

An Overview of System Adequacy:

Summer Review and Winter Outlook Report 2009/10

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1. EXECUTIVE SUMMARY

The Winter Outlook/Summer Review report, prepared at European level, presents the summary of the national or regional power balances between forecast electricity generation and peak demand on a weekly basis for the winter period from the beginning of December 2009 until the end of March 2010. This is combined with a review of the past summer.

The generation capacities, peak load forecasts and 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 are based on data collected and information made available by the ENTSO-E member TSOs in October 2009.

The winter outlook 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. This is particularly the case for several countries in Southeastern Europe and for France.

For temperatures close to seasonal normal conditions, the French winter outlook for the electricity supply-demand balance appears less favourable than last winter, until the end of January. For temperatures close to seasonal norms, the estimated level of imports could therefore reach 4,000 MW for several weeks between mid-November 2009 and January 2010.

Dependence on imports occurs also in Finland and in Latvia during peak hours however availability of these imports is expected. Although the Ignalina nuclear power plant will be shut down at the end of 2009, Lithuania will be able to cover peak load during the winter period.

Under severe conditions, due mainly to low temperature or unfavourable hydroconditions, **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 even the end of March. As per the above, we make reference to Southeastern Europe and France in this context. In the event of an intense and sustained spell of cold weather, the technical limits for imports (9,000 MW) into the French grid could be reached. In South-Eastern Europe, it is expected that the available generation capacities in Bulgaria and Romania should be sufficient to cover negative remaining capacities even in severe conditions in neighbouring countries.

This survey aims 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. It also intends to verify that congestions on the transmission grid do not limit the exchange capacity. TSOs may also wish to use the information as a background in planning possible actions to meet the objectives for security of supply in critical situations. Similarly, market players and third parties may also use this preliminary assessment as reference material.

1.1 Summer Review Summary

GENERAL REMARK

In general, demand was lower than forecasted levels in all regions, mainly due to the ongoing financial and economic crisis.

NORTH SEA REGION

BELGIUM, DENMARK, FRANCE, GERMANY, GREAT BRITAIN, LUXEMBOURG, NETHERLANDS, NORTHERN IRELAND, NORWAY, REPUBLIC OF IRELAND.

For the North Sea Region, system operation and system adequacy has functioned without any major problems during the summer of 2009. In France, maintenance and/or meteorological conditions may have led to a more sensitive but however secure network situation.

In France, some lack of margins occurred, especially in late June, due to loss in generation and an increase of imports from the northern borders was observed mainly due to maintenance of power plants.

Baltic Sea Region

Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Sweden.

For both the Nordic and the Baltic countries system operation and system adequacy has functioned without any large problems in the summer of 2009. Some events were experienced in Poland on the 4th of July due to network disturbances and low voltages in the western part of the Polish system.

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

For the Continental South West Region system operation and system adequacy has functioned without any large problems in the summer of 2009. In France, maintenance and/or meteorological conditions may have led to a more sensitive but however secure network situation.

CONTINENTAL SOUTH EAST REGION

Bosnia-Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic of Macedonia (FYROM), Greece, Hungary, Italy, Montenegro, Republic of Serbia, Romania, Slovenia

For all countries in the Continental South East Region, system operation and system adequacy has functioned without any severe problems in the summer of 2009. Furthermore, the implementation of a new 400 kV line between FYROM and Bulgaria has improved system security all over the region.

CONTINENTAL CENTRE SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

Within the region no major event put at risk system adequacy during the last summer. The most remarkable events were:

- In Austria the commissioning of the Styrian line (380 kV Südburgenland – Kainachtal) in summer 2009 with benefits to relieve congestions on the 220 kV north south lines for the next winter period.
- In Italy a decrease of demand was apparent due to the economic crisis.

CONTINENTAL CENTRE EAST REGION***Austria, Croatia, Czech Republic, Germany, Hungary, Poland, Romania, Slovak Republic, Slovenia***

For the continental Centre East region system adequacy was not at risk during last summer. Some serious events were experienced in Poland on the 4th of July due to network disturbances and low voltages in the western part of the Polish system. Some loss of nuclear production occurred in the Slovak Republic which was covered by the activation of ancillary services with no impact to consumers.

The most significant event was the start up on the 1st September 2009 of the integrated daily market with implicit auctions between CEPS and SEPS.

ISOLATED SYSTEMS***Cyprus***

The most remarkable event was the partial operation of the Combined Cycle Plant at Vasilikos Power Station.

Iceland

No significant events in Iceland.

ADDITIONAL CONTRIBUTING COUNTRIES***Albania Ukraine West.***

No answers were received from Albania or Ukraine West.

1.2 Winter Outlook Summary

NORTH SEA REGION

Belgium, Denmark France, Germany, Great Britain, Luxembourg, Netherlands, Northern Ireland, Norway, Republic of Ireland

The survey shows that for the North Sea Region, the predicted levels of generation-load balances are forecasted to remain positive for the winter 2009/2010. Attention needs to be paid to the situation in France, since France might become import-dependent in both severe and normal conditions. Should this occur, there may be some pressure exerted on the region as a whole. Important remarkable events forecasted include the possibility of high wind feeds in due to an increase of wind generation capacity.

A further assessment for the Nordic market is available in Appendix 1.

BALTIC SEA REGION

Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Sweden

The survey shows that both for the Nordic countries on the whole, and for the Baltic countries on the whole, no particular risk of shortage is expected for the winter 2009/2010. This is true both under normal conditions and under severe conditions. However, both Finland and Latvia are dependent on imports from neighbouring countries. A further assessment for the Baltic Sea region is available in Appendix 1.

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

The survey shows that for the Continental South West Region on the whole, the generation-load balances are being predicted as positive for the winter 2009/2010. Attention should however be paid to the situation in France, since France might become import-dependent in both severe and normal conditions. This might consequently put pressure on the region as a whole.

CONTINENTAL SOUTH EAST REGION

Bosnia-Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic of Macedonia (FYROM), Greece, Hungary, Italy, Montenegro, Republic of Serbia, Romania, Slovenia

During the winter 2010, some countries in the Continental South East Region will depend on import capacity. In normal weather conditions no particular risk of shortage is expected for the winter 2009/2010.

CONTINENTAL CENTRE SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

Under normal conditions the expectations for the winter 2009/2010 in terms of generation and load coverage are generally expected to be critical within the region except some less favourable conditions in France which may require imports to cover electricity demand and maintain system security.

Some remarkable forecasted events are related to possible critical situations in Germany due to high wind power feed in.

CONTINENTAL CENTRE EAST REGION

Austria, Croatia, Czech Republic, Germany, Hungary, Poland, Romania, Slovak Republic, Slovenia

The generation and load balance for the winter 2009-2010 is not considered at risk within the region both under normal and severe conditions.

It is however noted that some countries may additionally rely on imports to cover the load (e.g. Croatia).

ISOLATED SYSTEMS

Cyprus

No remarkable events are expected for the winter 2009/2010.

Iceland

The generation capacity in Iceland is expected to be sufficient to meet peak demands this winter under normal and severe conditions.

ADDITIONAL CONTRIBUTING COUNTRIES

Albania, Ukraine West.

No information available.

2. INTRODUCTION AND METHODOLOGY

2.1 Scope & Objectives of the Report

2.1.1 Summer Review Report

The ENTSO-E summer review report presents a survey of the most remarkable events, according to the TSOs, with regard to security of supply during the summer period from 1st of June to 4th of October 2009. The ENTSO-E summer outlook report 2009 was previously published on the ENTSO-E website. The objective of the summer review is to present a summary of what happened during the summer 2009 in comparison to the forecasts, with particular regard to weather conditions and other factors with consequences on the power system, availability of interconnections and market conditions.

2.1.2 Winter Outlook Report

The ENTSO-E Winter Outlook report presents the outlook of the national and regional power balances between forecasted generation and peak demand on a weekly basis for the winter period from the beginning of September 2009 until the end of March 2010.

The objective of the ENTSO-E Winter Outlook Report is to present its member TSOs' views as regards any national or regional matters of concern regarding security of supply for the coming winter and the possibility of neighbouring countries contributing to the generation/demand balance in critical situations. The survey gives TSOs the opportunity to share information and gives the impetus to conduct further studies for ENTSO-E to develop a system adequacy methodology on a common basis for both Pan European and regional analysis.

2.2 Sources of Information & Methodology

2.2.1 Summer Review Report

The Summer Review report is based on the information given as answers to the questionnaire sent to every ENTSO-E TSO member in order to present what happened during the summer and to compare what occurred in reality with the risks identified in the Summer Outlook Report. The TSOs have answered if their respective system experienced any significant/unusual events or conditions during the summer period (e.g. major losses of supply, loss of interconnection availability/capacity, emergency situations etc.), what the causes were and if any remedial action was taken.

2.2.2 Winter Outlook Report

The ENTSO-E Winter Report is based on the answers to a questionnaire sent to every European TSO in September (see Appendix 2). The questions concern TSOs' practices as well as some quantitative data collected in order to present country forecasts on a common basis.

The methodology is to develop a qualitative comparison of forecast and actual market conditions and events, based on a narrative description of the winter.

TSOs have been invited to provide their appreciation of the generation-load adequacy for the coming winter. Then they have been invited to provide quantitative data where possible to

illustrate the forecast during the winter (e.g. actual peak load and major disturbances and their effect on generation or transmission capability etc.).

In respect of the Russia-Ukraine gas supply dispute, TSOs were asked questions relating to its effect on the availability of gas-fired electricity generation and the measures forecasted to mitigate its impact.

The basis of the analysis is the so-called “normal” conditions, which means that the generation forecasts (generation capacity, planned outages) relies 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 is of particular significance, as it influences directly the level of the load. Therefore, to illustrate the sensitivity of the balance to this parameter, a so called “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.

Appendix 1 shows the individual country responses to the Winter Outlook Questionnaire.

2.3 Aims and methodology

2.3.1 General considerations

The aim of this report is to present TSOs’ views as regards national or regional System Adequacy Forecasts for the coming winter and the possibility of neighbouring countries contributing to the balance in critical situations. The survey gives them the opportunity to share information and to implement the requirements of the EC Regulation n. 714/2009 in terms of winter adequacy outlooks to be provided. It also stimulates further studies on a bilateral basis.

The information is based on the answers to a questionnaire sent to every TSO at the end of September. The questions related to 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 2009 (week 49) until end of March- beginning of April 2010 (week 14). The TSOs were also questioned whether the generation–demand balance should be considered at risk or not for the winter 2009/2010. 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.

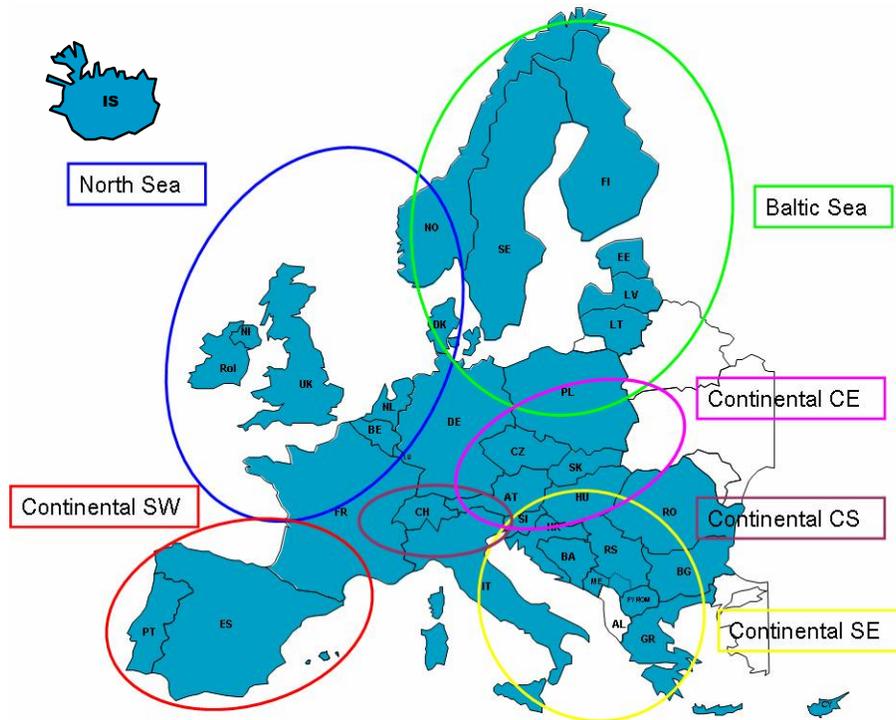
2.3.2 Methodology

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

The figures of the country individual responses in 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. The remaining capacity is also evaluated with firm import/export contracts and for severe conditions.

2.4 List of Contributing Countries

This report has been drawn up with the contributions of the countries listed below. The identification of blocks for the contributing countries under the Winter Review section relates to the regions under the ENTSO-E System Development Committee, as is shown below:



NORTH SEA REGION

Belgium, Denmark, France, Germany, Great Britain, Luxembourg, Netherlands, Northern Ireland, Norway, Republic of Ireland

BALTIC SEA REGION

Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Sweden

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

CONTINENTAL SOUTH EAST REGION

Bosnia-Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic of Macedonia (FYROM), Greece, Hungary, Italy, Montenegro, Republic of Serbia, Romania, Slovenia

CONTINENTAL CENTRE SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

CONTINENTAL CENTRE EAST REGION

Austria, Croatia, Czech Republic, Germany, Hungary, Poland, Romania, Slovak Republic, Slovenia

ISOLATED SYSTEMS

Cyprus, Iceland

ADDITIONAL CONTRIBUTING COUNTRIES

Albania, Ukraine West

3. SUMMER REVIEW 2009

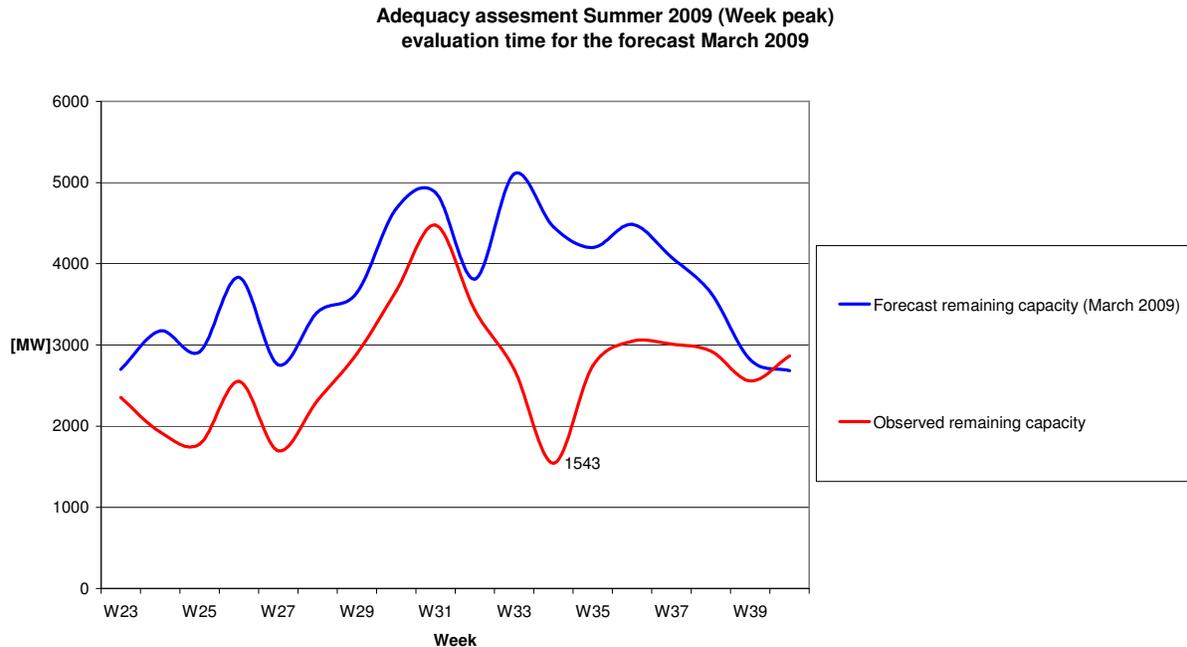
3.1 Summary of responses to Summer Outlook Review

NORTH SEA REGION

Belgium, Denmark, France, Germany, Great Britain, Luxembourg, the Netherlands, Northern Ireland, Norway, Republic of Ireland

Belgium

Due to the impact of the economic and financial crisis on the load values, the system adequacy of the summer 2009 remained positive (see figure below). The most critical situation occurred during the peak of week 34 in 2009. The unforeseen unavailability of several fossil fuel units and of a nuclear unit resulted in an unavailability capacity of 2.6 GW and in the lowest remaining capacity of the summer 2009 of 1.5 GW.



Denmark

It was a quiet summer with no severe conditions. The wind conditions have been average. It was warmer in June relative to 2008, while July and August in average were as warm as the same months in 2008. There were smaller planned outages. All in all, a quiet summer with no particular problems.

France

Last summer, no heat wave occurred except for a few days in mid August. Consequently there were no significant restrictions of supply due to environmental constraints.

However, there were some lack of margins (two hours ahead margin < 2400 MW which is the minimum required), especially in late June due to losses of generation.

Due to a low availability of the French generation fleet and the delay in the maintenance of some power plants, large levels of imports were visible especially from the northern borders of France. These imports led to a more sensitive but still secure network situation.

In some times in July and early August, RTE did not have the minimal margin required in order to reduce generation when consumption was low. To face these margin problems, RTE mainly used its balancing mechanism.

During several times within summer, tripping of IFA bipole caused reductions of exchanges between France and Great-Britain leading up to 1000 MW.

Germany

As a result of the economic crisis, demand was considerably lower compared with previous periods.

For each control area the main events were:

EnBW TSO:

Congestion management including the “C function” which has been implemented on the borders between D-CH and D-F has proven to be effective.

Voltage problems possibly arising from a shutdown of the Wehr power plant group due to overhauls could be avoided by the appropriate reduction of the C function.

VE-T:

The summer 2009 was characterized by a windy June and by a warm August with low wind supply. Distinct peaks in terms of feed-in from renewable-based plants were not recorded. The network conditions forecast for the summer 2009 occurred to a large extent as forecast (Summer Outlook Report). Due to the integration of wind energy, network and market-related measures pursuant to Article 13(1) EnWG (German Energy Industry Act) had to be carried out mainly in June and during the first half of July.

Apart from network-related measures, day-ahead security interference and counter-trading measures were carried out in particular. With a view to relieving the transmission network on the border with Poland, the DC loop flow was temporarily activated in addition. This loop flow between the transmission systems of Energinet.dk, SvK, PSE Operator S.A. and VE-T, actuated by the Kontek and SwePol HVDC, contributes to a reduction of the load on operating equipment exposed to the risk of congestion. However, it was not necessary to carry out any market-related measures during the whole month of August.

In the context of mutual support which the European transmission system operators provide to one another to comply with their responsibility for the system, the DC loop flow between VE-T, PSE Operator S.A., energinet.dk and SvK was activated several times to avoid congestion on the Swedish transmission system particularly in July 2009.

A thunderstorm in July 2009 gave rise to two disturbances on the transmission system; however, this did not lead to an interruption of supply.

There were no events that would have required the neighbouring TSOs to be warned by a changeover of status lights of the CEE Awareness System. Neither were there any market-related measures taken according to Article 13(2) EnWG during the summer months, i.e. there were no direct instructions given to power stations.

Measures for demand-side management were not required. In summer 2009, there were no major disturbances leading to supply interruptions in the transmission system of VE Transmission.

On the generation side, after successful re-commissioning on 21 June 2009, the Krümmel nuclear power station has again been taken out of operation for an indefinite time on July 1st and 4, 2009, due to disturbances. During the disturbances, there was a feed-in power loss of 1350 MW. However, system security within the control area and in the European interconnected power system was not jeopardized at any time. All system-relevant parameters (frequency, voltage and stability) were met in accordance with national and international standards. Due to the second disturbance of 04 July 2009, temporary interruptions of supply occurred however in the distribution system.

Average wind power feed-in during the period from June to August 2009 amounted to approximately 1462 MW (as compared to around 1376 MW in 2008 and around 1277 MW in 2007).

On the market side, electricity prices on the EEX spot market showed only minor fluctuations. Only early in July and at the end of August, the electricity price exceeded 100€/MWh for different hours. Particular occurrences have not been observed.

Remedial measures and consequences

In summer 2009, the transmission capacity of the Redwitz-Remptendorf interconnection (413 / 414) with the transmission system of transpower was increased by up to 180 A per circuit. In conjunction with the erection of the 380kV line Lauschstädt-Vieselbach commissioned in spring 2009, this led to a distinct enhancement of the transmission capacity available in a Western direction.

For a better integration of the power fed-in from renewables-based plants, in particular from wind energy plants, the 380/110 kV Stendal-West transformer station was also erected in summer 2009. The first transformer was put into service on 1st October. The risk of congestion in the subordinated 110 kV network is thus reduced.

Great Britain

The GB system did not experience any significant issues in balancing generation and demand during summer 2009. As a consequence, causes, remedial actions or lessons learned are not applicable.

Luxembourg

The Luxembourg system did not experience any significant issues in balancing generation and demand during summer 2009. As a consequence, causes, remedial actions or lessons learned are not applicable.

The Netherlands

The Dutch system did not experience any significant issues in balancing generation and demand during summer 2009. As a consequence, causes, remedial actions or lessons learned are not applicable.

Northern Ireland

There were no major events that impacted during the summer 2009 period. Northern Ireland experienced no significant problems, and there was no noteworthy lightning or storm damage with the transmission network sustaining no significant damage. There was low risk with no

major events or loss of gas supply and no major plant shortfalls in Northern Ireland or sizeable losses of generation.

Demand fell below previously forecasted levels and this was due to the Current Economic Downturn. The system performed as expected and generation was adequate and the interconnectors supply was as required. No loss of interconnection on either NI-GB or NI-IE interconnectors occurred.

There was the expected growth in wind farm development and capacity and this remained within manageable levels.

Republic of Ireland

The Irish system did not experience any significant issues in balancing generation and demand during summer 2009. As a consequence, causes, remedial actions or lessons learned are not applicable.

BALTIC SEA REGION

Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Sweden

For both the Nordic and the Baltic countries system operation and system adequacy have functioned without any large problems in the summer of 2009. In general the consumption was lower than expected, due to the financial crisis. Some events were experienced in Poland on the 4th of July (see notes under Continental Centre East Region).

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

France

See above under North Sea Region.

Spain

System operation and system adequacy have functioned without any large problems in the summer of 2009. In general the consumption has been lower than expected, due to the financial and economic crisis.

Portugal

The Portuguese system did not experience any significant issues in balancing generation and demand during summer 2009. As a consequence, causes, remedial actions or lessons learned are not applicable.

CONTINENTAL SOUTH EAST REGION

Bosnia-Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic of Macedonia (FYROM), Greece, Hungary, Italy, Montenegro, Republic of Serbia, Romania, Slovenia

For all of the SEE countries, system operation and system adequacy have functioned without any large problems in the summer of 2009. In general the consumption and import of importing countries has been lower than expected, due to the financial crisis. Implementation of new 400 kV line between FYROM and Bulgaria have improved security of the system operation of the overall region.

Bosnia-Herzegovina

No critical events occurred during summer 2009.

Bulgaria

No adequacy problem was encountered during the summer. Failure rates of units were as expected and maintenance schedules were strictly fulfilled. Water levels in the big reservoirs were slightly above target levels and hydro plants operated normally in peak zone of the daily load curve.

There were no critical outages in the transmission network. During the whole period Bulgaria exported electricity to neighbouring countries. There were no unplanned outages of all interconnection lines.

Croatia

During the summer period of the year 2009, the Croatian power system did not encounter any unexpected and unusual events or conditions.

FYROM

No critical unexpected events occurred during summer 2009. Conditions were very close to the forecasted ones. Import was lower than expected, because of the economic situation in Europe.

Greece

During last summer the weather conditions were milder than usual (temperatures no higher than 38°C). The most critical issue that threatened the integrity of the power system was the appearance and spread of forest fires in large geographic areas, as critical transmission circuits were threatened. This phenomenon has occurred fairly often in the past few years during the summer period.

Hungary

Summer of 2009 was pretty calm for the Hungarian power system. There was no extremely high demand, and the total demand was actually much lower than last year, mainly due to the financial crisis. 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.

Italy

See Continental Centre South Region.

Montenegro

No critical event was reported.

