ATSOI

UKTSOA

WINTER OUTLOOK
2008 – 2009

31-October 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 beginning of December 2008 until the end of March 2009.

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 2008.

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

The generation-load balances forecast in the different regions are generally considered suitable.

Under normal conditions, a few countries may depend on imports from their neighbours in some specific periods: Albania, Former Yugoslav Republic of Macedonia and Serbia depend on import contracts to meet demand for the winter (forecast margins in January are particularly tight in Serbia)), Slovenia requires imports to meet peak demand all through the winter, Latvia has negative remaining capacity between weeks 49-10 and may require imports to meet peak load (with highest dependency in weeks 50-51 and 1-3), Estonia has negative remaining capacity from in weeks 2-10 and may require imports to meet peak load. Belgium may require imports for weeks 50-51, Croatia for week 51. Some imports could be needed in France in over 1% of cases during weeks 2-3.

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 or the even the end of March.

Under severe conditions France could need some imports to meet the load from December to the beginning of February (apart from the holiday period), Croatia relies on imports in week 51, Greece relies on imports in December and January, Serbia from week 49 to week 8, Slovenia in week 3-4.5. Macedonia and Albania need imports over the whole period to reach adequate margins.

In such periods, unfavourable conditions could reduce the export capabilities from exporting countries and could lead to tight situations at the regional level in Western Europe (Great-Britain, France, and South Eastern Europe (Former Yugoslav Republic of Macedonia, 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, Hungary and Italy stress **the risks linked to the gas market.**

Last, TSOs from Central Western Europe mention potential loop-flows, connected in particular with wind generation in Northern part of mainland. Such countermeasures as phase shifter operation, generation re-dispatching or NTC reductions may be needed to guarantee the safe operation of the power system. Also Poland mentions that the amount of potential power that may be available for export in favourable conditions may be reduced due to congestion on the grid.

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 contacts.

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 :**
  - **North Western UCTE:** Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland
  - **North Eastern UCTE:** Czech Republic, Hungary, Poland, Slovak Republic, Ukraine-West
  - **South Eastern UCTE:** Bosnia-Herzegovina, Bulgaria, Former Yugoslav Republic of Macedonia (FYROM), Greece, Montenegro (no contribution available), Romania, Republic of Serbia
  - **Centre South UCTE**: Croatia, Italy, Slovenia
  - **South Western UCTE**: Portugal, Spain.

NB: The identification of blocks for the UCTE countries is purely geographical and does not pertain to any regional market nor security criteria.

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

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

- **BALTSO members:** Estonia, Latvia, Lithuania
- **UKTSOA and ATSOI members:** Great Britain, Northern Ireland, Republic of Ireland
- **Additional contributing countries:** Albania, Cyprus

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.

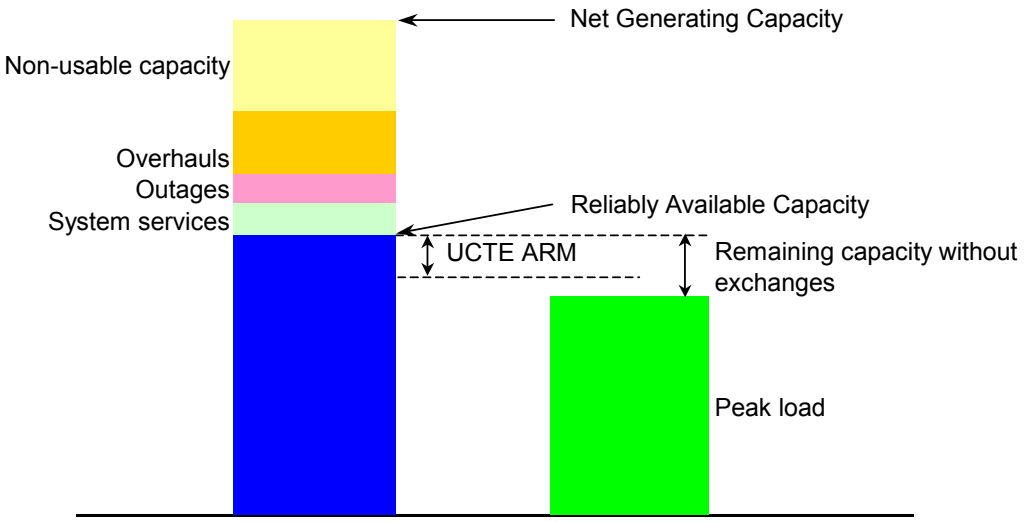
Available generation and peak load data were sought for each week, from the beginning of December 2008 (week 49) until end of March 2009 (week 14). The TSOs were also questioned on whether the generation–demand balance should be considered at risk or not for the winter 2008/09. No specific analysis was 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 regional features (§ 2.2), completed by additional comments, country by country (§ 2.3). A synthesis regarding the operation of the European power system during the last summer is given in §2.4.

Section 3 deals with blocks or regions considering the possibility of mutual assistance between neighbouring countries.

Section 4 is the conclusion.

Finally, the **Appendices** collect 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 analysis is based on 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 demand. 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 ;
- ***Meteorological conditions,*** such as low hydro-inflows leading to reduced generation of hydro units, or low wind conditions which lead to reduced availability of wind-power
- Market conditions for 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, or high wind in-feed leading to loop-flows (see below),
- ***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.

2.3. Regional and National comments

2.3.1 Baltic States

Provision of power demand and supply balance for the Baltic power systems in the coming winter is not considered at risk. Thanks to the availability of excess generation capacity in the Baltics and neighbouring power systems, as well as adequate transmission capacity, Baltic countries' TSOs will be able to manage the balance.
No significant additions of generation capacity are forecast during the 2008/2009 winter period.

EE ESTONIA

In the upcoming 2008-2009 winter season Estonian power system is expected to be in balance under normal conditions. Under severe conditions, there could be periods where domestic generation capacity is considered not to be sufficient to cover peak loads. There is no significant

addition of generation capacity forecast during this period. We expect that 2 units, with a capacity of 302MW, will be mothballed at the Narva power plant starting from December 2008.
Based on the peak load of last winter, the expected peak load for the approaching winter season is forecast to be around 1570MW. The average load will probably raise 3-5% similarly to last year's.

LV LATVIA

The commissioning of a 407MW combined cycle power and heat unit in Riga CHP-2 is scheduled for October 2008. This significant generation capacity would substantially improve power demand and supply balance of the Latvian power system in the coming winter. Moreover, additional 25 MW in small scale CHP plants and a new 2MW wind generator should help meet demand. Nevertheless domestic generation capacity is not sufficient to cover the load of the Latvian power system during the winter season. Thanks to the availability of excess generation capacity in neighbouring power systems and adequate transmission capacity, Latvian TSO should be able to manage the balance.

In the beginning of the spring flood period (with increase of water inflow) more generation capacity will be available from hydro power plants. Starting from the weeks 10-12, the Latvian power system should become self sufficient and even capable of exporting up to 700-800MW of power to the neighbouring power systems. The flood period usually lasts for 6 weeks.

LT LITHUANIA

The forecast level of generation availability should be sufficient to meet expected demand under normal and under severe conditions.

2.3.2 UKTSOA & ATSOI

No major problems with meeting demand are anticipated in the UKTSOA and ATSOI regions. Interconnectors play a major role in maintaining system security, but there are no planned outages of more than one day on the assets concerned.

National Comments

GB GREAT BRITAIN

The notified generation background for 2008/9 appears broadly similar to that observed prior to the 2007/8 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.
There are some uncertainties concerning generation availability (wind generation output and Nuclear) which coupled with a cold spell and consequent higher demands would lead to some system tightness.

NI NORTHERN IRELAND

SONI have no concerns and expect no significant problems on the Northern Ireland system this winter. SONI may be dependent upon the Moyle and NI-RoI interconnectors to meet peak demand at times, but this is a normal situation and no problems are expected.

ROI REPUBLIC OF IRELAND

EirGrid expects that the generation capacity will be sufficient to meet the expected peak demands this winter and to ensure that the appropriate level of security of supply is maintained.

2.3.3 NORDEL

The total Nordic power system has a positive power balance at peak hour. Total available generation capacity has decreased compared with last winter, but total forecast peak demand is unchanged.

Finland, Sweden and Denmark East have a deficit in the power balance in a "1 in 10" winter, whereas Norway and Denmark West have a surplus.

2.3.4 North Western UCTE

No major difficulty is expected for meeting the load under normal conditions. The needs for import from Belgium for weeks 50-51 should be satisfied by the capacity available by the neighbouring countries. The wind generation has a major impact on the balance of this region.
Switzerland, Germany and the Netherlands do not expect particular problems in meeting the load, not does Luxembourg thanks to import contracts.
Nevertheless, with a probability over 1%, France may reduce its exports and even need some imports for the second and third weeks of January. Under severe conditions, the stressed period extends from December to the beginning of February (apart from the end year's holiday period).
TSOs from this region also expect the possible congestion on the network, depending in some cases on wind generation. These will be mitigated by such countermeasures as phase shifters operation, generation re-dispatching or NTC reduction.

National Comments

AT AUSTRIA

Commissioning the second circuit Slavetice-Durnrohr by November 2008 will mitigate the congestion on the Czech-Austrian tie-lines that was observed in the past.
This will nevertheless stress even more the North to South congestion frequently happening on the Austrian network. APG is prepared to take every necessary countermeasure, including the operation of phase shifters and re-dispatching of generation. At longer term, two new 380 kV lines are planned; the first one, from Südburgenland to Kainachtal, is planned to be commissioned by mid-2009.

BE BELGIUM

Elia's desired safety level of 1000 MW for the generation-load balance is reached during the entire winter period 2008 - 2009, except for the peak of weeks 50 and 51 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. No outages of 380 kV lines will take place during weeks 50 and 51 of 2008. Only the 380kV international line Achêne (BE)-Lonny (FR) will be taken out of service in week 14 of 2009. This will reduce the simultaneous import capacity with approximately 350 MW. However, this outage 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 during generation-load imbalance.

The main risk factors for the Elia grid that might jeopardize the current positive winter adequacy assessment are a generation-demand imbalance for the whole of the UCTE-main block or unplanned outages at the main generation plants in Belgium.

CH SWITZERLAND

The remaining capacity in Switzerland will amount to at least 0.8 GW even in critical situations during the winter 2007/08. Additional 0.6 GW are assured even during severe weather conditions through firm import contracts.

The main result of the Winter Outlook Assessment is that under foreseeable conditions Switzerland will not have any problem with the electricity supply during the winter 2008/09. This will be true even in critical situations and even in the case of disturbed interconnections, because the national generation capacity will be sufficient to cover the expected load.

DE 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 adequacy in the coming winter. According to the data available, risks in terms of the generation/demand balance are not likely to occur.

The main problem in Germany is the difficulty to obtain reliable data from many market players.
Nevertheless, due to high wind power installed, it is expected that during the winter network and market-related measures (within and across control areas) will have to be taken over extended periods for the sake of full wind energy integration. In particular, re-dispatching measures and reductions of NTC with Western Europe are expected to be carried out to an increasing extent, especially under low-load conditions.

FR FRANCE

Under normal conditions, the generation – load balance on the French system is not considered at risk for the coming winter, except for the second and third weeks of January, when some imports should be needed in over 1% of cases in order to cover electricity demand in France.

Under severe conditions, margins should be tighter, especially from January to the beginning of February and also during the first three weeks of December. Therefore, for these periods the French export capacity is likely to be reduced to a lower value and some imports may even be needed.

The rest of the winter period is expected to be less stressed.

LU 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.

NL THE NETHERLANDS

The Dutch system appears to be less dependent on imports for its security of supply than was assumed in the previous report. This is due to both a lower growth of electricity consumption and a stronger increase in decentralised capacity (especially in the glasshouse horticulture sector).
The remaining capacity exceeds by far the UCTE ARM even under severe conditions. Nevertheless, in TenneT's opinion, the adequate criterion would be the average available and/or offered reserve capacity.
The balance is not considered at risk for the next winter. Nothing specific can be said advance about when or how imports will be needed.
Cross-border transmission capacity has been increased by 700 MW in May 2008, as a result of commissioning the NorNed cable to Norway.
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 in turn reduce the import capacity on the Belgian-Dutch border. However, phase shifters have been installed on most interconnectors with Germany and

Belgium since 2008, so Tennet TSO expects that the wind energy related transits and import capacity reductions should decrease.

2.3.5 North Eastern UCTE

The generation / demand balance shows suitable margins for the Czech Republic and Poland. Under normal conditions, some power should be available for exports from week 52 to 14 for the Czech Republic and from December to February for Poland. Nevertheless, available export from Poland could be reduced, due to congestions on the grid.
The Slovak Republic expects no particular problem in meeting the load, even under severe conditions.
Hungary should need some imports only for the second half of March. Under the severe scenario, imports are indispensable to meet the weekly peak load for that period.

National Comments

CZ CZECH REPUBLIC

CEPS does not anticipate significant balance problems in the Czech power system during the upcoming winter period, even at potentially severe conditions.
Only low exports are expected during weeks 49 through 52 and some minor imports can emerge under normal conditions. Under severe conditions, the remaining capacity is positive, but with a low value.
From the beginning of next year, the balance analyses show average export capability around 600 MW (minimum 300 MW for weeks 7 and 8) in normal conditions. In severe conditions, the remaining capacity is in average around the same value as ARM; however it is lower for weeks 4, 5 and 7.
CEPS has no forward information on planned exports/imports from traders, as only mandatory time horizon for scheduling export/import contracts is day ahead.

HU 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, but also biomass), 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, in December and in March.

PL 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, the value of remaining capacity may decrease, due to unexpected growth of level of outages and non-usable capacities in connection with extreme weather conditions.
The TSO emphasises that transmission congestion could limit the amount of available export towards UCTE and Nordel under emergency conditions.

SK SLOVAK REPUBLIC

In the process of access negotiations with the European Union, the Slovak government accepted a commitment to close down (in 2006 and 2008) two 440 MW units of the nuclear power plant in Jaslovske Bohunice. For this reason, an additional 440 MW of total installed power capacity will be lost by the end of 2008.
Nevertheless, expected generation capacities are sufficient for secure and reliable power system operation in the coming winter period. No critical periods are expected for the next winter. The adequacy reference margin (ARM) defined by UCTE is fulfilled in all weeks under normal conditions. The analysis under severe conditions shows that the Remaining Capacity is noticeably less than 5% ARM criterion only for the second and third weeks of 2009.
Firm contracts are not known yet but considering last winter, import is expected, mainly from January to March. Interconnection capacities are sufficient for expected import of electricity.

UA UKRAINE-WEST

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. In particular, it could be hard to guarantee the full amount of export contracts in March for the severe scenario.

2.3.6 South Eastern UCTE

For the winter 2008 – 2009 under normal conditions no major problem for meeting the load is expected by TSOs in the area but imports and firm long terms contracts are considered very important to satisfy margins in some countries. In fact imports from the neighbouring countries are considered essential to satisfy the load for Macedonia over the whole winter period, and for Greece in the most critical weeks of December and January.
In severe critical weather conditions risks can be encountered in the Serbian power system and long terms import contracts are declared inevitable to cover the load.

National Comments

BA BOSNIA HERZEGOVINA

No major problem is foreseen for the coming winter or critical period is expected during the winter 2008/09. The main factor of risk is the outage of the one of large thermal power plants off 300MW, but even then the load can be covered by the remaining plants.
The expected load and the available installed power seem to be adequate for a secure operation of the network. This is true even under severe temperature conditions.
The TSO does not expect any variations of the interconnection capacities during the winter.

BG BULGARIA

No addition of new generation capacity is expected for the coming winter. The maintenance schedule of the generating units is set to minimum. No problems in the transmission network are expected because of major maintenance works made in the summer period. All possible activities will be done in order to keep the forced outage rate of the generating units to the lowest possible level. The hydro conditions can be defined as normal and the target level of all reservoirs will be met which guarantees reliable operation and predictable contribution of all hydro plants. Under these conditions all criteria for the system adequacy will be met.

GR GREECE

For the winter 2008-2009, 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.
During last summer the demand was as high as expected. Presently the available hydro capacity in the reservoirs is at its minimum levels due to the severe drought that continues from the previous period.
The most critical period is December and January. We need moderate imports to meet our operating criteria under normal conditions.
Under severe conditions, the available import capacity of the interconnections will need to be used. In extreme conditions additional measures may be applied, such as modifications in the planned outages of the units, or voluntary load reduction.

ME MONTENEGRO
No contribution available

MK FORMER YUGOSLAV REPUBLIC OF MACEDONIA

The generation load balance on the Macedonian System is not considered at risk during the winter 2008-2009 depending on the finalisation of firm import contracts for 2009. The Macedonian electricity system relies upon imports of energy to reach adequate balance between consumption and production/import. Firm import contracts are in place till the end of 2008, while the contracts for 2009 are not yet finalised.

RO 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 next winter in respect with the last winter should be about 3% in the situation of a normal winter and about 5% in the situation of a severe winter. For the next winter, in both situations, the generation – consumption balance will be in balance.

RS SERBIA

Serbia is surrounded by eight countries, so its electrical grid is influenced by high transit flows from North to South and from East to West. In order to provide stable and reliable operations without congestion Serbia strictly follows methods in compliance with UCTE and ETSO rules for NTC calculation on its borders.
If a firm import contract is taken into account the UCTE ARM criterion will be met for the whole forecast period. In case of severe conditions system could be in risk from December till mid February.

2.3.7 Centre South UCTE

Under normal conditions the balance between generation and load in the coming winter is not considered critical in the area. In particular new generation capacity will be installed in Italy in the last quarter 2008 and year 2009 giving an essential contribution to meet the load under normal conditions.
Under severe conditions the role of importing capacity is fundamental for adequate reserve margins for the Italian electricity system. The Slovenian power system will have insufficient generation at peak load under severe conditions through almost all the winter: the most critical period occurs in weeks 3 to 5.

Severe conditions can occur in the area not only due the high winter temperatures and hydro conditions but also for unexpected events such as sudden lack of gas supply at the international level which will affect the fuel supply to combined cycle and gas thermal plants.

National Comments

HR CROATIA

No national comment available

IT ITALY

Under normal conditions the general situation expected in the winter 2008-09 is not critical. In the last quarter 2008 and in the year 2009, on the basis of the planned installations of new power plants, the thermoelectric capacity will increase of about 7GW for the mainland.

It should be noted that unexpected events (i.e. a sudden lack of gas supply at the international level, that cannot guarantee fuel to combined cycle and gas thermal plants, or the unforeseen outages of fundamental grid elements) can lead to possible critical periods.
Nevertheless proper countermeasures are already foreseen either at the national level and/or on the interconnections.
Under severe conditions the most critical weeks are expected in December and January.

SI SLOVENIA

Slovenia has insufficient generation at peak load through almost all winter period. The most critical weeks are at the end of January and at the beginning of February when the lowest temperatures and low hydrology usually occur. The lack of primary energy sources (unfavourable hydrology, environmental constraints) will be mitigated with imports. In case of loss of some major generation unit, system reserves will be used.

2.3.8 South Western UCTE

Generation and demand should balance well in the Iberian Peninsula for the coming winter, even under severe conditions. Not only the temperature and the hydro and wind conditions, but also the availability of gas supply may have a major impact on the balance.

National Comments

ES SPAIN

From the point of view of generation adequacy, the situation in the Spanish peninsular system is not critical for the coming winter, even considering the high planned overhaul capacity for this period. If average conditions are considered, remaining capacity will be around 8,700 MW. Minimum value will decrease to 4,500 MW.
Only in case of simultaneous extreme peak demand, very low wind generation (less than 8% of wind installed capacity), very drought conditions and a very high thermal forced outage rate, one can find values of remaining capacity of 3,100 MW.
However, the most important risk factors for the 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.

PT PORTUGAL

No difficulties are expected on the operation of the Portuguese system during next winter. Under normal conditions, the remaining capacity margin should stay at a secure level, with only two weeks below the ARM – UCTE (10%) threshold. In an extreme peak demand condition scenario, the

margin could drop below 5% of installed capacity on weeks 49 and 51, but even so without resorting to imports.

2.3.9 Additional contributing countries

AL ALBANIA

The national generating capacity in the Albania Power System will not be able to ensure the coverage of the consumption requirements and import will be eventually needed. The increase of Albania consumption for the next winter in comparison with the last winter, is planned to be about 1-2% but there is a strong correlation with water inflow in HPP reservoirs, as in Albania HPP generation production is about 90 % of the National Generating. In order to increase the reliability of the Albanian network, there are foreseen the construction of new Power Plants in the South part (Vlora TPP, Kalivaci HPP etc.) and in the meantime the reinforcement of the 220 kV network. At long term two new 380 kV lines are planned; the first one, from Tirana 2 to Podgorica under construction is planned to be commissioned by mid-2009, the second Tirana 2 to Kosova B in process of feasibility study.

CY CYPRUS

Cyprus does not anticipate any problems meeting demand under normal conditions. In the event of a major loss of generation capacity, interruptible loads could be used to control demand if necessary.

2.4. Summer Review

In summary, there were no significant events on the European transmission networks over the course of the summer. A compilation of detailed comments on the summer is included in the appendices.

3. ADDITIONAL ANALYSIS

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.

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.

Nordel - Baltic Countries – Russia

The import from Russia is expected to be 1400MW, although the experience from previous years has shown some reduction during peak hours. The value is valid if the peak only lasts for a few days.

The HVDC-link, Estlink, is used for import or export of maximum 350MW between Baltic and Nordic region. The real-time import or export amount depends on electricity market price difference between regions.

Nordel- Poland - Germany – the Netherlands

Peak-hour supply and demand are well balanced on the Nordel system.

According to the data available, Germany expects no particular problem in meeting the load all over next winter, nor do the Netherlands.

Exports should be available in Poland from December to February. Even if the amount should decrease due to extreme climatic conditions, the security of supply in this region should not be threatened.

Congestion on the grid could potentially happen in Germany, the Netherlands and Poland, in some cases connected to wind generation in the area, but this would be mitigated by phase-shifter operation, re-dispatching of generation and/or NTC reduction.

Ireland-Great Britain-France

The forecasts for Northern Ireland and Great Britain are both based on similar assumptions regarding the availability of exports from GB to Northern Ireland over the Moyle interconnector over the course of the winter.

The direction of power transfer over the Interconnexion France-Angleterre (IFA) is expected to be determined by relative market prices and this continues to be the key driver. As the differential between GB and French/German prices is expected to vary intra-day as in past winters, it is likely that the direction of flow may swing from import to export over the course of the day. The assumption is that at times of peak demand in Britain, 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.

The generation – load balance on the French system is not considered at risk for the coming winter, except for the second and third weeks of January, when some imports should be needed in over 1% of cases in order to cover electricity demand in France. This period coincides with a period of falling forecast demand and increasing remaining capacity in the GB market.

In case of severe scenario, the stressed period extends from December to the beginning of February (except the end year's holiday period).

France – Switzerland – Austria – Slovenia - Italy

The generation – load balance on the French system is not considered at risk for the coming winter, except for the second and third weeks of January, when some imports should be needed in over 1% of cases in order to cover electricity demand in France.
In case of severe scenario, the stressed period extends from December to the beginning of February (except the end year's holiday period).

Switzerland regards the generation/load balance as unproblematic regarding the security of supply. Austria mainly underpins the potential congestion on the grid, due to high North-South power flows. Slovenia needs imports to reach a safe balance between generation and load over the winter. The most stressed period is from the end of January to the beginning of February.

In Italy the adequacy evaluations for 2008-2009 winter period do not show particular risks for capacity adequacy and peak load cover. An increase in the generation capacity of about 7GW for the mainland is expected and under normal conditions margins are adequate to meet the load.

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

In Croatia and Bosnia & Herzegovina generation and load show tight margins for the whole winter. In Croatia negative margins are expected in week 51 under normal and severe conditions.

Republic of Serbia should have tight margins under normal conditions (expect first week when the margins are negative) and negative margins under severe conditions for almost the whole winter which makes import essential to cover the demand.

In Former Yugoslav Republic of Macedonia the remaining capacity under normal conditions is negative during all the winter and only with firm import contracts it will be possible to cover the load.

Albania

Albania will be an importer country because the remaining capacity as under normal conditions neither on severe condition is negative during all the year. The remaining capacity in case of a consumption value higher than the estimation for a severe winter could be managed by an increase of import as much as it is possible as well or with load shedding.

Greece – Romania – Bulgaria

Greece shows tight margins under normal conditions and negative margins under severe conditions in December and January which makes the country to rely on imports.

In Romania an increase in the electricity consumption for the next winter in respect with the last winter is expected for about 3% in the situation of a normal winter and about 5% in the situation of a severe winter. For the next winter, in both situations, the generation – consumption balance will be equable.

