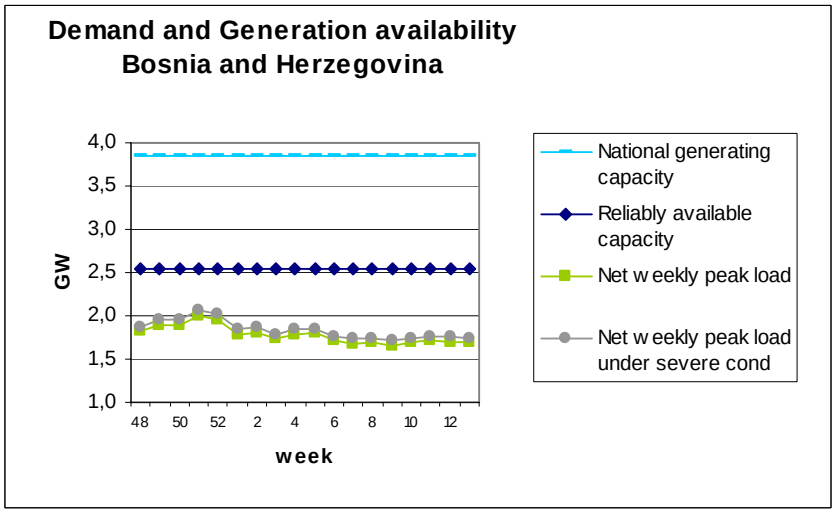
Firm import/export contracts – The Hungarian electricity market is traditionally import-oriented. This means that firm import contracts contribute to the security of supply. Nevertheless, after liberalisation in 2003, international exchange became much more sensitive to market conditions, even in short-term. Allocation of cross-border capacity rights to those contracts is also an issue.

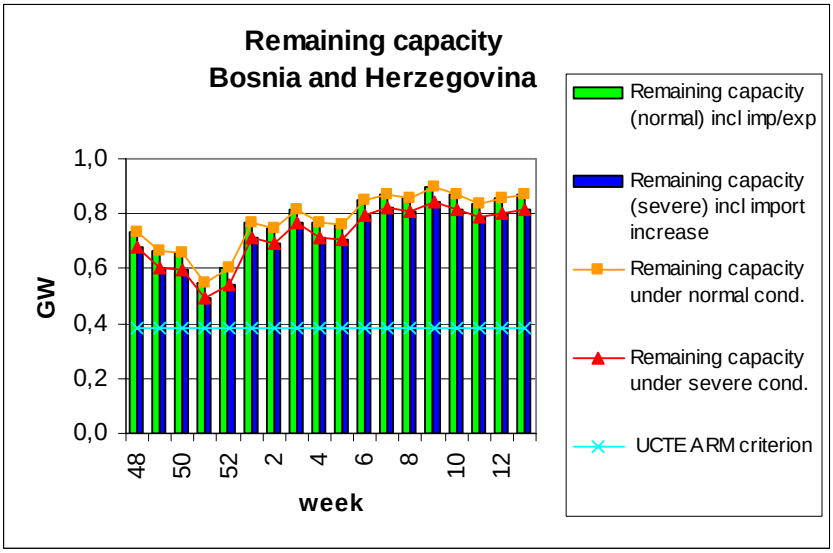
**WESTERN UKRAINE**


Demand and Generation availability
Ukraine
3,0
2,5
2,0
1,5
1,0
0,5
GW
Nov.
Dec.
Jan.
Feb.
Mar.
month
National generating capacity
Reliably available capacity
Net monthly peak load
Net monthly peak load under severe conditions