Republic of Serbia

During the summer period, no unusual events or conditions were recorded. Due to a rainy summer, peak loads for June and August were 5% lower than forecasted. Most of the planned repair works were completed in accordance to the plans.

Slovenia

See Continental Centre South Region.

CONTINENTAL CENTRE SOUTH REGION***Austria, France, Germany, Italy, Slovenia, Switzerland*****Austria**

No critical events concerning the Austrian power grid occurred in summer 2009. As a consequence of the economic crisis the consumption of electricity dropped during the summer leading to the exceptional situation that Austria exported more in comparison to the last years. As another consequence of the low load very high voltages occurred.

Italy

The summer period was marked with monthly temperatures above the average values, especially in August and this normally leads to an increase of consumption. Nevertheless during the summer there was a noticeable decrease of demand, (with lower values than expected) recorded mainly due to the economic crisis. For the hydro production the multi-year average capability data was higher than the corresponding ones of the previous year for the first part of the summer period (June and July).

On the generation side, favourable weather conditions increased the production of renewable sources sensibly, while the hydro generation in the period remained steady. Generation overhauls (both planned/unplanned) were consistent with forecast figures. Wind power and thermal plants generation increased over 400 MW.

On the demand side, despite temperatures above the average values, monthly consumption compared to the same period decreased. In particular over this period, power hour peaks of production resulted in lower values in comparison to the previous summer.

During the summer, transmission upgrading occurred over the Terna network. New transmission lines, substation and electrical devices were put in operation with reinforcement of the transmission network which was beneficial for reducing local congestions.

In terms of physical flows the interconnection recorded a variable monthly performance of import/export balance of energy but significantly under the limit value of the NTC on the interconnected system.

France

See above under the North Sea Region.

Germany

See above under North Sea region.

Slovenia

No significant events occurred in Slovenia during Summer 2009.

Switzerland

The Swiss system did not experience any significant events, unusual conditions or emergency situations during the summer period 2009.

CONTINENTAL CENTRE EAST

Austria, Croatia, Czech Republic, Germany, Hungary, Poland, Romania, Slovak Republic, Slovenia

Austria

See above under Continental Centre South Region.

Croatia

During the summer period of the year 2009, the Croatian power system did not encounter any unexpected and unusual events or conditions.

Czech Republic

No significant or unusual events were observed in the Czech Republic in the summer period in 2009. Due to economic crisis the net energy consumption was about 9% lower than in the same period in previous year.

Germany

See above under North Sea Region.

Hungary

See above under Continental South East Region.

Poland

On July 4th, PSE Operator S.A. experienced a quite serious network disturbance in the western part of the Polish power system. Within two hours (from ca 10:00 to noon) the PSE Operator S.A. lost three 220 kV lines and several 110 kV lines, which led to low voltages in the western part of Poland, including the city of Poznań – this area is vulnerable to voltage stability due to delays in construction of some 400 kV lines.

The disturbance also resulted in a high increase of power flow on the Polish northern tie line with VE-T (in the direction to PSE Operator S.A.) exceeding the n-1 security limit. The power flow decreased to the acceptable level thanks to, among others, quick implementation of DC loop flow mechanism (rescheduling on Swepol and Kontek HVDC links) and later on emergency supportive power from SvK. Finally, PSE Operator S.A. managed to come back to normal system operation by ca 16:00.

The PSE Operator S.A. carried out the investigation which showed that the main reason of this disturbance was:

- insufficient vegetation management as the initiating event (too small distance between trees and wires which caused the short-circuit),
- switching over in the 110kV network resulted in overloads and switching off of several 110kV and 220kV lines.

The main recommendations were:

- to increase the supervision of the transmission lines maintenances (vegetation management),
- to speed up activities towards full observability of 110 kV network at TSO level (regional control centers) and implementation of EMS functions (allowing on line security analyses in 110 kV network) at regional control centers,
- to speed up installation of VAR sources within transmission system,
- to build and complete the planned 400kV lines in this area as soon as possible.

Except for this disturbance, the PSE Operator S.A. during all summer did not notice any problems with operation and balance the system.

Romania

The Romanian system did not experience any unusual events or conditions during the 2009 summer period.

Slovak Republic

During the summer the big decline of the consumption continued started in November 2008. Although the climatic conditions were at the same level as the previous summer, the demand on consumption was lower by about 8% due to the economic crisis. Also the production decreased (about 7%) due to the consumption and decommissioning of the second unit in the nuclear power plant J. Bohunice as of 31 Dec 2008.

During the whole period of this summer, no critical or unusual event in the power system occurred. The largest loss of production was in the nuclear power station Mochovce (1 July 2009, lost power 430 MW of one nuclear unit). The loss of production was covered by activation of ancillary services and there was no impact on the consumers.

On the 1st September 2009, the daily markets of electricity of CEPS and SEPS, a.s. were integrated. Until 31st August, the daily capacity allocation of CEPS-SEPS, a.s. tie-lines was performed through coordinated auctions for five TSOs via e-Trace trading portal. Following the integration of the Czech and Slovak day-ahead markets the day-ahead allocation of available capacity on the border CEPS - SEPS, a.s. is no longer the subject of coordinated auction. Month-ahead allocation will continue to be organised via the e-Trace trading portal. For these reasons, the start of daily Implicit Auctions began from the 1st September 2009 on the CEPS-SEPS, a.s. Commercial profile (border) and consequently the termination of daily explicit auctions on the profile (border) were on 31st August 2009.

Slovenia

See above under Continental Centre South Region

ISOLATED SYSTEMS

Cyprus

During Summer 2009 no significant events affecting the generation adequacy of the Cyprus system occurred. This was mainly due to the partial operation of the Combined Cycle Plant at Vasilikos Power Station.

Iceland

No significant events occurred during summer 2009.

ADDITIONAL CONTRIBUTING COUNTRIES

Albania, Ukraine West.

No information available.

4. WINTER OUTLOOK 2009/10

4.1 Main results - Risk factors

The risk factors which have an effect on the balance between generation and load rest on the information made available by TSOs.

Temperature has a relevant place amongst the above mentioned risk factors, since it influences the level of the load directly.

Particular attention is given to both the effects and the drop of electricity demand due to **the economic and financial crisis**.

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

- **Outages of large units**, including of course overhauls and unplanned unavailability, but also extension of the duration of planned outages;
- **Hydrologic conditions**, low inflows leading to reduced generation of hydro units;
- Market conditions on fuels, especially **gas**, with possible effect on the energy that could be generated by Combined Cycle Gas Turbines.
- The last set of important factors is linked to the network conditions, such as:
- **Extreme climatic conditions**, which could affect the availability of the network and generation capacity.
- **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.
- **Wind feed in** due to an increase of wind generation.
- **Generation-load imbalances in other countries** of the same interconnected block that can lead to unforeseen flows through the country.

4.2 Main features

The most stressed period is generally the peak period (December-January) in addition to holiday periods at the end of the year.

For some countries, the generation-load balance should be observed during a longer period, e.g. until the end of February.

4.3 Comments per Regions

NORTH SEA REGION

Belgium, Denmark, France, Germany, Great Britain, Luxembourg, Netherlands, Northern Ireland, Norway, Republic of Ireland

Most of the member-TSOs of the North Sea Region seem quite optimistic as regarding their generation-load balances for the coming winter 2009-2010. In general, the expected load-drop caused by the financial and economic crisis, facilitates TSOs to reach their desired safety levels. Certainly when assuming **normal** conditions, the system adequacy analysis carried out by the TSOs mainly give positive results. Generation-load balances are mostly not at risk (although in Luxemburg this is due to import contracts). Attention should be paid however, to the fact that France predicts the need for imports in over 1% of the cases from mid November to January, in

order to cover its electricity demand. Given the central and considerable position of France in the North Sea Region, the situation in France is to be regarded with concern.

This is certainly the case when considering a **severe** situation, although all countries except France expect their generation-load balances to be reached, even when severe assumptions are made. Because of the strong dependence of the French electric consumption on temperatures, France may require more important imports from December to January under severe conditions to cover its electricity demand. An intense and sustained cold period might therefore put intensive pressure on the region as a whole.

TSOs point towards following additional risks that might further jeopardise the existing positive winter adequacy assessments: notably extreme wind situations given winds' major impact on congestion and balance in this region and the co-appearance of unplanned outages on important generation plants, fuel supply issues (mainly gas).

Belgium

Elia's desired safety level of 1050 MW for the generation-load balance is expected to be reached during the entire winter period 2009 – 2010. This analysis remains valid even when the impact of severe temperature conditions on the load values are taken into account (assuming an average winter temperature so that only 1 percent of historical temperature observations (period 1994 - end august 2009) falls below). In addition, the available simultaneous import capacity can contribute to compliance with the system adequacy. In order to assure a maximum level of available simultaneous import capacity, the planned outages of 380kV international lines are minimized during the critical winter periods. During the first semester of 2010, repair works are nevertheless foreseen in the internal grid so that at certain moments the simultaneous import capacity will be reduced with approximately 120 MW. On the whole, the first analysis of system adequacy for the coming winter is positive.

The main risk factors for the Elia grid that might jeopardise the current positive winter adequacy assessment are a generation-demand imbalance for the whole of the ENTSO-E-central west region or unplanned outages at the main generation plants in Belgium.

France

The availability of the French generating fleet for the winter period 2009-2010 is expected to be significantly lower than last winter during months from November to January. For temperatures close to seasonal normal conditions, the French winter outlook for the electricity supply-demand balance appears significantly less favourable than last winter, until the end of January. Imports could be required between mid-November 2009 and the end of January 2010 to cover the electricity demand in France and satisfy the technical security margin stipulated by RTE. For temperatures close to seasonal norms, the estimated level of imports could therefore reach 4,000 MW for several weeks between mid-November 2009 and January 2010.

In the event of an intense and sustained spell of cold weather with temperatures 7 to 8°C below the seasonal norm, the technical limits for imports (9,000 MW if well shared among borders) into the French grid could be reached.

Germany

Due to unbundling, detailed information about elements of the power balance are not available to the German TSOs and thus a great part of the data required for the power balance are estimations and approximations gained from past experience before the liberalization of the electricity market.

Nevertheless, it can be concluded that the remaining capacity under normal condition should meet the ENTSO-E ARM of 10% of the national generation capacity. As a result of the

economic crisis, demand is expected to decrease considerably. Consequently, Germany does not expect any extraordinary critical situations 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.

Due to the continuous strong increase of installed capacity in wind power plants (mainly in the VE-T and TPS area), it is expected that in winter 2009/2010 longer periods will occur during which grid and market-related measures will have to be taken (within and beyond control areas) for complete integration of wind energy. Due to this high wind supply in the VE-T and TPS control areas, the interconnections especially between VE-T and transpower will have to be operated to the limits of their loading capacity. Special agreements will be concluded for this purpose.

Further extraordinary events and disconnections or outages of system-relevant operating equipment are not expected or known.

Great Britain

For the coming winter the electricity demand and generation balance in Great Britain is expected to be comfortable in base case scenarios of demand (1 in 2 normal temperatures) and expected levels of generation availability. With expected levels of generation availability and high electricity demands, caused by very cold weather (1 in 20 cold temperatures), the forecast demand and operating plant margin can still be met in full.

Generation availability in the GB market for the winter to come is anticipated to be improved on recent winters, most notably with higher expected availability from nuclear power stations than seen in recent winters. This is combining with lower peak demands as a result of the economic downturn. Also in the GB market during the winter to come, some new CCGT and wind generation capacity is expected to commission (subject to this commissioning taking place as planned), further adding capability to the generation fleet over winter 2009/10.

Risks to meeting electricity demand are still present, although low, and focus on “external shock” type scenarios which by their very nature are unpredictable (e.g. significant gas supply issues/generation type faults).

Luxembourg

The overall generation capacity in Luxembourg (including pump storage power) is higher than the consumption. Due to the grid structure, all energy has first to be exported and then re-imported again. Despite a reduction of the generation capacity of 100 MW for overhauls in week 2 and 3 of 2010, the national generation adequacy is always reached.

Creos is still a net importer for about 85% of its electric energy. As no planned outages of lines are foreseen, the capacity of the interconnection lines is at all moments sufficient to cover the national load. Creos doesn't expect having any problems during winter period 2009/2010.

The Netherlands

For the Netherlands no winter adequacy forecast has been carried out at present. In Tennet's opinion, the supply-demand balance will occur on the basis of the price-driven demand principle and it is not the TSO's competence to intervene in the well functioning market. The specific TSO's task is to balance the system and to supply emergency power when necessary.

Nevertheless, TenneT TSO assesses on request of the Ministry of Economic Affairs every year for a period of 15 years ahead the so-called “Reliability of Supply in the Electricity Market in the

Netherlands". The last report for the period 2008-2024 was published in 2009 and can be found on the following link:

http://www.tennet.org/english/transmission_system_services/technical_publications/report_reliability_supply/index.aspx

Northern Ireland

SONI has no concerns and expects no significant problems on the Northern Ireland system within the coming winter. SONI might be dependent upon the Moyle and NI-RoI interconnectors to meet the peak demand at times, but that is a normal situation and no problems are expected.

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. 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.

BALTIC SEA REGION

Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Sweden

Denmark

The winter 2009/10 is expected to be normal with no particular problems. The power balance is expected to be positive even during severe winter conditions for Denmark as a whole. The critical point in the Danish system is the power balance in Denmark East which is low relative to Denmark West. The balance in Denmark East is dependent on interconnectors to Sweden and Germany.

Estonia

In the upcoming 2009/10 winter season, the Estonian power system is expected to be in balance. The generation and demand forecast for 2009/10 is similar to the same period of 2008/09, with no significant change.

According to weather forecast for this winter, the average temperature for coming winter period is expected slightly lower than long-term average temperature (-4...-8C), but due to the recession, an increase of demand is not expected. Domestic generation capacity is considered sufficient to cover peak loads during the winter season.

Finland

Finland is a deficit area in the power balance during peak hours. The balance is expected to be met with import from neighbouring systems with no major difficulty. Mainly this means imports from Sweden/Norway and Russia.

The economic crisis has decreased the energy and power demand. The generating capacity increased a little before the 2009/2010 winter period. On the other hand, some generating units are placed into reduced start-up readiness because of foreseen market situation.

The power balance in Finland is estimated to be improved by some 600 MW compared to the balance a year ago.

Latvia

In the winter 2009/10 the Latvian power system will depend on imports from its neighboring countries to meet the peak demand because in winter time water inflow is minimal due to that available energy from hydro power plants is very limited, and thermal power plants will be operated according to district heating loads only.

Peak loads of the 2009/10 are expected to be 10% lower than during the last year due to current economic downturn in Latvia.

Lithuania

Operation of the Lithuanian power system is expected to be secure and reliable over all winter period. Even after closure of Ignalina NPP (the main generation capacity in Lithuania), Lithuania expects to be able to cover peak load during the winter 2009/2010.

Poland

The PSE Operator S.A. does not expect any problems in operation this winter, mainly due to the observed considerable load decrease, which is the result of the financial and economic crisis.

The yearly peak load recently observed in the winter season in January (the last three winter seasons) and also operational conditions have become now more difficult in January due to lower average temperatures than in December.

Although, in mild and normal winter conditions, surplus of generation (remaining) capacity may still be observed in Polish power system as it does not mean it can always be used to help other power systems, because of possible transmission constraints limiting transfer capacities towards other ENTSO-E countries.

PSE Operator S.A., based on previous winter experience, does not forecast any significant influence of any potential gas crisis on Polish power system.

Norway

The main result of the assessment is that Norway is self-supporting with energy and power during the coming winter. Even in cold days, Norway is capable of using interconnectors to support neighbouring countries with power.

Sweden

Svenska Kraftnät does not expect any critical situation during the winter 2009/10. The available generation capacity is higher than the expected peak load, even on a cold winter day. If situations with revisions/overhauls/outages occur, Sweden has the opportunity to import from its neighbouring countries.

CONTINENTAL SOUTH WEST REGION***France, Portugal, Spain*****France**

See above under North Sea Region

Portugal

REN-studies show that there are no expected difficulties on the operation of the Portuguese power system during next winter. Demand should remain below last winter season's level, due to economic crisis, and with a new combined cycle in industrial service since August 2009, the remaining capacity margin is expected to stay comfortably above the 10% threshold, even in an extreme peak demand condition scenario.

Spain

From the point of view of generation adequacy, the situation in the Spanish peninsular system is not critical for the coming winter. If average conditions are considered, remaining capacity will be around 12200 MW. The minimum value will decrease to 8800 MW.

Only in case of simultaneous extreme peak demand, very low wind generation (less than 7% of wind installed capacity), very drought conditions and a very high thermal forced outage rate, one can find values of remaining capacity of 4600 MW.

The adequacy index forecast value, defined as the relationship between available capacity and peak demand, is in case of normal conditions always over 1,24. Only in case of severe conditions as described before, it could decrease down to 1,13.

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

CONTINENTAL SOUTH EAST REGION

Bosnia-Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic of Macedonia (FYROM), Greece, Hungary, Italy, Montenegro, Republic of Serbia, Romania, Slovenia

BOSNIA-HERZEGOVINA

System adequacy for the winter 2009/10 is not considered at risk. It is forecast that existing generation capacity will cover demand. At the beginning of the 2010, a new hydro power plant is expected to enter into operation.

Bulgaria

System adequacy for the winter 2009/2010 is not considered at risk.

Croatia

The Croatian power system safety should not be threatened during the upcoming winter period, due to the favourable state of hydro power plants reservoir basins levels at the beginning of considered period and planned availability of production and transmission facilities.

However, for stable and safe operation of the system as a whole, it is necessary to ensure continuous high availability and functionality of all its elements.

Croatian electricity system depends upon imports of electricity to cover difference between consumption and production, however due to high interconnection capacities this is not representing a constraint for Croatian security of supply.

Former Yugoslav Republic of Macedonia (FYROM)

The operation of the power system is expected to be secure and reliable over the all winter period.

From the point of view of system adequacy, load – generation balance will not be at risk during the next period of Winter 2009/10 in the Macedonian System. Macedonian electricity system depends upon imports to reach adequate balance between consumption and production/import.

Greece

The Greek system forecasts to be in balance in the upcoming winter period (2009/10). The expected commissioning of a new unit in the system, the good hydraulic storage of hydropower stations and the strengthening of the northern interconnections ensure the adequacy and security of the Greek interconnected System, which is not threatened under normal weather conditions.

Hungary

System adequacy is forecast as safe for the coming winter in the Hungarian power system during the winter 2009/10. The most critical periods under severe conditions are forecast in February and March. Hungary still relies on imports for reaching adequate margins. Possible risks identified are related to the availability of fuel (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 are very important for Hungary. A high capacity gas storage facility was built recently to ensure that the security of the gas supply could be increased.

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

Italy

See after under Continental Central South Region.

Montenegro

No comment available.

Republic of Serbia

Under normal weather conditions Serbia will be able to satisfy most of its energy demand with its own generation capacities. In case of severe cold weather, energy imports from neighbouring control areas will be necessary.

Romania

System adequacy for the winter 2009/2010 is not considered at risk in 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. Under normal conditions, a consumption decrease of about 7% is expected in respect with the last winter. Also, in case of severe winter conditions with 10°C lower than each monthly average temperature, there is not any foreseeable risk.

Slovenia

See below.

CONTINENTAL CENTRE SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

Austria

No critical events are expected. When compared with the decrease of load which occurred during the last year as a consequence of the economic crisis in Europe, a slight increase of load is expected. Grid reinforcement and the commissioning of new transmission lines in Austria (i.e. the commissioning during the last summer 2009 of the Styrian line (380 kV Südburgenland – Kainachtal) relieve congestions and mitigate some of the problems which are usually more severe during the winter time.

France

See above.

Germany

See above.

Italy

In Italy, given the observed load decrease resulted from the economic crisis and the increase of installed capacity, the system is not considered at risk under normal conditions and the balance between generation and load for the coming winter shows no adequacy problems. Peak loads forecasts in case of normal winter conditions show a reduction of about 5% if compared with the last winter report. Special consideration is given to Sicily (especially from week 3 to week 8) and Sardinia (however forecast margins are higher than the previous year due to the coming into operation of the new 500MW HVDC undersea links « SAPEI » with the Italian peninsula). Under severe conditions the critical weeks are expected to be week 51 and week 2.

Slovenia

No critical events are expected for the coming winter. In comparison to the previous winter, congestion is not expected between Slovenia and Croatia.

Switzerland

Swissgrid forecasts did not predict problems on electricity supply for the coming winter time both under normal and severe conditions. The remaining capacity in Switzerland will amount to at least 1 GW even in critical situations during the winter 2009/10. Additional 0.6 GW are assured even during severe weather conditions through firm import contracts.

Continental Centre East Region

Austria, Croatia, Czech Republic, Germany, Hungary, Poland, Romania, Slovak Republic, Slovenia

Austria

See above.

Croatia

See above under Continental South East Region.

CZECH REPUBLIC

Under normal and severe conditions no significant events with regard to generation – load balance is forecast for the Winter 2009/10.

GERMANY

See above under North Sea Region.

Hungary

See above under Continental South East Region.

Poland

See above under Baltic Sea Region.

Romania

See above under Continental South East Region.

Slovak Republic

No particular problems regarding the load/generation balance is foreseen in Slovakia under normal conditions. Import of electricity is expected on the level of the last winter (from January to March). Cross-border capacities are sufficient to allow import of the required level. During the year the installed capacities of nuclear power plants increased due to upgrading of technology (plus 160 MW). Other installed capacities are on the same level as the last winter.

Slovenia

See above.

ISOLATED SYSTEMS**Cyprus**

No information available.

Iceland

The generation capacity in Iceland is expected to be sufficient to meet peak demands this winter under normal and severe condition, and Landsnet does not anticipate any problems on the system.

ADDITIONAL CONTRIBUTING COUNTRIES**Albania, Ukraine West****Albania**

No information available.

Ukraine West

No information available.

4.4 Conclusion

The ENTSO-E winter outlook for 2009-2010 provides an overview of the national generation load balances forecasted for the coming winter. The survey shows that, as a whole, under normal conditions no particular risks are expected for the coming winter. This is mainly due to the drop of electricity demand caused by the economic crisis in Europe which reduces the risks of balance between demand and supply both under normal and severe conditions in respect to the previous winter.

The generation and load balance forecasts are generally suitable. Some countries may rely on imports to cover demand and for system security.

Under severe conditions such as low temperatures, high wind generation and gas supply crisis the power system may become more stressed. The risk periods are mostly related to December and January but may also be extended to February.

Gas supply concerns for winter adequacy assessment are mostly mentioned by Belgium, Bosnia and Herzegovina, Croatia, Estonia, Great Britain, Hungary, Lithuania, Poland (which do not expect significant impact of gas supply crisis), Serbia, Slovak Republic and Spain.

Anyhow, the ongoing negotiations between Ukraine and Russia on gas supply for 2010 will lead to a risk reduction of a new gas supply dispute as occurred last year.

5. LESSONS LEARNT

In order to improve on the forecasting process, the main learning points experienced via ENTSO-E reporting can be summarised as follows:

- Economic conditions and crisis in Europe have a significant impact on the load; nearly all TSOs underline the difficulty of making accurate forecasts in the current circumstances.
- The persistent negative trend of electricity consumption may need regulatory mitigation mechanisms through which the impact on transmission businesses is limited in order not to affect planned investments in network development.
- Attention shall be given to the availability of fossil-fuel generation units which are affected by the emission trading schemes and directives 2001/80/EC and 2001/81/EC.
- Efficient coordination with gas operators and market players is needed (especially in case of stress on gas supply).
- Better coordination of TSOs is required in “special cases” (e.g. high wind generation in Germany) as network and market-related mitigation measures may be needed. In addition, neighbouring networks may be affected by loop flows and even congestion, underlining the importance of good cross-border coordination.

ENTSO-E’s System Adequacy and Market Modelling Working Group will be working over the coming year on further improved methodologies for winter and summer outlooks to take advantage of the new common organization comprising all European TSOs in one association and of new methodological developments related to the Ten-Year Network Development Plan.

6. APPENDICES

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ALBANIA

No data available

AUSTRIA

LOAD – GENERATION BALANCE

Due to the economic crisis Austria experienced lower load figures in the last year. For the coming winter 2009/2010 a slight increase of load compared to the previous year is expected. In Austria no critical events for the coming winter season are expected, assuming normal climate and generation conditions. Some of the Austrian power grid problems described in previous reports were reduced due to the commissioning of new lines.