Bulgaria does not foresee problems to balance the load.

France – Spain – Portugal

Generation and load in Portugal should balance well, even if the margin is tight for weeks 49 and 51 without imports from Spain.

Spain should have suitable margins in the generation / load balance over next winter, even for the severe scenario, so that power should be available for exports, especially for the first half of December, the whole month of January and the second half of March.

The generation – load balance on the French system is not considered at risk for the coming winter, except for the second and third weeks of January, when some imports should be needed in over 1% of cases in order to cover electricity demand in France. In case of severe scenario, the stressed period extends from December to the beginning of February (except the end year's holiday period).

Thus, the possible reduction of NTC towards Spain due to voltage problems in the South West of France should have no critical impact on the supply of load in the Iberian Peninsula.

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 the different regions 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, low wind generation 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.

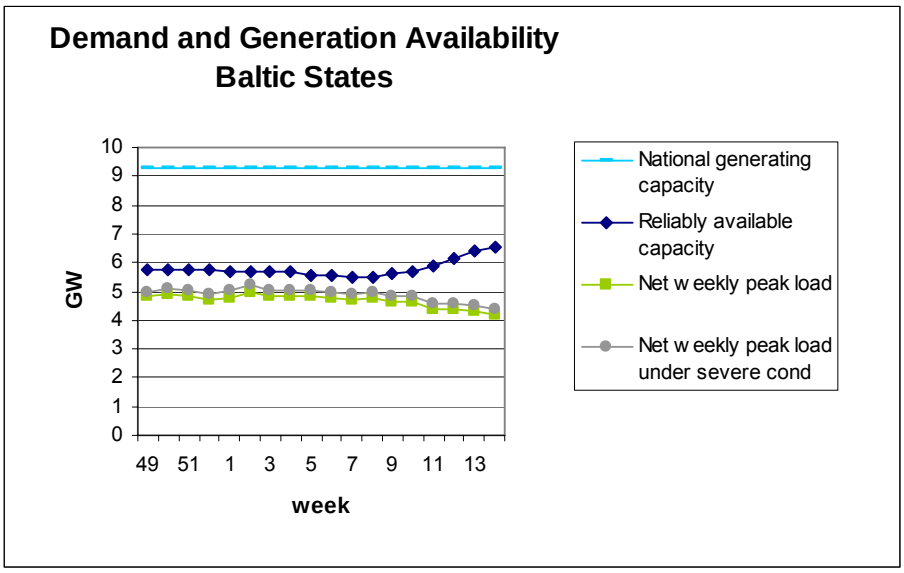
The risk relative to the availability of gas supply is particularly mentioned by Spain, Hungary and Italy.

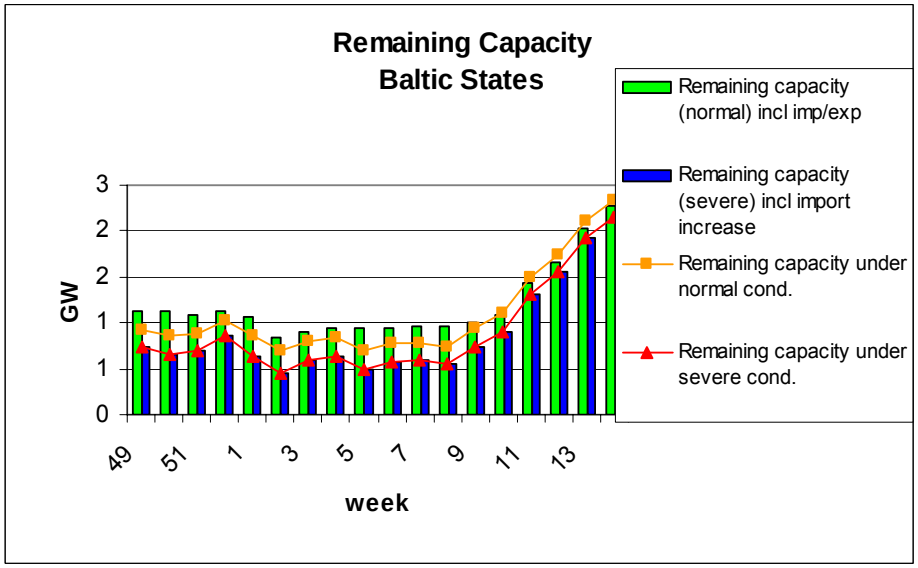
APPENDICES

CONTENTS

BALTIC COUNTRIES
Estonia
Latvia
Lithuania

BALTIC COUNTRIES



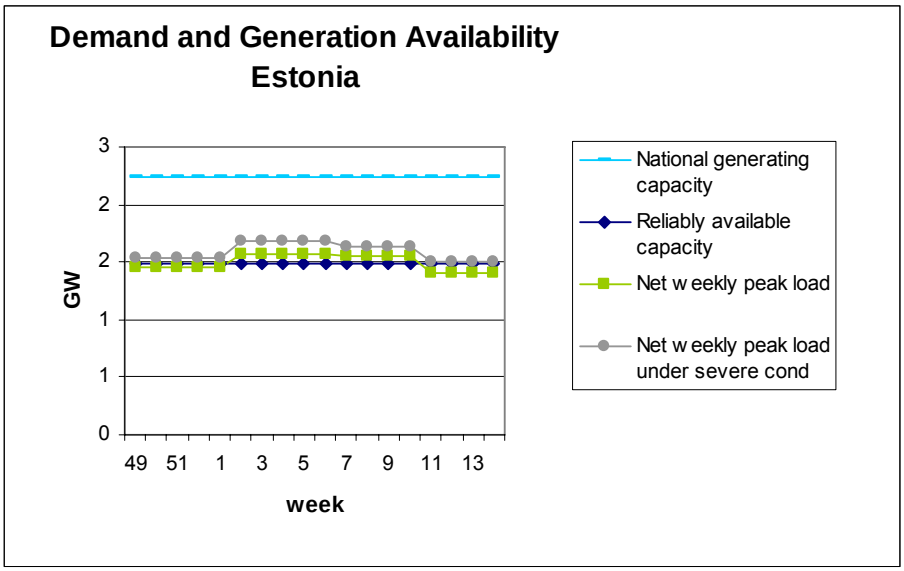


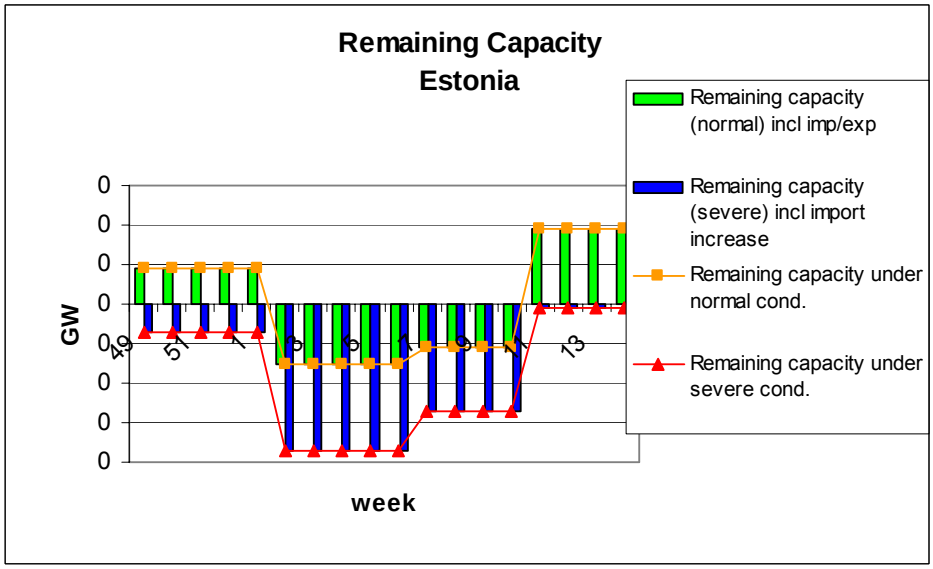
Summary

Provision of power demand and supply balance for the Baltic power systems in the coming winter is not considered at risk. Thanks to the availability of excess generation capacity in the Baltics and neighbouring power systems, as well as adequate transmission capacity, Baltic countries' TSOs will be able to manage the balance.

No significant additions of generation capacity are forecast during the 2008/2009 winter period.

ESTONIA



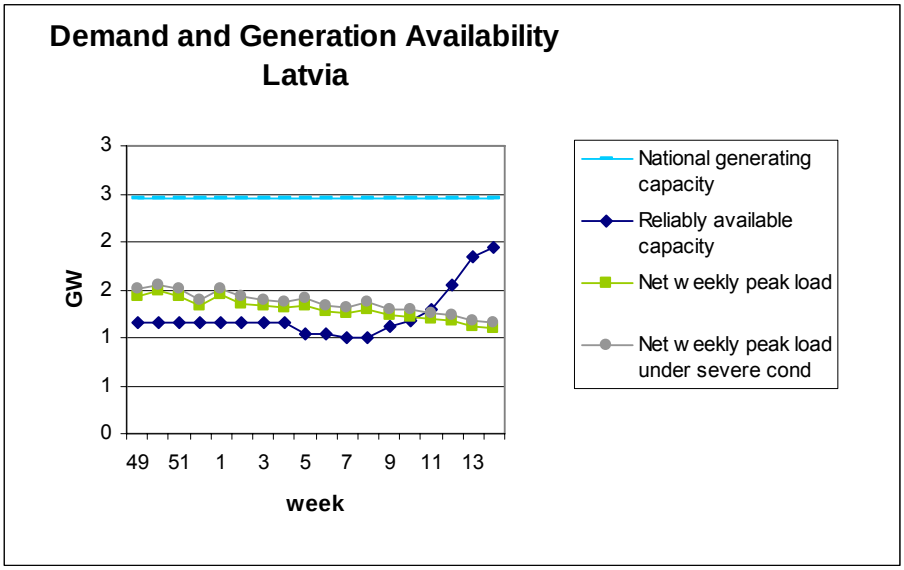


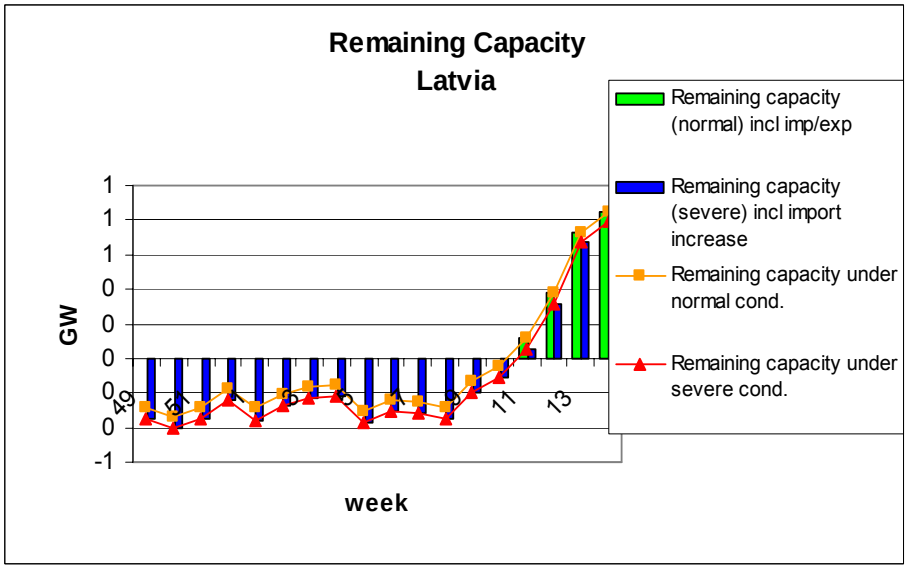
Summary

In the upcoming 2008-2009 winter season Estonian power system is expected to be in balance under normal conditions. Under severe conditions, there could be periods where domestic generation capacity is considered not to be sufficient to cover peak loads. There is no significant addition of generation capacity forecast during this period. We expect that 2 units, with a capacity of 302MW, will be mothballed at the Narva power plant starting from December 2008.

Based on the peak load of last winter, the expected peak load for the approaching winter season is forecast to be around 1570 MW. The average load will probably raise 3-5% similarly to last year's.

LATVIA





Synopsis

Commissioning of 407MW combined cycle unit in Riga CHP-2, as well as additional 25MW in small scale gas-fired CHP plants and new 2MW wind generator would substantially improve power demand and supply balance of the Latvian power system in the coming winter. Nevertheless remaining generation capacity both in severe and normal conditions is negative at least until the beginning of the spring flood period. With the increase of water inflow in the rivers (starting from weeks 10-12) the Latvian power system becomes self sufficient and even capable of exporting up to 700-800MW of power to neighbouring power systems.

Thanks to the availability of excess generation capacity in the neighbouring power systems and adequate transmission capacity, Latvian TSO should be able to manage the balance.

The day of power system maximum load, which is usually registered in the middle of December (week 50-51) or in the middle of January (week 1-3), might be the most *critical period* for the Latvian power system. This is the period with the highest dependency on power supply from the neighbouring power systems through the interconnections.

The second critical period, which happens at the end of the winter (week 10-12) – is the flood period, when Latvian power system switches from suffering a deficit of power to having a surplus. The beginning of the flood period, the real inflow in the rivers and consequently the output of hydro power plants cannot easily be predicted. That is why it is always a stress for the power traders and the TSO.

The main *risk factors* for the Latvian power system are the possibility of severe winter peak demand due to extremely low temperatures and low available hydro capacity due to insufficient water inflow in the rivers. In fact, such an extremely low temperature and the record-breaking high electric load was registered in January of 2006. The most problematic situation is the situation, when both these risk factors coincide.

The third risk has a longer-term nature. This is an availability of generation capacity (in the neighbouring countries) for electricity export to Latvia. For the last several years, this potential was constantly decreasing. Currently, excess generation capacity in the neighbouring countries is quite tight. Therefore, in the event of the outage of large generation unit, there are limited sources of replacement energy.

Nevertheless, until the scheduled closure of the second unit of the Ignalina Nuclear Power Plant (in Lithuania) at the end of 2009, there should not be a big problem with electricity imports.

Methodology for winter adequacy assessment

25.04.06 Regulations of the Cabinet of Ministers of Latvia No. 322 obliges the TSO to provide/publish power market and system information and forecasts once a year, including generation and transmission adequacy issues. The methods for adequacy assessment used in TSO Report and for the Winter Outlook Report are the same. Latvian TSO Report includes the forecasts of electric capacity and energy balances by year, by month and hourly balances for the representative days (winter maximum and summer minimum).

Usually two scenarios are considered in the TSO Report: A. scenario “Conservative”: only new generation projects known as firm are integrated, B. scenario “Best estimate”: it takes into account future power plants whose commissioning can be considered as reasonably probable according to the information available.

Generation – demand balance

Due to slow down of economic development, growth of electricity consumption might reduce to 0%-2% per annum during the next 3-5 years, compared with previous years with annual growth of 4%-7%. With the temperature increase of 1°C, increase of electric load in Latvian power system might reach 1%-1.5% of load or approximately 10-20 MW. Overall load increase at the severe winter peak conditions is evaluated to be about 5%. At the end of the winter period (week 13), the electric load is just about 75%-80% from the maximum load.

During the 2008/2009 winter season Latvian power system would have a capacity deficit of 10%-20% from the peak loads, which is a significant improvement compared with 2006/2007 winter season deficit of 25%-35%. This deficit capacity is covered by import power from Baltic, Nordic or Russian power systems. During the spring flood period approximately 700-800MW of power is exported from Latvian power system.

Fossil fuel power stations are CHP plants capable to operate both in cogeneration and condensing mode. During the winter period CHP plants mostly are operating in cogeneration mode at nominal

power. Maintenance is usually not planned for the winter heating season. The forced outage rate of CHP plants might be around 3%-3.5%.

Capacity of hydro power stations strongly depends on water inflow in rivers. During the winter peak hours the average expected capacity of large hydro power plants (Daugava HPP with installed capacity 1520 MW) is approximately 400 MW with the standard deviation of ±200 MW. In balance calculation 600 MW in Daugava HPP was assumed. Capacity of small hydro (overall installed capacity 26 MW) and wind power stations (overall installed capacity 28 MW) is assumed as zero. During the last week of the winter season (week10-13), when the flood period starts, the available capacity of large hydro power plants start to increase and might even reach the nominal level. The forced outage rate of large hydro power plants might be as low as 0.5%.

Primary (frequency) reserve for the Baltic power system is secured by the Russian power system (Volga hydro power plant cascade). Secondary reserve is provided in Daugava HPP in Latvia and Krounis HPSP in Lithuania. Tertiary reserve is delivered by thermal power plants, including CHP plants in Latvia. The agreement about the parallel operation between the Baltic, Russian and Belorussian TSOs assumes provisions about the sharing of reserve capacity.

Role of interconnections

Existing transmission capacity of cross-border interconnections entirely ensures the flow of power between the Baltic States. The transmission capacity is sufficient to secure the peak load of Latvian power system for 100%, where available generation capacity exists in neighbouring countries.

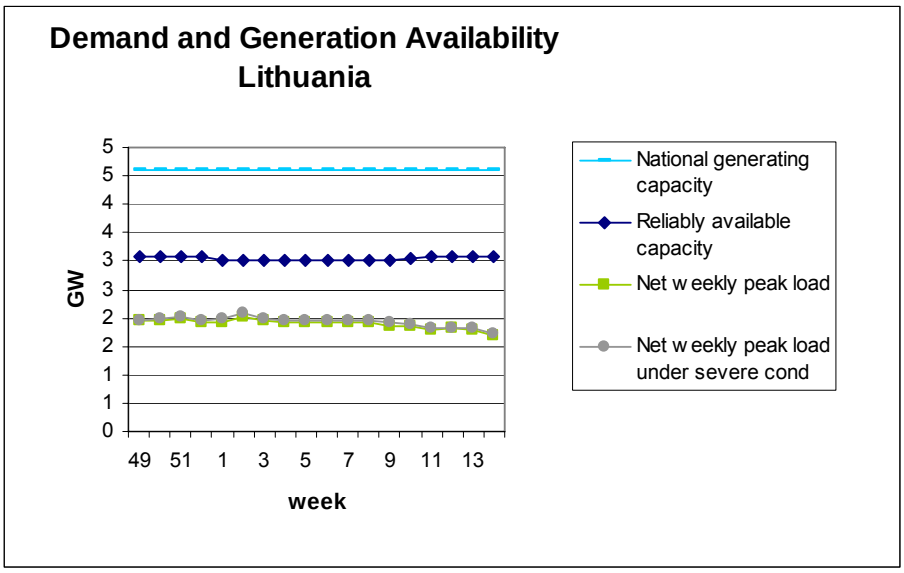
No major congestions are expected on the cross-border interconnections between Latvia and neighbouring power systems of Estonia, Lithuania and Russia both in normal and emergency conditions.

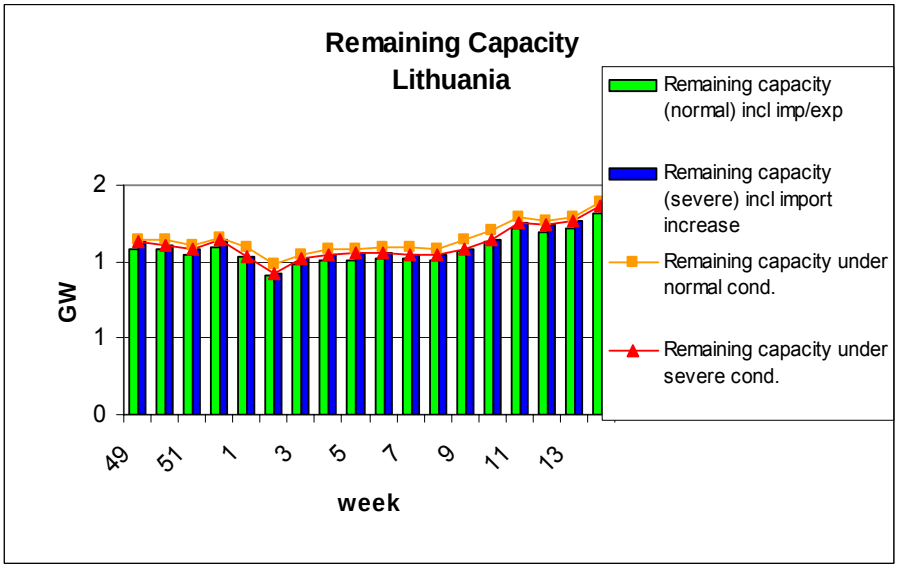
Due to poor predictability of the output of hydro power plants, firm import/export contracts are usually not practised. Nomination of necessary capacity happens only a number of days in advance.

Additional comments

1. Contribution from intermittent energy sources, such as small hydro and wind, for the peak load coverage is considered as zero.
2. No mothballed capacity is available.
3. In normal and emergency conditions, there are practically no limitations in transmission capacity for power import or export to/from Latvia.
4. During the winter peak load 600 MW out of 1520MW from Daugava HPP was assumed in calculations.
5. There are not any fuel supply limitations which could limit capacity of fossil fuel power stations.

LITHUANIA





Generation and Demand balance

The winter adequacy assessment takes into account information about generator availability and demand.

In Lithuania, electricity production is mainly based on nuclear and gas fuel. The biggest electricity producer in Lithuania is the Ignalina Nuclear Power Plant. Due to huge capacity of the INPP unit, the reliable operation of the power system necessitates parallel operation of Lithuanian power system not only with Baltic States, but also with power systems of Russia and Belarus, i.e. Lithuania has to use the benefits of regional cooperation. Other generators in the Lithuanian power sector are mainly the Lithuania Power Plant and CHP plants; many of which are required to help provide the high level of reserve needed in Lithuania to cover forced outages of Ignalina. The output of nuclear power is expected to be 100% of the capacity (1300 MW minus auxiliary power). Wind generation is not considerable for the time being. Mothballed capacities are practically not available under any

circumstances. Planned overhauls during the winter period are 0.05 – 0.13MW. Data for overhauls concerns fossil fuel power stations and Kaunas hydro power plant.
The assessment is made on a weekly basis for the week peak based on experience of previous years. The growth of load under severe conditions is inversely correlated with the temperature. The average load sensitivity to temperature is around 14 MW/°C. Concerning the winter months the experience is that the situation is most severe in January and February. March is usually not critical. No load reduction is used.
During the past 3 years final electricity consumption in the economic sectors has increased on average about 3% per annum. Forecasts of electricity demand in the Lithuanian National Energy Strategy and other studies were based on the assumption that modernization of the Lithuanian economy would require a fast growth in electricity demand, and its share in the structure of final energy demand would increase for all economic sectors.
In normal conditions Lithuanian system is balanced well without imports. This winter it is forecast that Lithuania will have a peak demand under normal conditions of about 1.98 GW excluding export and under severe conditions of about 2.06GW excluding export. Under severe conditions the remaining capacity is positive – average about 1.13GW.
Emergency reserve – is an active power reserve which is to be activated to compensate for shortage of power being generated in the Lithuanian power system after an emergency loss of a power providing unit.
Emergency reserve needed to maintain in Lithuanian power system is calculated considering the following:

- Under the agreement between the Russian, Belarusian, Estonian, Latvian and Lithuanian power system operators, power systems of the Baltic countries, Belarus and Russia must be hold emergency reserve.
- Under the agreement between the Lithuanian, Latvian and Estonian power system operators respective power systems jointly maintain emergency reserve which is needed to cover the loss of the largest power generating unit in the Baltic power systems minus emergency reserve which are to be provided by Belarusian and Russian power systems in a case of an emergency. The share of the joint emergency reserve respective power systems need to maintain is proportional to their largest power generating unit.