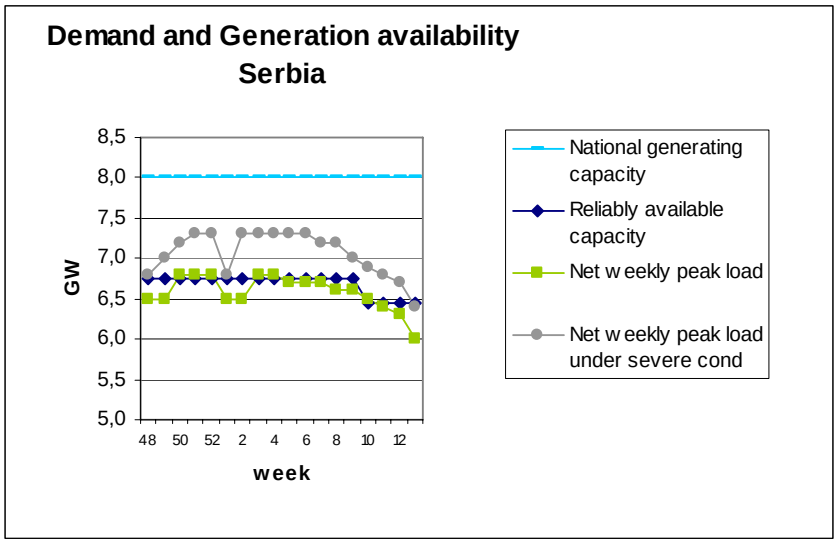

Remaining capacity
Ukraine
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
GW
Nov.
Dec.
Jan.
Feb.
Mar.
month
Remaining capacity (normal) incl imp/exp
Remaining capacity (severe) incl import increase
Remaining capacity under normal cond.
Remaining capacity under severe cond.
UCTE ARM criterion

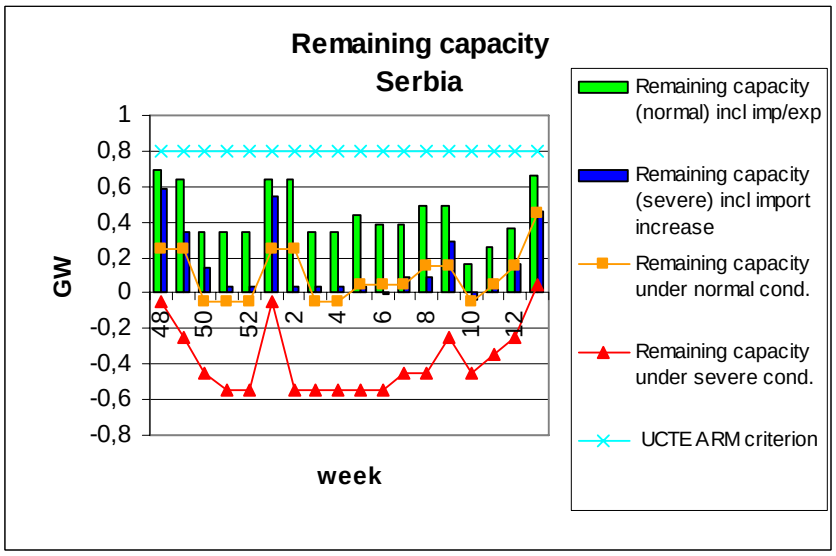
**BOSNIA HERZEGOVINA**


Demand and Generation availability
Bosnia and Herzegovina
GW
4,0
3,5
3,0
2,5
2,0
1,5
1,0
48
50
52
2
4
6
8
10
12
week
National generating capacity
Reliably available capacity
Net weekly peak load
Net weekly peak load under severe cond


Remaining capacity
Bosnia and Herzegovina
GW
1,0
0,8
0,6
0,4
0,2
0,0
48
50
52
2
4
6
8
10
12
week
Remaining capacity (normal) incl imp/exp
Remaining capacity (severe) incl import increase
Remaining capacity under normal cond.
Remaining capacity under severe cond.
UCTE ARM criterion