Congestions: better situation due to new transmission lines but not finally solved yet

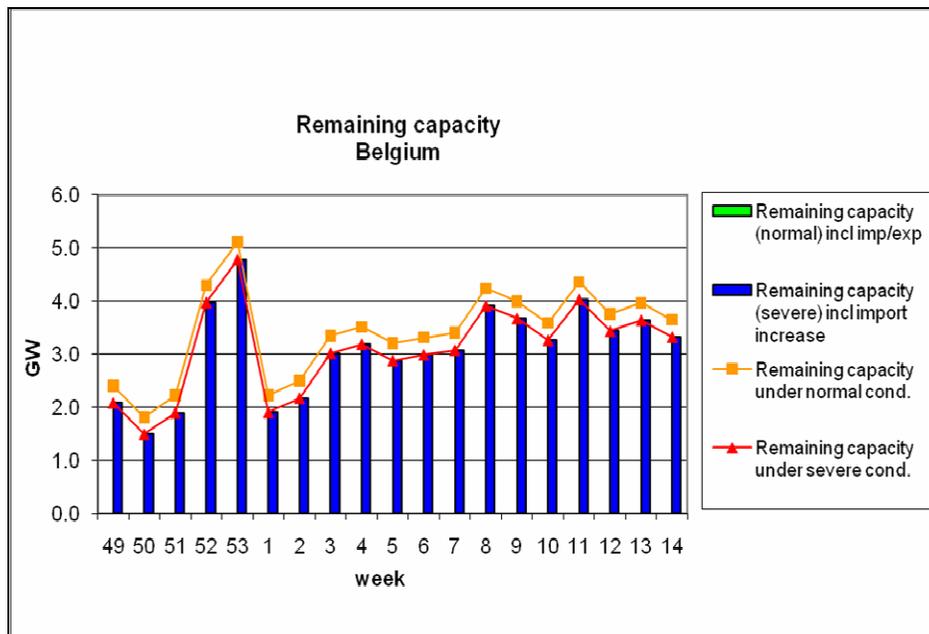
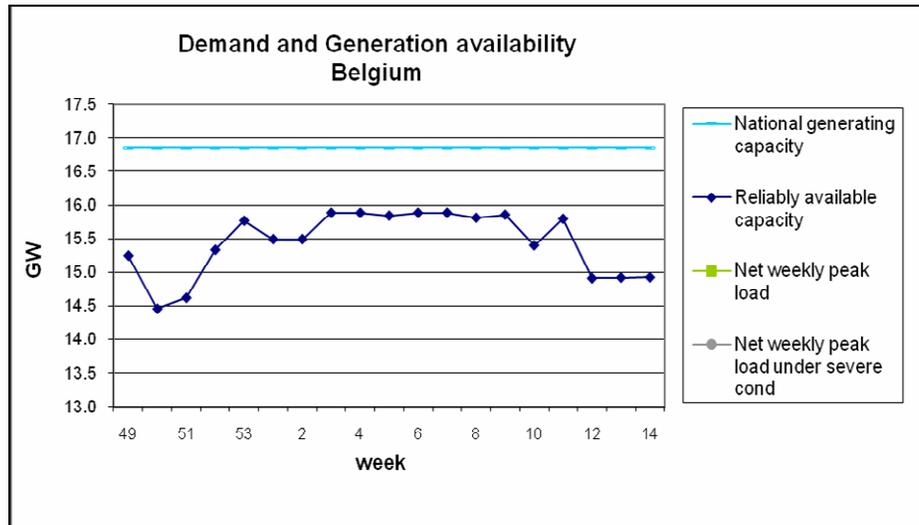
With the commissioning of the Styrian line (380 kV Südburgenland – Kainachtal) in summer 2009 the congestions on the 220 kV north south lines are released in the east part in a sustainable way. The 220 kV north south lines in the west (St. Peter – Salzach – Tauern) will be highly loaded and n-1-problems still exist until the commissioning of the planned lines Salzburgleitung I + II (380kV St. Peter - Tauern). Therefore the phase shifting transformers must stay in operation.

High load flows on tie lines caused congestion on the Czech-Austrian lines in the past. This problem was solved by the installation of the second circuit Slavetice – Dürnrrohr which was put into operation in November 2008.

Critical situation when applying second system Wien Süd Ost (AT) - Györ (H)

During the Winter 2009/2010 the second circuit on the line Wien Süd Ost (AT) – Györ (HU) will be installed. During the construction phase the disconnection of three 380 kV circuits for two days is needed. To cope with this situation, grid and redispatch measures in the region of Vienna have to be realized. The additional circuit will be commissioned by April 2010.

BELGIUM



Comments

Synopsis

The desired safety level of 1050 MW for the generation-load balance is expected to be reached during the entire winter period 2009/10. This analysis remains valid even when the impact of severe temperature conditions on the load values are taken into account (assuming an average winter temperature so that only 1 percent of historical temperature observations (period 1994 - end august 2009) falls below). In addition, the available simultaneous import capacity can contribute to compliance with the system adequacy. In order to assure a maximum level of

available simultaneous import capacity, the planned outages of 380kV international lines are minimized during the critical winter periods.

During the first semester of 2010, repair works are nevertheless foreseen in the internal grid so that at certain moments the simultaneous import capacity will be reduced with approximately 120 MW. On the whole, the first analysis of system adequacy for the coming winter is positive.

The main risk factors for the Elia grid that might jeopardise the current positive winter adequacy assessment are a generation-demand imbalance for the whole of the ENTSO-E-central west region or unplanned outages at the main generation plants in Belgium.

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 fulfill 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. 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).
3. The daily peak load values of the Elia control area are foreseen under normal conditions (assuming an average temperature of 4.8 °C for the coming winter) to increase with 0.37% percent for winter 2009-2010 compared to the peak load values measured during the winter 2008-2009 adjusted to reflect normal temperature conditions.
4. 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 6 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 1050 MW (equivalent to the biggest unit in the grid) for the generation-load balance is judged as the desired safety level for the short-term adequacy analysis. This deterministic criterion reflects the highest risk due to a single incident for the Elia grid taking into account the total generating capacity minus a reduction for non-usable capacity as well as the actual, announced overhaul and outage schedules. The main objective of this short-term analysis is to assess whether the Elia grid can remain autonomously when this incident occurs. During periods of non-respect the system will rely on net imports.

The ENTSO-E 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.

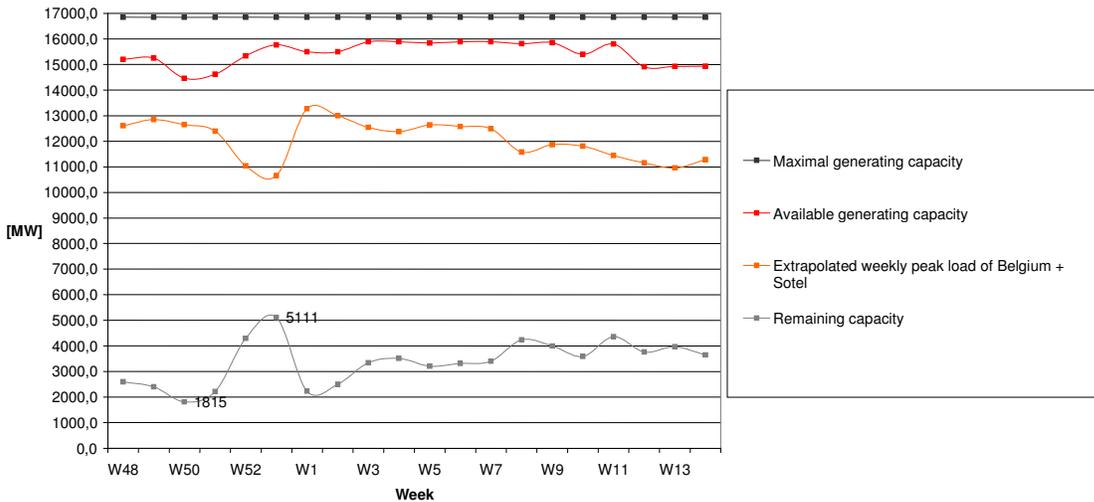
In Annex a complete overview of the differences between both methodologies is presented.

Generation – Demand Balance

In the figure below an overview is given of the result of the assessment of winter 2009-2010 for the week peak under normal temperature conditions. A low level of overhauls combined with a low level of forecasted demand for the week peak of week 53 of 2009, 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 overhauls combined with a high level of forecasted demand for the week peak of week 50 of 2009, results for that week in the lowest remaining capacity level for the coming winter (week 49 of 2009 till week 14 of 2010) for the week peak.

The desired safety level of 1050 MW for the generation-load balance is reached for all the week peaks of the coming winter 2009-2010 under normal temperature conditions.

**Adequacy assesment Winter 2009-2010 (Week peak) under normal temperature conditions
evaluation time September 2009**

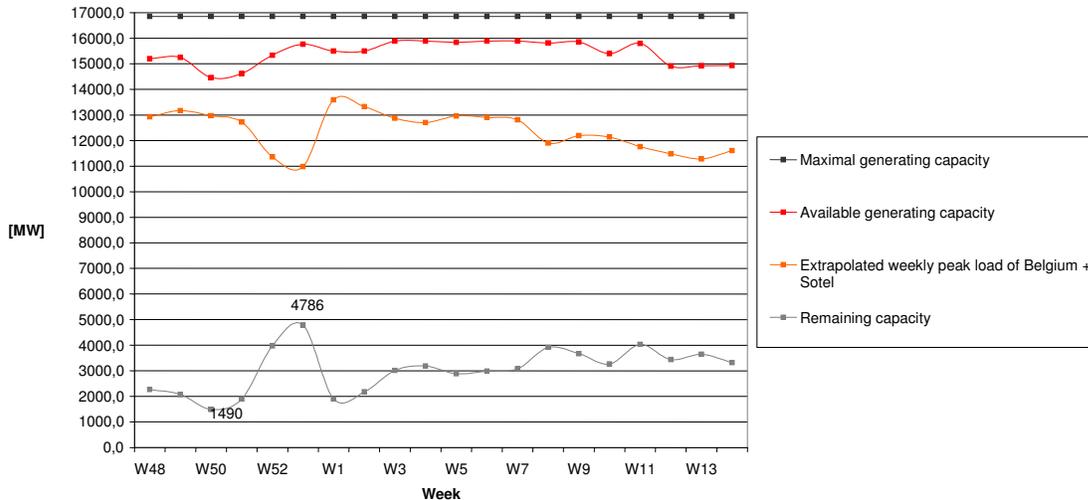


The analysis as mentioned above does not take into consideration severe temperature conditions. Load and generation modification based on meteorological forecasts are only considered for the assessments made as from one week before the considered week. The load is reversely correlated with the temperature. 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 +/- 35 MW. Taking this into account for a cold winter day with an average temperature of -4.5°C, this is the temperature value below which only 1 percent of historical observations (period 1994 - end august 2009) falls, resulting in a positive correction of the load by +/- 325 MW. The winter 2008-2009 revealed that a cold spell can cause the unexpected absence of several fossil fuel units. For instance the cold spell in week 2 of 2009 resulted in an unforeseen unavailability generation capacity of 2.7 GW in week 2.

In the figure below an overview is given of the result of the assessment of winter 2009-2010 for the week peak under severe temperature conditions. The desired safety level of 1050 MW for

the generation-load balance is reached for all the week peaks of the coming winter 2009-2010 under severe temperature conditions.

**Adequacy assesment Winter 2009-2010 (Week peak) under severe temperature conditions
evaluation time September 2009**



Role of Interconnection

Last winter period (from week 49 of 2008 until week 14 of 2009), on average, a net import of 255 MW was measured during week peak times (from 5:15 pm until 8 pm) on the Belgian South border (F-B border) and a net export of 635 MW 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 export during peak times last winter period totalled 549 MW. During 50 percent of the peak times within last winter period, a net export level between 105 MW and 963 MW was attained. These exchange values are in contrast with the values for previous winter periods, where the Elia control area structurally depended on import, and are related to the low load values due to the economic and financial crisis.

The average simultaneous import capacity for the coming winter is approximately 3378 MW whereas the average simultaneous export capacity is approximately 1966 MW. During the first semester of 2010, repair works are nevertheless foreseen in the internal grid so that at certain moments the simultaneous import capacity will be reduced by approximately 120 MW. The simultaneous import and export capacity was obtained by adding the average NTC-values (according to the ENTSO-E 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 control of this type of loop flows. These control possibilities will be reduced at the end of the winter period (starting from the mid of week 13) due to the unavailability of the phase shifter in Zandvliet (until week 28). During the unavailability of the phase shifter in Zandvliet, Elia will not plan any outages of 380kV international lines elements

nor of the other phase shifters in Van Eyck in order to maximize the available simultaneous import capacity (the simultaneous import capacity will be reduced with approximately 120 MW).

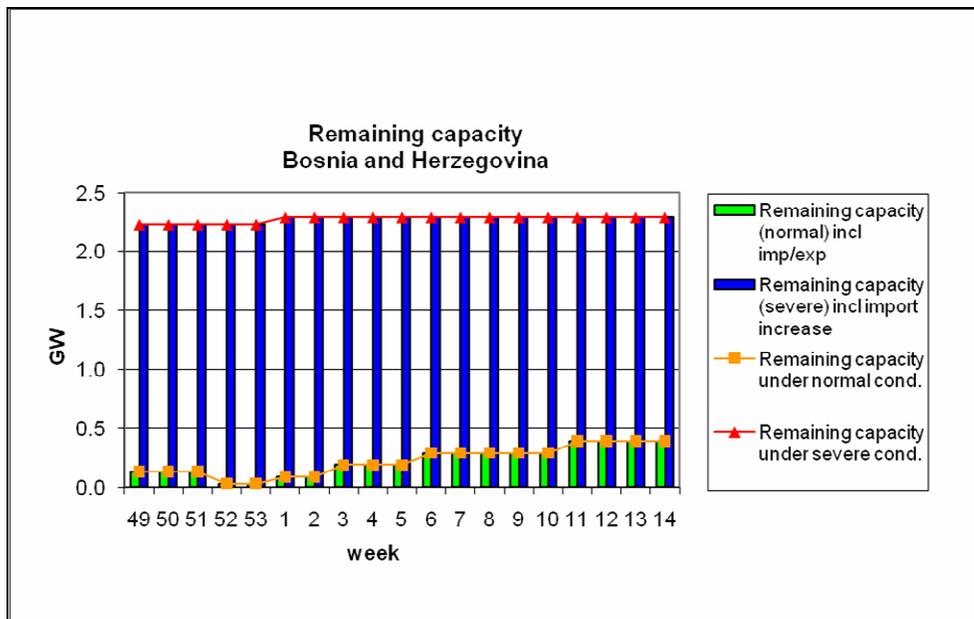
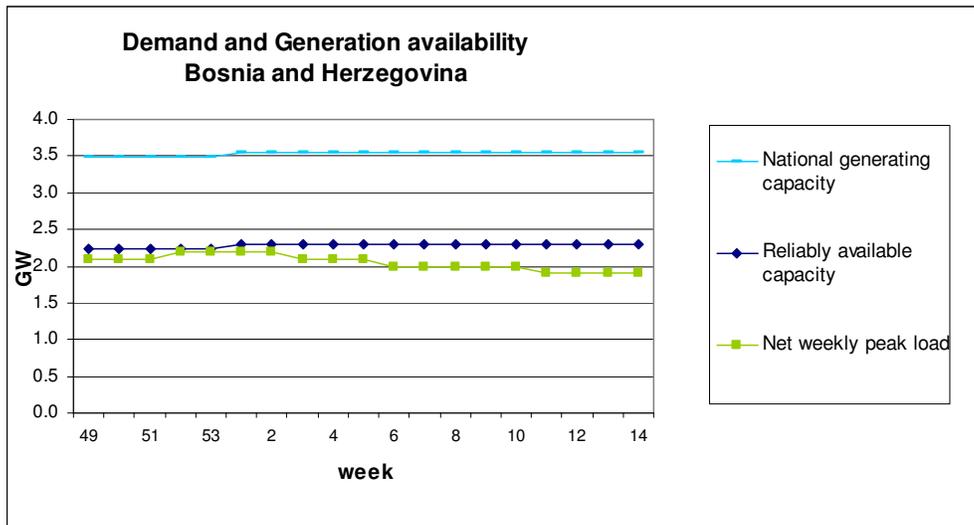
Additional comment

Although Belgium has no own gas supplies, the main gas infrastructure in Belgium is bidirectional. Hence if one gas source is not available it is easy to switch to another gas source even if it is located somewhere else. Taking this into account the gas supply needed to balance the gas demand the coming winter 2009-2010 should be available.

Annex: Comparison between Elia's short-term winter outlook and the medium & long-term system adequacy - ENTSO-E approach

ELIA's short term winter outlook				Medium and long term system adequacy – ENTSO-E 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.	1050	3.	Margins	System service reserves	957
						Probabilistic part of Ge, expected to be unavailable for outages	362
						Additional margin of 5 % of Ge	842
						Total margin	2161
4.	Criterion	Short term autonomy	Ge-1050- Le >0	4.	Criterion	Medium and long term System Adequacy	Ge – 2161 – 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 09-10 in Belgium:	no weeks.		6.	Duration that the criterion is not respected in winter 09-10 in Belgium:	Approximately 4 weeks during severe temperature conditions and 1 week under normal temperature conditions	

BOSNIA & HERZEGOVINA



It is expected that existing generation capacity can cover demand. Therefore system adequacy is not expected to be at risk during the winter 2009/10.

The total current generation capacity in Bosnia and Herzegovina is as follows:
 - Thermal Power Plants: 1505, 6 MW (Maximum power on the transmission network)
 - Hydro Power Plats: 1970, 6 MW (Maximum power on the transmission network)
 At the beginning of the 2010, it is expected the start of the new hydro power plant Mostarsko Blato, 2x 30 MW.

The maximum peak load of 2224 MW is forecasted for the period from December 1, 2009, to March 31, 2010. The maximum peak load in 2008 was 2117 MW, reached on December 31, at 18,00 h.

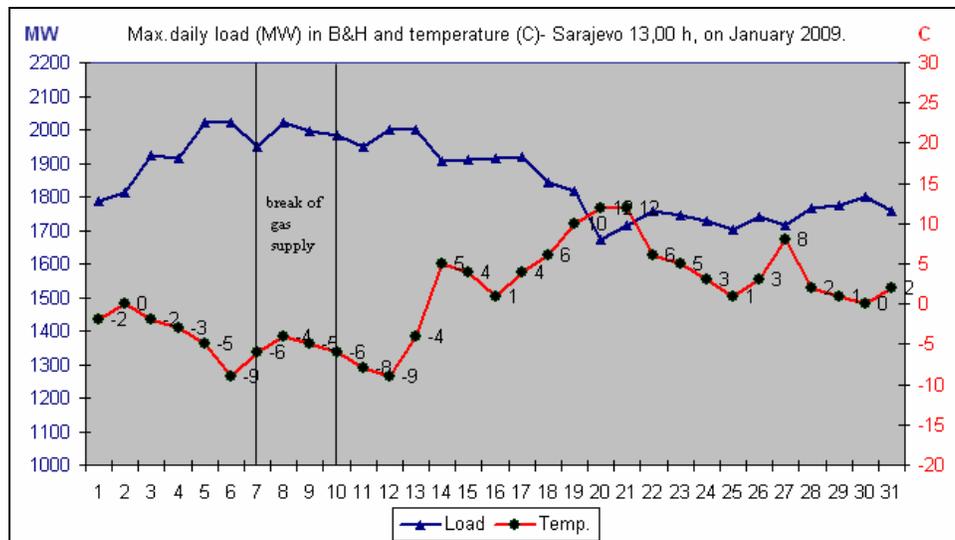
Impact of Interruption of Gas Supply on January 2009

Total interruption of gas supply was noted on January 7, and January 8, and reduced supply in the next two days. No remarkable increase in maximum daily load was registered, because there are only few regions supplied by gas in Bosnia and Herzegovina (Sarajevo, Zvornik).

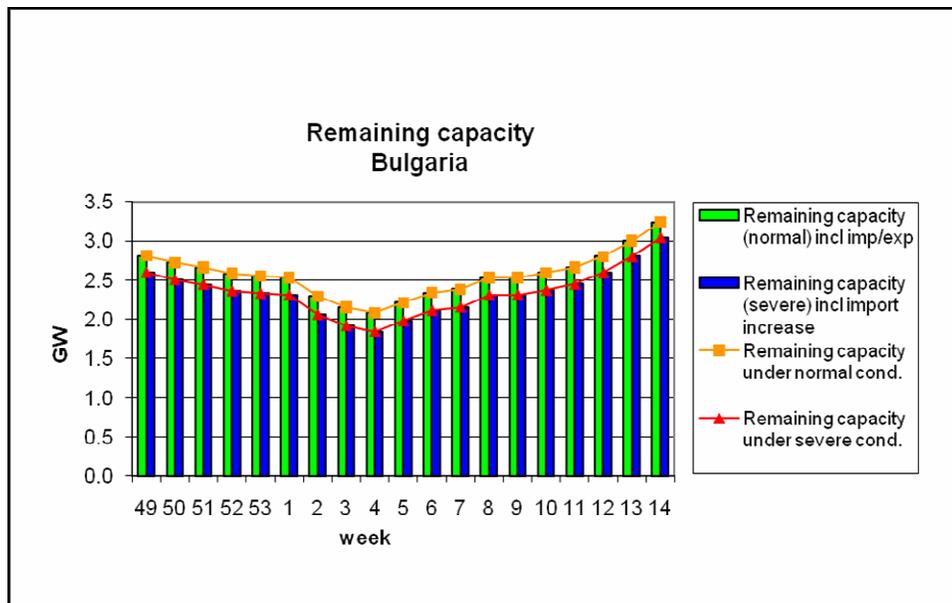
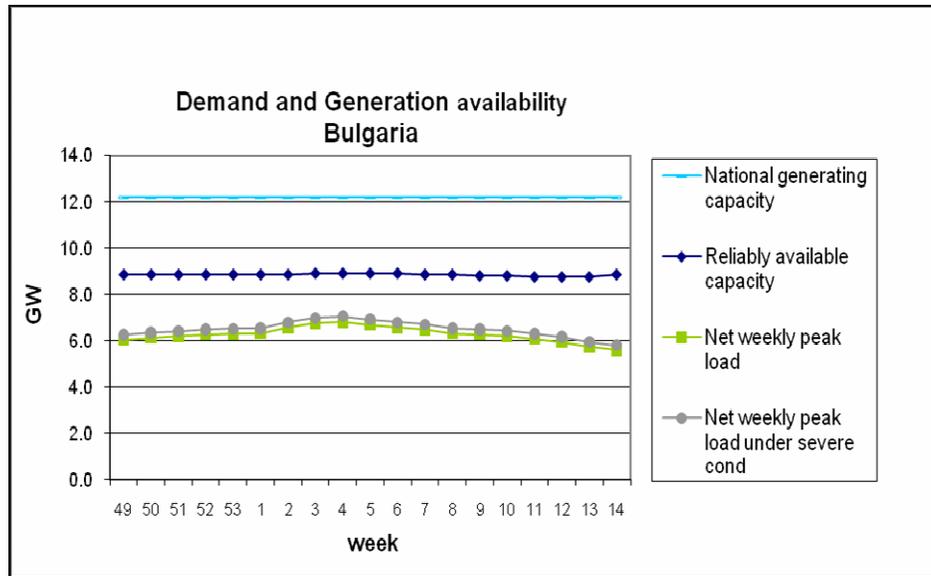
On the next diagram it is shown the **maximum load on January 2008 and 2009**, with marked period of gas interruption on January 2009.



On the following diagram it is shown the **influence of temperature on the maximum load on January 2009**. The temperature is measured on January 2009 (13,00 h) for the town Sarajevo.