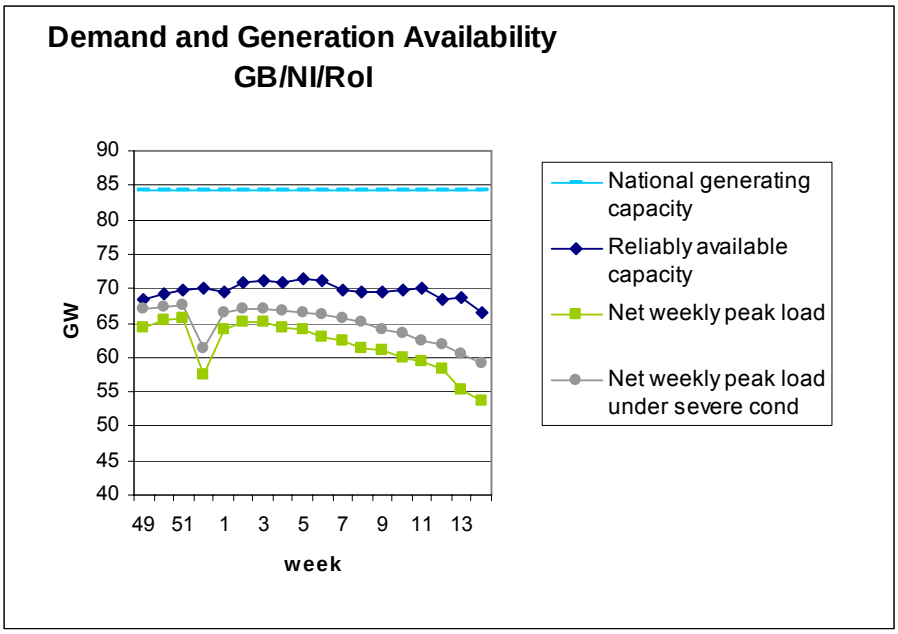
In the case of an emergency in any of the respective power systems under the mentioned agreements first of all the emergency reserve maintained by the accidental system is activated and only afterwards the emergency reserve from the neighboring systems is to be provided.
The provision of power by the emergency reserve units is planned to last up to the twelve hours.

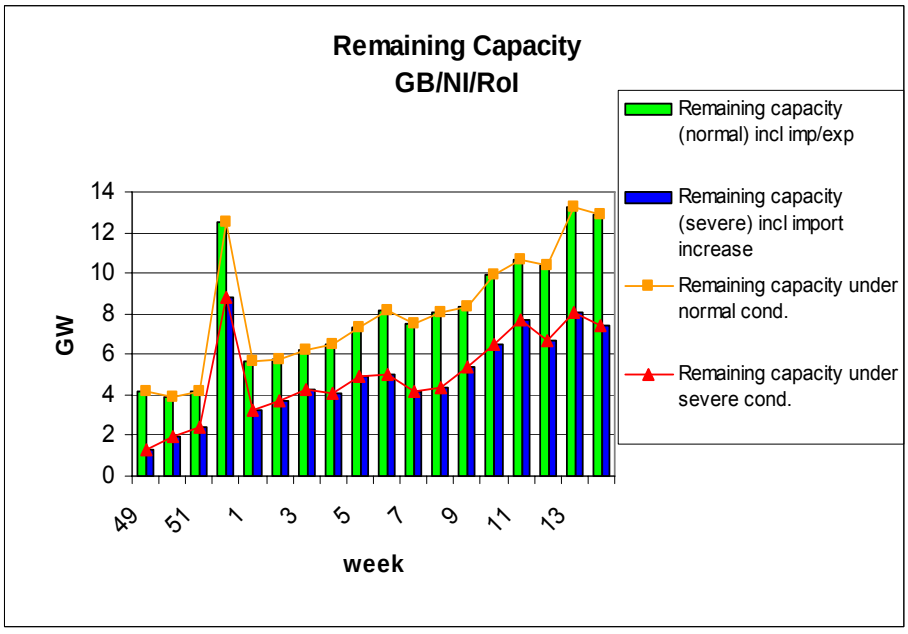
Role of Interconnection
The expected importable and exportable capacities are considered as physical flows that are based on previous experience. The assumptions used in the Winter Outlook Report are that there will be the export to neighboring countries about 0.29GW in normal and severe conditions.

Conclusion
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.

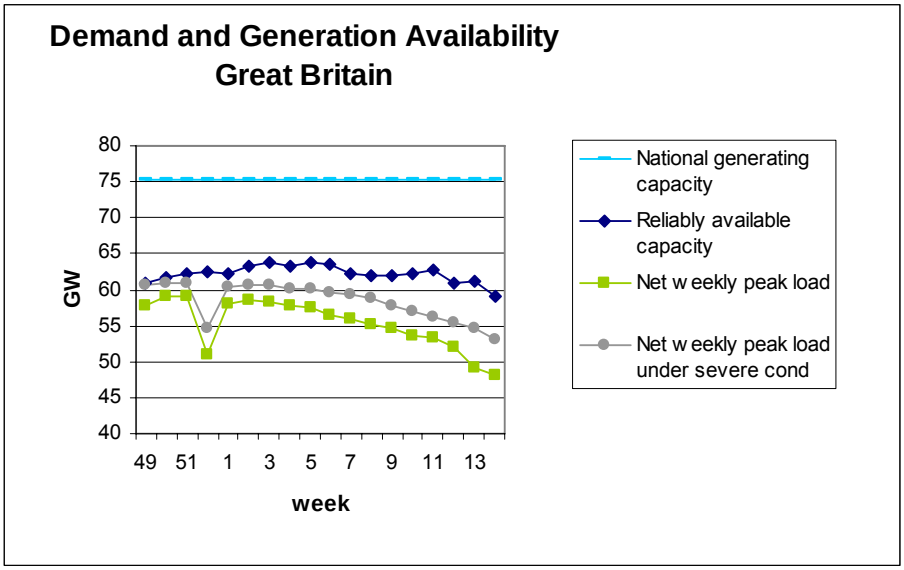
Great Britain
Northern Ireland
Republic of Ireland

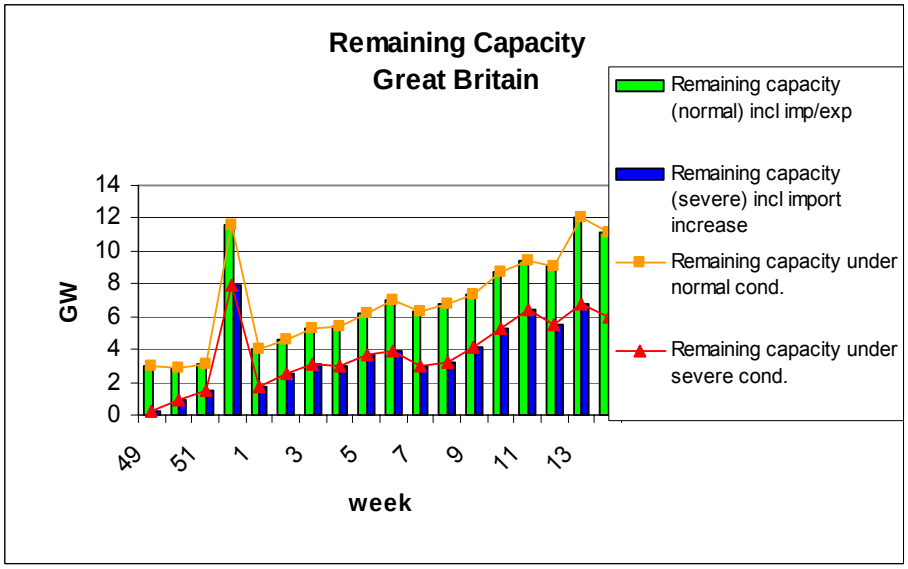
Great Britain/Northern Ireland/Republic of Ireland





Great Britain





Synopsis

The notified generation background for 2008/9 appears broadly similar to that observed prior to the 2007/8 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.

For the first half of last winter coal-fired generation had a price advantage over gas but there was a step change on 1st January 2008 when Phase 2 of the EU Emission Trading Scheme came into force. The increase in the cost of CO_2 emissions made coal-fired generation significantly more expensive and the load factor of gas-fired generation then exceeded that of coal for the rest of the winter. The Large Combustion Plant Directive also came into force on 1st January 2008 and as a number of stations had not completed their FGD installation their running hours were restricted by the Environment Agency. However, most stations are expected to have completed their FGD installation by the end of December 2008. Coal prices have risen over the summer but gas prices

are expected to rise over the winter to the extent that we expect coal-fired generation to become economically attractive again compared to gas-fired generation. 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.

Generation – Demand balance

The modelling for the winter ahead 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 less than this due to long term outages at Heysham 1 and Hartlepool power stations to make repairs to the structural tensioning cables associated with the concrete pressure vessels, but all four units are due back before the end of December 2008. This means margins will be tighter than the assumption during November.

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.

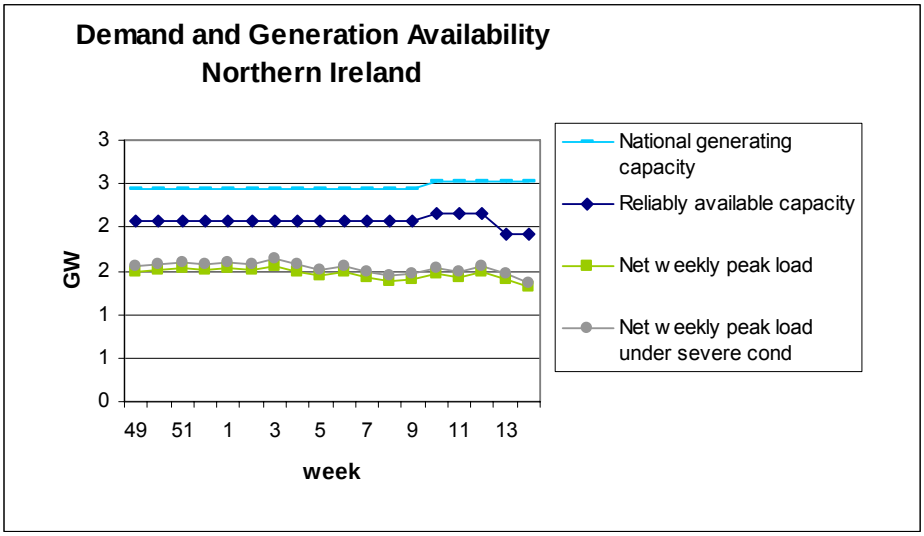
Role of Interconnection

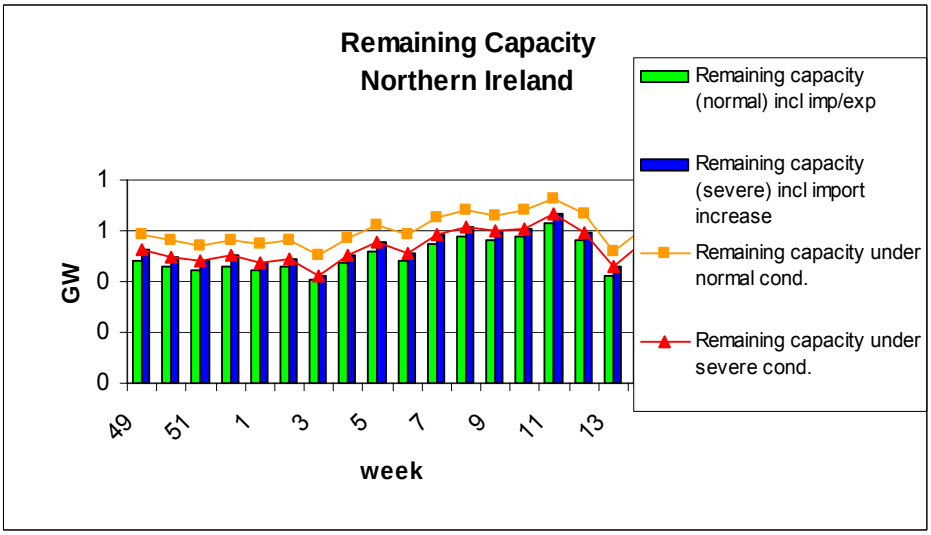
The Interconnexion France-Angleterre (IFA) interconnector consists of two pairs of 500MW circuits and has annual availability over 95% (including over winter periods). There are no planned outages of more than one day over the winter period. If an unplanned outage were to occur, then availability would be reduced in increments of 500MW. However, the overall assumption of 86% generation availability is based on 2GW flow from France to GB at peak demand times.

We expect the direction of power transfer to be determined by relative market prices and this continues to be the key driver. As the differential between GB and French/German prices is expected to vary intra-day as in past winters, it is likely that the direction of flow may swing from import to export over the course of the day. Our assumption is that at times of peak demand in Britain, 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.

Under severe weather conditions, the availability of imports from France would be required to cover fully the short term operating reserve requirements. Exports from France may be reduced at times of low temperatures on continental Europe if this causes the price differential to swing in France's favour but National Grid has an operational agreement with RTE, the French system operator, which provides an option to increase imports in the unlikely event that power transfers are insufficient for ensuring GB security of supply.

Northern Ireland





Synopsis

SONI have no concerns and expect no significant problems on our system this winter. At present there or no weaknesses or any problems envisiged that would be regarded as being of a high risk to SONI.

To ensure peak demand is met SONI would be dependent upon the Moyle and NI – RoI interconnectors at times. Countries concerned are GB via the Moyle and the Republic of Ireland on the Tandragee – Louth lines.

There will be a period beginning on the 14th March when for over 2½ weeks Unit 5 (170MW) at Ballylumford will be overhauled on a flexible planned outage. Also at Ballylumford, OCGT1 (58MW) will be out for 1 week from 18th March and OCGT2 (58MW) out for 1 week from 25th March. Both of these are also flexible outages.

Should any major losses occur, procedures are in place to ensure system security and generation adequacy and at this point any known outages can be covered within our planning.

Method

SONI produces a Seven Year Generation Capacity Statement. This is an assessment of the adequacy of the generation capacity in Northern Ireland.

The generation capacity assessment in Northern Ireland is measured against three future demand scenarios – High, Medium and Low (i.e. increases in demand of 2.2%, 1.6% and 1.4% respectively). The purpose of including these scenarios is to cover a realistic range of potential demand outcomes.

Historically, Northern Ireland has experienced high levels of generator availability (circa 92%), therefore the modelling includes assumption that 8-10% of generation plant will be unavailable.

Generation – Demand Balance

Generation Available
The lowest Available Capacity is forecasted to be 2112MW during the winter 2008 period.

Demand
The demand is forecasted to peak at 1784MW for severe load conditions and 1702MW for normal load conditions during the winter 2008 period.

Remaining Capacity in Normal Conditions
The lowest Remaining Capacity in Normal Conditions value is forecasted to be at 507MW during the winter 2008 period.

Severe Load Conditions
The Severe Load Condition is forecasted to peak at 1784MW during the winter 2008 period which would reduce remaining capacity to 425MW.

Role of Interconnection

Interconnection Capacity
The Importable Capacity is 780MW, while the Exportable Capacity is 410MW. This is made up from the Moyle interconnector between NI (SONI) and GB (National Grid) and from the Tandragee-Louth interconnector or tie-line between NI (SONI) and ROI (EirGrid).

Firm Import/Export Contracts
Only the Tandragee-Louth interconnector has firm import/export contracts associated with it. This sets up a guarentee where a minimum of 100MW can be imported from ROI to NI and 200MW from NI to ROI. However, these are now redundant owing to the creation of the Single Electricity Market (SEM) on 1 November 2007.

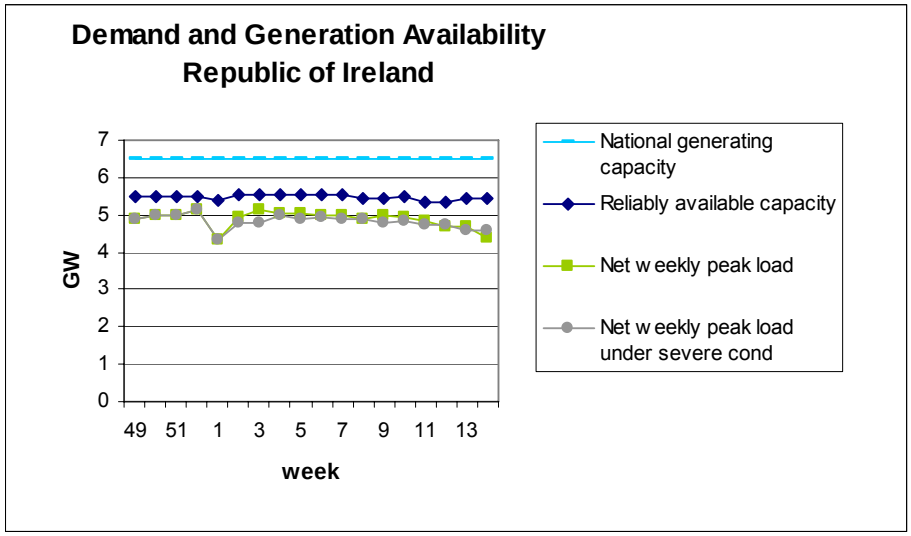
The Moyle interconnector is not subject to these contracts as its capacity is subject to auctions therefore no firm import/export data is available.

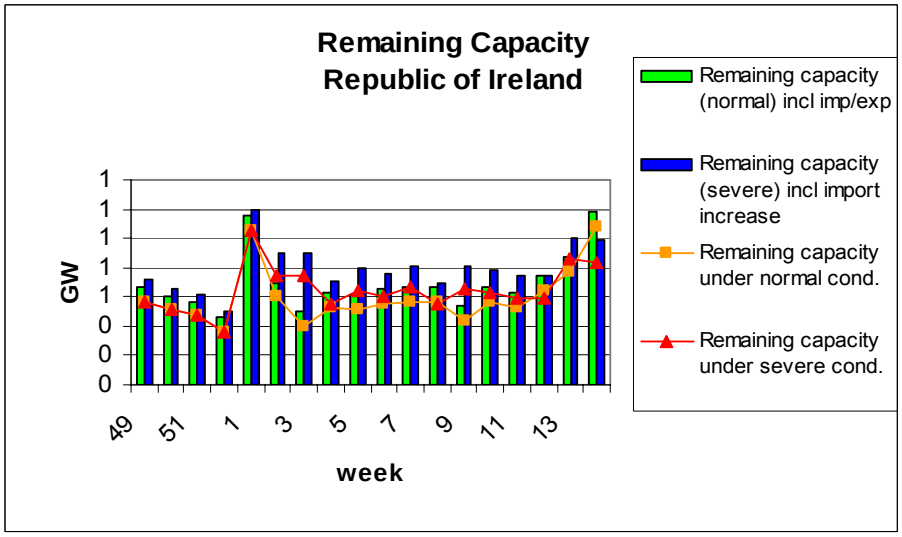
Potential Additional Areas for Comments

The expected increase in penetration of wind in the NW and on the island of Ireland as a whole will be a challenge to manage in the short to medium term. The current capacity for wind in Northern Ireland is 241MW. This is expected to grow to steadily with new Wind Farm Power Station being added during the winter 2008 period.

Overhauls and outages are not expected to cause any major problems on the system and there are no expected issues regarding fuel availability.

Republic of Ireland





Synopsis

EirGrid expects that the generation capacity will be sufficient to meet the expected peak demands this winter and to ensure that the appropriate level of security of supply is maintained. Both deterministic and probabilistic analyses were carried out in examining the capability of the generation portfolio available to EirGrid to meet peak demands during the coming winter period.

Based on previous years' experiences, the peak demand is expected to occur in the week before Christmas. Areas of growth in demand, the capacity and performance of generation (both conventional and wind) and available import capacity were all considered. There is some risk of inability to meet peak demand if generation availability failed to be meet expected levels or there were significant limits to the availability of imports from Northern Ireland, particularly if wind generation was low.

Generation-Demand Balance

Deterministic and probabilistic analyses were carried out. In examining capacity adequacy, EirGrid met all the generators and discussed the performance of the units and the expected availability of the units for the winter period. The following were the key assumptions:

- The installed conventional generation capacity will be 6,013MW of dispatchable plant. The capacity figure also does not allow for any forced outages which could be expected in the winter period. Generation unit performance, and specifically Forced Outage Probabilities, is based on past performance and EirGrid's discussions with the generators. The system average Forced Outage Rate for the analysis is 11.5%. There are no major scheduled outages planned from 4th November 2007 to 3rd March 2008 but there may be some maintenance carried out at low load periods.

- The installed capacity of wind generation will have increased to approximately 1,050MW this winter and the capacity credit for wind is assumed to be 220MW.

- With the advent of the Single Electricity Market, the generation portfolio on the island of Ireland is scheduled for dispatch as one entity rather than two separate systems. Imports from Northern Ireland provide an important contribution towards the ability to meet system demand in Ireland. The level available at any point in time is dependant on the generation availability in Northern Ireland, the status of the Moyle interconnector (from Northern Ireland to GB) and the status of the transmission network on both the Irish and Northern Ireland systems. Consistent with previous years, the analysis has assumed that up to 200MW of capacity is available from Northern Ireland.

- The demand for electrical energy is still growing with mid-year data showing a rate of approximately 3% per annum. The peak growth is estimated to be in the range of 2% - 4.5% (giving a peak demand of 5,000MW – 5,125MW). The actual peak is highly dependent on the weather i.e. whether there is a mild or cold winter so for the analysis, a peak at the upper end of the range 5,125MW was chosen. The peak demand for electricity in 2007 was 4,906 MW. This occurred on the Tuesday 18th December and was only a small increase on the previous year's peak.

Sensitivity analysis was also carried out. This examined the situation where there was a significant reduction in available capacity (400MW) for a sustained period. This could arise, for example, from generation performance deviating significantly from expected values or from there being zero available to import from Northern Ireland at a time of low wind. Should such a scenario materialise, there are a number of existing short-term demand control schemes that EirGrid can use to assist in managing the system at peak demand when capacity margins are tight. Nevertheless, depending on the severity of the underlying cause of the reduction in available capacity, it could lead to a possible inability to maintain appropriate security of supply standards for periods of peak demand.

NORDEL COUNTRIES
Denmark
Finland
Norway
Sweden

POWER BALANCE 2008/2009

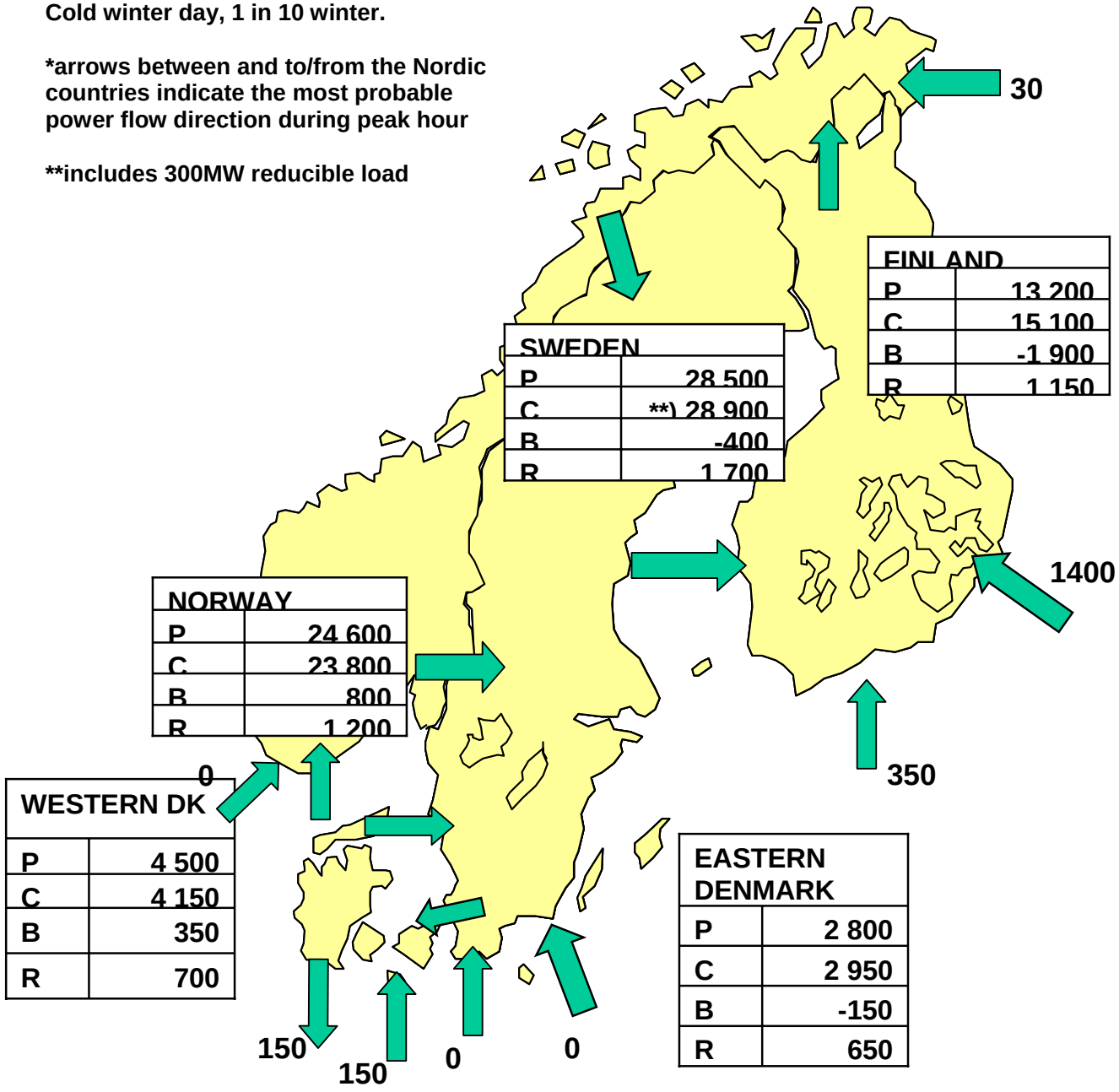
With estimated power exchange [MW] ****)

Cold winter day in 1 of 10 winters

NORDEL Power Balance 2008/09
With estimated power exchange (MW)*
Cold winter day, 1 in 10 winter.