**SERBIA**



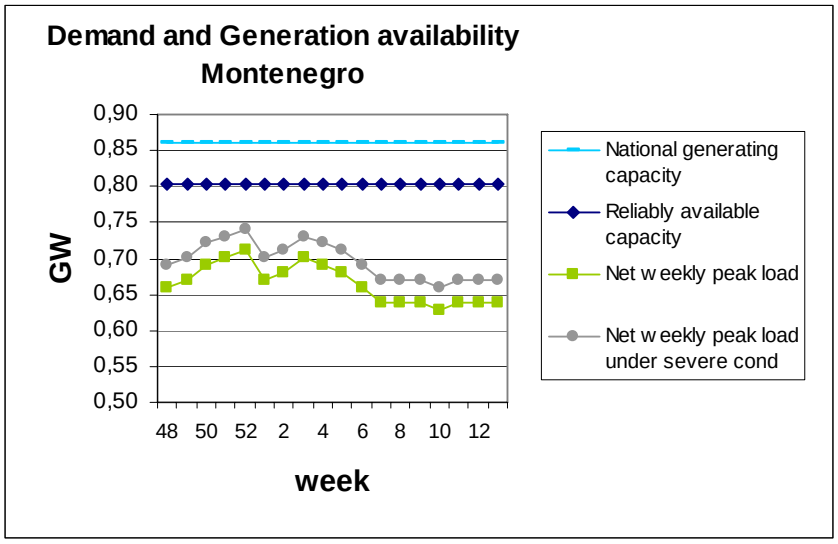

**Synopsis**

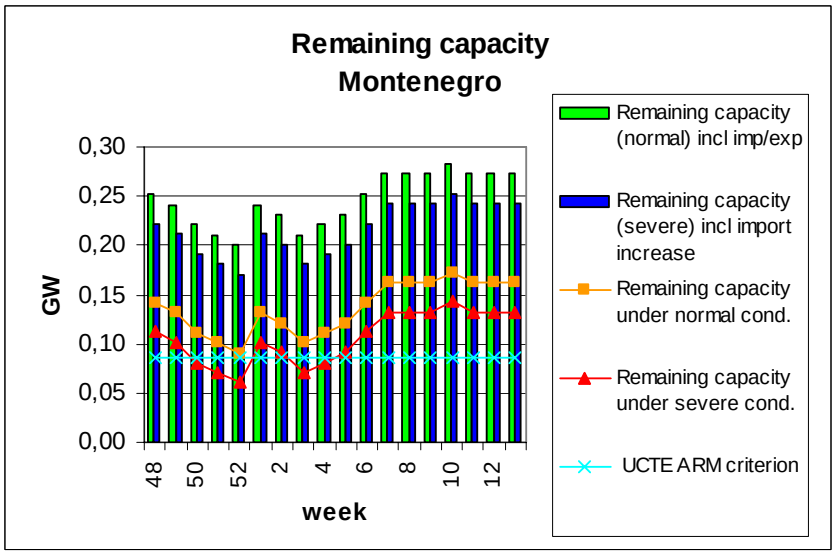
The national generation capacity of Serbia is 8000MW. About 35 % of electric energy is provided by hydro and 65% from thermo power plants. On the part of territory of the Republic of Serbia which is under interim UN administration (Kosovo and Metohija), 400MW of that capacity is non-usable according to last year experience. There is no planned overhaul for the period December 2007 – February 2008. An overhaul of 300MW is planned for March.
According to Snap-Shots on models from last year, the average expected value for outages is 250MW.
For secondary and tertiary control respectively, 150MW and 450MW are reserved, which means that 600MW is secure for system services reserve. UCTE recommendation for secondary and tertiary control reserve is hardly realizable for a small system like Serbia.
The expected weekly peak load is estimated taking into account an energy growth of 2% for average temperature. The consequence of this is the increase of load peak.

**Role of Interconnection**
Serbia has long term contract with neighbouring control area Montenegro which includes capacity of Piva hydro power plant.

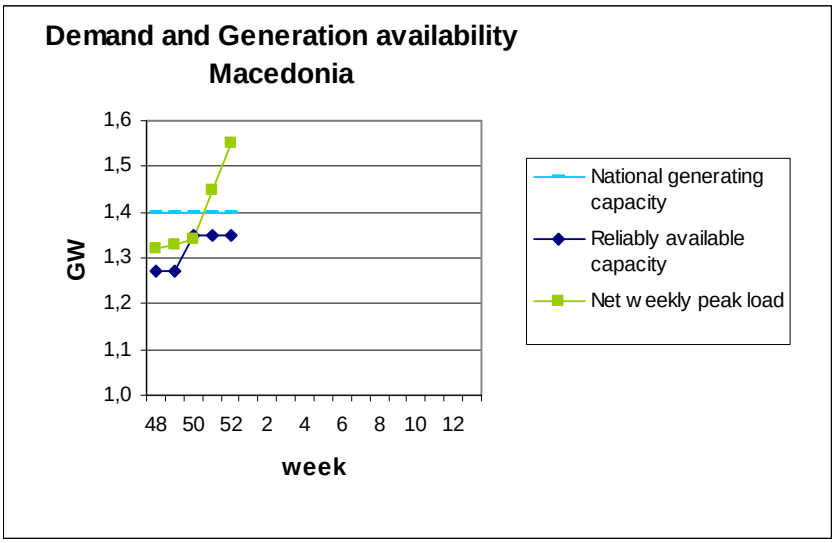
Serbia does not cover the national load during the winter period. Because of that, Serbia imports 200MW from December till the end of February and 100 MW in March. For severe conditions, Serbia will need additional import of 200MW.