BULGARIA



Synopsis

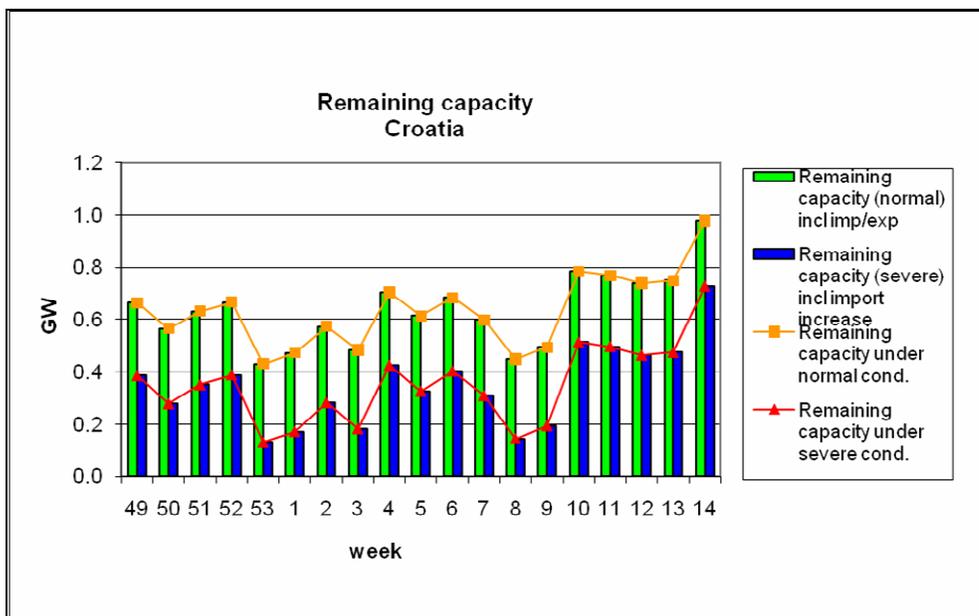
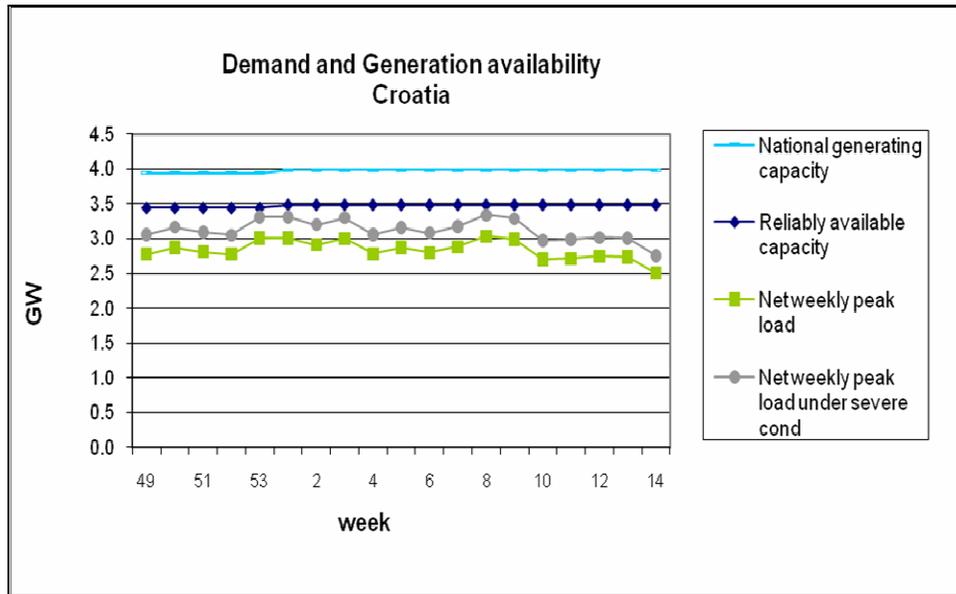
No addition of new generation capacity is expected for the coming winter. The maintenance schedule of the generating units is set to minimum. No problems in the transmission network are expected because of major maintenance works over the summer period. All possible activities will be done in order to 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.

Summer 2009 Review Report

Due to the global financial and economic situation and the resulting impact to Bulgaria the electricity demand in the country continued to decrease. Compared with 2008 the decrease of the normal temperature-adjusted monthly consumptions for June, July and August 2009 was as follows: June: -7.7%; July: -5.3%; August: -5.8%. The average monthly temperatures were: June: +21.2°C; July: +22.8°C; August: +22.5°C. The hottest working day was 24 July (Friday) with temperatures: $T_{min} = 17.9\text{ C}$, $T_{ave}=26.9\text{ C}$, $T_{max}=35.6\text{ C}$. This is the day with the highest peak load in the season: 4471 MW and the highest daily consumption: 95074 MWh.

There were no adequacy problems in the period. Failure rates of units were as expected and maintenance schedules were strictly fulfilled. Water levels in the big reservoirs were slightly above target levels and hydro plants operated normally in peak zone of the daily load curve. There were no critical outages in the transmission network. During the whole period Bulgaria exported electricity to neighbouring countries. There were no unplanned outages of all interconnection lines.

CROATIA



Synopsis

The Croatian power system, due to significant share of hydro power plants, primarily depends on hydrological circumstances of the region. That is the main reason for significant differences between the productions of hydro power plants in extremely dry or extremely wet period, which can vary for approximately 50% of expected production in hydro power plants (annually up to 6 TWh). In average hydrological circumstances the annual need for import of electricity in the Croatian power system is 37 %, from which 17 % comes from electricity produced in "Nuclear

Power Plant Krško”, based on the ownership contract (right on half of the realized production from nuclear power plant).

The Croatian power system depends on imports of energy to cover difference between consumption and production caused by different hydrological circumstances.

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

The considered winter period is characterised by the appearance of differences in energy values of river flows between the primary and the dry seasons, which in total amounts to approximately 940 GWh.

Therefore, in case of possible continuous dry periods it should be possible to additionally increase the import of electricity for the purpose of significant substitution to compensate for lacking hydropower production and for maintaining security of supply of consumers in the Republic of Croatia.

The amount of cross-border import transmission capacities needed for both options of the observed hydrological season are objectively achievable in any of the observed winter months, and there are satisfactory reserves of energy in the reservoir basins. Therefore, difficulties in securing sufficient amounts of energy for the domestic customers, as well as problems in the stability of the power system through required availability of minute amounts of reserves (secondary and tertiary) in their full extent, should not be expected.

In addition to ensuring sufficient capacity to allow additional import of electricity the Croatian TSO takes care for securing other technical conditions necessary for the stable operation of the system.

Further measures relating to the coordination of planning, performing and supervision of network and power plants maintenance to ensure the necessary stage of transmission network reliability and reliability of the power system as a whole, and their alignment with actual power conditions.

With regards to above, in the forthcoming winter period the emphasis is on ensuring a high degree of availability of all power plants within the system.

It is anticipated that the Croatian system adequacy for balance between load and generation will not be threatened during the forthcoming winter 2009/10.

Generation – Demand balance

The forecast of weekly peak load is similar to the last winter’s because the stagnation is expected and cessation of further growth (winter consumption for the season 2008/2009 was 0,5% lower then for the previous winter season 2007/2008). Peak demand in severe winter conditions was 10% higher then the forecasted peak load.

In July 2009, a test operation of the new 100 MW CCGT unit in TE–TO Zagreb started. A new hydro power plant HE Lešće with installed capacity of 42 MW and the new wind power plant VE Vrataruša with installed capacity 42 MW, are expected to start being operational by the end of the year 2009 or at the beginning of the year 2010.

Role of interconnection

The Croatian electricity system is one of the best interconnected European power systems with more than 20 interconnections with all of its neighbours (except Montenegro) representing strong connection between South-East and Central Europe

The Croatian Transmission System Operator has finalized reconstruction of a tie-line OHL 220 kV Mraclin – Prijedor. This line towards Bosnia and Herzegovina was put in operation on 19th March 2009 but with slight influence on network capacity.

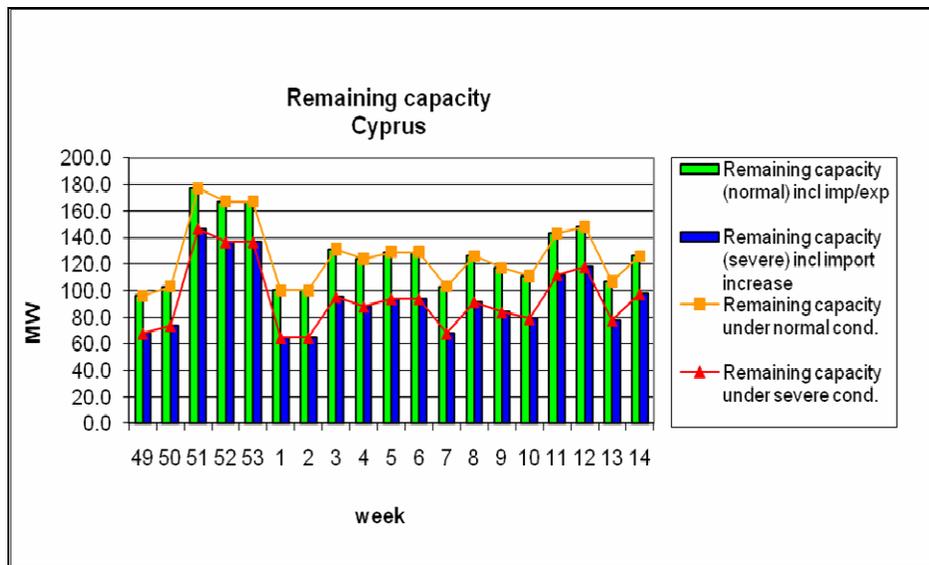
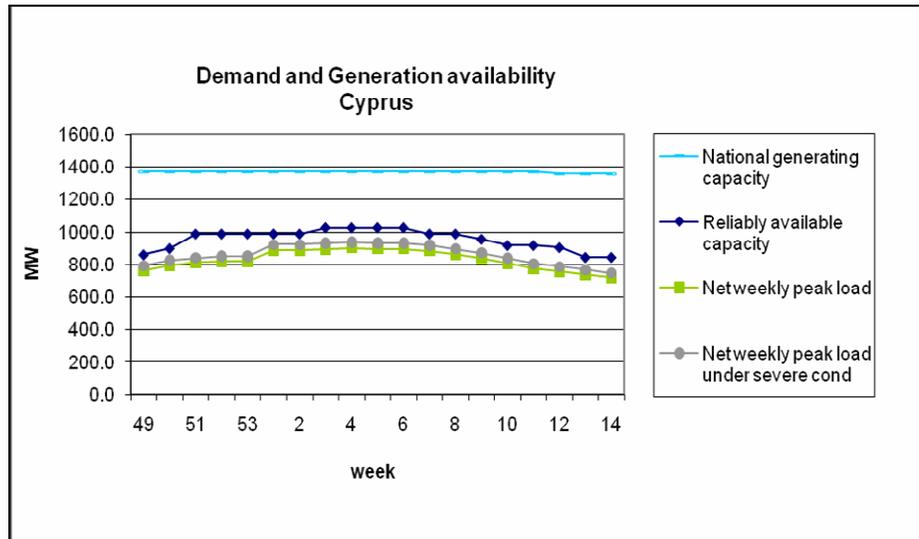
In respect to ENTSO-E definitions, HEP-OPS agrees on bilateral (yearly and monthly) NTC values with the neighbouring transmission system operators, organises and conducts unilateral yearly, monthly and daily auctions of available cross-border transmission capacity on Slovenian, BIH and Serbian border, and bilateral auctions on Hungarian border in order to reduce congestions on cross-border transmission tie-lines. HEP-OPS participates in coordination of planned long and short term outages on the regional level as well.

Except for the case of severe winter conditions, HEP-OPS does not expect transmission power flows that could jeopardise the interconnections.

Potential additional areas for comments

Due to the possibility of thermal power stations to switch fuels between gas and oil and additional reserves of energy in domestic generation, especially hydro power, are high enough to substitute the lack of electricity that can arise from interruption of gas supply. We can conclude that possible interruption of gas supply would have no significant influence on the situation in the Croatian power system.

Cyprus



Synopsis

No critical periods are expected during Winter 2009/ 10 since the generation capacity in Cyprus is much higher than the consumption. Under normal or severe temperature conditions the generation – load balance of Cyprus System is not considered to be at risk even with loss of the largest power unit of 130MW. A Combined Cycle Power Plant of 220MW is being commissioned and will be available during the winter period.

It is mentioned that the maximum demand in Cyprus occurs during the summer period and therefore no plant maintenance is allowed during July and August.

A provisional overhaul schedule of the power units is communicated to the TSO of Cyprus by the Electricity Authority of Cyprus and the final schedule is approved by the TSO, having taken into consideration the load forecast carried out by the TSO.

Methodology

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

Role of interconnection

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

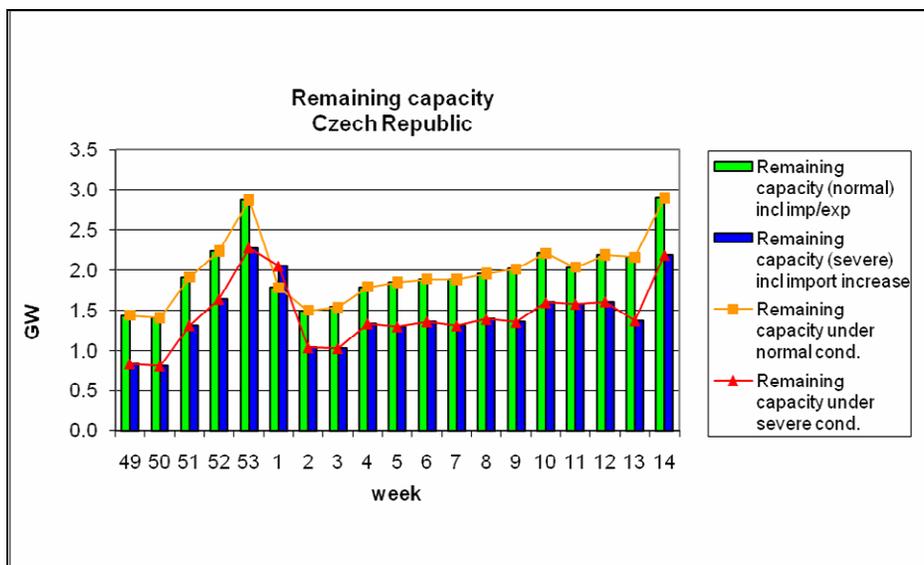
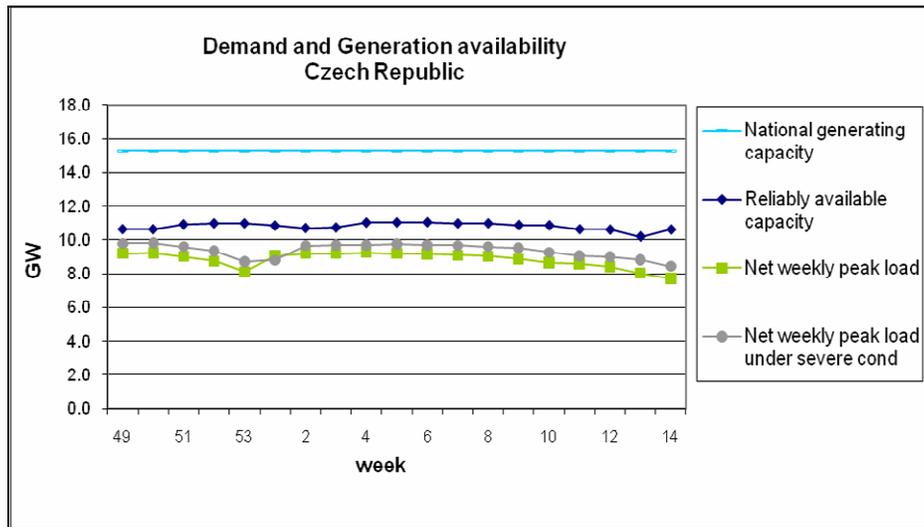
Potential additional areas for comments

Although numerous connection applications of wind parks are under study no wind parks are connected to the Cyprus Grid yet.

There are no mothballed plants in Cyprus.

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

CZECH REPUBLIC



Synopsis

CEPS does not anticipate significant balance problems in the Czech power system during the upcoming winter period, even at potentially severe conditions. In the end of year 2009, due to economical crisis, we expect a drop of the net energy consumption of about 6.5 % (converted on normal temperature) in comparison with the previous year. The balance analyses show remaining capacity in severe conditions above 800MW at the end of the year and above 1000 MW from the beginning of next year. CEPS has no forward information on planed exports/imports from traders, as only mandatory time horizon for scheduling export/import contracts is day ahead.

Framework and Method Used for Winter Outlook

CEPS's regular operation planning horizons are: year (annual operation plan), month, week and day. The data presented here comes from current Annual Operational Plan (AOP) for coming year, the final version of which will be approved in late November 2009.

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 need in terms of its structure a volume, planned outages of generation capacities, disconnection schedule (tripping plan) of TS facilities, analyses of transmission and short circuit conditions in the TS, overview of facilities, etc.

Results of AOP serves 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

Planned outage of two 200 MW units was prolonged for all winter weeks. However, it is expected, that even in the case of severe condition the generation capacity will allow exports.

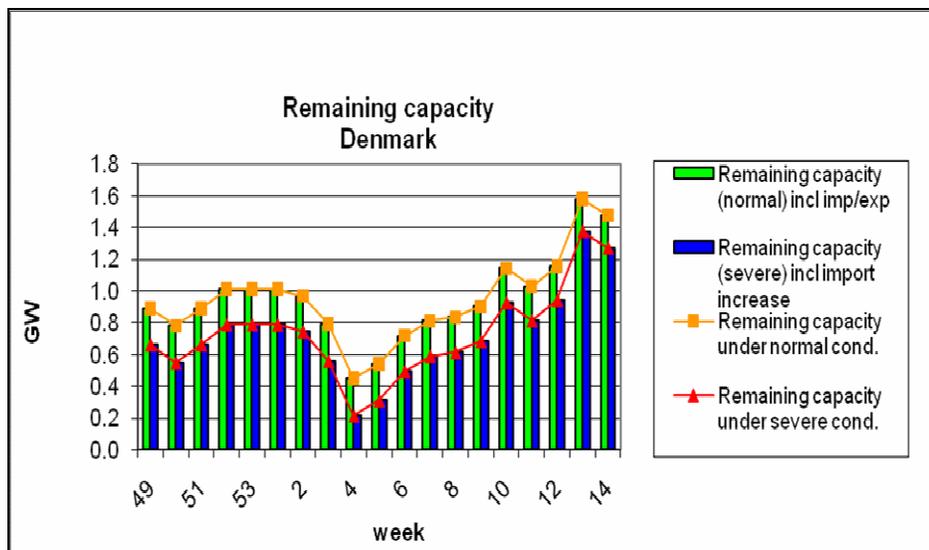
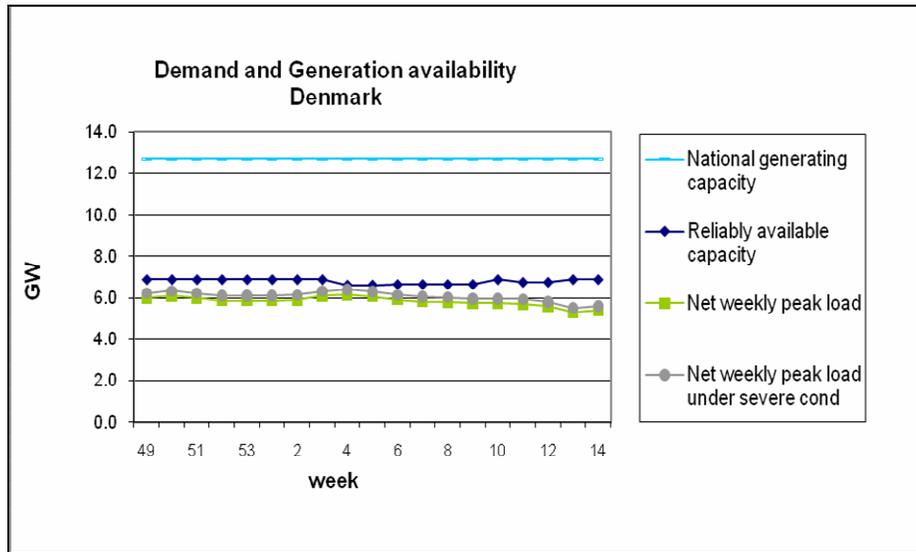
Role of interconnection

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

Potential additional areas for comments

Predictability of load is lower than usually, due to uncertainty caused by economic crises. Trend of economy growth, is hard to foresee.

DENMARK



Synopsis

The winter 2009/2010 is expected to be normal with no particular problems. The balance between load and generation is always interesting especially if there are overhauls or outages.

The power balance is expected to be positive even during severe winter conditions for Denmark as a whole (see figures below).

The critical point in the Danish system is the power balance in Denmark East which is low relative to Denmark West. Under normal winter conditions the balance is positive but some of this capacity is not in operation every day (mothballed plants, reserves, etc). Under severe

winter conditions the power balance is expected to be lower than a normal winter (less than 100 MW).

The financial crisis has lowered the expectations to electricity consumption which has improved the balance.

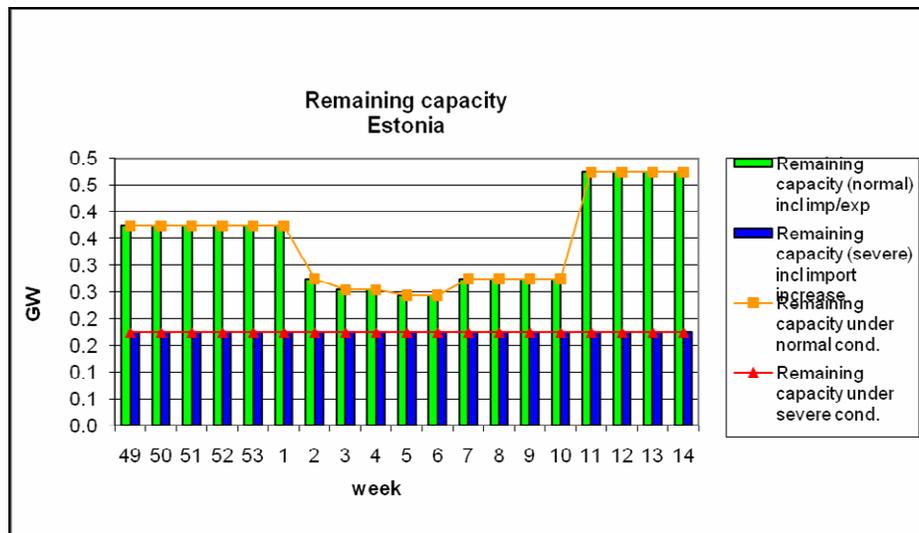
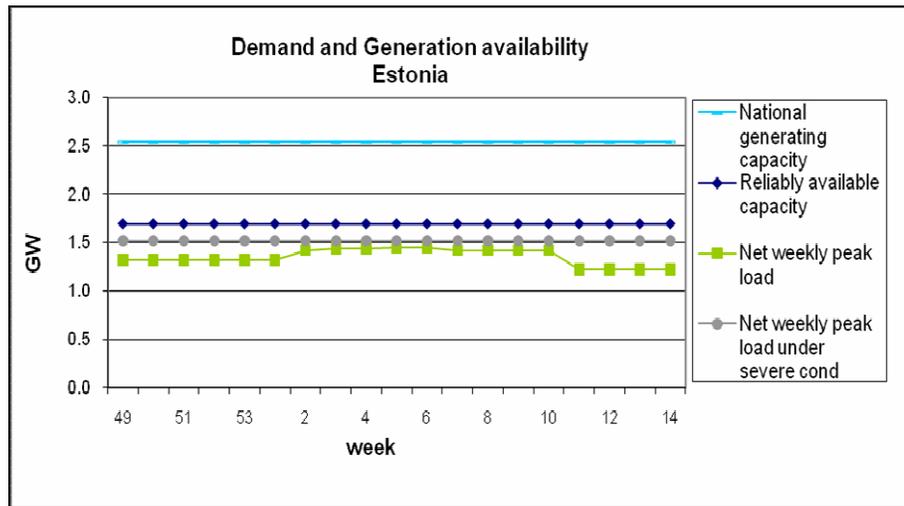
Therefore the balance is more critical in Denmark East and dependent on interconnectors to Sweden and Germany.

Demand – Generation balance

The figures above illustrate the forecast for the balance of the power system in Denmark. There is a fall in "Reliably available capacity" from the beginning of February. This is a result of planned overhauls.

It is expected that peak load will occur in week four. However, as figure 2 indicates, the remaining capacity is still 450 MW under normal winter conditions (215 MW for a winter with severe conditions).

ESTONIA



Synopsis

In the upcoming 2009/10 winter season, the Estonian power system is expected to be in balance. Domestic generation capacity is considered sufficient to cover peak loads during the winter season. There is no significant addition of generation capacity forecasted during this period.

Considering the peak load of last winter and the statistics, the expected peak load for the approaching winter season is around 1450 MW and will drop for the weeks 5-6, the average load will probably lower to the last years, because of the recession, despite of predicted coldest winter.