***arrows between and to/from the Nordic countries indicate the most probable power flow direction during peak hour**

****includes 300MW reducible load**



NORDEL		TOTAL
P =	Available capacity TSO reserves excluded	73 900***
C =	Peak demand	73 400****
B =	Balance without power exchange	500
NE =	Net power exchange to Nordel area	1 800
R =	Reserves available for the TSOs	5 400

*****includes 6% (280MW) wind power**
******c.2% lower than sum of national peaks**

DEFINITIONS	
Available capacity (P)	Installed generation capacity including peak load reserves, but excluding: • unavailable generation capacity • frequency controlled reserves • fast active disturbance reserves (only production)
Peak demand (C)	Maximum consumption in temperature circumstances with appearance probability one winter during 10 years.
Power balance without power exchange (B)	Available capacity (P) - Peak demand (C)
Net power exchange (NE)	Estimated power exchange to the Nordel area
Reserves (R)	Reserves available for TSOs including frequency controlled reserves and fast active disturbance reserves (only production)

FUNDAMENTALS

- Production capacity in Norway is increased slightly even though Kårstø (420MW CCGT) is excluded.
- Peak demand in Finland is estimated to decrease approximately 100 MW compared to last winter due to made and planned shutdowns in paper industry.
- Supply of natural gas to the power stations in Denmark is expected to be kept up.
- Unavailable generation capacity is based on this year´s hydro situation and experiences from previous peak demand situations.
- 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.
- Wind power output is expected to be 0 % for each country but 6 % (280 MW) for Nordel due to non coincidence of calm weather.
- Nuclear power output is expected to be 100 % of the installed capacity based on statistics.

- The import from Russia is expected to be 1400MW, although the experience from previous years has shown some reduction during peak hours. The HVDC-link Estlink is expected to give an import of 350MW. These values are valid if the peak only lasts for a few days.
- Import from continental Europe at peak demand may improve the balance.

Summary

The total Nordic power system has a positive power balance in peak hour. Total available generation capacity has decreased compared to last winter. Total peak demand in the Nordel area is unchanged.

Finland, Sweden and Denmark East have a deficit in the power balance in one out of 10 winters whereas Norway and Denmark West have a surplus.

During high-price periods, the price elasticity of consumption might reduce the peak demand compared to the presented values. This will improve the power balance.

UCTE MEMBERS

North Western UCTE

AUSTRIA

There are still the same problems concerning the Austrian system as described in previous reports. In general these problems which are described below are more severe in wintertime.

North-South congestions

Since 2001 severe congestions occur on the weak 220kV lines from the north to the south of Austria. These congestions are more severe in wintertime compared to summertime.

For permanent improvement of these structural congestions, new 380 kV lines from Südburgenland to Kainachtal and from St. Peter to Tauern are planned. The line from Südburgenland to Kainachtal will be put into operation by mid 2009 and the construction of the first part (St Peter to Salzach) of the line St. Peter to Tauern is already authorized and it is planned to finish the line in 2011.

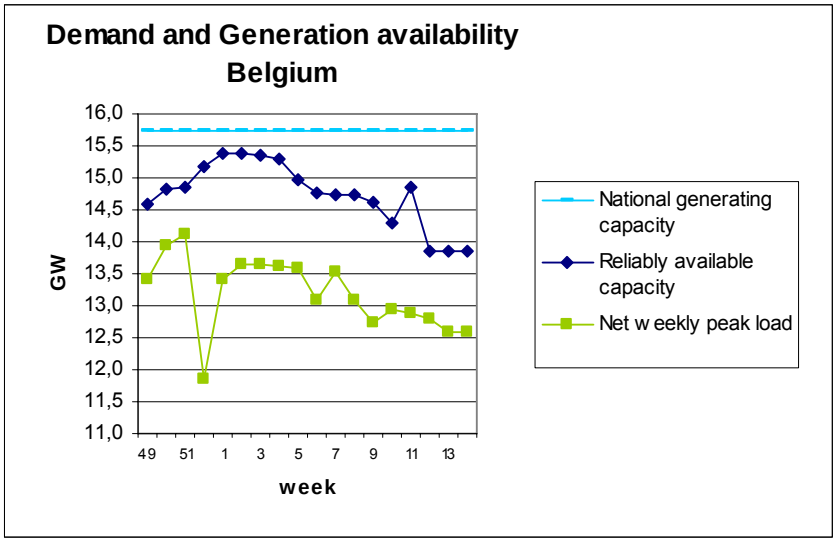
Until then APG is prepared to take countermeasures in order to reduce these congestions. This can be done by Phase Shifting Transformers (PST) in combination with re-dispatching of power plants (including restriction of pumping) and special switching in network operation. Especially the PSTs allow a better balanced distribution of load flows and thus for higher utilization of the existing three 220 kV north to south double circuit lines.

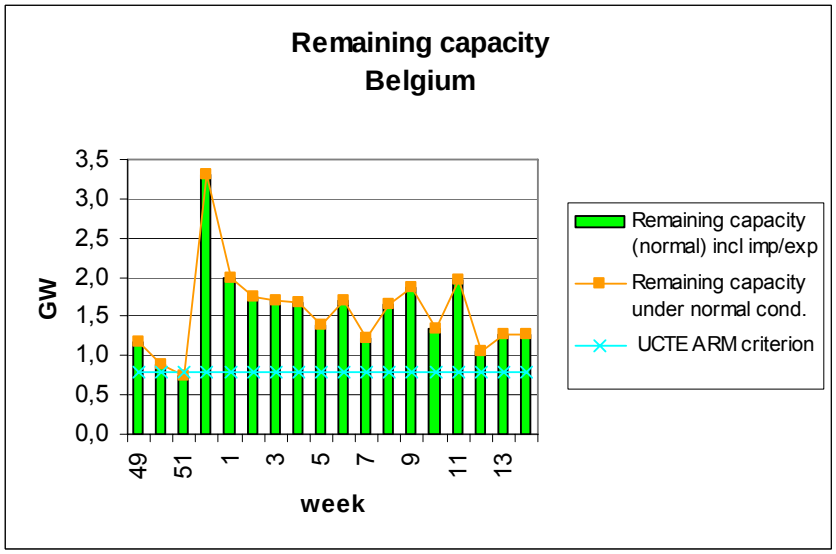
Congestion on Czech-Austrian tie lines

High loop flows on tie lines caused congestion on the Czech-Austrian lines in the past. This problem will be mitigated by the installation of the second circuit Slavetice – Dürnrohr which is almost finished and will be put into operation by November 2008.

The improvement of the Czech-Austrian situation will stress the North-South congestion even more but APG is prepared to take all needed countermeasures to reduce this congestion.

BELGIUM





Comments

1. Synopsis

The desired safety level of 1000MW for the generation-load balance is reached during the entire winter period 2008 - 2009, except for the peak of weeks 50 and 51 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. No outages of 380kV lines will take place during weeks 50 and 51 of 2008. Only the 380kV international line Achêne (BE)-Lonny (FR) will be taken out of service in week 14 of 2009. This will reduce the simultaneous import capacity with approximately 350MW. However, this outage 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 during generation-load imbalance.

The main risk factors for the Elia grid that might jeopardize the current positive winter adequacy assessment are a generation-demand imbalance for the whole of the UCTE-main block or unplanned outages at the main generation plants in Belgium.

2. The framework and the method used for adequacy assessment

An adequacy forecast study is carried out each year for the Elia control area, which includes 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 are 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 32 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 0.5% for December 2008 compared to the peak load values measured in 2007 and with 1.5% for January and February 2009 and with 1.3% for March 2009 compared to the peak load values measured in 2008.
5. The planned outages of lines.

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, all week peaks are assessed. A first revision of the assessment takes place 5 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 5 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 1000MW (equivalent to the biggest unit in the grid) for the generation-load balance is judged as the desired safety level for 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. During periods of non-respect the system will rely on net imports.

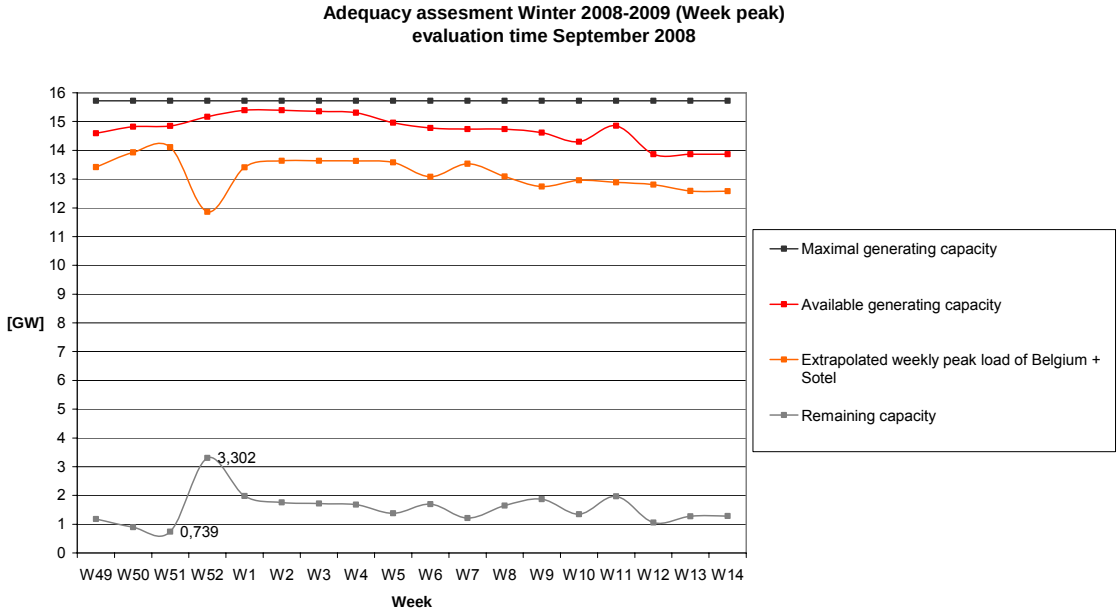
The UCTE approach for medium and long-term system adequacy applies a stricter probabilistic criterion. This approach indicates the dependency on possible net imports to face contingencies and to allow some freedom in maintenance planning during non-respect.

In section 5 a complete overview of the differences between both methodologies is presented.

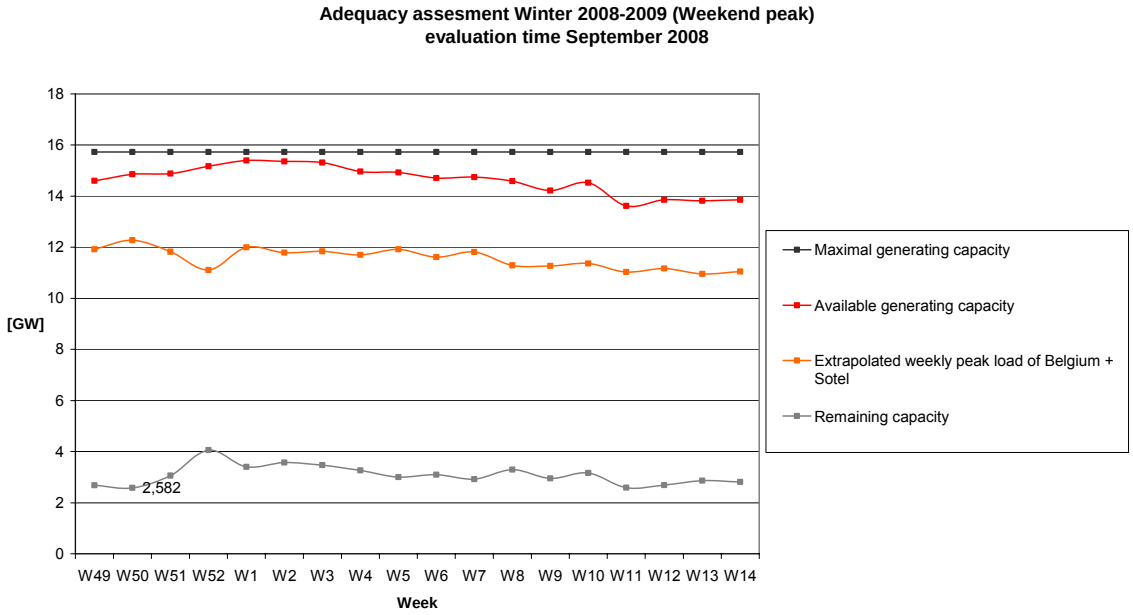
3. Generation – Demand Balance

In the figure below an overview is given of the result of the assessment of winter 2008-2009 for the week peak. A low level of overhauls combined with the lowest level of forecast demand for the week peak of week 52 of 2008, result for that week in the highest remaining capacity level for the coming winter for the week peak. On the contrary the highest level of forecast demand for the week peak of week 51 of 2008, results for that week in the lowest remaining capacity level for the coming winter (week 49 of 2008 till week 14 of 2009) for the week peak.

The desired safety level of 1000 MW for the generation-load balance is not reached during the peak of weeks 50 and 51 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 Achêne (BE)-Lonny (FR) will be taken out of service in week 14 of 2009. This will reduce the simultaneous import capacity with approximately 350MW. However, this outage can be annulled if required for the security of the system.



The figure below gives an overview of the result of the assessment of winter 2008-2009 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 2582MW.



At the moment, the analysis as mentioned 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 inversely correlated with the temperature. This is why 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 +/- 35MW.

4. 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 1000MW during the coming winter. Last winter period (from week 49 of 2007 until week 14 of 2008), on average, a net import of 473MW was measured during week peak times (from 5:15 pm until 8 pm) on the Belgian South border (F-B border) and a net import of 1384MW was measured during week peak times (from 5:15 pm until 8 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 1858MW. During 50 percent of the peak times of last winter period a level between 758MW and 2060MW of net import was attained.

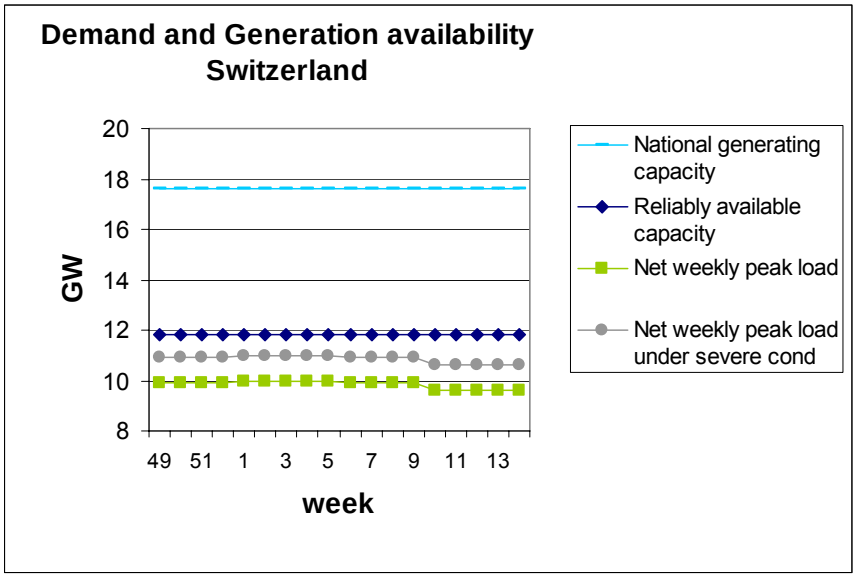
The simultaneous import capacity for the coming winter is situated between 2836MW and 3221MW while the simultaneous export capacity is situated between 1681 and 1926MW. The simultaneous import and export capacity was obtained by adding the NTC-values (according to the ETSO definition) of both borders and multiplying this sum with a simultaneous coefficient of 70 percent.

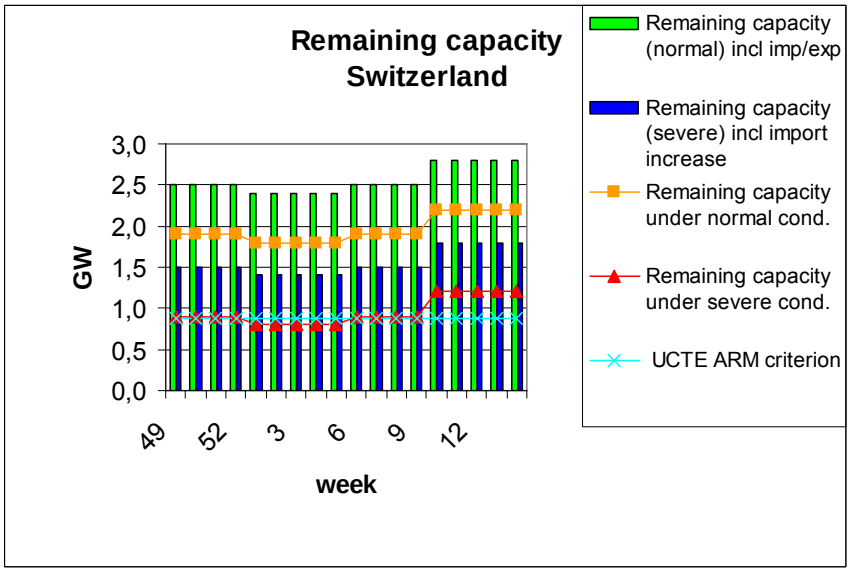
Elia does not expect any congestion problems on its grid for the coming winter due to the minimization of planned outages of international lines during critical winter periods. Atypical winter loop flows from the South to the North causing congestion problems in the Elia grid are less problematic because the commissioning of a phase shifter in Zandvliet and two phase shifters in Van Eyck allows a better managing of this type of loop flows.

5. 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, predetermined 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	968
						Probabilistic part of Ge, expected to be unavailable for outages	425
						Additional margin of 5 % of Ge	786
					Total margin		2179
4.	**Criterion**	***Short term autonomy***	Ge-1000-Le >0	4.	**Criterion**	***Medium and long term System Adequacy***	Ge – 2179 – 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 08-09 in Belgium:	***Approximately two weeks.***		6.	Duration that the criterion is not respected in winter 08-09 in Belgium:	***Approximately the whole winter period (with exemption of week 52)***	

SWITZERLAND





Comments

No critical period are expected during the winter 2008/09, 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 2009 – 2020 states that in January 2009 the Swiss remaining capacity will be as of 0.8 GW under normal weather conditions by taking into account the outage of the largest nuclear power plant (1.2GW).

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

- 1.0GW for severe winter conditions (-15° C),
- 0.2GW as an average expected value for unexpected bigger (>0.1 GW) hydro power plant outages (the sum of the latter two, i.e. 1.0+0.2=1.2GW 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. 1.2GW),
- 0.2GW 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 2009 – 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 another case that is partially included into the reference adequacy margin i.e. a very cold winter (severe weather conditions, which are also very rare) and the outage of an average bigger (>0.1GW) hydro power plant (their number amounts to 36, i.e. this event might be quite probable).

The Swiss remaining capacity in January 2009 as of 0.8GW will not match the reference adequacy margin which amounts to 1.4GW. However, one should consider the fact that 0.5GW of Swiss system services reserves (tertiary reserve) have been contracted abroad so far. Besides, we chose a very conservative approach at determining the non-usable capacity at peak load, which means that additional 0.2-0.3GW will be very probably available. From this it follows that Switzerland will match the reference adequacy margin during the winter 2008/09 even without taking into consideration the firm import contracts, which assure further 0.6GW 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 7 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, the economic part prevails in these plans. Therefore, the winter itself is only a special case within the frame of economic calculations.

Generation- demand balance

The generation/demand balance will not be at risk during the winter 2008/09.

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.

Regarding the other plants, with few significant exceptions they are all 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 -0.3°C. However, December and February are only about a single degree warmer (+1.0°C in both months). In November the mean daily temperature is as of +3.7°C and in March as of +5.0°C. Our observations suggest that there is a load temperature dependency that amounts to about 70MW/°C. In the Excel sheet 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 2008/09.

Nevertheless, the following should be kept in mind. For the Winter Outlook Report the average capacity at power plant outages is recorded in the Excel sheet. It amounts to ca. 0.2GW and is estimated using a probabilistic approach. On the other hand, for the System Adequacy Forecast normally the outage of the biggest power plant unit with its full capacity (1.2GW) is considered. These two kinds of reports are based on different methodologies related to outages and accordingly deliver different results as to the remaining capacity (for January 2009, 1.8GW in the Winter Outlook Report versus 0.8GW in the System Adequacy Forecast).

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 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, via interconnections, the Swiss generation can 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 2008/09.

Firm import/export contracts

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

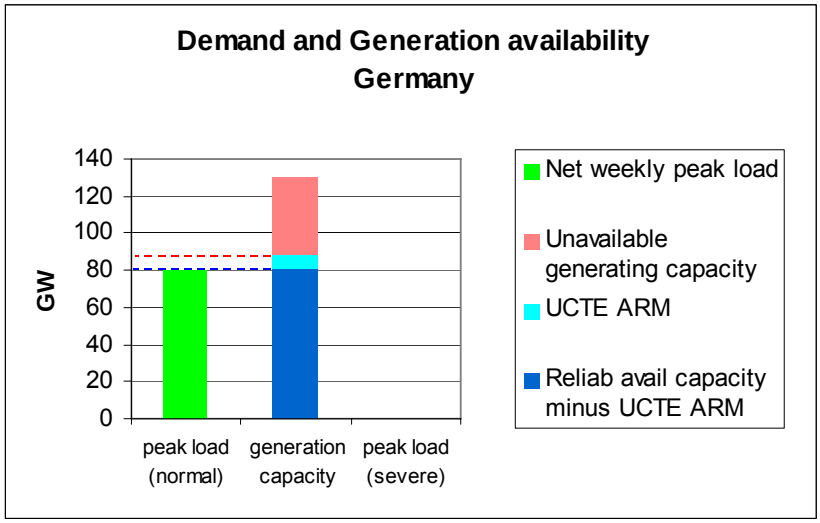
Additional loads due to transits

Additional flows due to transits are not expected during the winter 2008/09. However, the transit flows throughout the Swiss transmission network are permanent and high. If necessary they will be reduced by using the NTC procedures.

Potential other areas for comments

No issues of special relevance. The contribution of intermittent energy sources (e.g. wind) in Switzerland is negligible. The treatment and the amount of mothballed plants is not known to swissgrid, but there can't be much of such capacity in a generation system which is almost completely based on hydro power and 5 nuclear units, whereas the latter are, of course, not mothballed. No special constraints are expected during the winter 2008/09 related to interconnection capacity, fuel supply or hydro power plants (i.e. no constraints which would go beyond the unavailability already recorded under the non-usable capacity).

GERMANY



Comments

The German contribution to the ETSO Winter Outlook Report 08/09 has been prepared on the basis of the 3rd Wednesday figures of January 2009 which have been delivered to UCTE in the framework of the current inquiry for the UCTE System Adequacy Forecast 2009-2020 (according to the UCTE Methodology). The result is that the peak load is expected to be 80GW (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 "Remaining Capacity" of around 8GW 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 there is 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 there is an increasing number of generators and especially embedded and renewable generation (more than 40 GW and 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.

Generation and Load Conditions:
Due to the high wind power installed, it is expected that during the winter 2008/2009 network and market-related measures (within and across control areas) will have to be taken over extended periods for the sake of full wind energy integration.

Remarks on expected additional loads on interconnecting lines due to transit flows having an impact on import/export capacities:
Basically, the interconnecting lines between VE-T (Vattenfall control area)/PSE-O (Poland) and VE-T/CEPS (Czech Republic) are not loaded to their maximum, except for exceptional cases after consultation.
Also during the coming winter, the interconnecting lines between VE-T/E.ON control areas will have to be operated to their limits due to high wind power capacities within the VE-T control area. This requires separate agreements and consultations.