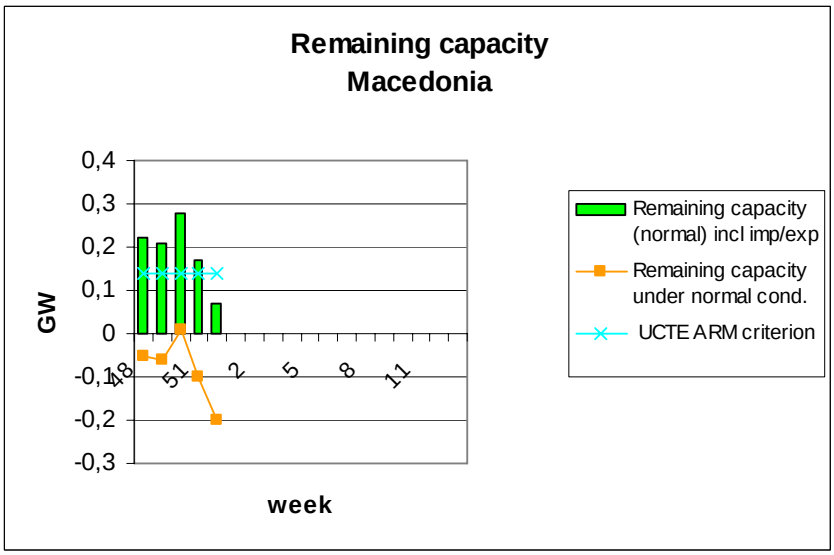
**MONTENEGRO**


Demand and Generation availability
Montenegro
0,90
0,85
0,80
0,75
0,70
0,65
0,60
0,55
0,50
GW
48 50 52 2 4 6 8 10 12
week
National generating capacity
Reliably available capacity
Net w eekly peak load
Net w eekly peak load under severe cond


Remaining capacity
Montenegro
0,30
0,25
0,20
0,15
0,10
0,05
0,00
GW
48 50 52 2 4 6 8 10 12
week
Remaining capacity (normal) incl imp/exp
Remaining capacity (severe) incl import increase
Remaining capacity under normal cond.
Remaining capacity under severe cond.
UCTE ARM criterion