The estimation of electricity demand and supply balance for Estonia power system does not consider the probable extraordinary events (mission capacity for domestic needs and transit, also to provide adequate security of supply). Interconnectors will mostly used for exports.

According to Elering OÜ estimation in case of gas crisis generation adequacy in Estonia should not be at risk. Currently in Estonia the share of gas-fired power plants is about 4% of total net available generation capacity. Due to economic reason, a price disadvantage over dominant in Estonia oil shale generations, about half of gas-fired capacity was mothballed during last winter. However in case of a gas crisis, the growth of demand can be expected up to 10% as most of district heating boiler houses are gas-fired and it could be replaced with direct electrical heating.

The framework and the method used for making the winter adequacy assessment

Electricity generation availability is taken for the whole winter, forecast provided to Estonian TSO every year by the generating companies. The wind generation was considering as non usable generation capacity. Demand forecast are produced by TSO, based on statistical data and any known issues for the forthcoming winter.

Generation - Demand balance

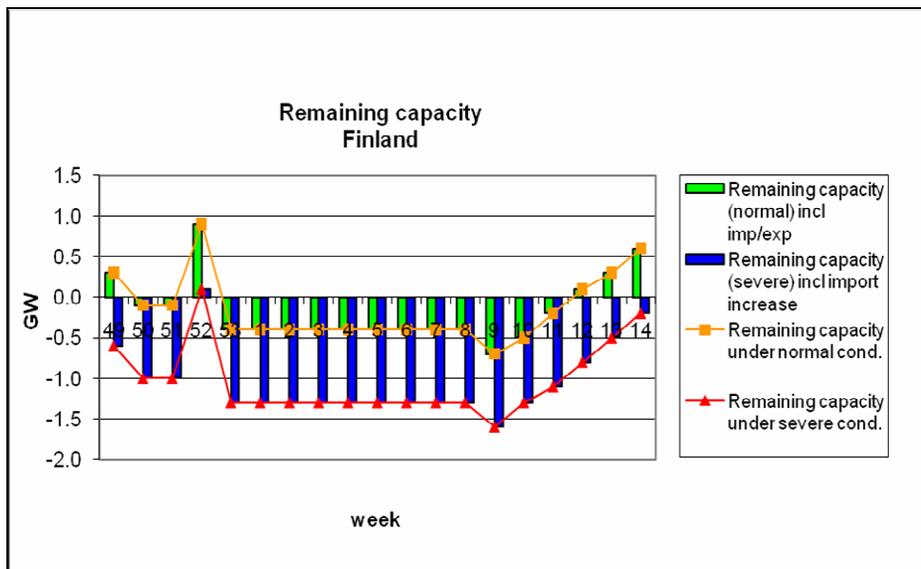
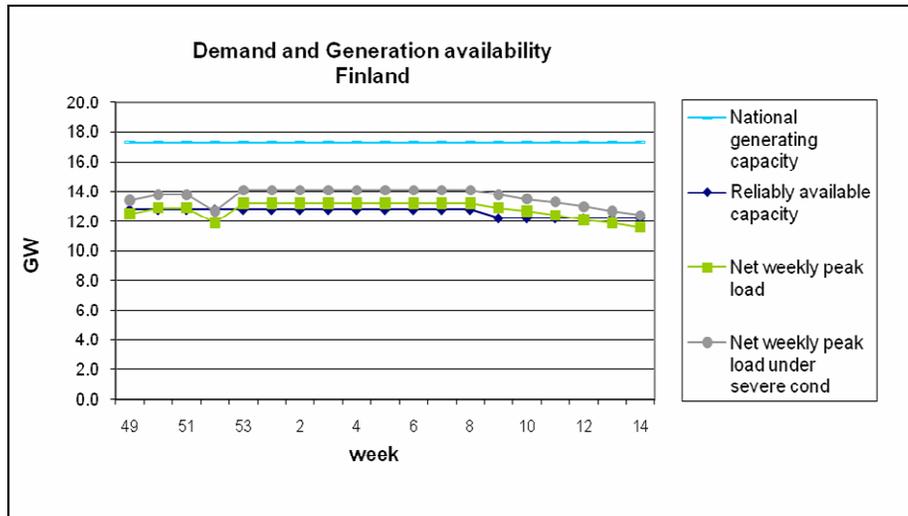
Elering OÜ expects that the generation capacity will be sufficient to meet the expected peak demand even under unexpected severe conditions this winter.

Role of interconnection

The availability of interconnections between Estonia and neighbouring power systems is expected in normal conditions over winter period.

In 2010 it can be expected the direction of power transfer will be from Finland and Estonia to Latvia and Lithuania due to closure of Ignalina PP.

FINLAND



Synopsis

Finland is a deficit area in the power balance and hence dependent on power import during peak hours even in normal temperature conditions. Finland is expected to manage the balance with the import possibilities from neighbouring systems.

Two new CHP (Combined Heat and Power) plants will come into operation before the winter period. On the other hand producers have informed that a few units are "mothballed" or "placed into reduced start-up readiness" because of the foreseen market situation.

The economic crisis has decreased both the energy and power demand. This improves the power balance compared to situation Finland would face assuming the demand growth forecasted a couple of years ago.

The framework and the method used for making the winter adequacy assessment

Traditionally the Nordic TSO's have made the power balance only for the peaking hour in two cases; in normal climatic conditions with the occurrence probability once in two years and, in cold conditions with probability once in ten years. A weekly estimate is made for the first time. Different aspects considered are explained below.

Generation - Demand balance

Generation Available

National generating capacity will remain unchanged through the period under consideration.

Estimate on non-usable capacity is based on public information from producers and on TSO's own experience.

Except the wind power and mothballed units explained in 3.5 below, the non-usable capacity includes estimated reductions because of very different reasons: hydraulic and icing conditions in hydro power, the electrical output of CHP plants is reduced in cold conditions as more heat is needed, outages, etc.

Yearly overhauls are carried out outside the winter season.

In summary, available capacity is the TSO's estimate on the capacity which is available to the market during peak demand.

Outages are not estimated separately but included in the overall non-usable capacity.

System service reserves consists of frequency controlled reserves mainly kept in hydro power and, gas turbines for fast disturbance reserves.

Demand

Until now in Finland, only the winter peak in average and in cold conditions has been estimated. The peak load in the Nordic conditions may take place during any working day usually in January or February, sometimes even in December or the beginning of March. Also this time the two peak loads mentioned above were first estimated. The estimation for the 19 weeks was then based on analysing the weekly peak loads during the previous winter periods.

Load reduction is understood to mean demand response. No demand response is assumed in average temperature conditions.

Remaining capacity in normal conditions

Remaining capacity is negative in normal conditions excluding the Christmas week. Hence, import is necessary to meet power balance. During the most probable period for winter peak to occur the deficit is about 0,5 GW increasing a little at the beginning of March when the "Peak load power capacity" explained below is no more available and the load may still be high.

Severe load conditions

The severe load conditions are assumed to correspond to cold conditions with a probability once in ten years. No demand response is assumed to exist in severe load conditions. The power deficit is some 900 MW bigger than in normal conditions or, in other words, it is almost 1.5 GW at most. In case the market price rises very high some demand response may exist decreasing the deficit.

Role of interconnection

During peak hours power balance in Finland is dependent on import. The interconnection capacity is sufficient to meet the power deficit.

All the existing transmission capacity between Finland and Sweden is foreseen to be available during the coming winter season. Except faults in transmission connections export from Sweden to Finland could be reduced in case of faults or further delay in restart of the nuclear power units in Sweden after overhaul or, in case of especially cold period in Scandinavia increasing the demand there. It is very unlikely to have especially cold simultaneously in Scandinavia on one hand and in Finland and in North-Western Russia on the other hand. This kind of exceptional situation would mean increased demand in Finland and restricted import from both east and west.

The import from Russia is expected to be 1400 MW. No reductions are expected in import. The experience from previous years has shown that only an especially cold period, generation failures or major line faults in North-Western Russia might cause some reduction in import possibilities. The reduction might last for a few days.

The HVDC-link, Estlink, is used for import or export of maximum 350 MW between Baltic and Nordic region. The real time import or export amount depends on electricity market price difference between regions. Apparently, during the coming winter the import from the Baltic will be smaller than it used to be earlier and, during peak hours zero or at least smaller than the interconnection capacity enables. This is due to the closing the Ignalina nuclear power plant in Lithuania by the end of 2009.

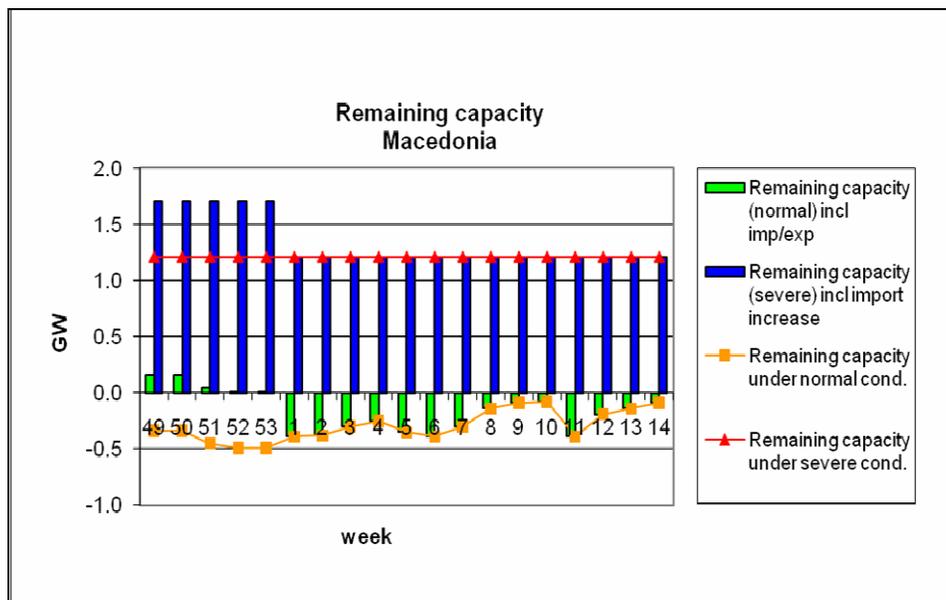
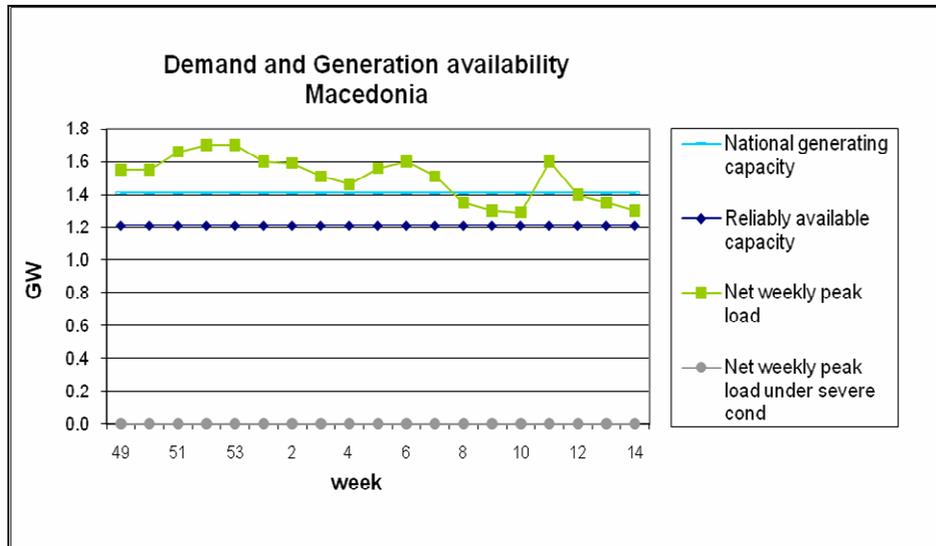
Additional comments

Cold conditions in winter result in peak demand. Cold weather also often means little or no wind. In this study six percent of the wind power capacity is assumed to be available during peak hours. In the whole Nordic area the records show that this six percent has probability of 92%. For the time being, wind power capacity in Finland is small and hence the figure has no practical meaning, however.

The mothballed units include power plants their owners have informed to be placed into reduced start-up readiness (two months etc.) because of foreseen market conditions. With special contracts 600 MW of capacity in Finland is reserved as "Peak load power capacity". This capacity is available only from the beginning of December to the end of February. This capacity is included in the mothballed capacity from the beginning of March, weeks 9 to 14.

The economic crisis has decreased the electricity demand drastically in Finland. The demand in 2009 will remain of the order of ten percent lower than the demand a couple of years ago. Some pulp and paper factories and some more individual paper machines have been closed permanently. This has impact both on energy and power demand.

FORMER YUGOSLAV REPUBLIC OF MACEDONIA (FYROM)



Comments:

The operation of power system is expected to be secure and reliable over all the winter period.

The Macedonian electricity system depends upon imports of energy to reach adequate balance between consumption and production/import. There are firm import contracts, until the end of 2009, but the contracts for 2010 have not been finished yet, so data for 2010 could not be included in the graphs.

From the point of view of system adequacy, load – generation balance will not be at risk during the next period of Winter 2009/10 in the Macedonian System.

The Macedonian transmission network has developed interconnections with neighbours: two 400 kV tie-lines with Greece and one 400 kV tie-line to Serbia. The new 400 kV interconnection to Bulgaria was commissioned at the end of 2008, the operation of the power system is now more secure than before and the transit through Macedonia has increased. This has also, improved the security and reliability in the whole SEE region.

The overhauls of the interconnections and power plants followed the plans which were coordinated with the other countries in the SEE region.

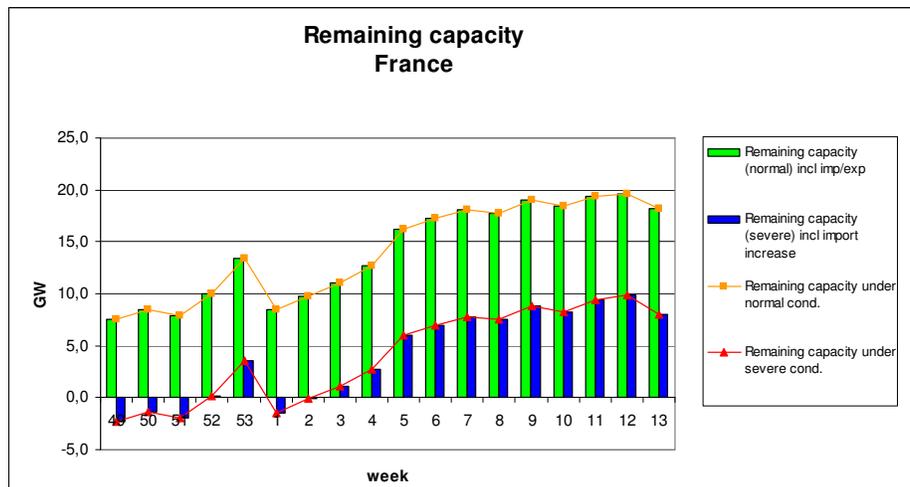
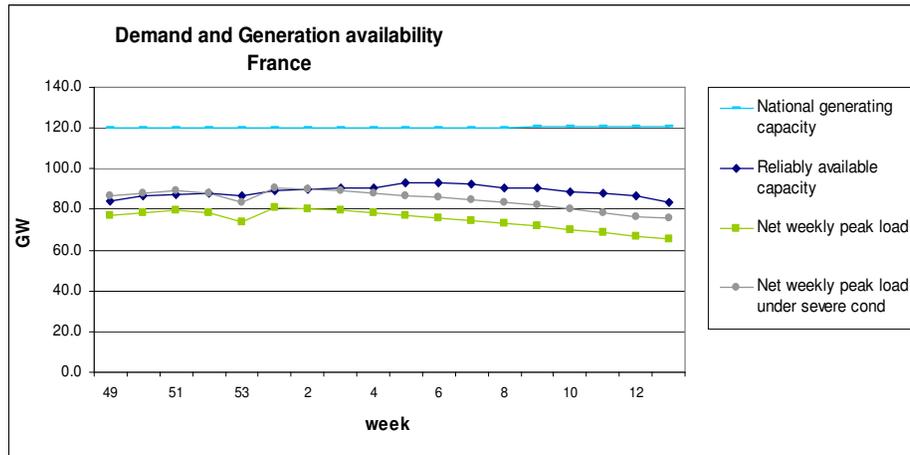
There are hopes that the import contracts for the winter period (2010) will be signed very soon, so the generation-load balance on the Macedonian system will not be considered at risk, during the winter 2009-2010.

Generally, the 2009 **summer conditions** were very close to the forecast ones from the point of view of temperatures, and the levels of our reservoirs are very high. This is the advantage for the high load winter period. Planned maintenances of Thermal and Hydro Power Plants were carried out successfully. The overhauls of the interconnections and power plants occurred according to the plans which were coordinated with the other countries in the SEE region.

There were no unexpected situations during the Summer period.

This year the import was lower, due to the economic situation.

FRANCE



Comments

Framework and Method Used for Winter Outlook

An adequacy forecast study is carried out each year for the November-March period, using a probabilistic approach to simulate random situations of load and generation, covering the whole of 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.

In concrete terms, 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.

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 (end of October). 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 12.2 and 15.2 GW.

The risk level is more important at period of 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 occurs when the wind energy generation is low in Northern Germany.

For this coming winter, the maximum import and export capacities are respectively around 9 GW and 13 GW. These values take into account the maintenance already planned on the network. Some additional operations on the network should happened.

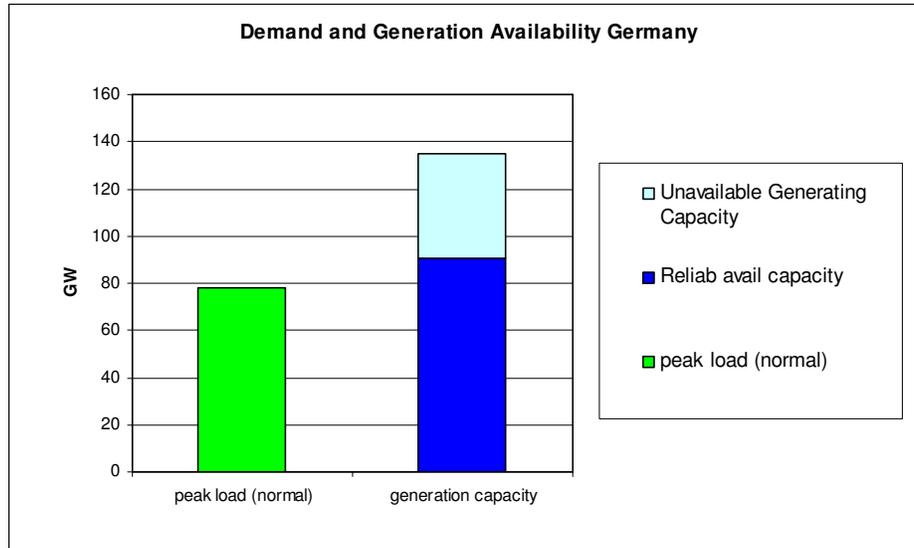
Conclusion

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

From December to January, in case of severe conditions, forecast margins will be reduced because of the strong dependence of the French electric consumption to temperatures. More important imports could be needed to cover the electricity demand in France.

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

GERMANY



Comments

The German contribution to the ENTSO-E Winter Outlook Report 2009/2010 has been prepared on the basis of the figures for the 3rd Wednesday of January 2010 which have been delivered to ENTSO-E in the framework of the current inquiry for the ENTSO-E System Adequacy Forecast 2010-2025 (according to the former UCTE Methodology).

It has to be pointed out that due to unbundling detailed information about elements of the power balance is not available to the German TSOs and thus a great many of the data required for the Power Balance are estimations and approximations gained from past experience before the liberalization of the electricity market (e. g. some elements of unavailable capacity; some parts of generating capacity, especially embedded generation).

The 3rd Wednesday figures available for January 2010 show a scenario for a typical winter month. According to our experience, the situation is most severe in December and January and the figures for January can be applied to 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.

It can be concluded from the figures for the representative 3rd Wednesday in January 2010 that the peak load will amount to approximately 78 GW. As a result, a “Remaining Capacity” of around 13 GW will be obtained which means that the “Adequacy Reference Margin” will be met. (As a result of the economic crisis, demand is expected to decrease considerably.)

Special remarks on the different control areas:

EnBW TSO:

- Particular non-availability is not expected in terms of power plant feed-in.
- Large North-South power flows may still occur under certain conditions of strong wind.
- Due to the congestion management existing for the borders between D/CH and D/F, these power flows can be appropriately limited through reduction of the „C function“.

- Ice loads on conductors as well as galloping may occur under particular meteorological conditions. However, it is not possible to predict the probability of occurrence of these effects.

Amprion:

- Generally, increased use of re-dispatch measures is to be expected in the event of high wind power feed-in.
- Limitations of NTC-values between DE and CH, FR, NL and BE could arise in case of high wind power feed-in.
- The shutdown of the Biblis nuclear power station A+B (not excluded for the period under consideration) may lead to higher load flows in an East-> West-> North-> South direction. This might lead to modifications of the network topology or to redispatch measures, also in the light of high wind power feed-in.

VE-T:

General Situation:

In spite of the 2009 network extension, a further aggravation of the situation is expected due to the continuous strong increase of installed capacity in wind power plants. The situation will become particularly critical if the mean feed-in power will again reach the order of magnitude of previous years after the comparatively low wind conditions during the last winter 2008/09.

Furthermore, the new 380/110 kV Stendal-West transformer station provides an additional feed-in point for renewable energies. Here, the first 380/110 kV transformer 411 was released for continuous operation on 1st October 2009. A second 380/110 kV transformer is also to be put into service in 2009. Due to feed-in from the wind power plants connected in this area, a high negative vertical network load is expected for the Stendal-West transformer station particularly during windy periods. Besides, the risk of congestion in the subordinated 110 kV distribution network is reduced by the new feed-in point. For this reason, it is expected that major amounts of power are re-fed from the subordinated distribution network into the transmission network.

Critical periods

In accordance with the large capacity installed in wind power plants (line 4a) in the VE-T control area, it is expected that in winter 2009/10 longer periods will occur during which network and market-related measures will have to be taken (within and beyond control areas) for complete integration of wind energy.

The average feed-in from wind power plants during the period from December 2008 to March 2009 amounted to approximately 1931 MW (as compared to about 2758.4 MW in winter 2007/2008 and to about 2675.7 MW in winter 2006/2007).

Role of interconnections

As a matter of principle, the interconnections between VE-T and PSE Operator S.A. and between VE-T and CEPS are not fully loaded; in exceptional cases, they are loaded in consultation with the parties concerned.

Due to a high wind supply in the VE-T control area, the interconnections between VE-T and transpower will have to be operated to the limits of their loading capacity. Special agreements will be concluded for this purpose.