Information about the interconnecting capacity between other national systems are given on the Web sites of the TSOs concerned, such as
http://www.rwe-transportnetzstrom.com/generator.aspx/netznutzung/engpassmanagement/language=de/id=502712/engpassmanagement.html

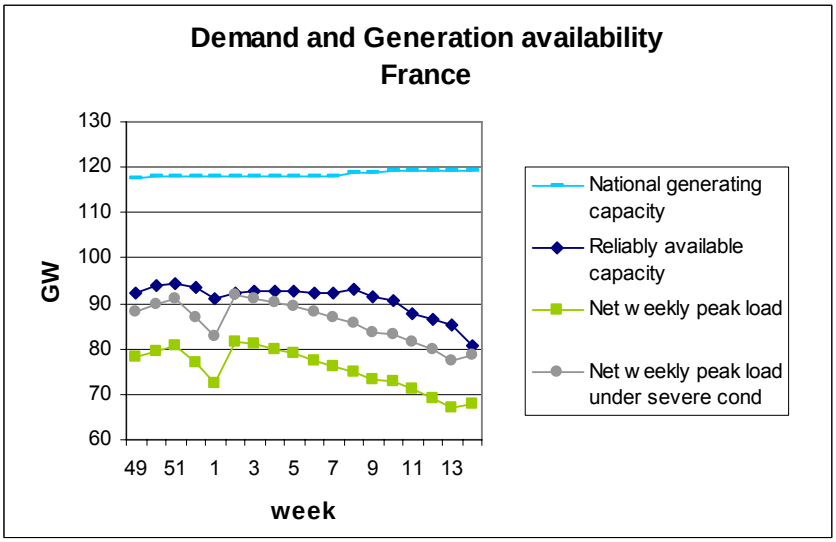
Restrictions of NTC values between D and CH/F/NL/B for the following reasons:
1. High wind-power injections
2. Revision of the Wehr pumped-storage power station (approx. 1000 MW) until 7 March 2009
3. Line reconstruction of Selfkant-schwarz/Kirchberg-Süd from 23 to 25 March 2009 (UCTE agreement still pending)

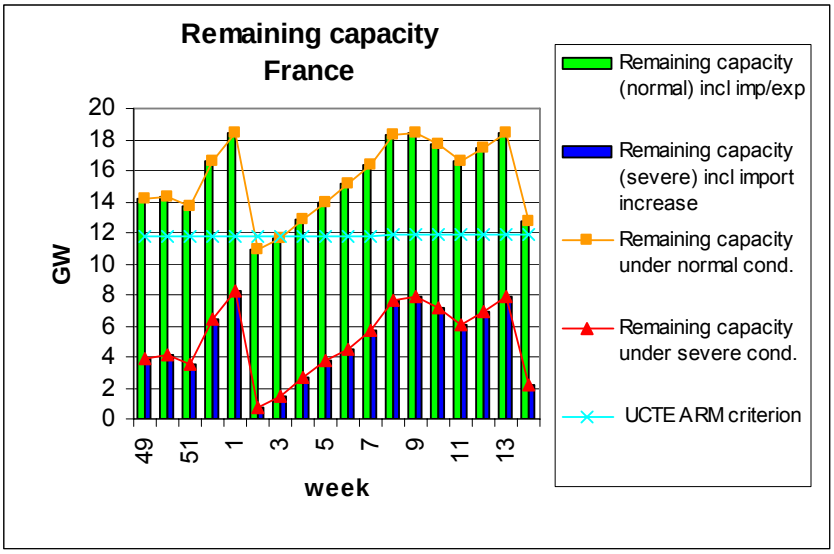
The following measures (possibly associated with high wind-power injections) might lead to network topology changes or re-dispatching:
1. Dümmersee Süd 1 (RWE-E.ON, line reconstruction from 24/11/2008 to 26/11/2008
2. Shutdown of the Biblis A + B nuclear power station from 27/01/2009 to 31/03/2009 (higher East-West/North-South load flows)

For information:
Andelsbach line (RWE-NOK, rehabilitation from 12/11/2008 to 12/12/2008)

Generally:
In the event of high wind-power injections, re-dispatching measures are expected to be carried out to an increasing extent, particularly at low-load conditions.

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, covering the whole mainland France. It is published on the RTE website.
This study is used to identify periods where the supply-demand balance comes under strain. It explores the measures that can be taken by electricity market players and RTE to avoid any interruption in the power supply during peak demand periods in France, due to a lack of market supply.

Actually, 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 outages of generating units;
- Random levels of inflows to hydro generating units.

This study is reviewed at different time horizons (monthly, weekly, intra-weekly and day-ahead).

Generation-Demand Balance

The generating capacity should increase this winter thanks to more fossil fuel power stations and more wind power plants.

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.

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 15 GW. The risk level is more important at the period of the annual peak load.

Role of Interconnection

In case of climatic conditions much colder than the average, RTE may reduce its export capacity from France to Spain, due to low voltage problems. The value of such a curtailment depends on the consumption in South-Western France.

The export capacities 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.

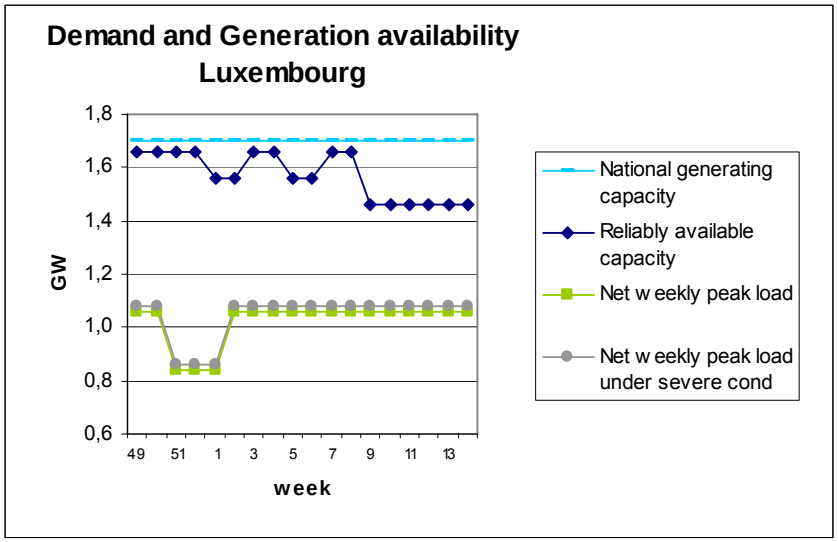
Conclusion

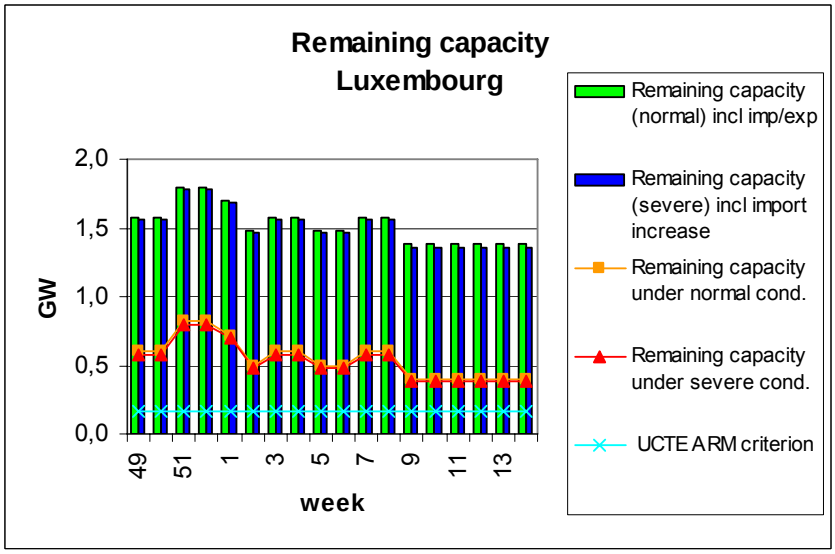
Under normal conditions, the generation – load balance on the French system is not considered at risk for the coming winter, except for the second and third weeks of January, when imports should be needed in over 1% of the cases in order to cover electricity demand in France.

Under severe conditions, margins should be tighter, especially from January to the beginning of February, during the first three weeks of December and also the beginning of April. Therefore, for these periods the French export capacity is likely to be reduced to a lower value and some imports may even be needed.

The rest of the winter period is expected to be less stressed.

LUXEMBOURG





Comments

Appreciation of the generation – load balance

The generation capacity in Luxembourg (including pump storage power) is much higher than our consumption. But as the whole energy of the major generation plants, the pump storage of Vianden and the thermal plant of TWINerg, is exported, Luxembourg has to re-import the main part of the electricity to cover the national consumption. To have a direct relation between load balance and generation balance, the consumption of pumps is added to the load.

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, we consider that there is no risk for problems during the coming winter.

Generation Available

- Luxembourg has two large generation plants, the pump storage of Vianden SEO (1.1GW) whose start up is determined by RWE TSO, and the thermal plant of TWINerg (385MW) whose production is injected to the Belgium grid. As the major part of electric energy is imported from Germany and Belgium, it is practically impossible for us to determine a risk for generation.
- Non-usable capacity is mainly determined by the lack of wind but is relatively low.
- During the weeks 1; 2; 5 and 6; one unit of 100MW of the pump storage of Vianden is out of service, and starting from the week 9, two other units are out of service, for maintenance for a longer period.
- 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 60MW), 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 be vary in a range of 250MW. We will consider the worst case which is the sum of both loads.
- Possible load reduction is practically inexistent (~ 20MW).

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 exist 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 in 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. No additional capacity is needed to cover the outage of one of the power plants.

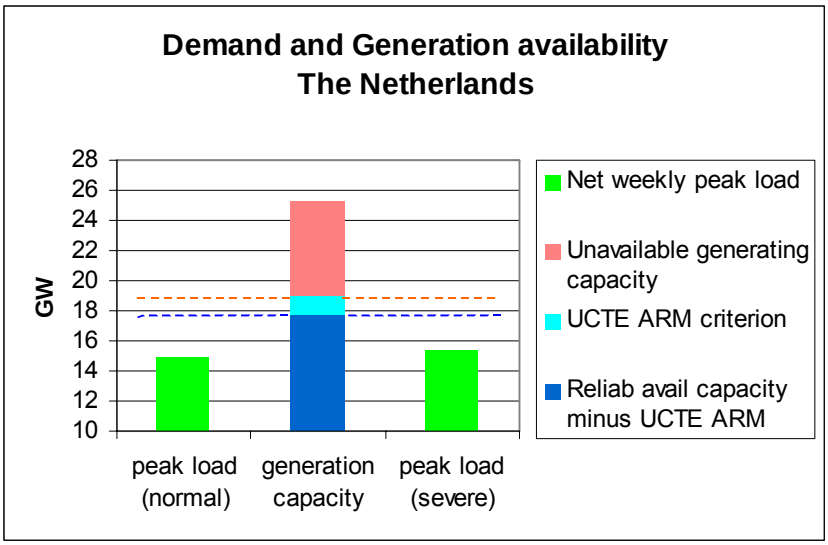
Firm import/export contracts

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

Transit flows

Luxembourg has no interconnections that allow transit flows between countries.

THE NETHERLANDS



Comments

For the Netherlands no forecast of winter adequacy assessment is made so far. 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 to intervene in a good functioning market. The specific TSO's task is balancing the system and supplying emergency power when necessary.

Nevertheless, TenneT TSO assesses on request of the Ministry of Economic Affairs every year for a period of 15 years the Reliability of Supply in the Electricity Market in the Netherlands.
The last report for the period 2007-2023 is published in 2008. http://www.tennet.org/english/images/150_rapport_Monitoring_Leveringszekerheid_2007-2023_Final3_EN_tcm43-16836.pdf

It became apparent that the Dutch electricity system was less dependent on imports for its security of supply than was assumed in the previous Monitoring Report. Reasons for this include lower growth in electricity consumption than was originally forecast, and also a stronger increase in decentralised capacity (especially in the glasshouse horticulture sector).

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 2009-2020.

Generation – Demand Balance

In the aforementioned monitoring report the balance is not considered at risk for the coming winter-period 2008-2009. Nothing specific can be said in advance about when or how 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 a reliable 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 May 2008 the DC-connection between the Netherlands and Norway was taken into service. As a result, the import/export capacity will be raised by 700MW.

Firm Import/Export Contracts
For 3 years preferential import-capacity has no longer been allowed as a consequence of the decision of the European Court of Justice. So there are no longer firm import/export contracts and there is no 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. However, since 2008 phase shifters have been installed on most interconnectors with Germany and Belgium, so it is expected that these transits will decrease.

Additional Comments

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

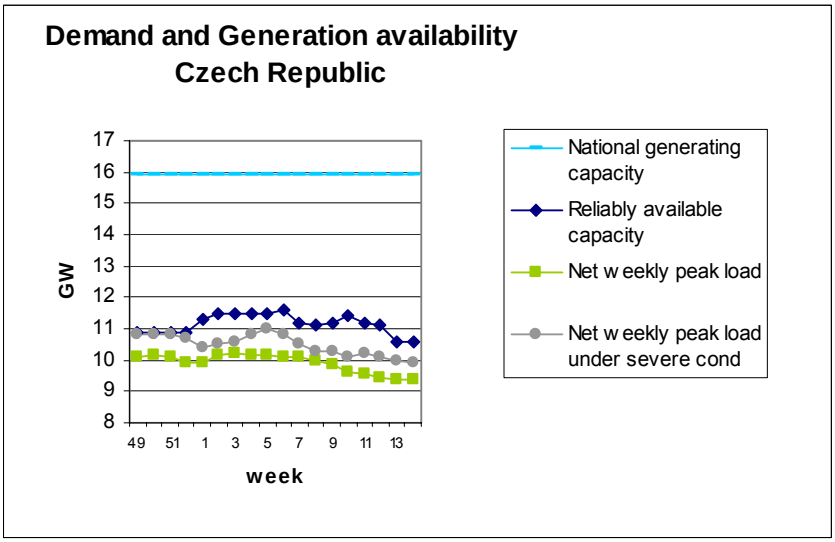
Interconnection Capacity
There are two phenomena which could affect the import capacity of the Netherlands in the sense of reductions or congestions:
The first is the high transit flows through our network originating from high wind generation in Germany. Last winter periods these flows threatened at 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 cross-border flows, there were certain reductions of import/export agreed on in relation to wind generation forecast in Germany. The reduction in dependency of the wind-generation is realised on forehand as an operational measure. But as since 2008, phase shifters are installed on most interconnectors with Germany and Belgium, it is expected that the wind energy related transits will decrease and the reductions be lesser.

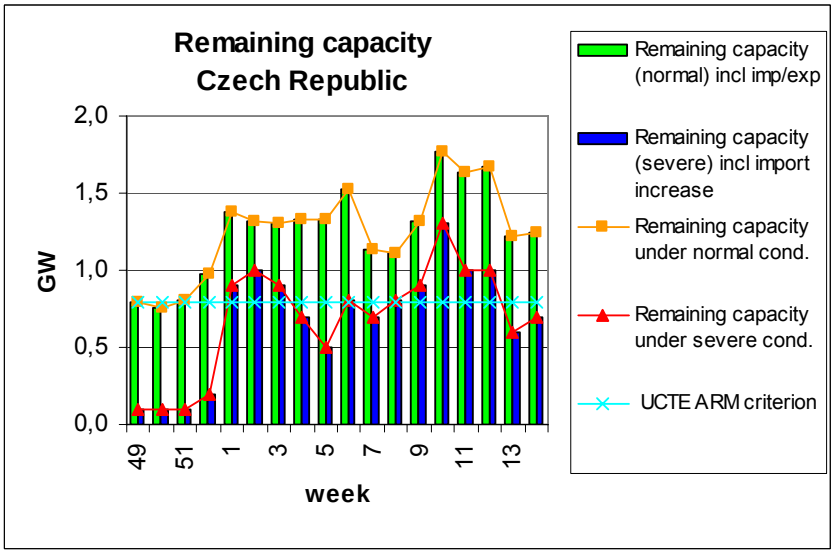
Any other fuel supply issues which could affect availability e.g. gas supply issues
Still under study in relation to gas infrastructure.

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.

North Eastern UCTE

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.

Only low exports are expected during weeks 49 through 52 and some minor imports can emerge under normal conditions. Under severe conditions, the remaining capacity is positive, but with a low value.

From the beginning of next year, the balance analyses show average export capability around 600MW (minimum 300MW for weeks 7 and 8) in normal conditions. In severe conditions, the remaining capacity is in average around the same value as the ARM; however it is lower for weeks 4, 5 and 7.

CEPS has no forward information on planned 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 current Annual Operational Plan (AOP) for coming year, the final version of which will be approved in late November 2008.

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 needs in terms of structure and volume, planned outages of generation capacities, disconnection schedule (tripping plan) of transmission system facilities, analyses of transmission and short circuit conditions in the transmission system, overview of facilities, etc. Results of AOP serve 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.

Overhauls are consistent with the last schedule provided by the generators for AOP. Average expected value of outages is based on the unavailability rates of significant units.

Generation-demand balance

Higher overhauls during weeks 49-52 have a negative effect on the balance. Planned outage of two 200MW units was prolonged for all winter weeks. However, it is expected, that even in the case of severe condition the generation capacity will allow some export during weeks 1-14.

Role of interconnection

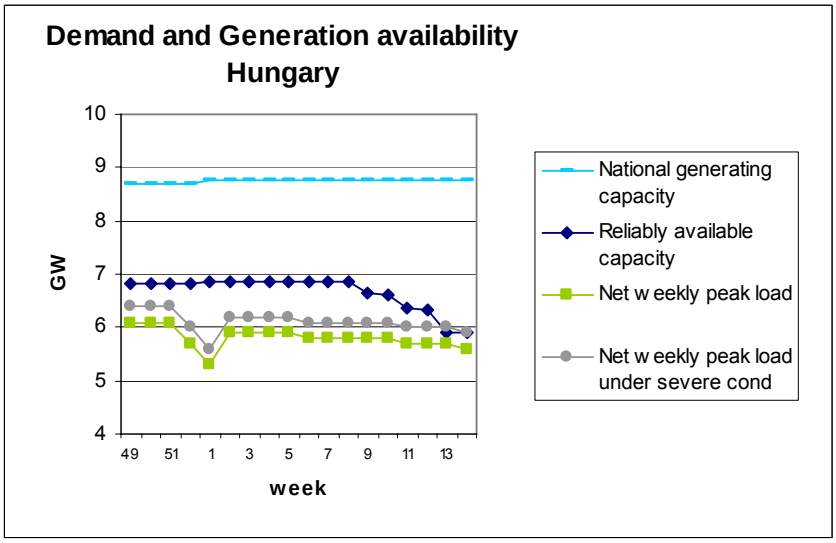
Interconnection capacity is sufficient to export spare generation capacity. Stronger interconnection to south (Slavetice-Durnrohr) is expected to be available already before 48th week.

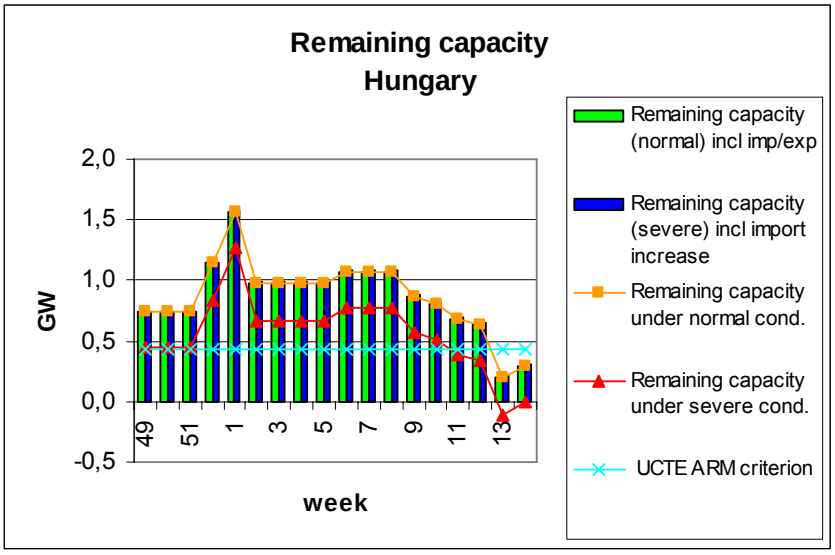
Values of firm export import contracts are not available to CEPS in advance. All export/import contracts are scheduled day ahead.

Additional comments

CEPS does not expect significant contribution or effects influencing the transmission system from intermittent energy sources, as there not significant yet in term of ratio intermittent to conventional sources. Development of installed capacity of wind farms is slower than expected so far.

HUNGARY





Comments

Synopsis

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

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

- Availability of fuel, first of all that of 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, mainly under severe conditions. Cross-border exchange is a matter of economy for market players. Their decision-making can be influenced by contractual conditions, e.g. on reserves.
- Overall cross-border capacity is satisfactory; however, allocation of cross-border capacity rights on the respective border sections may be an issue.

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, required international exchange of electricity, forecasted production of intermitted 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, severe minimum and severe maximum loads.
The necessary reserve level is determined in accordance with the procedure described in UCTE Operation Handbook (OH), taking into consideration the specificity of the Hungarian power system.
The plan is updated and published monthly on the web-site of MAVIR, combined with actual data.

Comments related to the generation-demand balance

Generation capacity – Hydro generation is not considerable unfortunately. Mothballed capacities are practically not available under any circumstances. Renewable energy (mainly biomass, but lately increasing amount of wind, too) and co-generation has a growing portion in the generation mix (over 23%), and their operation is very much legislation-sensitive, i.e. difficult to predict – take-off is obligatory, on regulated prices. Wind generation is growing (0.112GW at the moment), but due to its low availability, it is not taken into account in the balance (i.e. included as 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 it is 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)

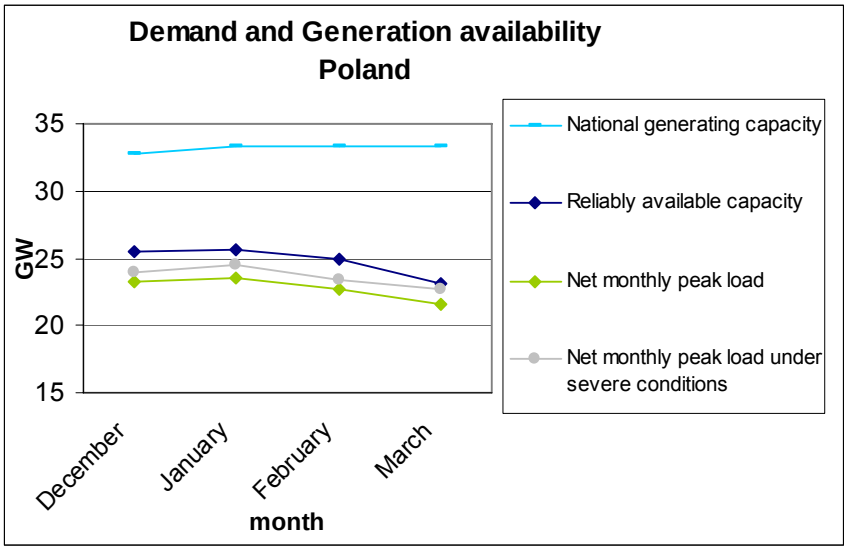
Remaining capacity – Secure operation requires at least 0.5GW of remaining capacity during the weekly peak demand periods, even under severe conditions (i.e. the capacity of the largest generation unit in the power system.)

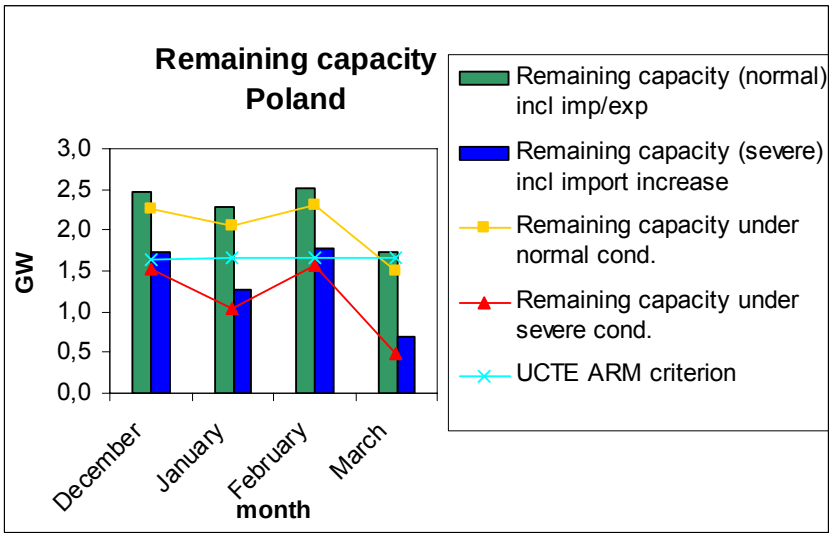
Comments on role of interconnections

Interconnection capacity – Since the Hungarian Power System is a part of the highly meshed Central-European network, cross-border trade is considerably limited by transit flows. However, cross-border capacity is most of the time available for the necessary amount of import.