**FORMER YUGOSLAV REPUBLIC OF MACEDONIA**

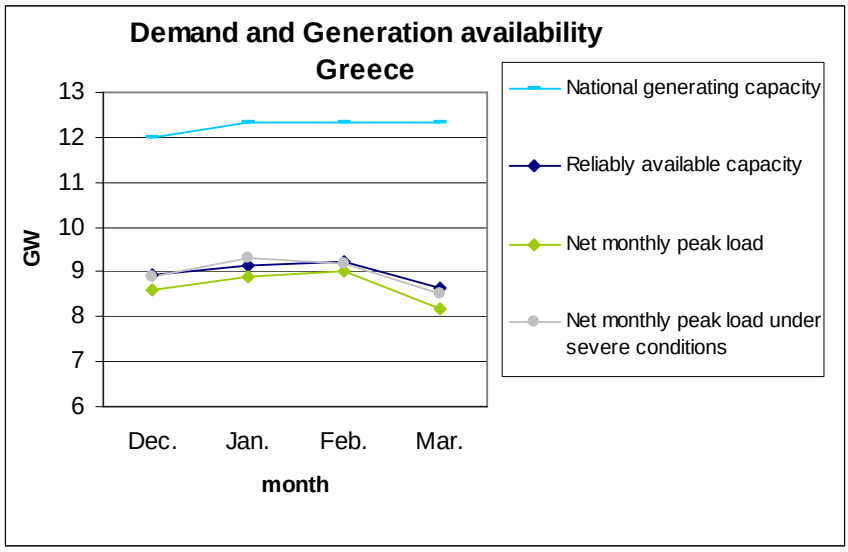


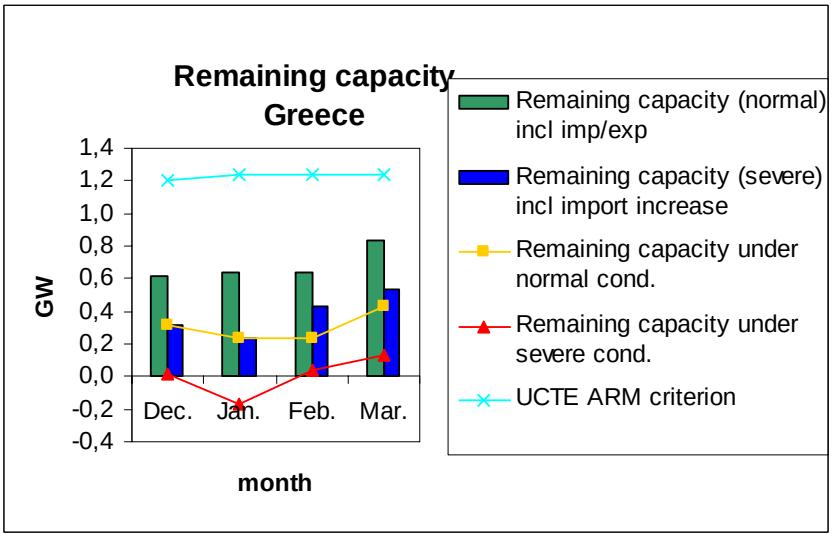




**Comment:**

Data is available only for the period until the end of 2007.

**GREECE**




**Comments**

*Synopsis*

For the coming winter, the generation-load balance is studied for the most stressed period, that is the monthly peak load, building two scenarios dependent on the weather conditions. The first scenario is based on normal weather conditions given that the forecast of the load represents the 90% probability of not exceeding forecast maximum, while the second scenario is based on severe weather conditions and the respective probability is 97.7%. No load reduction has been taken into account in this forecast. The remaining capacity without considering the one of the interconnections is low in both cases, normal and severe conditions, especially in December and January and February. According to the estimation of the HTSO a remaining capacity of 600MW is necessary for

the secure operation of the system. Under normal conditions the operation criterion is met if we include the firm imports.
In case of severe conditions, additional imports are necessary, extra measures are needed to meet the criterion of 600MW. In case of emergency, additional measures are available to ensure the system adequacy and security.

**Methods Used for Winter Outlook**

In long term, a five year System Load Forecast study covering both energy and yearly peak load is carried out every year. The results are included in the study for Transmission System Expansion Plan issued by HTSO and published upon approval of the Regulatory Authority for Energy and the Ministry of Development of Greece. In this frame, monthly peaks are also calculated.

In medium and short term the HTSO conducts studies concerning the Generation Adequacy Assessment. The studies include load forecasts, and multiple scenarios on energy management, using deterministic methods. The energy management studies aim at checking the actual energy situation and the level of hydro reserves. These studies are regularly revised to include mainly, variations in the load and/or the availability of the thermal units.

The HTSO uses the power balance studies to assess the system adequacy in very short term, so the required information, on a weekly basis for the winter period, is not currently available.

To underline the most critical periods of next winter, this report focuses on the monthly peak demand. The power balance is based on the results of the UCTE System Adequacy Report – Forecast 2008-2020, and on the HTSO energy management studies for the generation adequacy report, in addition to the experience of the HTSO personnel responsible for the System Operation.

**Generation-Demand Balance**

Concerning the **national generating capacity,** the total net output thermal capacity will be increased from next January by 335 MW in comparison the previous year.
For the forthcoming winter the weather conditions will be very crucial because, after the summer season (summer with extra high temperatures, and high peaks) the present level of hydro reserves is low.

A provisional **overhaul schedule** of the thermal power plants is communicated to the HTSO by the generators but the final schedule is agreed between the HTSO and the generators, having taken into account the forecasts carried out by the HTSO. The overhauls of the thermal power plants are avoided during periods of high demand. In this assessment the provisional overhaul schedule of the thermal units has been considered. As for the overhauls of the hydro power plants, they are implemented during periods of low use, that is low water reserves or low load periods. Therefore, the scheduled outages of the hydro power plants do not affect the remaining generating capacity.

In this assessment, the unavailability of the thermal power plants due to **forced outages** has been calculated according to the provisions of the new ‘Grid Operating and Power Exchange Code’. The forced outage rate of the thermal generating units is expressed by the Equivalent Demand Forced Outage Rate (EFORd). According to the calculations, a usually made assumption of two typical large units of 300MW each is considered out of operation due to forced outages.