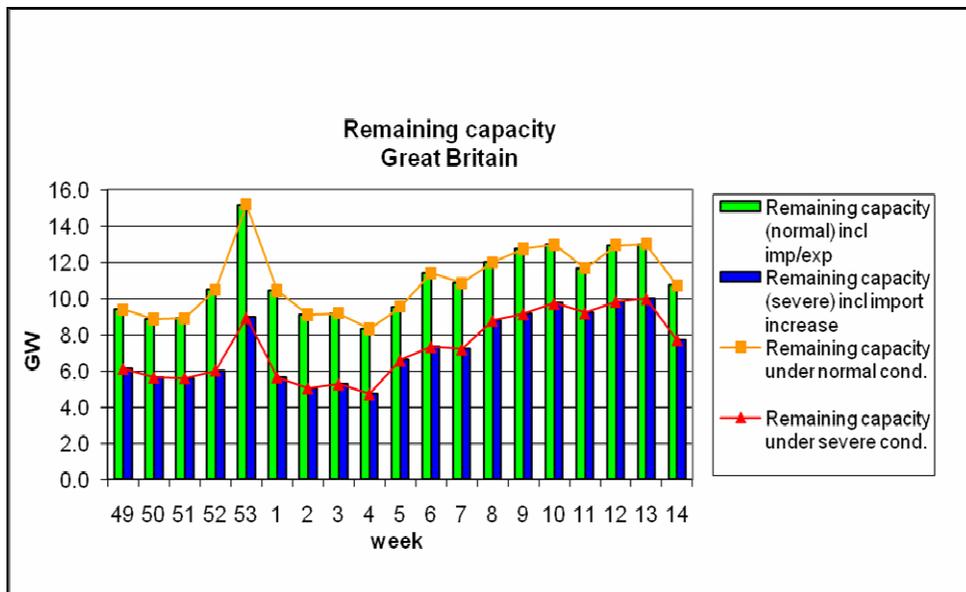
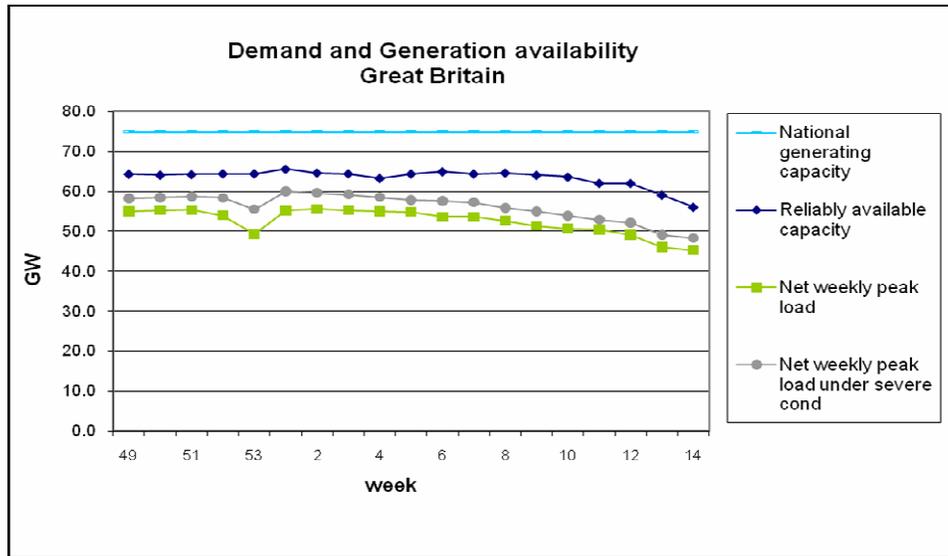
In winter 2009/10, a higher transmission capacity (of up to 180 A per system) will be available on the Redwitz-Remptendorf interconnection (413/414) between VE-T and transpower. In addition, the Lauschtädt-Vieselbach interconnection (471/472) will be available for the first time

for a full winter period. Both measures contribute to a reduction of the risk of occurrence of congestion between the transmission systems of VE-T and transpower.

Other issues

Extraordinary events and disconnections or outage of system-relevant operating equipment are not expected or known. Load-flow based allocation between Germany and Poland and between Germany and the Czech Republic of available transmission capacity (CEE region) is not likely to be introduced before spring 2010. Thus, like in the previous winter periods, the loading condition of the relevant interconnections is not likely to ease up during the winter of 2009/10. The nuclear power stations of Brunsbüttel and Krümmel are likely to be out of service during the whole winter 2009/10.

GREAT BRITAIN



Synopsis

For the coming winter the electricity demand and generation balance is comfortable in base case scenarios of demand (1 in 2 normal temperatures) and expected levels of generation availability. With expected levels of generation availability and high electricity demands, caused by very cold weather (1 in 20 cold temperatures), our forecast demand and operating plant margin can still be met in full.

Generation availability in the GB market for winter to come is anticipated to be improved on recent winters, most notably with higher expected availability from Nuclear power stations than seen in recent winters. This is combining with lower peak demands as a result of the economic downturn. Also in the GB market during winter to come, some new CCGT and wind generation capacity is expected to commission (subject to this commissioning taking place as planned), further adding capability to the generation fleet over winter 2009/10.

Risks to meeting electricity demand are still present, although low, and focus on “external shock” type scenarios which by their very nature are unpredictable (e.g. significant gas supply issues/generation type faults).

Winter 2009/10 Outlook – Electricity

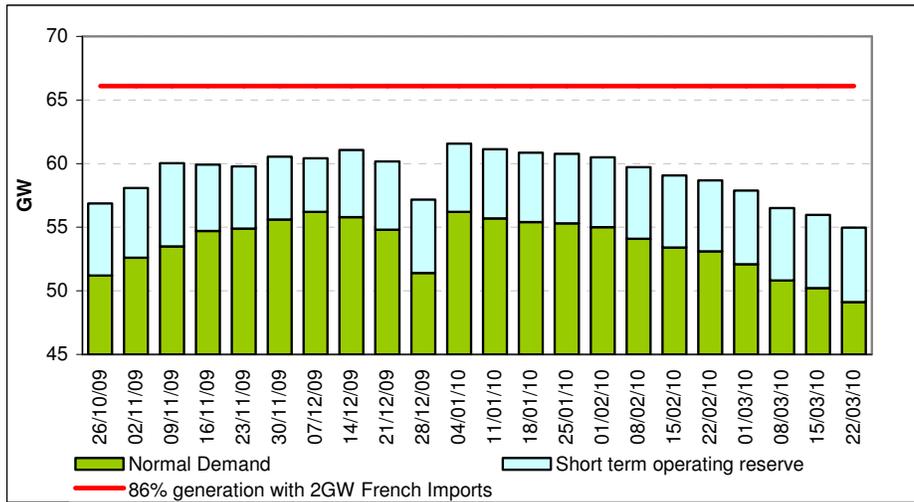
For winter 2009/10, surplus generation availability above expected electricity demand continues to be materially more comfortable than we have seen in recent years. There also remains some potential upside in generation availability which is dependant upon the anticipated commissioning of several new large CCGT power stations and new wind power generation.

Based on data submitted by Generators, our expectation of operational generation capability is 77.0 GW at the start of winter. Allowing for anticipated generation performance issues, such as planned and unplanned outages, based on historical performance we would expect this to deliver an availability of 66.1 GW.

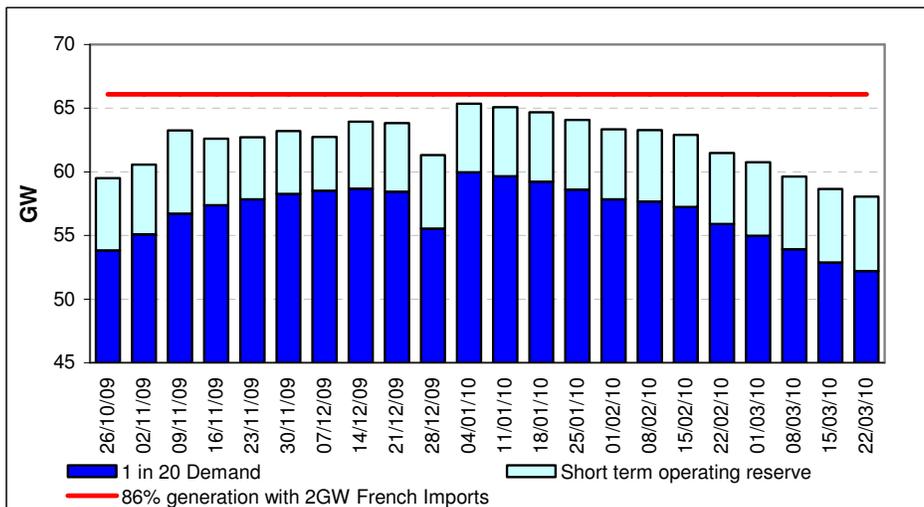
Power Station Type	Full Metered Capacity (GW)	Assumed Availability	Assumed Availability (GW)
Nuclear	10.4	80%	8.4
French Interconnector	2.0	100%	2.0
Hydro generation	1.1	80%	0.9
Wind generation	1.6	27%	0.4
Coal	28.1	85%	23.9
Oil	3.5	95%	3.3
Pumped storage	2.7	95%	2.6
OCGT	1.3	80%	1.0
CCGT	26.3	90%	23.6
Total	77.0		66.1
Overall availability		86%	

The forecast Average Cold Spell (ACS) peak demand for winter 2009/10 at 57.4 GW is below last year's outturn peak demand, adjusted for ACS conditions. Last winter saw significant reductions in demand as a result of the economic recession. In winter 2009/10 we anticipate a further reduction in peak demand. This is supported at present by our operational demand forecasting models for which underlying demands are now stabilising. Clearly in a time of significant economic uncertainty, demand forecasting has become more challenging and we place greater emphasis for winter 2009/10 upon revisions to our latest view which will be published on www.bmreports.com as winter progresses.

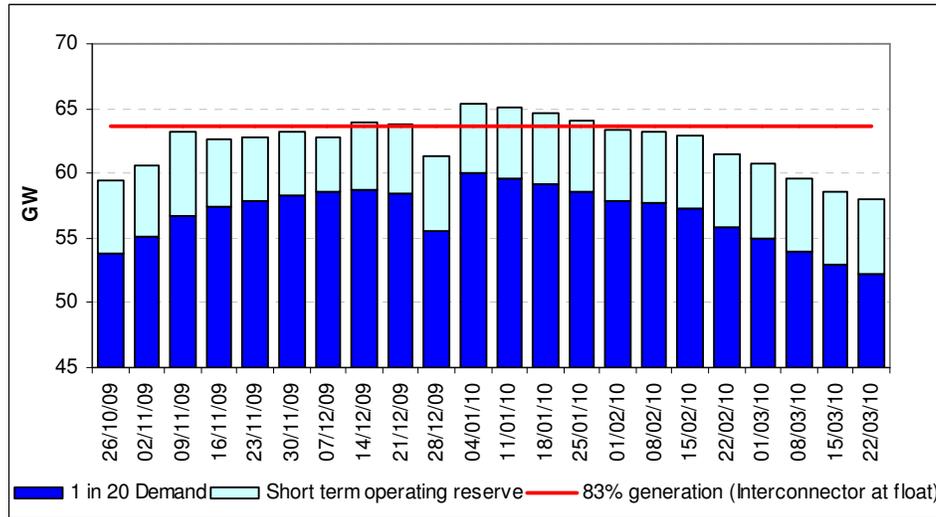
The chart below brings together GB view of demand and generation under normal demand scenario and base case generation availability and shows that under these assumptions generation surpluses are comfortable.



Under a 1 in 20 demand scenario which might be expected in a very cold winter, generation surpluses are still considered adequate at this stage.

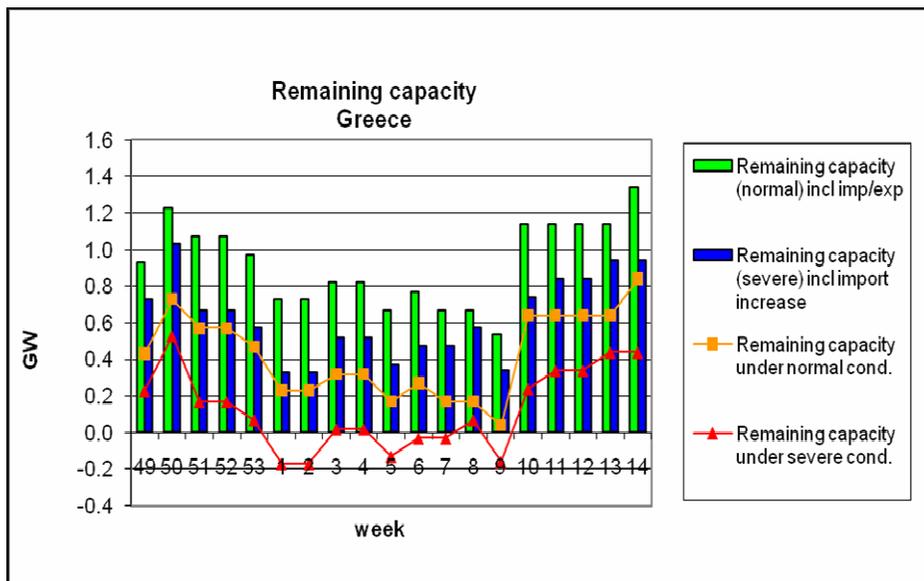
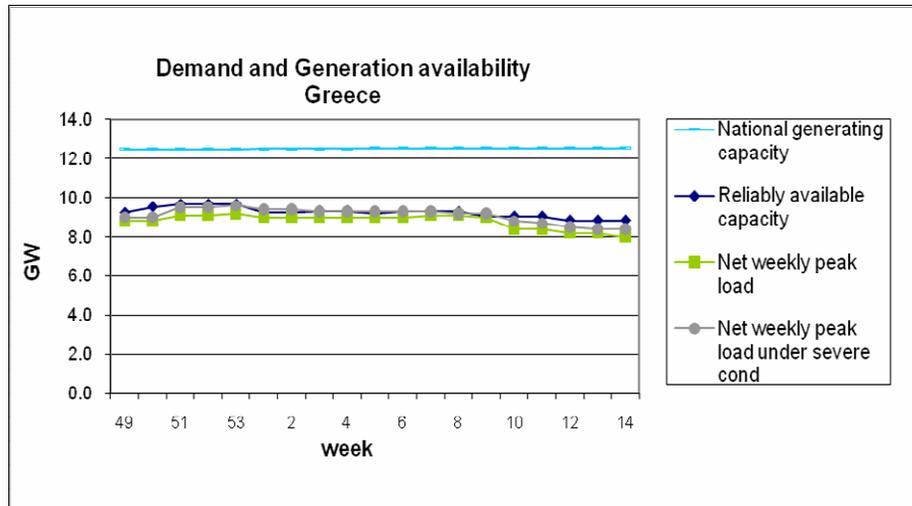


We have also analysed a credible “tougher” scenario of adverse elements to balancing demand and generation coinciding. This combines a low generation scenario (interconnector transfers between France and GB at float and wind generation output at zero) along with 1 in 20 cold temperatures driving high demand levels. In this scenario demand can still be met in all but extreme high scenarios of short term generation failure and demand forecast error, though some system warnings would be likely to have been issued as our operating plant margin would have been eroded as illustrated in the chart below.



USING INSTALLED GENERATION CAPACITY RELATIVE TO ACS PEAK DEMAND YIELDS A PLANT MARGIN OF 34%, INCLUDING ANY POTENTIAL IMPORTS FROM FRANCE. THE MORE REPRESENTATIVE ESTIMATE OF ACTUAL LIKELY GENERATION AVAILABILITY AT THE WINTER PEAK OF 66.1 GW YIELDS AN EXPECTED OPERATIONAL MARGIN AT THE WINTER DEMAND PEAK OF 15%.

Greece



General Comments

During last summer the weather conditions were mild (temperatures no higher than 38°C). The particular problem appearing frequently in recent years have been the large-scale fires that have resulted in jeopardising the stability of the system when threatening critical transmission circuits.

For the upcoming winter season 2009 - 2010, 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.

Strengthening of northern interconnections (new 400KV interconnection line between the neighbouring systems of FYROM and Bulgaria) had the immediate effect of reducing the loop

flow between Bulgaria - Greece - FYROM. This has a positive effect on the facilitation of energy exchanges in the region.

The most critical period remains during December and January. Moderate imports are needed to meet our operating criteria under normal conditions.

In case of severe conditions, the usage of the maximum available import capacity of the interconnections will be needed.

Extreme conditions are not expected for the winter season. That case is more probabilistic for the summer season and in this case additional measures may be applied.

Synopsis

The Greek system expected to be in balance in the upcoming winter period (2009-2010) The expected commissioning of a new unit in the system, the good hydraulic storage of hydropower stations and the strengthening of the northern interconnections ensure the adequacy and security of the Greek interconnected System, which is not threatened under normal weather conditions.

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, 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 aims at checking the actual energy situation and the level of hydro reserves. These studies are regularly revised to include mainly variations in the load and/or the availability of the thermal units.

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

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

Generation-Demand Balance

Concerning the national generating capacity, the total net output thermal capacity will be increased by one unit of 400 MW, in relation to the previous year.

This new thermal unit in the combination with the good hydraulic storage of hydropower stations and the strengthening of the northern interconnection lines ensure the balance of Greek system. A provisional overhaul schedule of the thermal power plants for the next year is communicated to the HTSO by the generators. The final schedule will be agreed between the HTSO and the generators, having taken into account the forecasts carried out by the HTSO. The overhauls of the thermal power plants are avoided during periods of high demand. In this assessment the provisional overhaul schedule of the thermal units has been considered. As for the overhauls of

the hydro power plants, they are implemented during periods of low use, that is low water reserves or low load periods. Therefore, the scheduled outages of the hydro power plants do not affect the remaining generating capacity.

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

The non usable capacity includes mainly capacity of wind power plants. The hydro conditions were very well this year so the water reserves are in the sufficient level. The water management aims at saving the water reserves to use them at the peak demand and only for irrigation requirements. As for the capacity of the wind power plants, an average of 78% is non usable at the winter peak.

The monthly peak load is calculated both for normal and severe conditions. Monthly peaks, as well as yearly peaks highly depend on weather conditions, mostly temperature. A statistical approach is followed based on recorded hourly load and temperature data covering the period since 1997. For the winter peak load, the dependency of the load on the temperature averages 150 MW/C.

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

The financial crisis has lowered the expectations to electricity consumption which has improved the balance.

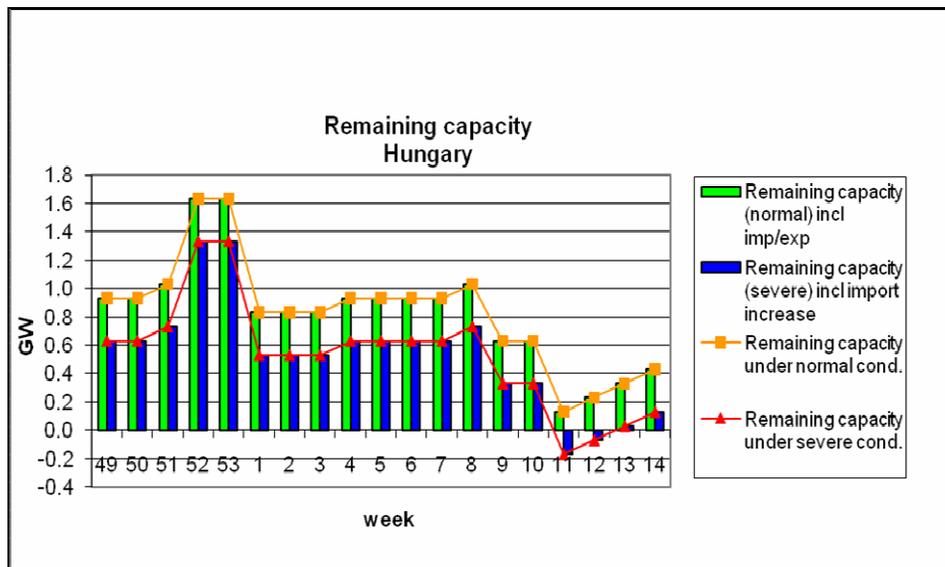
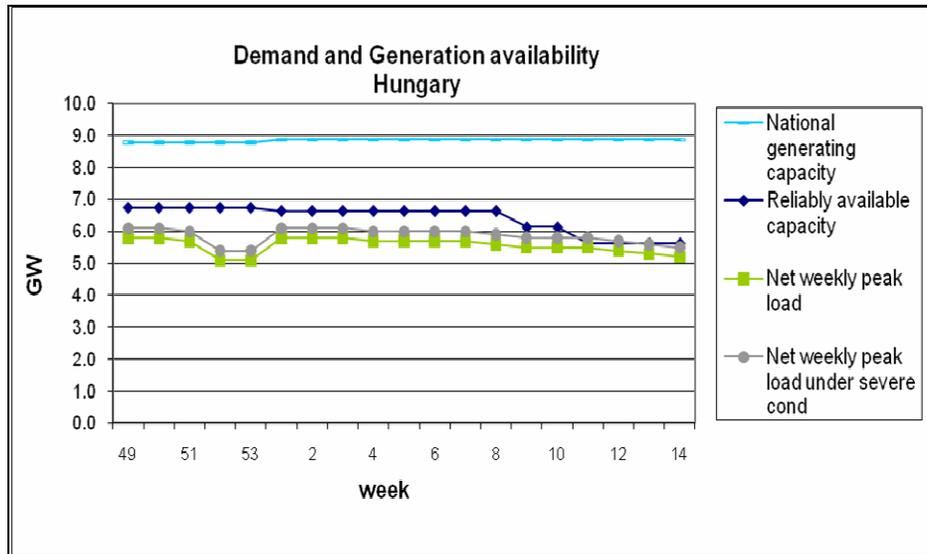
Load reduction is available upon decision of the Ministry of Development and the Regulatory Authority for Energy, but in this report it is consider no load reduction measures. System services include primary, secondary and tertiary reserve according to the UCTE OH Policy 1.

The NTC of North Greek interconnections for imports, a mean estimation of which is in total 1200MW, is allocated to the market participants by long and short term explicit auctions. The notification for the usage of the long term allocated capacity is made during day ahead according to the auction rules. By experience, the firm contracts from the long term allocated capacity are estimated at 400-600MW

It has to be told that during summer period the imports in Greece were reduced due to the low System Marginal Prices.

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

HUNGARY



Comments

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. Limitation may take place in case of 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 February and March.

Synopsis

In spite of the growing uncertainty on both generation and demand side, as a result of liberalisation on the one hand, and promotion of intermittent generation on the other, the Hungarian 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 are essential to keep the lights on. A high capacity gas storage was built recently so that the security of the gas supply could be increased.
- 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 intermittent generators are determined on a daily basis. The necessary data and information come 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 ENTSO-E Operation Handbook, taking into consideration the specialities 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 (0.18

GW at the moment), but due to its low availability, it is not taken into account in the balance (i.e. calculated 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 ENTSO-E OH Policy 1, taking into consideration the Hungarian specialities. (See the note on demand!)

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

Comments on role of interconnections

Interconnection capacity – the import/export capacities, stated in the excel table, are not NTC values. Since the Hungarian Power System is a part of the highly meshed Central-European network, volatile transit flows are comparable to those values. Therefore cross-border trade may considerably be 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, the import part is high. After liberalisation had been completed, international exchange became much more sensitive to market conditions, even in short-term. The Hungarian TSO does its best to stimulate, or even oblige market players through market rules (pricing of balancing energy) and contracts (on provision of reserve power) to ensure the required level of import, in order to guarantee reliability of the power system. For the time being, high amount of import energy is available on the market, which increases our security.

ICELAND

General comments

The generation capacity in Iceland is expected to be sufficient to meet peak demands this winter under normal and severe conditions, and Landsnet does not anticipate any problems on the system.

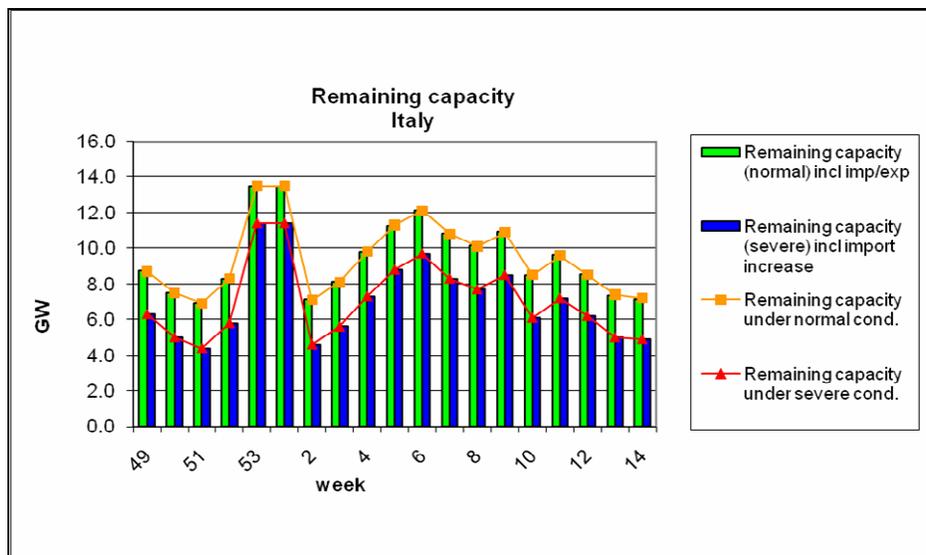
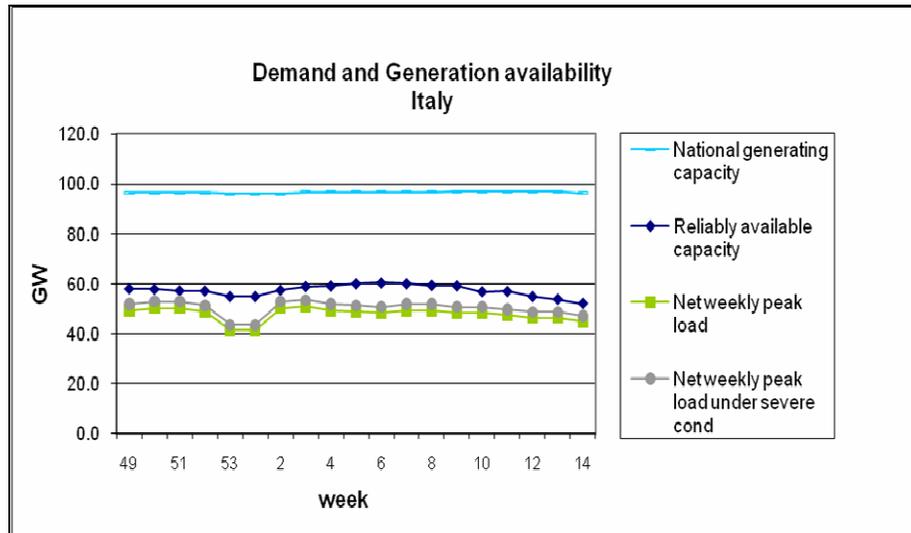
Synopsis

Landsnet expects that the generation capacity will be sufficient to meet peak demands this winter under normal and severe condition. There are no particular problems anticipated for generation and load balance in the isolated Icelandic power system.