International exchange – The Hungarian electricity market is traditionally import-oriented. After liberalisation had been completed, international exchange became much more sensitive to market conditions, even in short-term. Through market rules (pricing of balancing energy) and contracts (on provision of reserve power), the Hungarian TSO does its best to stimulate, or even oblige market players to ensure the required level of import, in order to guarantee the reliability of the power system.

POLAND





Comments

Foreword

Since the last two winters, the yearly peak load is recently observed in January. Also operational conditions have become now more difficult in January due to lower average temperatures than in December.

Results presented here rely on the forecasts for 3rd Wednesday for every month.

Synopsis

In spite of mild winters over the last two years (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 Polish system can be confirmed.

The forecast remaining capacity is lower than for previous winter. The main reasons for that are, besides the above mentioned demand growth, the higher values of non-usable capacities and outages. The amount of the non-usable capacities and outages of thermal power stations may increase during exceptionally cold periods.

Framework and method used for making the winter adequacy assessment
Forecast plans are being done for the whole year on a monthly basis – yearly coordinating plan. That is the reason why the questionnaire 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 every month Polish TSO publishes monthly coordinating plan, which includes the precise information for all the days of the next month. Further specification takes place in the operational planning.
PSE-Operator prepares one coordinating plan – no different scenarios.
Polish data is deterministic data, except outages.

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

Generation Available
National generation capacity:

Generation capacity will increase in January as the result of commissioning some wind power as well as a new conventional thermal unit. This unit cannot reach its full power yet, since it will need to be tested for the first three months.

Non-usable capacity contains mainly:
- increase of the heat production in combined heat and power plants,
- average factor of unavailability of wind generation, which amounts to 75%,
- part (ca. 40%) of pump storage power capacity that is treated as non-usable (usage of hydro power according to duration of peak load in winter season),
- technological and economical constraints.

Maintenance and overhauls comprises of:
- overhauls,
- long and mid-term maintenances.

Outages include:
- forced outages,
- maintenance due to unexpected faults during the start-up of the unit.

Outages are calculated not only on the basis of statistical data, but also by taking into consideration the present situation of the system. This is the reason why the values change every year. During severe winter these values may significantly rise. Moreover, the increase of outages is possible as the result of testing of the new conventional unit.

System Services Reserves are comprised of:
- primary and secondary reserves in conventional thermal power plants,
- pumped storage hydropower as the intervention reserves used exclusively by TSO.

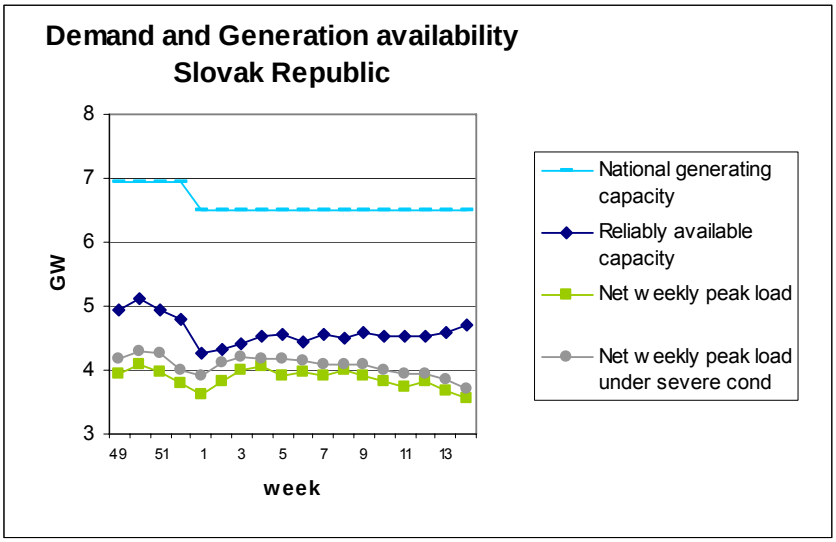
Remaining capacity
Taking into account the expected load and level of remaining capacity for the period under consideration no troubles with covering the demand are foreseen. However, the value of remaining capacity may decrease, due to unexpected growth of level of outages and non-usable capacities in connection with extreme weather conditions.
Level of remaining capacity during the normal conditions satisfies Polish TSO internal regulations which are included in Polish Grid Code. This level is close to UCTE ARM criteria.

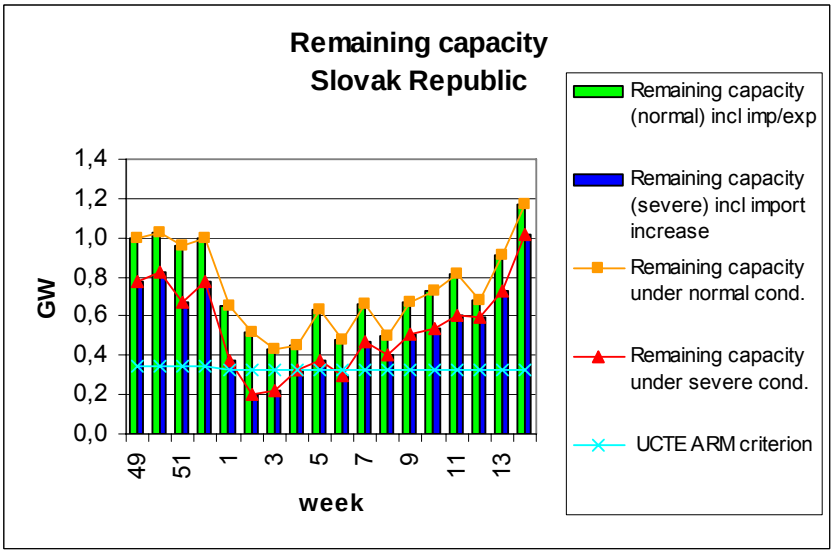
Role of interconnection

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 non-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 HVDC 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 as well as towards Nordel (below the rating of HVDC link due to internal transmission constraints in the north of Poland).

SLOVAK REPUBLIC





Comments

Foreword

The Slovak TSO, SEPS a.s. undertakes the study of the power system operation each year for the next year. The study is available at the end of November. The document is for internal purposes mainly, but selected parts are distributed among market participants. Based on the study the monthly, weekly and daily planning is made considering new information not available at the time of preparing the yearly study. In the yearly study estimations are made for Monday, Wednesday, Saturday and Sunday each week all over the year. The estimations are prepared for one scenario only - normal climatic conditions are considered. For “the ETSO Winter Outlook Report” severe winter peaks were calculated considering data of previous ten years.
In addition to the yearly study SEPS, a.s. prepares every two years the transmission system development plan for the next ten years.

Generation - Load balance:

Expected generation capacities are sufficient for secure and reliable power system operation in the coming winter period. Firm contracts are not known yet but considering last winter, import is

expected, mainly from January to March. Interconnection capacities are sufficient for expected import of electricity.

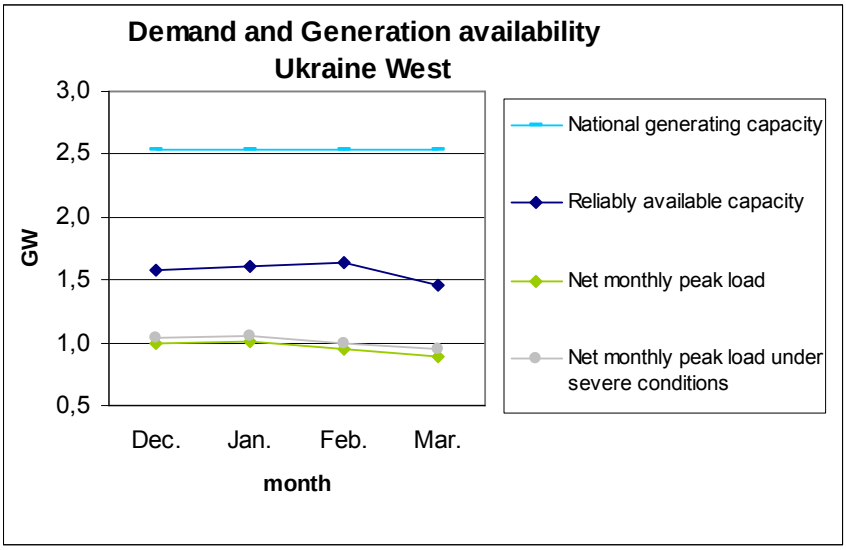
In the process of access negotiations with the European Union, the Slovak government accepted a commitment to close down (in 2006 and 2008) two 440MW units of the nuclear power plant in Jaslovske Bohunice. For this reason, an additional 440MW of total installed power capacity will be lost by the end of 2008. The capacities of hydro and fossil fuel power plants will be at the same level as the last winter.

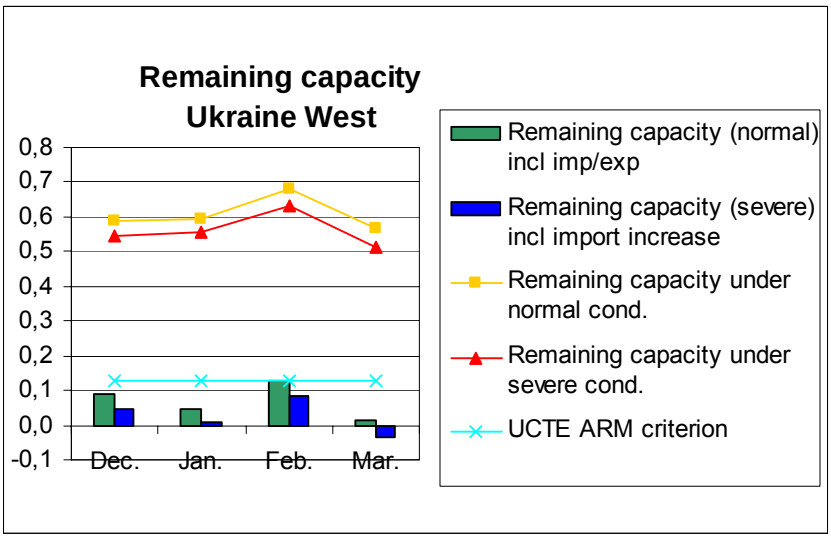
No critical periods are expected for the next winter. The adequacy reference margin (ARM) defined by UCTE is fulfilled in all weeks under normal conditions. The analysis under severe conditions shows that criterion ARM is noticeably less than 5% only in the second and third weeks of 2009. Internally SEPS, a.s. does not use another criterion for assessment of generation adequacy.

Role of interconnection

At the time of writing, the process of coordination with adjacent TSOs to prepare for common operation of interconnections is not finished yet. Nevertheless interconnections are expected to be sufficient to meet volumes of expected import or export.

UKRAINE-WEST

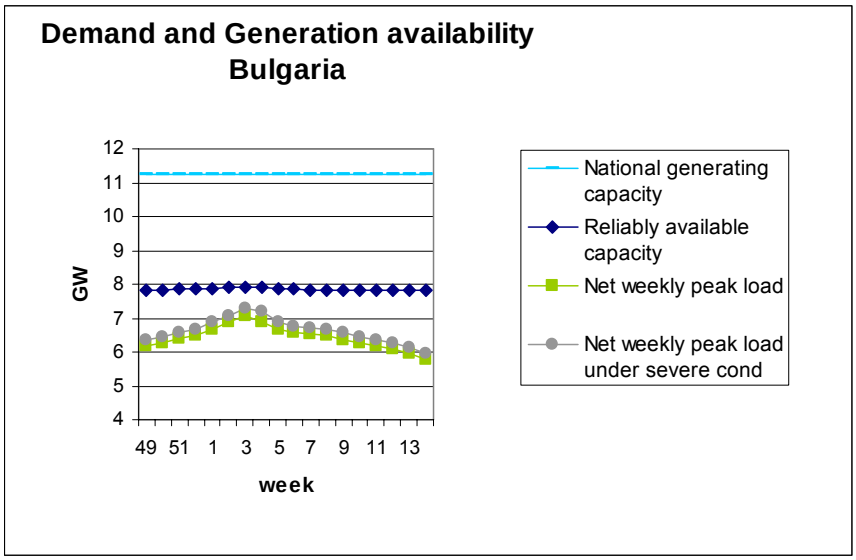


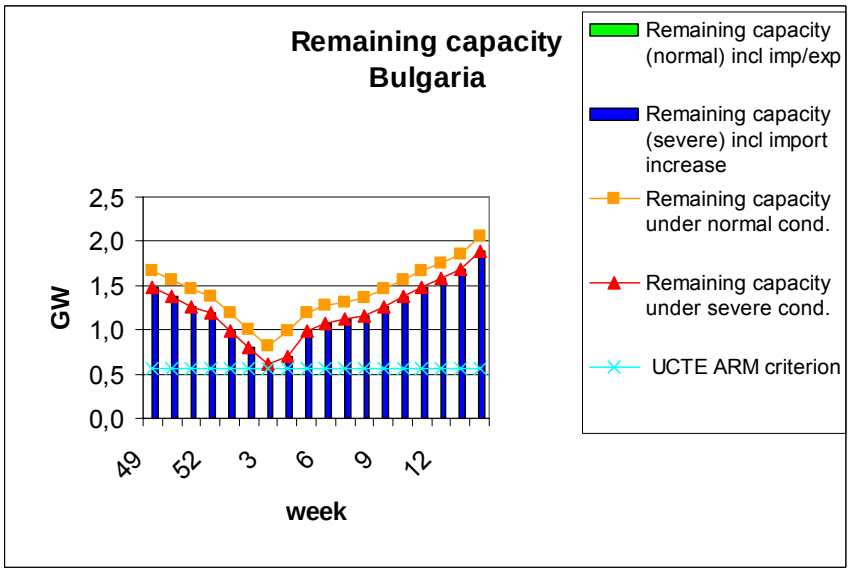


South Eastern UCTE

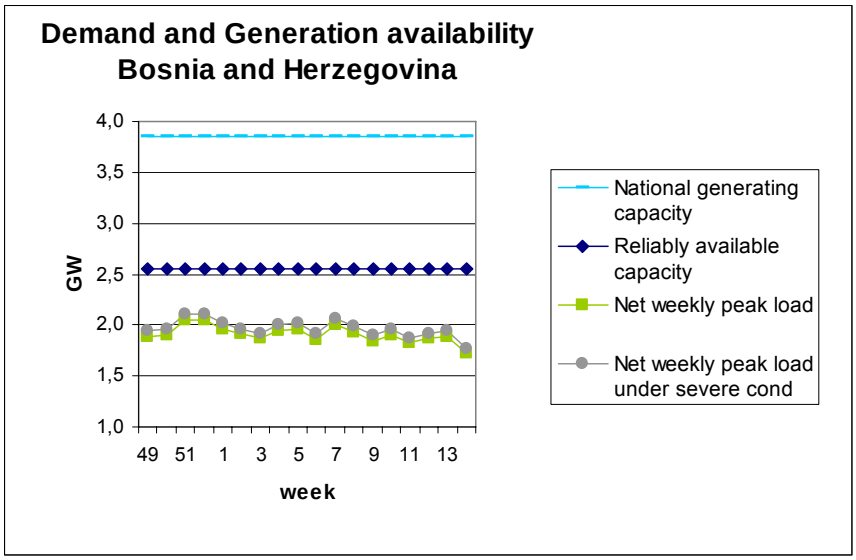
BULGARIA

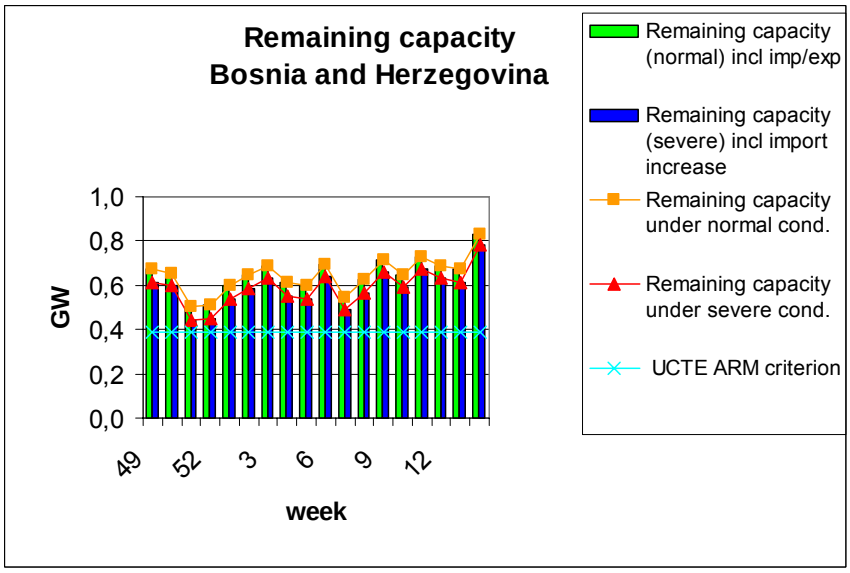
No addition of new generation capacity is expected for the coming winter. The maintenance schedule of the generating units is set to minimum. No problems in the transmission network are expected because of major maintenance works over the summer period. All possible activities will be done in order to keep the forced outage rate of the generating units to the lowest possible level. The hydro conditions can be defined as normal and the target level of all reservoirs will be met which guarantees reliable operation and predictable contribution of all hydro plants. Under these conditions all criteria for the system adequacy will be met.





BOSNIA HERZEGOVINA





No critical period is expected during the winter 2008/09. The main factor of risk is the outage of the one of large thermal power plants of 300MW, but even then the load can be covered by the remaining plants.

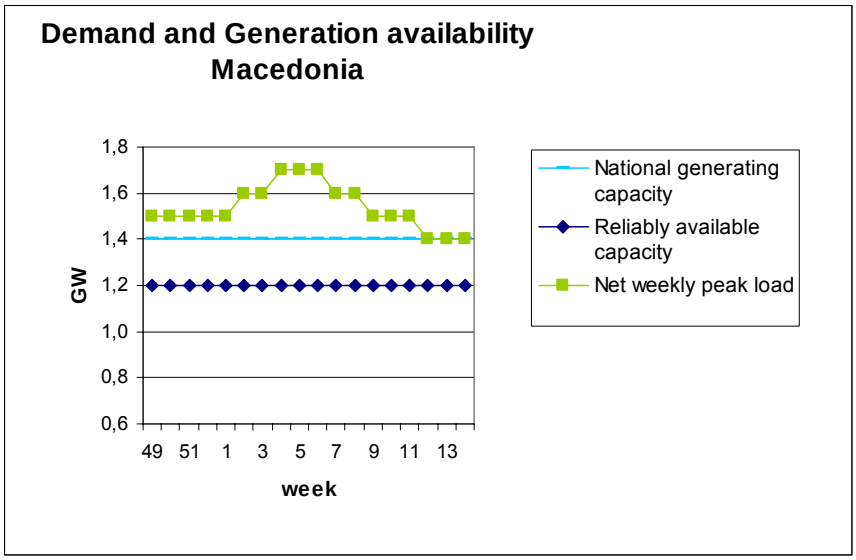
The expected load and the available installed power seem to be enough for a secure operation of the network. This is true even under severe temperature conditions.

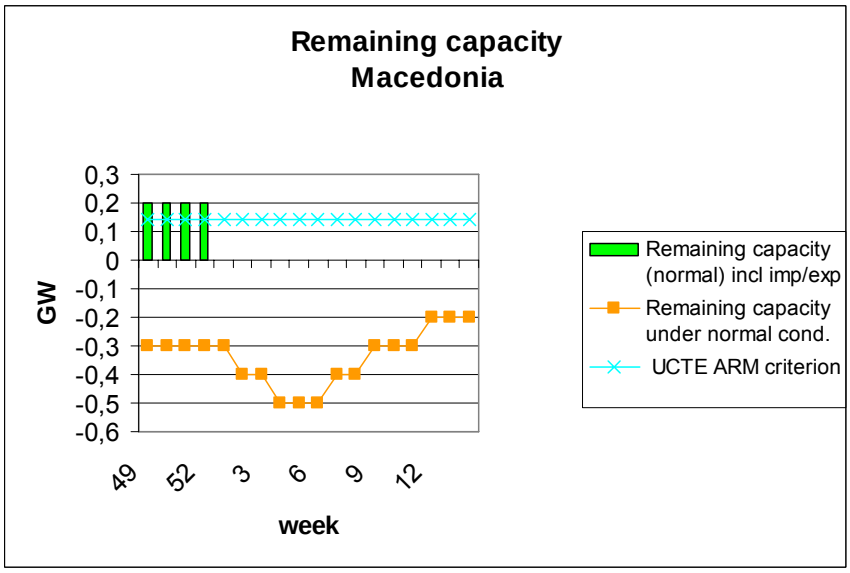
The TSO does not expect any variations of the interconnection capacities during the winter.

MONTENEGRO

No Contribution available

FORMER YUGOSLAV REPUBLIC OF MACEDONIA





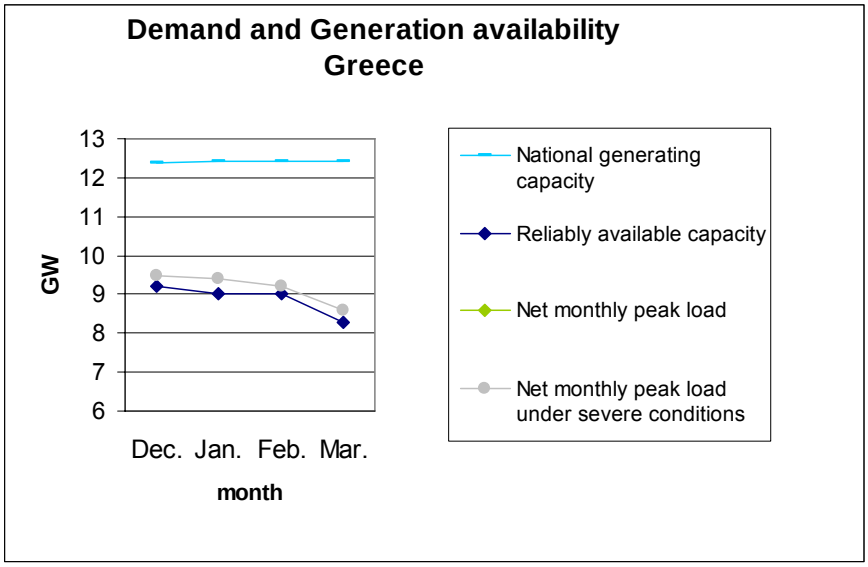
Macedonian electricity system depends upon imports of energy to reach adequate balance between consumption and production/import. We have firm import contracts, till the end of 2008, but the contracts for 2009 are not finished, so we couldn't put data in the table for 2009.

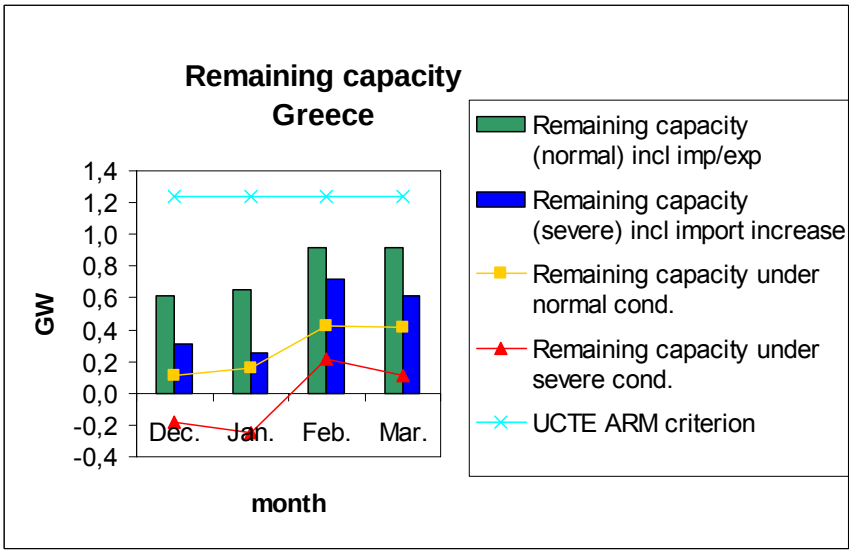
Generally, the 2008 summer conditions were very close to the forecast ones from the point of view of temperatures, but the whole period was extremely dry with limited flows. That resulted to the deterioration of the hydraulic reserves with possible bad consequences during the high load winter period.

Macedonian transmission network has well developed interconnections with neighbours: two 400kV tie-lines with Greece and one 400kV tie-line to Serbia. The new 400 kV interconnection to Bulgaria will be commissioned at the end of 2008. So, the operation of power system will be secure and reliable over all the period.