The **non usable capacity** includes mainly hydro capacity which is reduced due to limited water reserves and capacity of wind power plants. The hydro conditions were very bad this year so the water reserves are low. The water management aims at saving the water reserves to use them at

the peak demand and only for irrigation requirements. As for the capacity of the wind power plants, an average of 78% is non usable at the winter peak.

The **monthly peak load** is calculated both for normal and severe conditions. Monthly peaks, as well as yearly peaks highly depend on weather conditions, mostly temperature. A statistical approach is followed based on recorded hourly load and temperature data covering the period since 1997. For the winter peak load, the dependency of the load on the temperature is, on average, 147 MW/°C.

The load is the sum of two components. The first one reflects the load sensitivity to the weather (temperature, humidity), while the other one is dependent on miscellaneous effects (financial and human activities) The net monthly peak load calculated for normal conditions represents the 90% probability of not exceeding forecast maximum, while in severe conditions the respective probability is 97.7%.The losses of the transmission system are included in the monthly peak load.

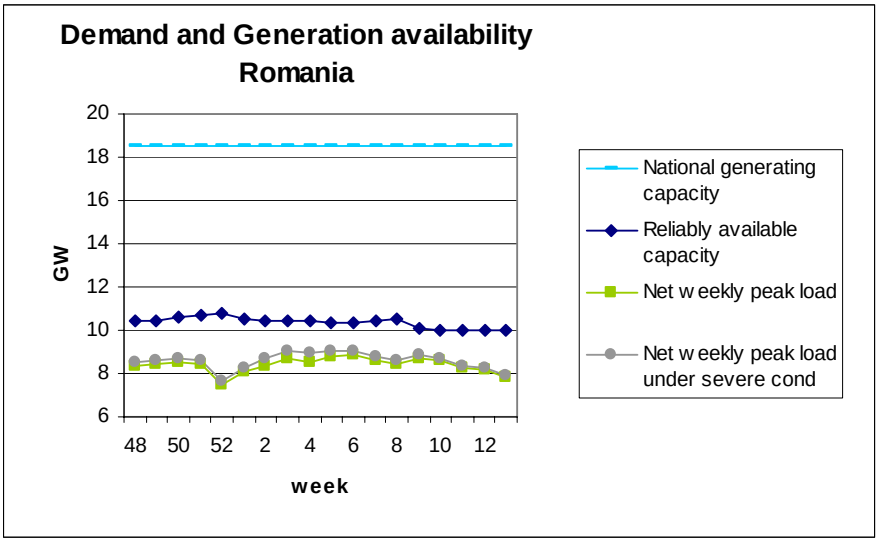
**Load reduction** is available upon decision of the Ministry of Development and the Regulatory Authority for Energy, but in this report we consider no load reduction measures.

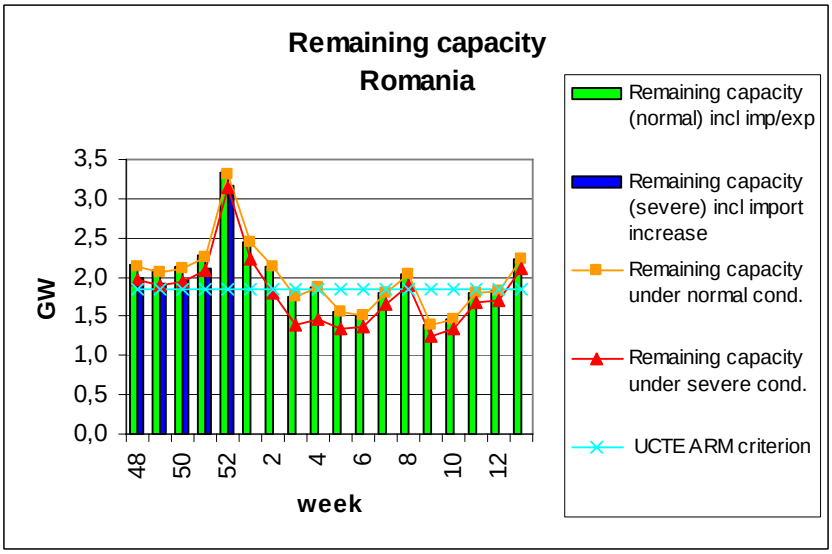
**System services** include primary, secondary and tertiary reserve according to the UCTE OH Policy 1.