The total generation capacity in Iceland is 2,4 GW, where 77% is from hydro stations and 23% from geothermal stations. The hydro status is good and no critical periods are expected during the winter 2009/2010.

Long term Generation Capacity Assessment and Load Forecast in Iceland is made by Landsnet every year and reported in the Transmission System Development Plan. For short term, studies are made by Landsnet on weekly bases for Generation Capacity, Reserves and LF.

Italy



General Comments

Under normal conditions, the Italian power system is not expected to face particular problems mainly due to the observed load decrease resulted from the economic crisis and to the increased installed capacity, with the possible exception of Sicily where the forecast margins are still tight.

In Sardinia, the forecast margins are greater in comparison to the ones of the previous years thanks to the coming into operation of the first of the two new 500 MW HVDC undersea links with the peninsula (SAPEI).

Synopsis

Under normal conditions the general situation expected in the winter 2009/10 is not critical, with the minimum remaining capacity close to 15% of expected peak load. Peak load forecasts in normal weather conditions show a reduction of about 5% versus last winter outlook report.

Further consideration is required for Sicily especially during weeks 3 to 8 due to the unavailability of some power plants needed to carry out maintenance works in order to be compliant to new emission limits. In Sardinia forecast margins are greater than in the previous years due to the coming into operation of the first of the two new 500MW HVDC undersea links with the peninsula (SAPEI link) at the end of November. Further adequacy level will be reached only through the entry into operation of the second cable (planned for the end of 2010)

It should be underlined that unexpected external events (i.e. a sudden lack of gas supply at an international level) might lead to possible critical periods. Nevertheless, proper countermeasures have already been planned.

Under severe conditions, reduced availability margins are expected to occur in the weeks 51 and 2.

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

Terna performs deterministic adequacy studies on a weekly basis with a yearly horizon, considering both all the available information (i.e. planned outages and new capacity scheduling) and the best estimates based on historical data (i.e. load, non thermal production, forced outages rate).

Furthermore all the data used are market-related (i.e. installed capacity refers to the capacity of the plants registered for the market).

Generation – Demand balance

In comparison to the previous year, import is not crucial to cover the load. This is due to both a reduction in peak load forecasts resulted from the economic crisis and an increase in thermoelectric capacity (CCGT and coal plants).

Peak load forecasts in normal weather conditions shows a reduction of about 5% versus last winter outlook report.

The assumption is that about 12% of fossil fuel power stations capacity will be unavailable, based on historical data.

For weeks 1 to 14 overhaul values are based on the requests of generating companies for the 2010 maintenance plan.

Hydro power output forecasts are in the range from 7,5 GW in week 14 to about 11 GW in week 4 and 5.

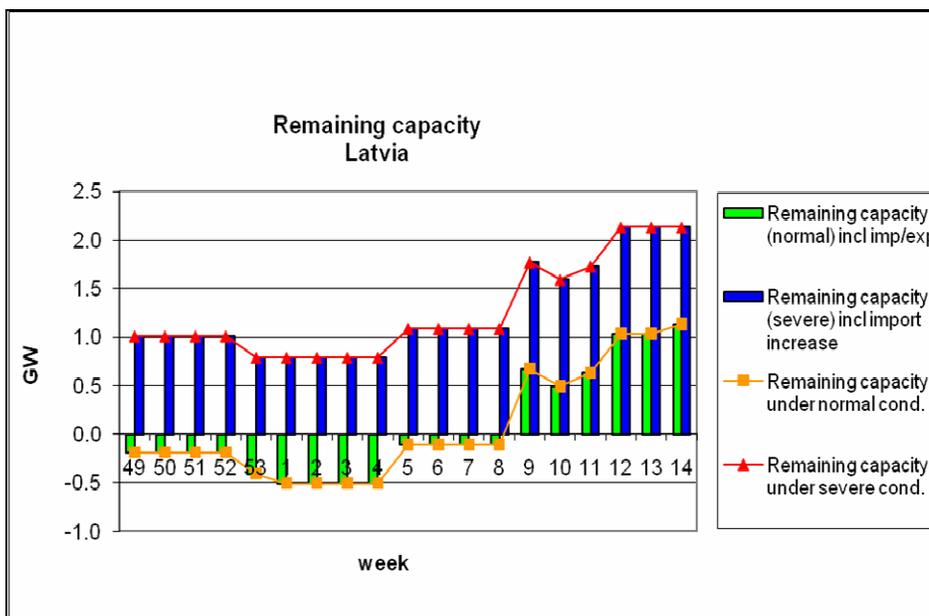
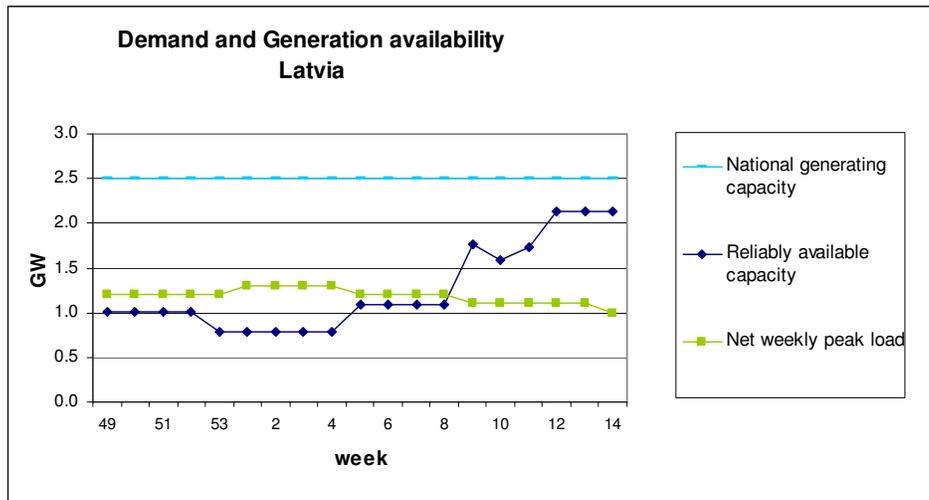
Wind power production is set to be 0% in our adequacy assessments.

Role of interconnection

Although import is not crucial to cover the load, interconnections are still expected to play an important role.

More than 7 GW of interconnection capacity is expected to be available in each week within the horizon of the report.

LATVIA



Synopsis

Latvian power system base power is CHP plants and they cover about 40% of peak demand. Despite sufficient installed capacity on the hydro power plants, shortage of inflow waters is the main limiting factors for generation availability. Therefore low inflow scenario was chosen for this winter to address for probable energy deficit.

Therefore Latvia plans to be dependent from energy import from neighboring countries during the winter. Ignalina NPP closure will decrease significantly the power balance in the Baltic

power systems and resulting additional loading on the tie-lines will decrease possibility for energy imports from neighboring surplus power systems.

Starting from the week 10 spring high inflow period is starting turning the Latvian power system into a surplus generating system and providing energy exports to neighboring power systems. High inflow period usually lasts until beginning of the May, after which Latvia turns into deficit power system again.

Low water inflow level based assumptions on the power output of the Daugava HPP cascade are following:

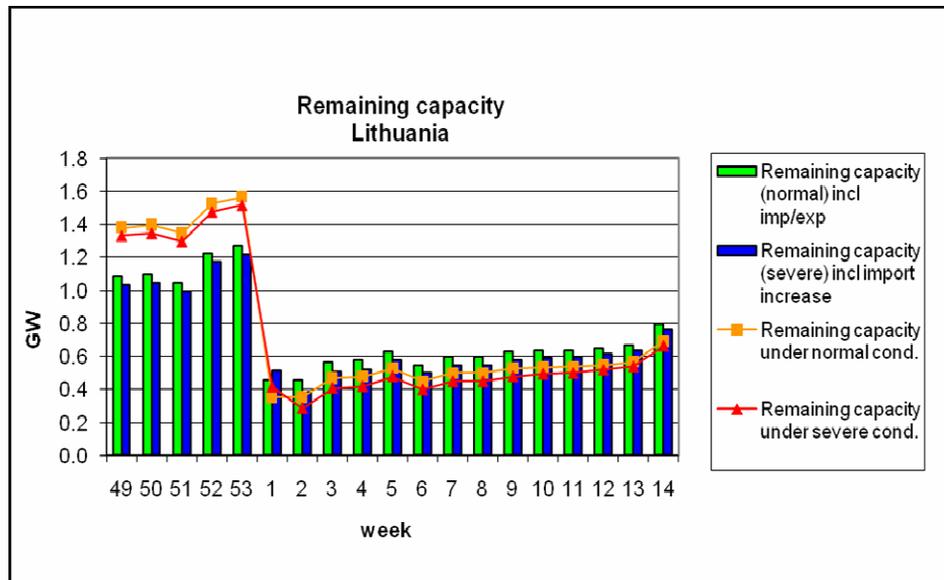
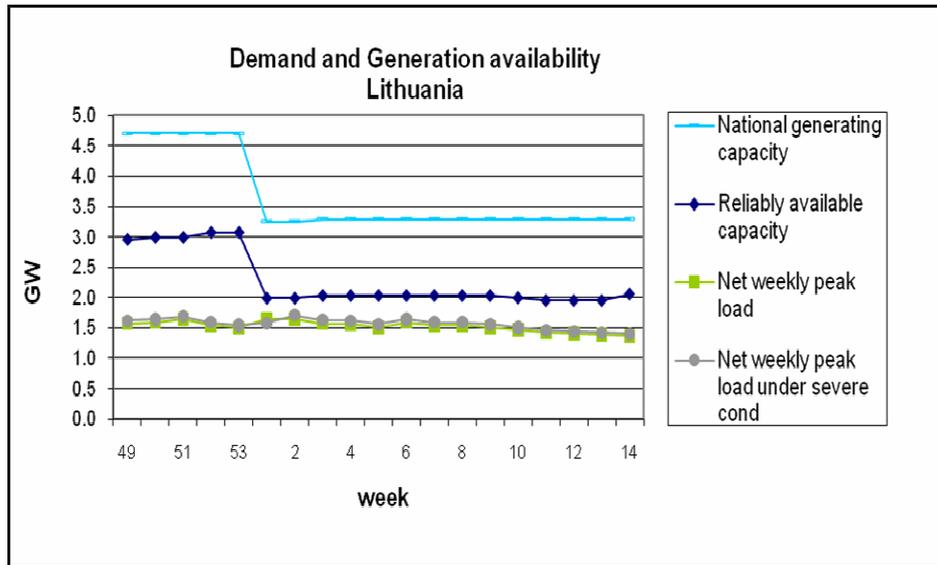
- Week 49-52 500 MW
- Week 53-4 200 MW
- Week 5-8 500 MW
- Week 9-14 1540 MW

Due to current economic downturn in Latvia our forecasted weekly peak load is expected to be 10% lower than in last year forecasts.

TSO's appreciation of the generation – load balance for the coming winter

60 % of installed generation capacity in Latvian power system is installed on river Daugava in cascade with weekly regulating. Because of this system balance depends from water inflow during the forecasted period. Usually for Latvian system adequacy analysis minimal water inflow is used and because of this 15% of winter peak demand is covered by HPP despite that some times Latvian power system is in balance and CHP plants work in co-generation mode and covers about 40% of peak demand. Missing power Latvian power system imported from neighboring power systems.

Lithuania



Synopsis

Ignalina NPP dominates the electricity market in Lithuania with the output from one unit being sufficient to support up to 60-70 % of domestic electricity demand. However, after closure of INPP by the end of 2009, Lithuania will be able to cover peak load during the winter period. Lithuania does not expect any critical situation during the winter period. In 2010 gas-fired power plants will take major part of generation capacity in Lithuania. Russia is the main gas supplier for Lithuania.

The framework and the method used for making the winter adequacy assessment

The assessment is mainly based on Generation adequacy forecast and Demand forecast, prepared by Lithuanian TSO. The winter adequacy assessment takes into account information about generator availability, demand and planned outages of lines.

Hydro and wind generation is not considerable for the time being. Mothballed capacities are practically not available under any circumstances.

The assessment is made on a weekly basis for the week peak based on experience of previous years.

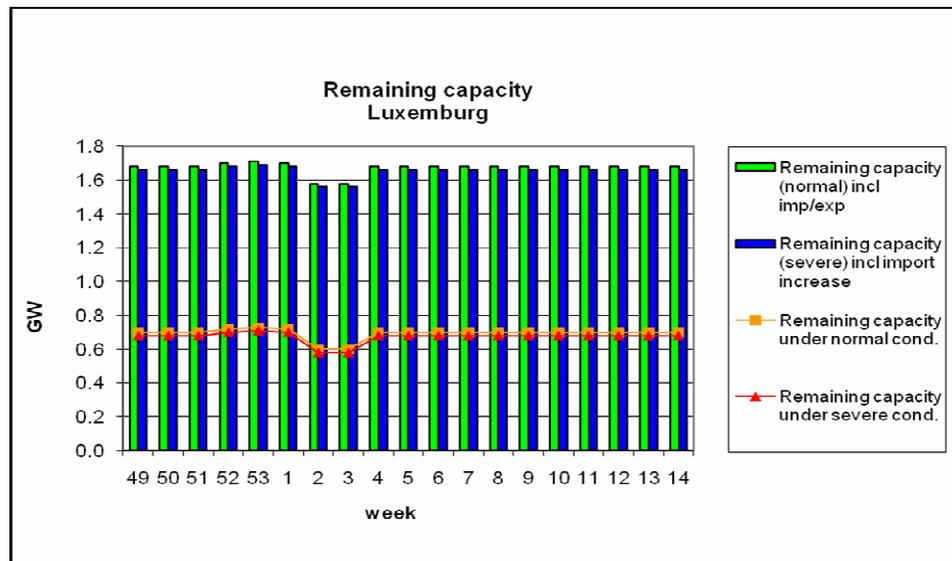
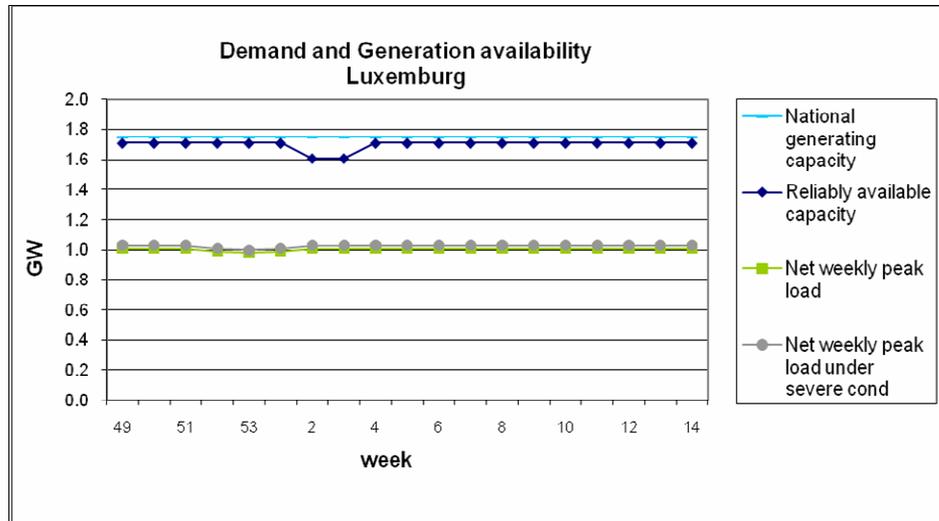
Generation – Demand balance

In Lithuania, electricity production mainly is based on nuclear and gas fuel. The biggest electricity producers in Lithuania are the Ignalina Nuclear Power Plant and Lithuanian PP. Even after closure of Ignalina NPP Lithuania expects to have enough capacities to cover peak demand during the winter period.

Role of Interconnection

The expected importable and exportable capacities are considered as physical flows that are based on previous year experience.

LUXEMBOURG



Comments

Appreciation of the generation – load balance

The overall generation capacity in Luxembourg (including pump storage power) is higher than the consumption. Due to the grid structure, the whole energy has first to be exported and then re-imported again. Despite a reduction of the generation capacity of 100 MW for overhauls in week 2 and 3 of 2010, the national generation adequacy is always reached.

Creos is still a net importer for about 85% of its electric energy. As no planned outages of lines are foreseen, the capacity of the interconnection lines is at all moments sufficient to cover the national load. Creos doesn't expect having problems during winter period 2009/2010.

Generation – Demand balance

Synopsis

Luxembourg has two high voltage grids, an industrial grid, connected to Belgium and the public grid of Creos connected to Germany. For both grids the interconnection capacity will be sufficient to cover n-1 security. In normal operation the grids are not interconnected so that there is no possibility for transit flows. In emergency cases mutual reserves can be made available to the other grid. In temperature stressed situations, the load increase can be supported by the lines. No generation depending on very low temperatures exists in our country.

Generation Available

The generation – demand balance remains positive even in the period where some generation capacity is not available due to overhauls. The non-usable capacity is mainly determined by wind conditions but remains very low. For energy supply, Luxembourg depends on the neighboring grids. Power plant outages in Luxembourg will not affect the energy supply to the grids. System services reserves for the Creos grid are assured by Amprion whereas system services reserves for the industrial grid are assured by ELIA.

Demand

The load peaks of the public grid and of the industrial grid are not necessarily at the same period. We considered in the table the worst case where both peaks would overlap. Possible load shedding in the public grid is very low (about 20MW)

Remaining capacity in normal conditions

Remaining capacity is always positive. We have to remark that this generation capacity is determined largely by a pump storage power plant and by that this capacity is only given continuously for some hours.

Severe load conditions

The impact of load increase due to severe weather conditions is very low. Peak load depends largely of the industrial consumers. Nevertheless the most critical load situation is considered.

Role of interconnection

Interconnection capacity

As Luxembourg imports the major part of its electrical energy, the interconnection capacity is designed in accordance and will be sufficient to cover the whole consumption at any time, even in n-2 mode.

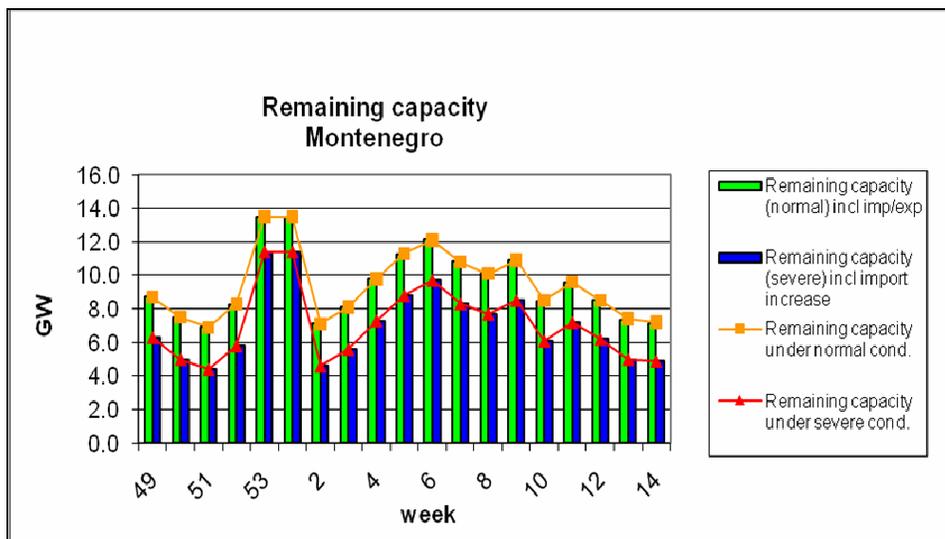
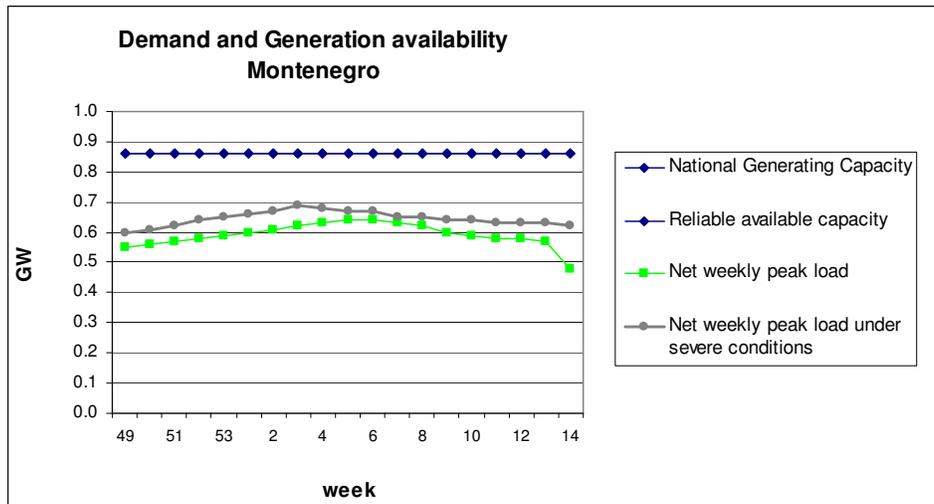
Firm import/export contracts

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.

MONTENEGRO



Comments

Generation – demand

Due to high influence of aluminium industry on Montenegrin power demand, some mistakes in demand prediction may be expected.

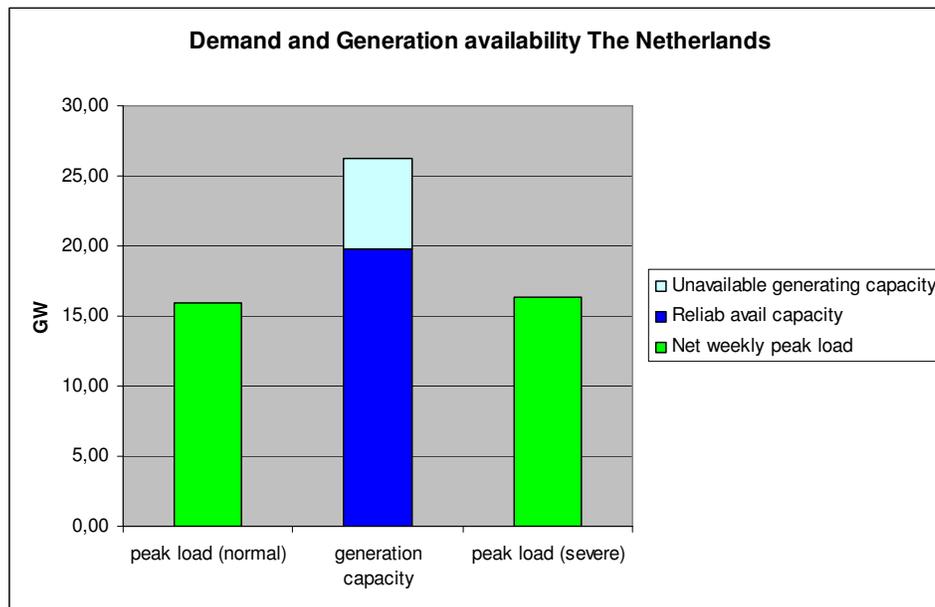
Interconnection capacity

No major variations of the interconnection capacities are expected during the winter 2009/10.

Firm import/export contracts

The Montenegrin power utility has firm import contracts in amount from of 110MW on Serbia-Montenegro border.