We hope that the import contracts for the winter period (2009) will be signed very soon, so the generation-load balance on the Macedonian system will not considered at risk, during the winter 2008-2009

GREECE





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 is low in both cases, normal and severe conditions, especially in December and January. 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 import capacity.
In case of severe conditions, 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 the System Adequacy Assessment

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 2009-2020, 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 October by 335MW (instead of previous January) in comparison the previous year.
For the forthcoming winter the weather conditions will be very crucial because, after the serious drought period 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 '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 - 275MW net production 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 have been very bad over the last two years so the water reserves are low. 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 75% 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 averages 147MW/˚C.

The load is the sum of two components. The first one reflects the load sensitivity to the weather (temperature, humidity and cloudiness), while the other one depends 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.

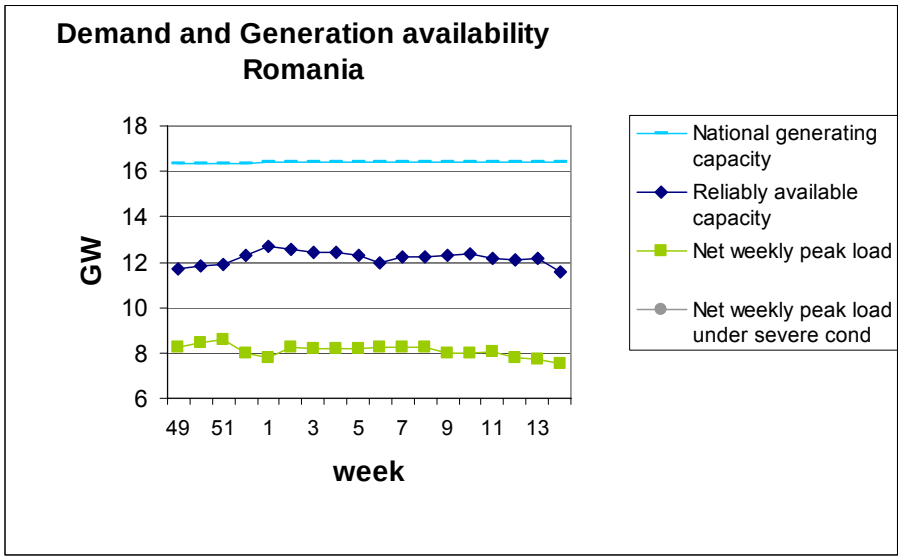
Load reduction is available upon decision of the Ministry of Development and the Regulatory Authority for Energy, but in this report we consider no load reduction measures.

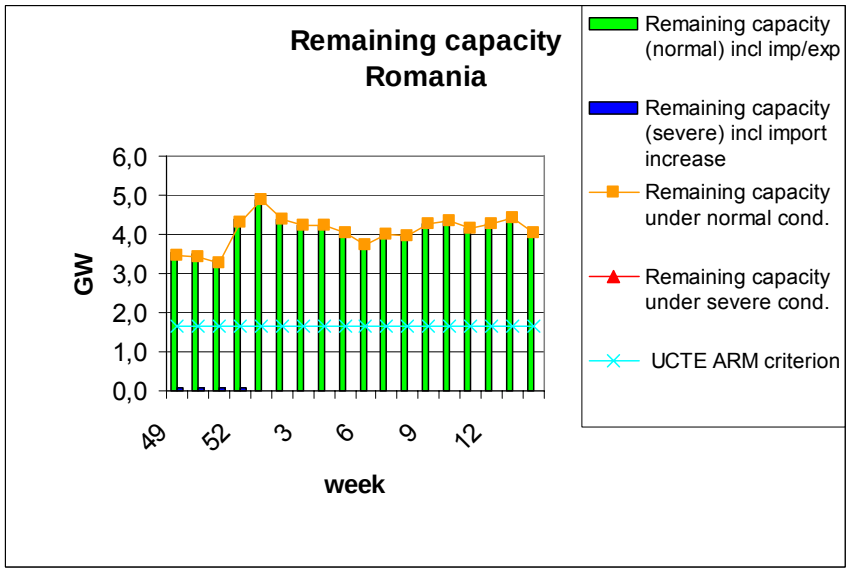
System services include primary, secondary and tertiary reserve according to the UCTE OH Policy 1.

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 and January. 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 550MW net production is necessary for the adequate and secure operation of the system.

ROMANIA





Synopsis

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

Short explanation of the framework and the method used for making the winter adequacy assessment

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.
Monthly planning studies are carried out 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 also done by Transelectrica);
- coordination of the tie-lines schedule with the neighbouring power systems.

The results include information concerning the necessary generation levels, the network topology and voltage level measures in order to ensure secure power system operation in those time periods.
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 operation of the Balancing Market.

Generation – Demand balance

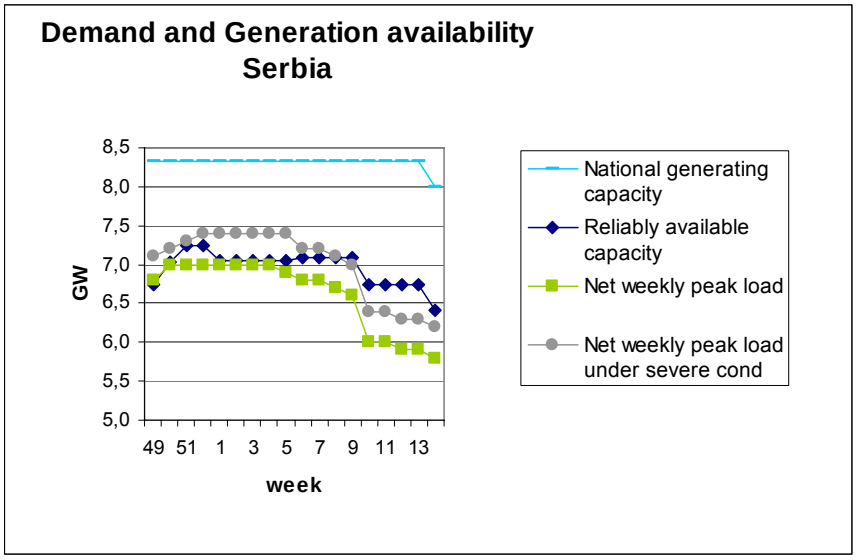
The national generating capacity value is established related to the yearly declaration of the producers. The maintenance/overhauls of the units are scheduled during off-peak periods in accordance with the specific characteristics for each power plant type. Mean while the equivalent outage rates for the generating units are based on multi-annual statistics taking into account the probability of the units' unavailability.
Regarding the demand forecast Transelectrica expects a 3% rate of increase attributable to economical growth, 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 40MW/ºC.
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 despite of this there are not any solicitations to license the consumers yet.

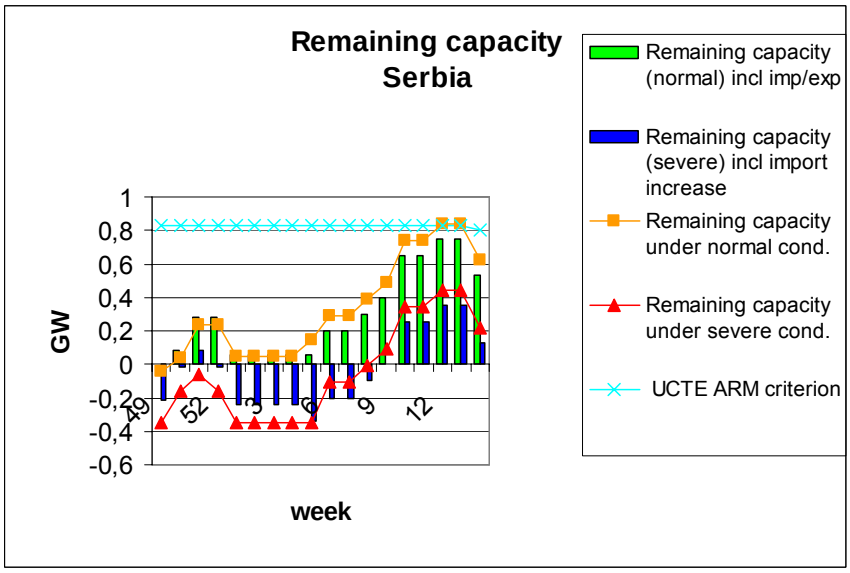
Role of interconnection

The synchronous interconnection allows to Transelectrica to facilitate commercial power exchanges with neighbouring TSOs, and also to carry out some emergency assistance if required.
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 interconnected operation with the UCTE countries, for the next winter 2008-2009 the maximum, indicative and non-guaranteed values are 1400MW for import and 1800MW for export.
The NTC values with West Ukraine must be added, in the amounts of 300MW import and 150MW export, respectively.
All these values do not include the capacity values for possible involved lines in island operation with non-UCTE countries which are 410MW import and 350MW export.

Besides for the coming winter, Transelectrica does not expect transit flows which could jeopardize the interconnections.

REPUBLIC OF SERBIA





Synopsis

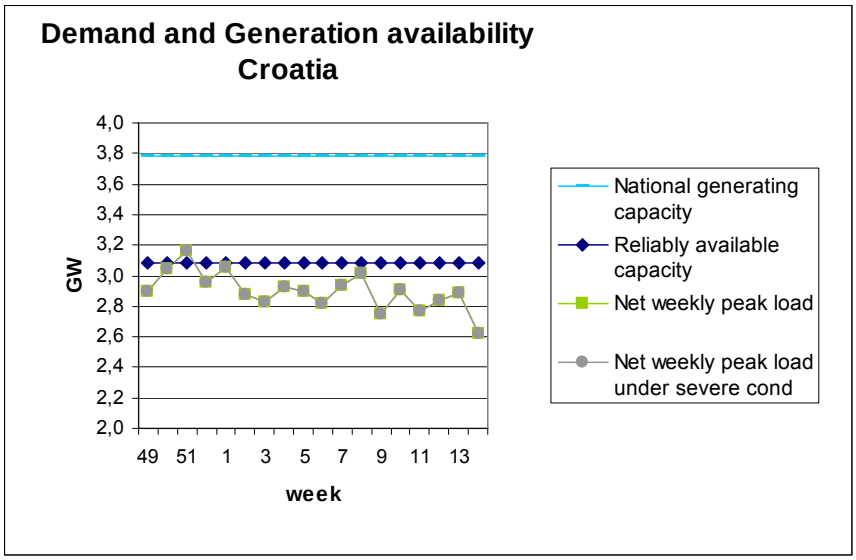
About 35% of electric energy in Serbia is provided by hydro and 65% from thermal power plants. Recent rehabilitation of a thermal unit on part of the Serbian power system which is currently under UNMIK (United Nations Mission in Kosovo) administration has decreased non-usable capacity by nearly 70% compared with last year. Overhauls of major units started in 2008 are planned to be finished at the beginning of December. New overhauls are going to start in March 2009. The period from mid-December to end-February are reserved for repair of small units.
Average expected value for outages remains the same: 250MW.
System service reserve is in accordance with Serbian Grid code which is come into force from May 2008. Validation of weekly peak load is based on an estimated load growth of 2% on average temperature. As a consequence peak load will continue to rise.

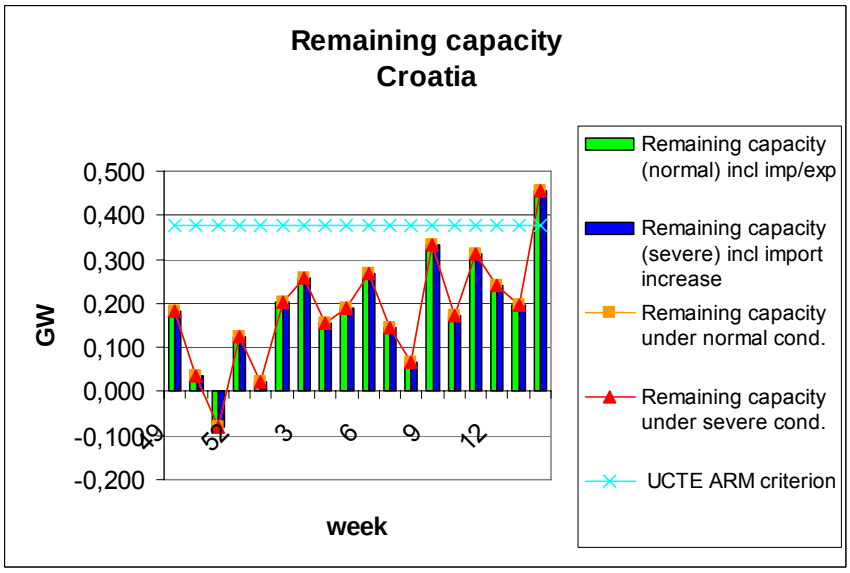
Role of interconnection

Serbian generation company Electric Power Industry of Serbia (EPS) has a long term contract with the Montenegrin generation company EPCG which belongs to the neighbouring control area Montenegro and includes use of the hydro power plant at Piva. According to this contract, band energy is exported from the Serbian control area to the Montenegro control area, and in exchange EPS has a right to use the hydro power plant Piva. As a result, Serbia does not cover all load needs for the forthcoming winter period, so import of energy is inevitable. In case of severe condition Serbia is ready to provide additional import.

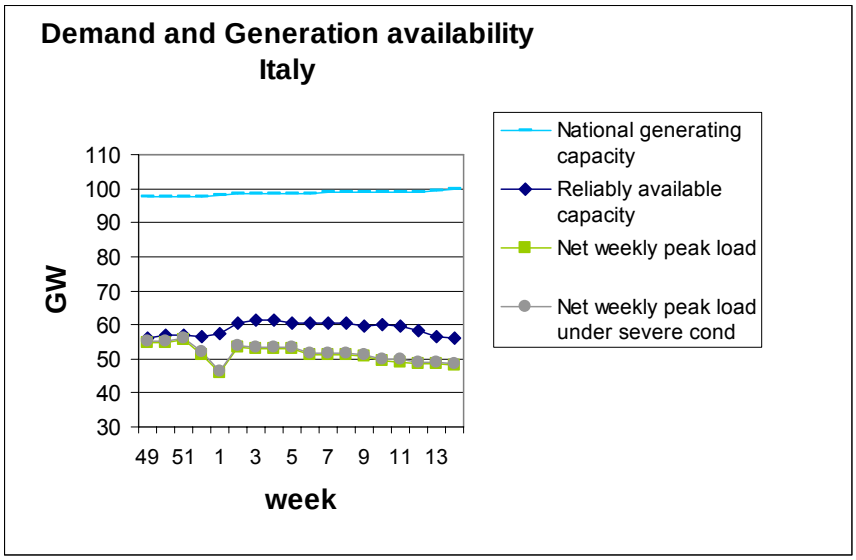
Centre South UCTE

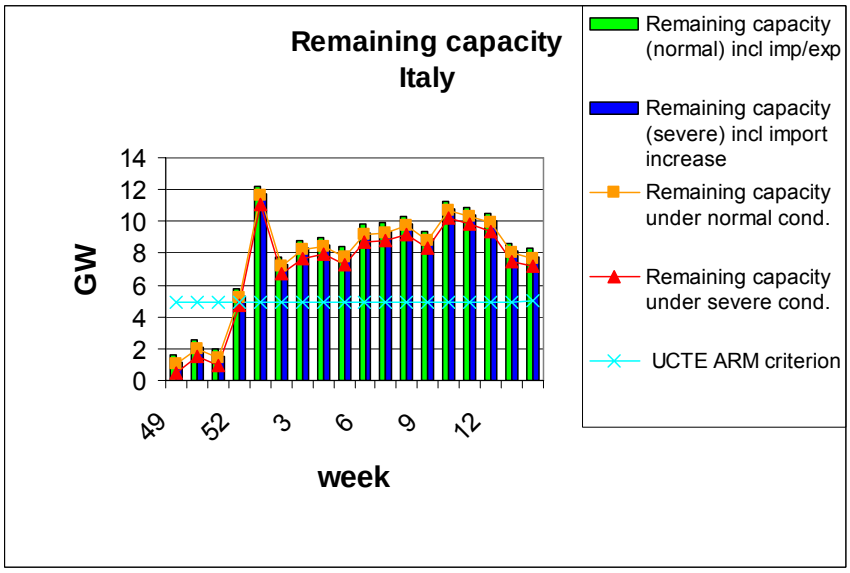
CROATIA


Demand and Generation availability
Croatia
GW
4,0
3,8
3,6
3,4
3,2
3,0
2,8
2,6
2,4
2,2
2,0
49 51 1 3 5 7 9 11 13
week
National generating capacity
Reliably available capacity
Net weekly peak load
Net weekly peak load under severe cond


Remaining capacity
Croatia
GW
0,500
0,400
0,300
0,200
0,100
0,000
-0,100
-0,200
49 52 3 6 9 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

ITALY





Synopsis

Under normal conditions the general situation expected in the winter 2008-09 is not critical. In the last quarter 2008 and in the year 2009, on the basis of the planned installations of new power plants, the thermoelectric capacity will increase of about 7GW for the mainland.

Unexpected events (i.e. a sudden lack of gas supply at the international level) that cannot guarantee fuel to combined cycle and gas thermal plants, or the unforeseen outages of fundamental grid elements) can lead to possible critical periods.

In normal conditions the remaining capacity, including only the firm importing contracts, is in most cases over 2GW c.a. This value can be higher with a full importing capacity.

Short explanation of the framework and the method used for making the winter adequacy assessment

The Medium-term power system adequacy assessment is performed on a rolling basis for the incoming next 12 months.

The adequacy evaluation is carried out for each weekly peak load demand at the national level and also for each market zone and for some main aggregations (i.e. mainland and islands). For each area the available capacity for load demand supply is evaluated taking into account the following components:
Power exchanges with areas close to that under evaluation (i.e. for the mainland the import from external countries and power exchanges with the islands);
Estimated hydroelectric power generation;
Available thermoelectric power generation.

It should be noted that the wind power generation is not considered due to high uncertainties for a year-ahead time horizons.

The analysis also takes into account:
Power plants overhauls, consistent with information given by the Producers;
Thermoelectric outages capacity evaluated on a statistical basis;
Capacity limits due to the power plant cooling systems;
Transit limits within the transmission power system.

Generation – Demand balance

Under normal conditions the balance is not considered at risk for the system.

Critical periods can be caused in case of unexpected events (i.e. a sudden lack of gas supply at the international level, that cannot guarantee fuel to combined cycle and gas thermal plants, or the unforeseen outages of fundamental grid elements).

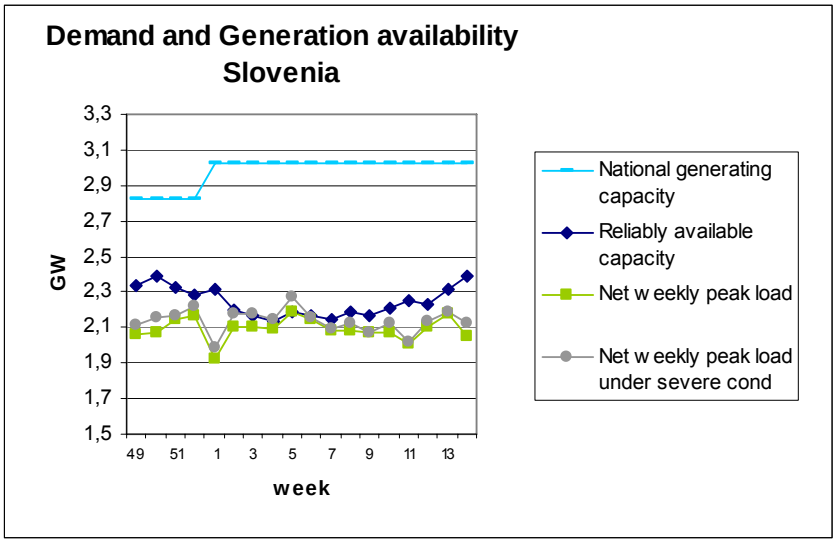
Nevertheless proper countermeasures are already in place either at the national level and/or at interconnections.

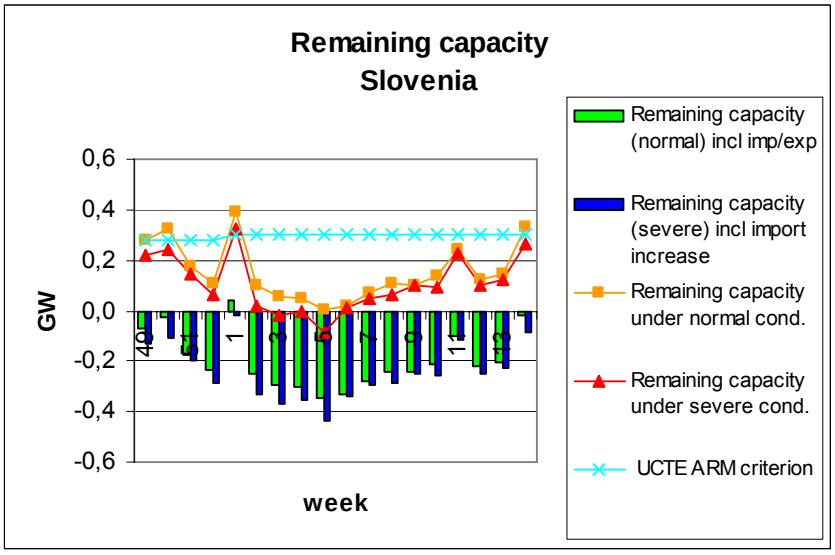
Role of interconnection

Under normal conditions in the Italian electric power system the load demand can be supplied by relying on the internal capacity.

Nevertheless the importing capacity from external power systems gives a fundamental contribution for wider margins. Under severe conditions the importing capacity becomes necessary to guarantee adequate reserve margins.

SLOVENIA





Synopsis

Slovenia has insufficient generation at peak load through almost all winter period. The most critical weeks are at the end of January and at the beginning of February when the lowest temperatures and low hydrology usually appear. The lack of primary energy sources (unfavourable hydrology, environmental constraints) will be mitigated with import. In case of loss of some major generation unit, system reserves will be used.

Framework and method used for making the winter adequacy assessment

A general study of System Adequacy is made on monthly basis once per year. For ETSO Winter Outlook requirements, TSOs statistic data is used and study is made separately. Two scenarios (normal/severe load) have been considered.

Generation – Load Balance

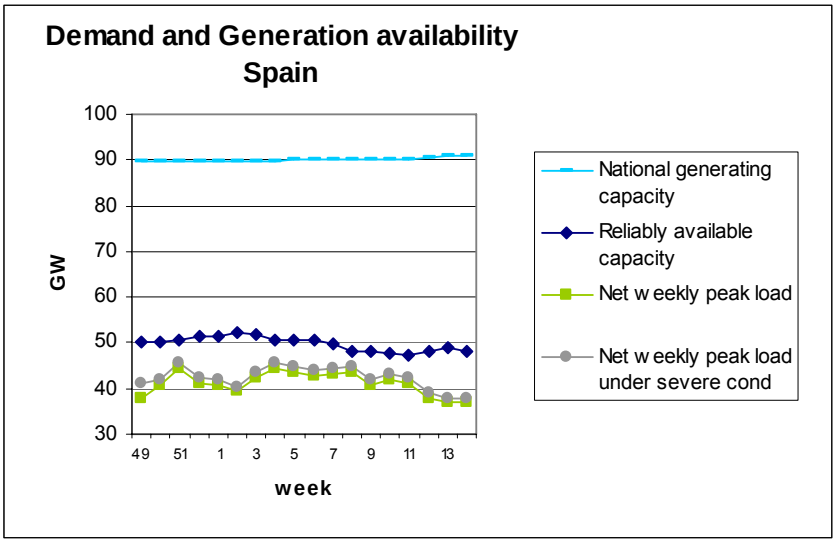
Low hydrology leads to non-usable capacities on the generation system.
No overhauls are planned during the winter period.

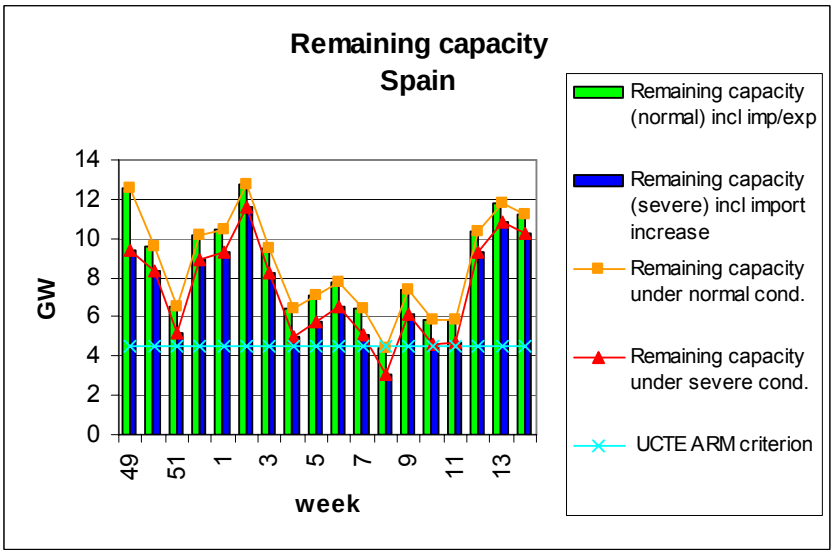
Winter peak-load increases by approximately 3% per year.
In severe winter conditions the most critical period occurs in weeks 3 to 5 (Remaining capacity without import/export is negative).