The NTC value of the **interconnections** for imports which is estimated a total of 1200MW is allocated to the participants of the market by long and short term explicit auctions. Firm contracts are estimated as 400-600MW

For this period, the **remaining capacity** considering the capacity of the interconnections is low, especially in December, January and February. Therefore, the final maintenance schedule for the thermal units may change in order to avoid unit maintenance during winter peaks. According to the HTSO estimation, a remaining capacity of 600MW is necessary for the adequate and secure operation of the system.

**ROMANIA**


Demand and Generation availability
Romania
GW
20
18
16
14
12
10
8
6
48 50 52 2 4 6 8 10 12
week
National generating capacity
Reliably available capacity
Net weekly peak load
Net weekly peak load under severe cond


Remaining capacity
Romania
GW
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
48 50 52 2 4 6 8 10 12
week
Remaining capacity (normal) incl imp/exp
Remaining capacity (severe) incl import increase
Remaining capacity under normal cond.
Remaining capacity under severe cond.
UCTE ARM criterion

**Comments**

The national generating capacity in the Romanian Power System will be able to ensure the coverage of the consumption and the eventual export requirements. The increase in Romanian consumption for the winter in comparison with last winter will be around 2% in a normal winter and about 5% in a severe winter. For this winter, in both situations, the generation – consumption balance will be equable.

**Synopsis**

From the point of view of system adequacy, the next coming winter does not cause any problem to our system safety operation. The remaining capacity could cover any unit tripping which exceed the expected value for outages in either case for a normal or a severe winter.
A consumption value higher than the estimation for a severe winter could be managed by the remaining capacity as well.

**Framework and Method Used for Winter Outlook**

Based on a Grid Code and Commercial Code in compliance with UCTE rules, Transelectrica Company performs all the activities in order to ensure a reliable and stable operation to our network. The main duty is to coordinate the operation of all installations with the purpose of satisfying the power demands in quality and safety conditions.
There are performed semestrial planning studies based on load forecast, load flow, steady state and dynamic stability analyses. The network input data are based to the following items:

- harmonization of the producers schedules on yearly basis;
- an approved yearly internal line schedule ( this product involves another analysis done by Transelectrica as well);
- - coordination of the tie-lines schedule with the neighbouring power systems.

The results include information concerning the necessary generation amount, the network topology, voltage level measures in order to obtain a safety power system operation in those time intervals.
When there are some deviations from the input data, Transelectrica has to perform another analysis on monthly basis.
However with updated data Transelectrica should carry out operational programming on short term, in fact one day, sustained at least on load flow computations as a means to detect daily network bottlenecks, which are removed by using the Balancing Market.

**Generation - Demand Balance**

The national generating capacity value is established related to the yearly declaration of the producers. The maintenance/overhauls of the units are scheduled during off-peak periods in accordance with the specific characteristics for each power plant type. Mean while the equivalent outage rates for the generating units are based on multi-annual statistics taking into account the probability of the units' unavailability.
Regarding the demand forecast Transelectrica expects 2% rate of increasing attributable of the state economy, but it still remains a possibility to exceed this value due to load sensitivity to temperature for short time intervals. Relied to statistics the peak load sensitivity for winter interval is approximately 40 MW/$^{o}$C.
Concerning the system services reserve, yearly or for any interval is needed, Transelectrica signs contracts with the producers in order to be able to: control the system frequency and balance exchange after a disturbance, compensate the consumption forecast deviation or network losses, maintain the voltage level within regular range.
There is a regulatory frame regarding the load reduction, but in spite of this there is not any solicitation to license the consumers yet.

**Role of Interconnection**

The synchronous interconnection allows Transelectrica to facilitate the commercial exchange of power with the neighbouring TSOs and even to carry out some emergency assistance when neighbours need it.
In respect of ETSO definitions Transelectrica furnishes coordinated bilateral (yearly and monthly) NTCs for commercial purposes, that can be used simultaneously in the same direction (export or import), with TRMs harmonized in bilateral agreements, without endangering system security.
Concerning the simultaneous interconnection capacity values, we have to point out that the figures represent all transportable capacity which includes also the possible involved lines in island operation with non–UCTE countries. It must be noticed that only 1000MW import and 1500MW export represent the NTC values with other UCTE countries. The NTCs with Burshtyn island must be added in amount of 300MW import and 50MW export, respectively. These values represent the indicative and non guaranteed NTC values for the Romanian interface concerning the next winter 2007-2008.
Besides for the coming winter, Transelectrica does not expect transit flows which could jeopardize the interconnections.