Role of Interconnection
Ownership of the nuclear power plant Krško is equally divided between Slovenia and Croatia, thus half of its generation is delivered to Croatia in accordance with the international agreement. With regard to past experiences no congestion on Slovenian-Croatian border is expected during winter period.

South Western UCTE

SPAIN





Comments

Synopsis

From the point of view of generation adequacy, the situation in the Spanish peninsular system is not critical for the coming winter, even considering the high planned overhaul capacity for this period. If average conditions are considered, remaining capacity will be around 8,700MW. Minimum value will decrease to 4,500MW.

Only in case of simultaneous extreme peak demand, very low wind generation (less than 8% of wind installed capacity), serious drought conditions and a very high thermal forced outage rate, one can find values of remaining capacity of 3,100MW.

The adequacy index forecast value, defined as the relationship between available capacity[1] and peak demand, in case of normal conditions is always over 1.12. Only in case of severe conditions as described before, it could decrease down to 1.09.

[1] Available capacity is defined as generating capacity minus non usable capacity at peak load, overhauls and outages

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.

Framework and method used for making the winter adequacy 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.

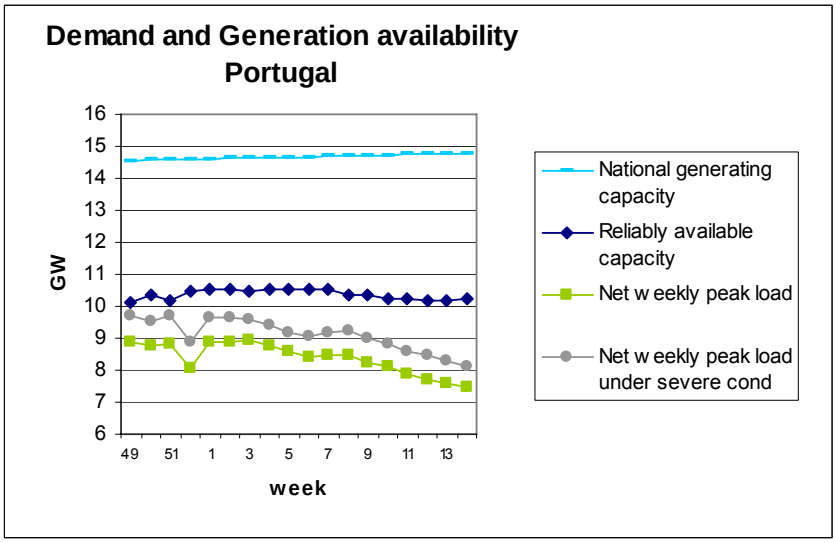
The medium term forecast considers several hydro conditions, available thermal capacity and wind production scenarios.
All scenarios are built under the following assumptions:

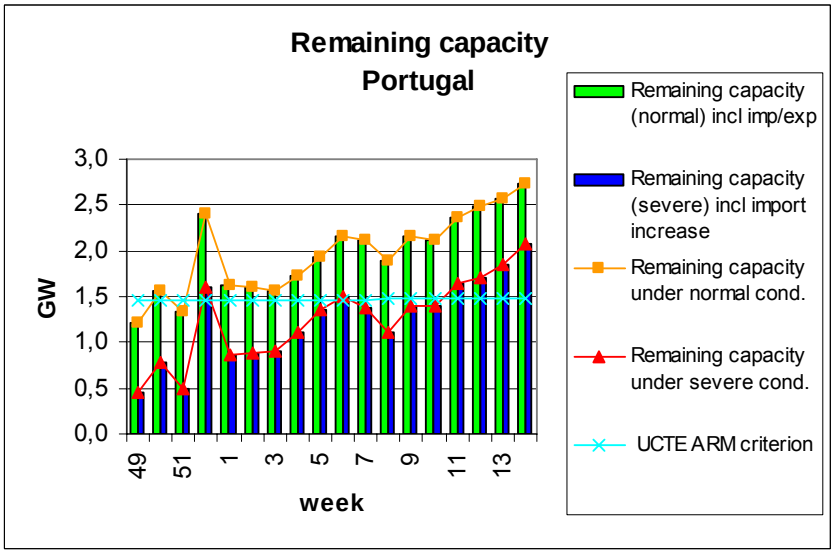
- Overhaul planning notified by generators for the incoming winter.
- Guaranteed fuel (gas) supply to combined cycle and gas thermal plants.
- Low wind conditions: wind generation considered is around 8% of available capacity. Wind generation has been above this rate with a probability of 95%.

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 due to 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;
- Unplanned average forced outage of thermal capacity with a 10% probability of being exceeded (around 3,800MW).

PORTUGAL





Comments

Main results

No difficulties are expected on the operation of the Portuguese system during next winter. Under normal conditions, the remaining capacity margin should stay at a secure level, with only two weeks below the ARM – UCTE (10%) threshold. In an extreme peak demand condition scenario, the margin could drop below 5% of installed capacity on weeks 49 and 51, but even so without resorting to imports.

Additional information

These results are based on studies undertaken in the framework of security of supply analysis. These studies are made on a weekly basis, with internally developed tools, to assess the water value of the reservoirs and determine the optimal hydro and thermal production. The method uses a probabilistic approach where several hydro inflow scenarios are considered.
These studies are not public and are made for the horizon of up to the end of the following year.

From our forecasts, generation/demand balance is not at risk for the coming winter, so we are not considering any demand management measures.

The remaining capacity margin was computed according to the UCTE Adequacy Reference Margin (ARM) criteria, so results are based on average conditions:

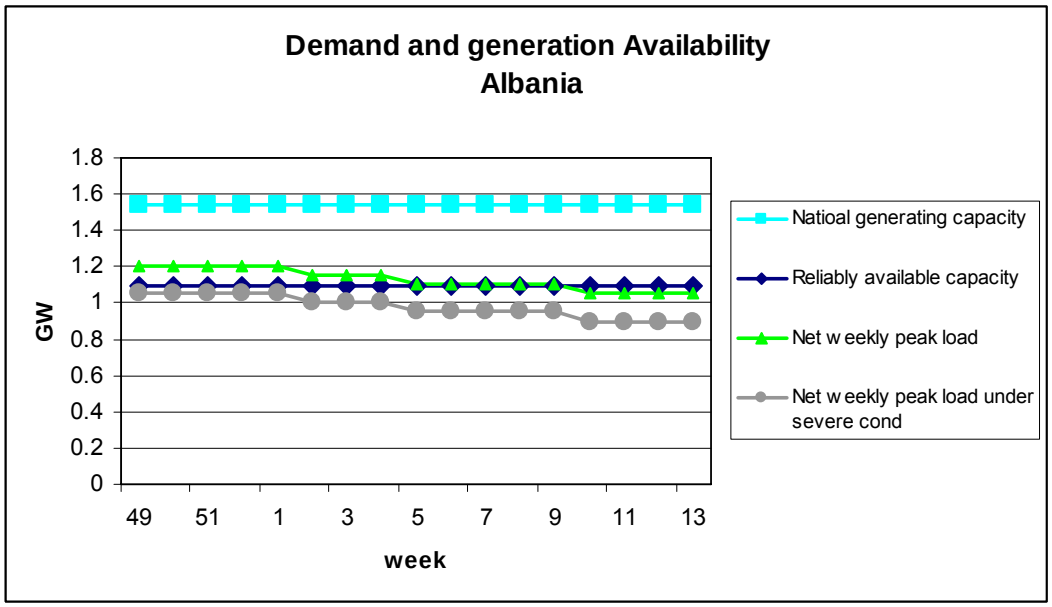
- Average hydro conditions (taking into account the actual levels of the reservoirs)
- Average wind production based on historical data (27% of utilization)
- Planned available capacity for the thermal power stations
- Average Outages based on historical data

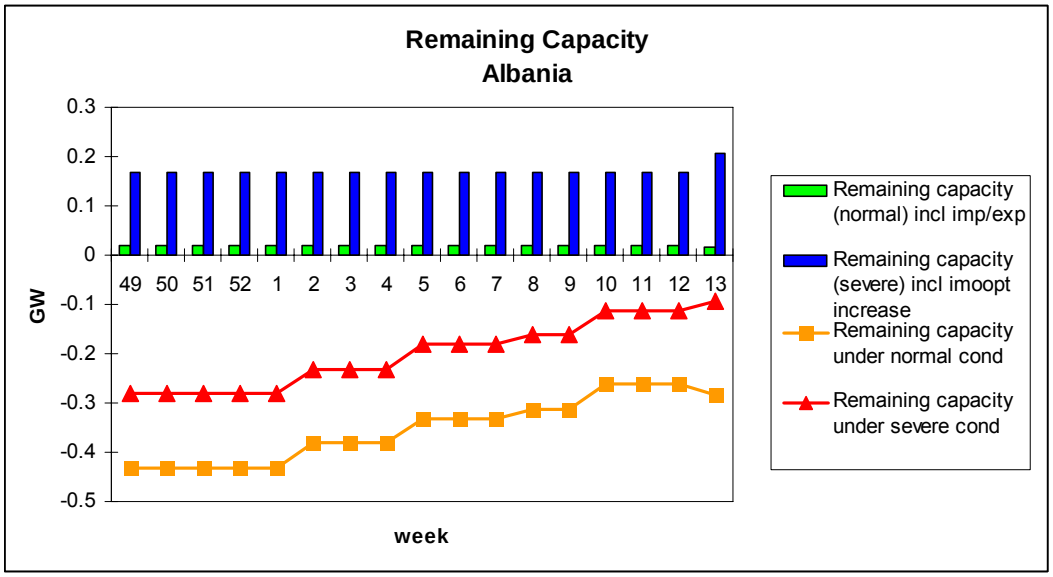
Variations to the demand level were included, resulting in a severe load condition scenario that presents a 1% probability of being exceeded.

Although interconnection capacity plays an important role on the operation of Portuguese transmission grid, the power balance can be achieved without importing from Spain.

Additional Contributing Countries

Albania





Synopsis

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

Framework and the method used for making the winter adequacy assessment

Based on a Grid Code and Commercial Code in compliance with UCTE rules, OST Company performs all the activities in order to ensure reliable and stable operation of our network. The main

duty is to coordinate the operation of all installations with the purpose of satisfying the power demands in terms of quality and safety.

Annual planning studies are performed based on load forecast, load flow, steady state and dynamic stability analyses. The network input data are based on the following items:
- harmonization of the producers schedules on yearly basis;
- an approved yearly internal line schedule ;
- coordination of the tie-lines schedule with the neighbouring power systems

The results include information concerning the necessary generation volume, the network topology and voltage level measures in order to obtain a safe power system operation in those time periods.
When there are some deviations from the input data, OST has to perform another analysis on a monthly basis.
However with updated data OST should carry out operational short-term (day ahead) programming, sustained at least on load flow computations as a means to detect daily network bottlenecks, which are resolved by re-dispatching.

Generation – Demand balance

The national generating capacity value is established related to the yearly probabilistic studies based on the existing lake level at Fierza and water flows estimated using historical data and probabilities. Fierza lake is used as the yearly base of production projections, because it is the main guarantee of production cascade and the whole internal production.

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 unit's unavailability.

Regarding the demand forecast OST expects 1-2% rate of increasing attributable to the state economy.

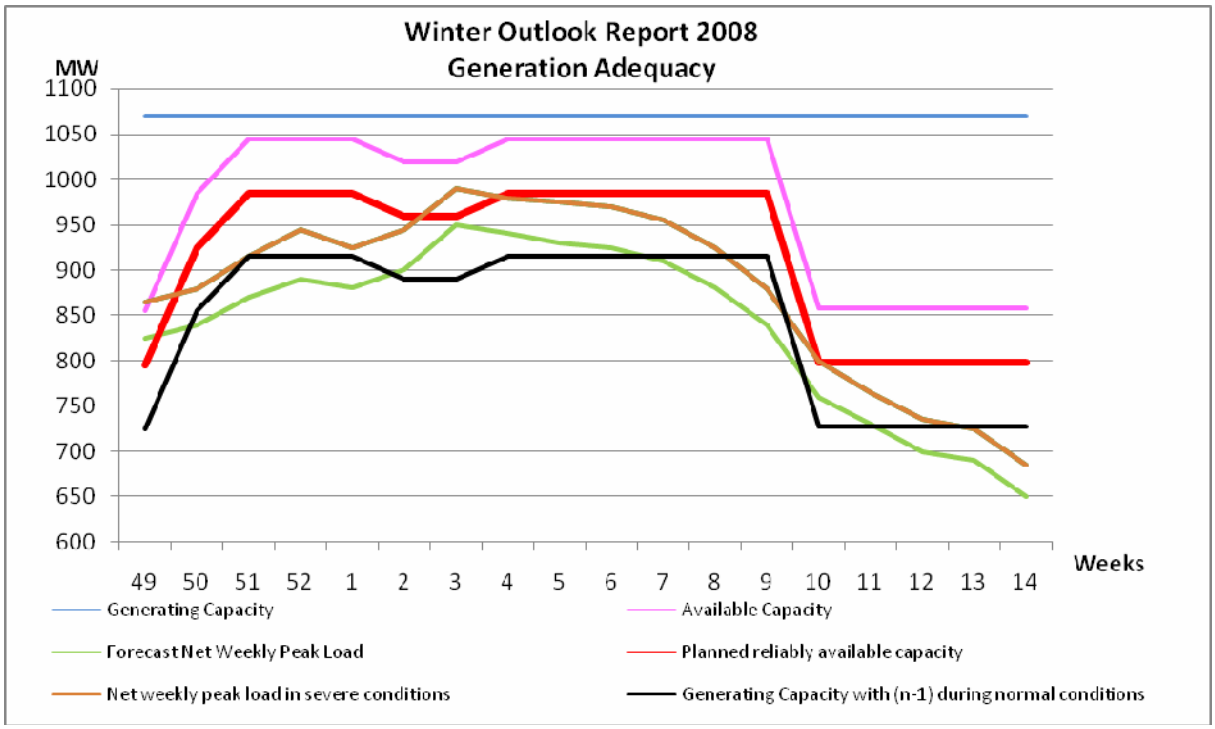
Role of interconnection

The synchronous interconnection allows to Albania Power System to facilitate meeting consumption requirements.
In respect of ETSO definitions OST 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, OST points out that their figures represent all transportable capacity. It must be noted that only 500MW import and 300MW export represent the NTC values with other UCTE countries

For the coming winter, OST does not expect transit flows which could jeopardize the interconnections.

Cyprus



Synopsis

For the coming winter, no particular problem for generation and load balance is expected under normal conditions. However, in case one of the largest Generator Units (130MW) at Vasilikos Power Station is lost during the coming winter period there will be a generation inadequacy of the order of 20 to 160MW depending on time and the day. In this case the TSO will have to resort to load rejection of controllable loads (e.g. water-pumping, storage heaters etc) and depending on the time of the day that the shortage occurs, 11KV feeders supplying domestic load will be interrupted.

It must be said that the load is very sensitive to cloud coverage and temperatures conditions. The effects of these changes are critical to the generation-load balance forecast, because the Cyprus System is isolated. Also, unplanned outages of generation plants and changes in duration and timing of the maintenance of generators may cause unexpected unavailability of generators.

TSO Cyprus, tried to reschedule the planned outage for maintenance of power plants, but this option was not possible as Capacity Reserve Margin during the winter period does not allow it.

Methodology

Studies are made to estimate the weekly max demand curve for all the months of the year forecasts. Inputs considered are previous max demand data, weather forecasts and expected percentage increase load growth. Forecasts are made for mild, normal and severe weather conditions.

Generation-Demand Balance

Concerning the national generating capacity, the total net output thermal capacity is mainly from Fossil Fuel Power Stations with a plant capacity of 1070MW.

The maximum demand in the Cyprus electricity grid occurs during summer. No plant maintenance is normally allowed during July-August. Under normal operating conditions there is no excessive risk during the winter period except in the case of the loss of the largest unit. Availability of Generation varies from 840MW in week 49 of 2008 up to 1030MW in weeks 4, 5, 6 of 2009. This availability varies due to programmed plant maintenance.

A provisional overhaul schedule of the thermal power plants is communicated to TSO Cyprus by the Cyprus Electricity Authority and the final schedule is approved by the TSO, having taken into account the forecasts carried out by the TSO. Overhauls vary from 25MW to 212MW depending on the less and most critical weeks of the winter.

During normal peak conditions no generation shortage is expected during winter. In case of loss of largest unit (130MW) a shortage of 30MW will appear during week 49 but no load shedding will be necessary due to adequate spinning reserve. In case of severe conditions no generation shortages are anticipated unless severe conditions are accompanied by loss of largest unit in which case load shedding will be necessary during most times. A Combined Cycle Power Plant of 220MW will be commissioned during April 2009 and this remote generation shortage will not be repeated during the following winter.

Role of interconnection

The Cyprus Transmission System is an isolated system. No interconnections exist with other countries.

Potential additional areas for comments

Although numerous connection applications of wind parks are under study no Wind Parks are connected to the Cyprus grid as yet.

There are no mothballed plants in Cyprus.

Another fuel supply issue which could affect availability is that an LNG terminal is under study to be constructed in Cyprus. Forward plans are made for the conversion of Vasilikos Power Station generator boilers to burn natural gas.

2. Summary of Responses to Summer Review

BALTIC STATES – EE, LV, LT
No significant events.

GB
No significant events.

NI
No significant events.

RoI
No significant events.

NORDEL – DK, FI, NO, SE
No significant events.

AT
Climate conditions (temperature and rainfall) corresponded with the average climate conditions (Basis: 1971-2000) in summer 2008 (April to September). Severe thunderstorms hit several parts of Austria and caused local outages in the distribution grid.
The important North-South 220 kV line (St. Peter – Salzach – Tauern), which was destroyed by windstorm "Emma" on March 1st 2008, has been reconstructed and is in operation since July 18th 2008.
Neither on the Czech-Austrian lines nor on the weak North-South lines, which are both prone to congestion, any mentionable occurrences (related to congestion) happened which could not be handled by congestion management measures.
While power demand remained almost unchanged, the run-of-river plants' generation was higher compared to summer 2007, which led to significantly lower imports compared to last year. From June to August Austria even exported electrical energy. EEX prices (base and peak) doubled compared to summer 2007.

BE
Due to the absence of a long period of dry and hot weather, which would reduce the flow of cooling water from the rivers and therefore the available generation capacity, the analysis of the system adequacy of the summer 2008 remained positive.

CH
The Swiss system did not experience any significant events, unusual conditions or emergency situations during the summer period 2008.

DE
Significant events
On 13 June 2008, the lights of the CEE System Monitor were set at "YELLOW" from 09.54 a.m. to 23.26 p.m.
Loading of interconnecting lines
During the period from June to September 2008, the interconnecting lines towards VE-T/PSE-O and VE-T/CEPS were at no time loaded to their maximum.
On those interconnecting lines, imports towards Germany were nominated over the entire period under review. As the capacity demand is higher than the calculated net transfer capacities (NTC) according to the ETSO method, capacity allocation to the market is implemented through an approved auction procedure in several time slices.

FR
For the last summer, no heat wave happened, consequently no significant losses of supply due to environmental constraints happened (average temperatures were always lower than normal temperatures), excepted at the end of June when constraints are stricter than in July and August.
Some lacks of margins happened in real time (margin in real time < 1 500 MW which is the minimum required), especially in June due to losses of generation and difficulties with important changes of scheduled exchanges (because of constraints like minimal duration of using on hydraulic power plant)

In July and August, margins were always higher than the minimum requested excepted two days. The problems were due to the tripping of generation units or consumption higher than forecast.

In August, some times, RTE did not have the minimal margin required in order to reduce generation when consumption was low.
To deal with margin problems, RTE mainly used the balancing mechanism.

IFA bipoles tripped several times during the summer, which caused reductions of exchanges between France and Great-Britain up to 1 000MW.

In late August, during some periods, because of problems of flows on the Swiss border, TERNA was requested by some neighbouring TSOs to reduce capacities at the Italian northern interconnection.

To solve problems with changes of scheduled exchanges, RTE discuss with hydraulic producers to get more flexibility in using hydraulic power plants.

Some analyses with neighbouring TSOs are conducted to determine the reason for the low flows to Italy probably due to unbalanced power flows.

LU
No special event.

NL
No special event.

CZ
No special event.

HU
Summer of 2008 was pretty calm for the Hungarian power system. There was no extremely high demand; the total demand was actually lower than last year. Outages of generators remained rather low. The grid was reliable and controllable.
MAVIR, the Hungarian TSO procured the necessary amount of reserve power by concluding market maker contracts, which put an obligation on the market players to offer their capacities on the daily market of ancillary services. This solution proved to be effective.

PL
No contribution available.

SK
<u>17 June, 2008 - Shut down of 400kV substation Levice</u>
During the maintenance work (on a disconnector) in the 400kV sub-station Levice, the substation was switched off on 17 June 2008, at 9:57 hrs. The reason was an approach of the working floor to the bus-bar and consequently action of differential bus-bar protection (the electric arc injured two workers). The substation Levice was shut down. Most of the 400kV lines (including the tie line with Hungary) and both 400/110kV transformers were switched off.
The shut down of the substation caused the loss on the production and consumption side. Above all the nearby nuclear power station Mochovce lost the production 800MW (two nuclear units). The total loss of consumption was 46MWh. The first 400kV line was switched on in 5 minutes. The normal

operation of the substation was recovered within 15 minutes. The generators of the first nuclear unit in Mochovce were synchronized on 13:29 hrs. (of the second nuclear unit on 23:08 hrs).
The loss of production was covered by activation of ancillary services and import of electricity from adjacent TSOs according to the contracts of emergency help (150MW from ČEPS, a.s. and 150MW from PSE-O).

Ukraine West
No contribution available.

BG
No significant event was reported

BA
No significant event was reported

ME
No contribution available

MK
No significant event was reported.

GR
During the summer there were no unusual events in the Greek System. As was expected, the demand was high all over the summer, but without significant peaks as severe conditions were not experienced in Greece. The only significant event was the continuous high demand until the middle of September due to drought, high temperatures and humidity.

RO
The Romanian system did not experience unusual events or conditions during the 2008 summer period.

RS
During this summer period Serbian power system did not have any significant problem. Hydrology was good and overhauls were conducted according to the plan.

HR
No contribution available.

IT
The adequacy evaluations for 2008 summer period did not show particular risk for capacity adequacy and load covering as well as with the national supply system's.
Favourable weather conditions increased sensibly the production from renewable sources, while the hydro generation remain steady. Wind power and thermal plants generation increased over than 900 MW. No remark for generation availability with respect to the generation overhauls (both planned/unplanned).
The temperatures during the summer were below the average with decreasing effects on the monthly consumption as compared to the same period in the previous year. In particular, on July, power hour peaks of production remained under low values with respect top the previous summer.
Other new lines and devices were put in service with reinforcement of the transmission network with benefits on reducing local congestions.
A sensible reduction in terms of net import/export balance of physical exchanges has been recorded during last summer. Anyway interconnections remain the way to maintain the system security and share part of the reserve with the others union countries.

SI
Nuclear power plant Krško was stopped from 4th to 9th June due to technical problems on steam generators. The lack of generation was covered with import and tertiary reserves.
All overhauls on power plants and power lines maintenances were carried out as scheduled.

ES
No special event.

PT
No special event.

Albania
No special event.

Cyprus
On 16/9/2008 at 11:55 a Generator Transformer failure in Moni Power Station resulted in total generation loss of 180MW and line tripping with a total loss of 360 MW out of 862MW or 40% of the actual total system demand. The reasons for such a loss are being examined but on a first assessment it seems that the system protection failed to clear the fault in time. The operating reserve at the time was 66MW and in order to restore system operation the available Gas Turbine Generators were used to cover gradually the load. At 13:00 energy was restored to 90% of the system demand.
The fault was due to Transformer failure at Moni Power Station during maintenance time. An investigation committee consisting of EAC and TSO engineers is examining the fault. Lessons will be available after current investigation for this incident is finalised.