THE NETHERLANDS



Comments

For the Netherlands, no winter adequacy forecast has been carried out at present. According to TenneT the supply-demand balance will be carried out on the basis of the price-driven demand principle and is not a competence of the TSO to intervene in a good functioning market. The specific TSO's task is to balance the system and to supply emergency power when necessary.

Nevertheless, TenneT TSO assesses on request of the Ministry of Economic Affairs the Reliability of Supply in the Electricity Market in the Netherlands every year for a period of 15 years ahead.

The last report for the period 2008-2024 was published in 2009 and can be found on following link:

http://www.tennet.org/english/transmission_system_services/technical_publications/report_reliability_supply/index.aspx

Framework and Method Used for Winter Outlook

No winter forecast is done by TenneT because there are no specific data available for this period from week to week. Only the data for the third week of January are given in accordance with the system adequacy forecast 2010-2025.

Generation – Demand Balance

In the aforementioned monitoring report the balance is not considered at risk for the coming winter-period 2009/10. Nothing specific can be said on forehand about when or how imports will be needed.

Demand

Load forecast for a medium long period is not carried out by TenneT, because the load on itself on each moment is not our 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

In 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 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

No specific comments.

Firm Import/Export Contracts

For 4 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. Since 2008, phase shifters have been installed on most interconnectors with Germany and Belgium, which caused these transits to be decreased.

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 are the high transit flows through the Dutch 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 had to reduce import capacity for the market.

The second one are the congested flows on the French-Belgian border which on return reduce the import capacity on the Belgian-Dutch border.

To manage these cross-border flows in a better way, there was agreement on certain reductions of import/export related to wind generation forecasts in Germany. The reduction in dependency of the wind-generation is realized on beforehand 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 will become lower.

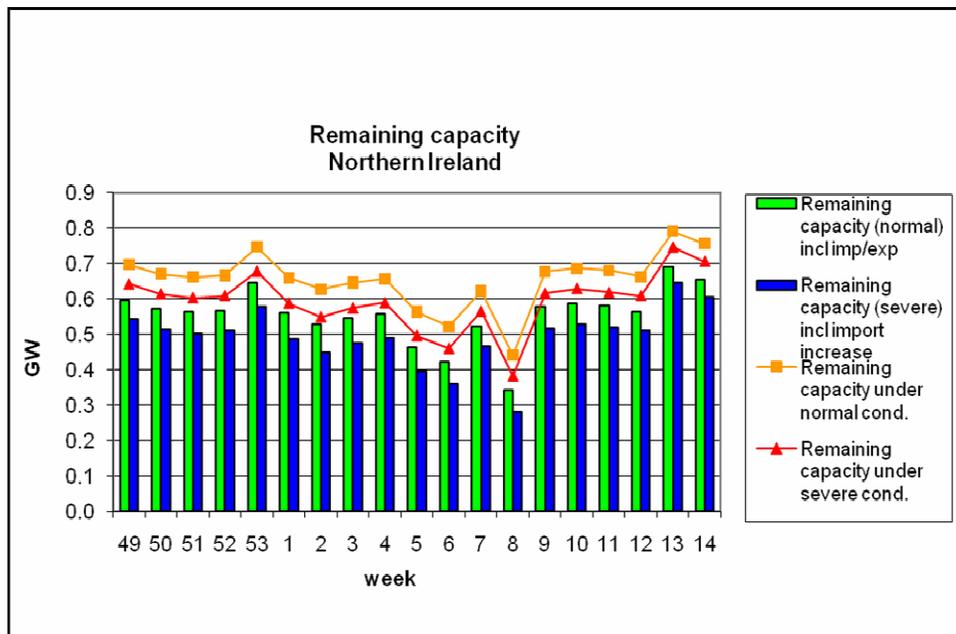
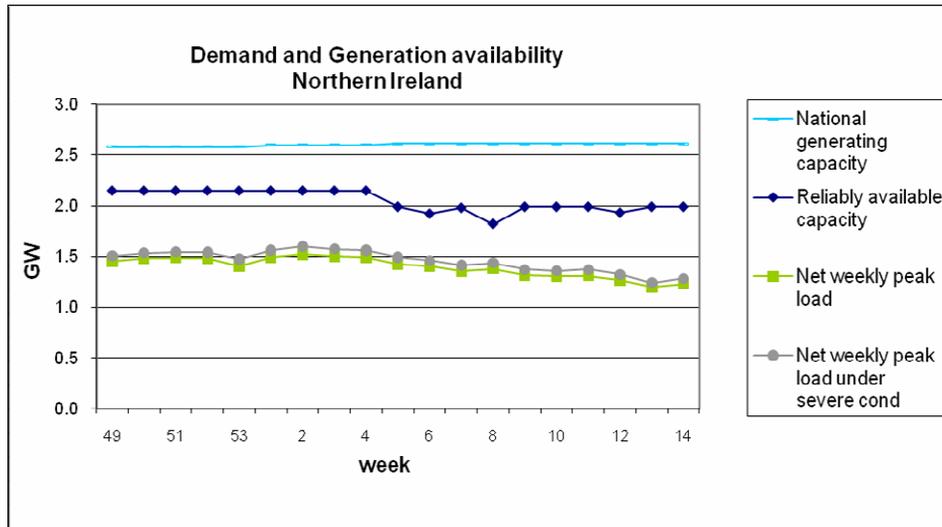
Any other fuel supply issues which could affect availability e.g. gas supply issues

Still under study in relation to gas infrastructure.

Following last winter's Russia-Ukraine gas dispute, what actions do you plan to activate in case of shortage of gas supply this winter?

From the point of view of TenneT nothing useful can be told about the required level of remaining capacity. In our market system of "Program Responsibility", each participating PR-party has the obligation to assure in first resort its own reserve power. TenneT in its role as balancing manager only requires that enough balancing power will be offered in the bidding system that we employ for this purpose. It happens frequently that less power is offered than what is considered as necessary which makes requests for offering more power are to be sent to market parties. Until now no real shortage has occurred.

NORTHERN IRELAND



Synopsis

SONI has no concerns and expects no significant problems on its system this winter. At present there are no weekends or any problems envisaged that would be regarded as being of a high risk to SONI.

To ensure peak demand is met, SONI would be dependant upon the Moyle and NI – RoI interconnectors at times. Countries concerned are England (GB) via the Moyle and the Republic of Ireland on the Tandrage – Louth lines.

There will be a period from Week 6 to Week 14 where there will be some outages affecting units at a number of Power Stations. These outages are not expected to pose any major concerns to System Security.

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 contingencies.

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.

Like other TSO's, SONI have seen a drop in demand of around 4% due to the ongoing World Economic Downturn. SONI expect this to level off in 2010 before beginning to grow again and have factored this in on their most up-to-date forecasts.

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

Generation – Demand Balance

Generation Available

The lowest Available Capacity is forecasted to be 2282MW during the winter period 2009/10.

Demand

The demand is forecasted to peak at 1700MW for severe load conditions and 1622MW for normal load conditions during the winter period 2009/10. These figures take into consideration the fall in peak demand due to the current Economic Downturn.

Remaining Capacity in Normal Conditions

The lowest Remaining Capacity in Normal Conditions value is forecasted to be at 441MW during the winter 2009/10 period.

Severe Load Conditions

The Severe Load Condition is forecasted to peak at 1700MW during the winter 2009/10 period which would reduce remaining capacity to 382MW.

Role of Interconnection

Interconnection Capacity

The Importable Capacity is 620MW, while the Exportable Capacity is 410MW. This is made up from the Moyle interconnector between NI (SONI) and GB (NATGRID) 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 guarantee 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 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 is available.

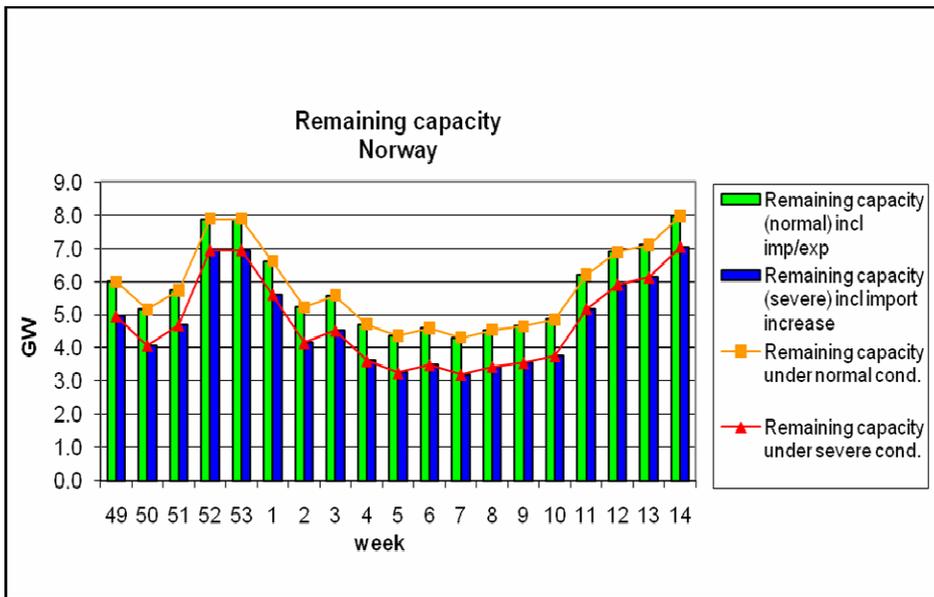
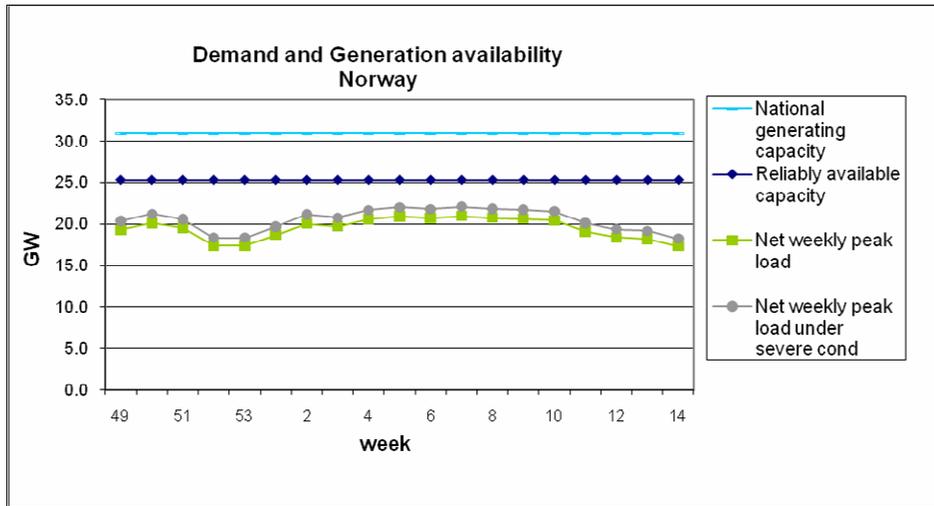
Expected Additional Loads of Interconnections due to transit flows import/export capacity
It is not expected that this will affect the interconnectors.

Potential Additional Areas for Comments

The expected increase in penetration of wind in the North West 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 292MW. This is expected to grow steadily with new Wind Farm Power Stations being added during the winter 2009/10 period equating to an additional 35MW. At periods of high wind and low load it has been necessary on a few occasions to constrain wind generation. This will be an increasingly common occurrence as more wind capacity is connected to the system.

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

NORWAY



Synopsis

Statnett does not expect any critical situations during the winter 2009/10. The available generation capacity exceeds the expected peak load, even on a cold winter day. At peak demand in a normal winter, Norway is thus able to offer power support at minimum 2900 MW to its neighbouring countries.

Framework and method

The assessment is mainly based on historic data and Statnett’s internal assessments. Some data is also based on Nordel’s Power and Energy balances 2012.

Generation – Demand balance

Norway has a healthy generation/demand balance. Generation is higher than demand even on a cold winter day.

Generation availability

An internal study concludes that hydro power is 87 % available during winter time. The percentage is based on historical data. A conservative estimate assumes that wind power is 5 % available during winter time. The estimate takes into consideration that it is little wind during the coldest winter time.

Demand

According to statistical data for Norway, peak time for demand is most likely from 8 to 9 in week 7. During the last seven years the week with the highest demand in hour 9 has been between week 50 and week 10. Statistics show that demand increases steadily up to week 4, except for a fall in demand during Christmas time. From week 4 to week 10, demand remains at a stable level, before it decreases rapidly after week 10.

Remaining capacity in normal conditions

The remaining capacity will be sufficient during the winter 2009/10.

Severe load conditions

Based on Nordel's methodology, a cold winter day happens one of ten years. On a cold winter day, demand is expected to increase by 5 % compared to peak demand in a normal winter. This corresponds to an addition load of about 1 GW.

Role of interconnection

Norway is not dependent on imports from its interconnection during the winter 2009/10. It is on the other hand expected that Norway will be able to export to the Netherlands, Sweden, Denmark and Finland during cold days.

Interconnection capacity

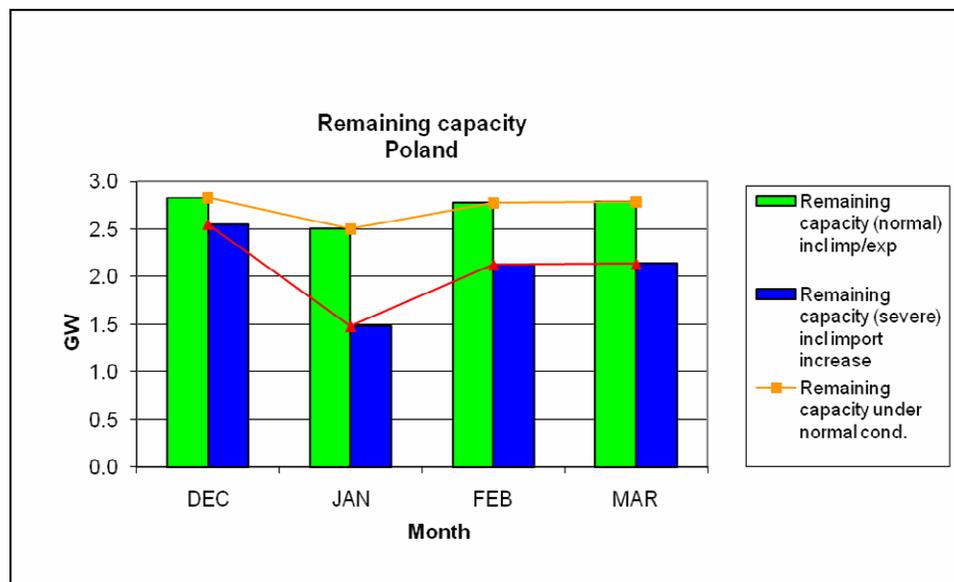
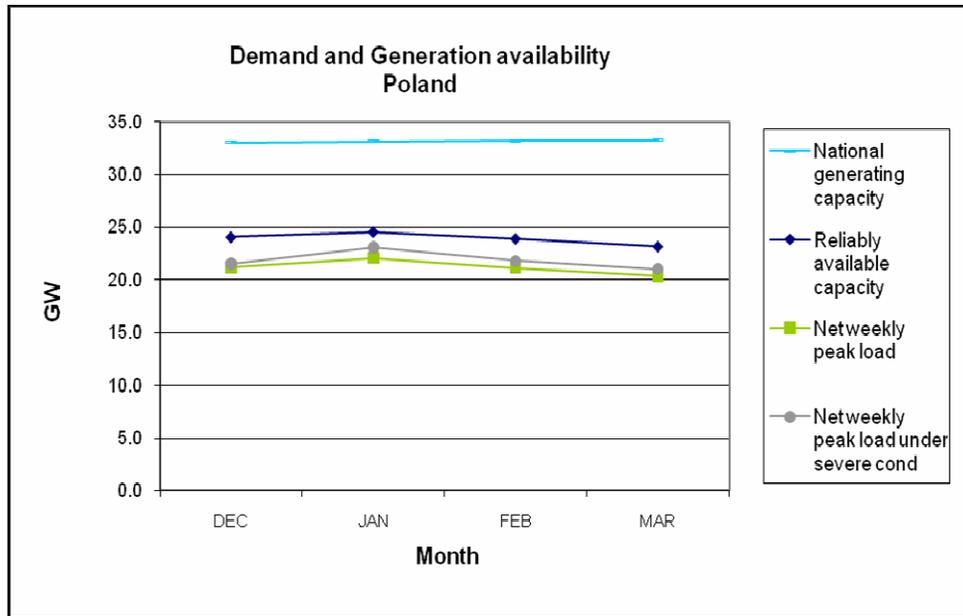
It is expected that available capacity will remain stable during the coming winter. However, internal grid constraints may reduce the export capacity on cold days.

Potential additional areas for comments

The reservoir filling in Norway is at the time around the normal value. Thus, the energy supply for the hydro power will be sufficient for the winter 2009/10.

The financial crisis has caused a reduction in consumption for power intensive industry. The consumption has started to increase, but it is expected that some consumption will remain out of operation during the coming winter.

POLAND



Synopsis

PSE Operator S.A. forecasts that peak load this winter will be at the same level as registered peak load in the previous winter. Average peak load last winter was 4% lower (at about 2GW) than forecasted, as the result of economic crisis (which was not taken into consideration during the data preparing).

Remaining capacity under normal condition during all winter should be at the safe level and will amount at about 2,5 GW (12% of peak load).

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

Forecast plans are being done for the whole year on a monthly basis – yearly coordinating plan. This is the reason why the questionnaire is not divided into weeks. Yearly coordinating plans are published on the PSE Operator S.A. web site at the end of November every year. On 26th every month PSE Operator S.A. publishes monthly coordinating plan, which includes the precise information for all days of the next month. Further specification takes place in the operational planning. PSE Operator S.A. prepares one coordinating plan – no different scenarios

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

Generation – Demand Balance

Difficulties with covering system demand are not expected.

Generation Available

1. National generation capacity: changes in Net Generating Capacity are insignificant.
2. Elements of non-usable capacity:
 - 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 is treated as non-usable (usage of hydro power according to duration of peak load in winter season),
 - technological and economical constraints.
3. Elements of maintenance and overhauls:
 - overhauls,
 - long and mid-term maintenances.
4. Elements of outages:
 - forced outages,
 - present maintenances due to unexpected faults during the start of the unit.

Outages are calculated not only on basis of statistical data, but also by taking into consideration present situation in the system. During severe winter this value may significantly rise.

5. Elements of system services reserve:
 - 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, lower than in previous forecasts, and the level of remaining capacity for the period under consideration, no problems with covering the demand are foreseen. The value of the remaining capacity may decrease due to unexpected growth of level of outages and non-usable capacities as a result of extreme weather conditions, but still will be at high, safe level and satisfies PSE Operator S.A. internal regulations which are included in Polish Grid Code.

Role of interconnection

There is more precise information concerning Transportable Capacity of Polish profile in the table below:

MW	XII	I	II	III
PL->DE/CZ/SK ¹⁾	800	1000 ²⁾	1000 ²⁾	1000 ²⁾
DE/CZ/SK ->PL ¹⁾	0	0	0	0
PL->UA ³⁾	0	0	0	0
UA->PL	220	220	220	220
PL->SE ⁴⁾	0	0	0	0
SE->PL	600	600	600	600
Sum of PL export	800	1000	1000	1000
Sum of PL import	820	820	820	820

Values presented in the table above take into consideration network constrains caused by planned switching off of the internal/international lines, which has influence on transportable capacity on the Polish profile.

- 1) PSE Operator S.A. provides aggregated data for the whole synchronous PL - DE/CZ/SK profile.
- 2) Values for January, February and March do not take into consideration possible switching off of the internal/international lines, because there is no yearly schedule of them for year 2010 yet. Such schedules for next year are preparing with cooperation with neighbouring TSOs till end of November every year. The real values could be lower.
- 3) Radial connection.
- 4) PL - SE Swepol HVDC Link.

No firm export/import contracts are reported.

Potential additional areas to comments

Although the PSE Operator S.A. is able to balance the system by itself without electricity import, there are agreements concluded between PSE Operator S.A. and neighbouring TSOs for energy delivery in case of emergency situation. Moreover, since autumn 2008 PSE Operator S.A. could use "Cross Border Rescheduling" (DC Loop flow) using HVDC links under the Baltic Sea. The clockwise DC loop flow, for example, allows to relieve network constraints occurring on the Polish – German border in case of high wind conditions in northern Germany (by decreasing the physical flow from Germany to Poland).

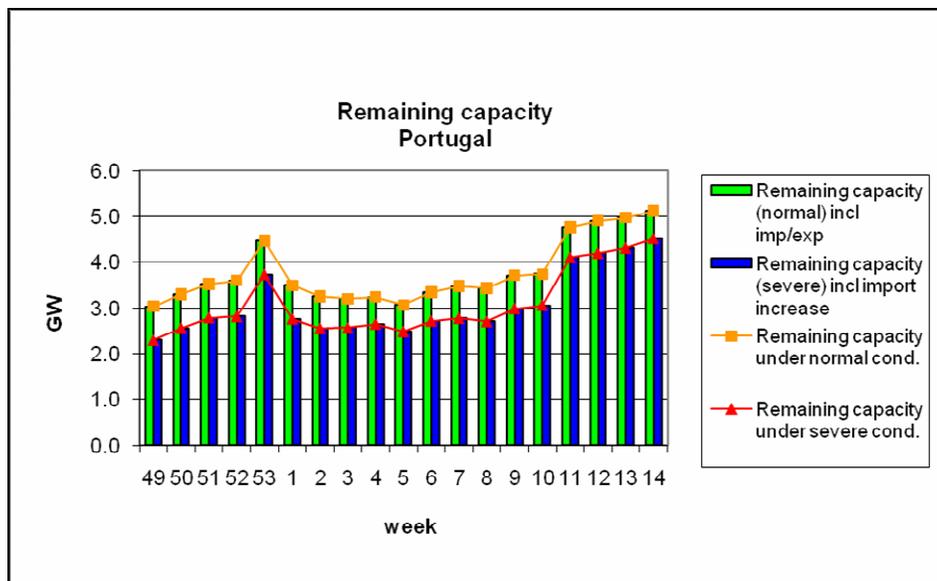
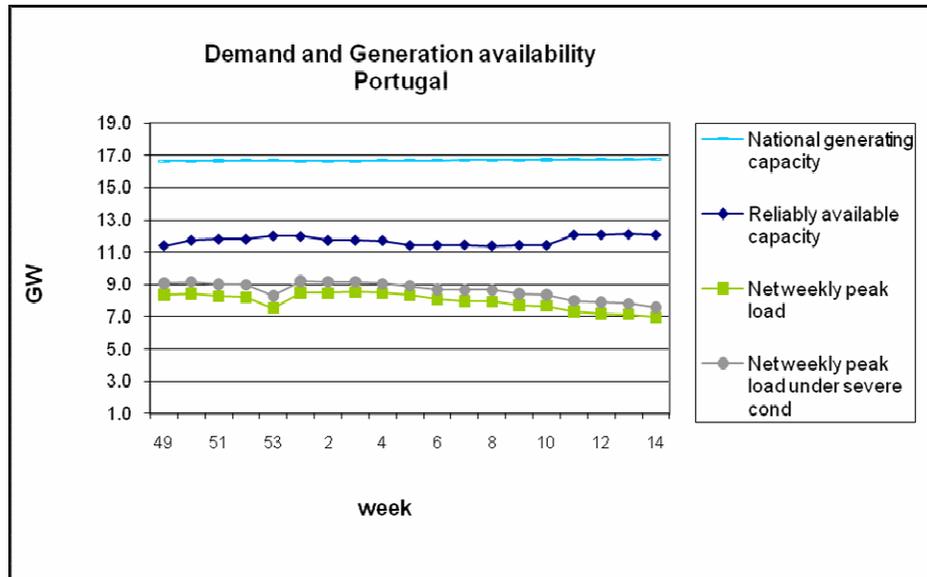
The DC loop flow as well as the measures above are only remedial actions in emergency situations in the Polish/other Baltic sea countries power system and they are not taken into account when transportable capacities are calculated.

Influence of the potential gas crisis

PSE Operator S.A., based on previous winter experience, does not forecast significant influence of potential gas crisis on Polish power system, mainly due to:

1. Gas production is at about 2,5% only
2. Gas CHPs burn gas coming from local (Polish) deposit.
3. Polish gas system is connected with Russian not only via Ukraine, but via Belorussia too.

PORTUGAL



Comments

Main results

From studies, there are no expected difficulties on the operation of the Portuguese power system during next winter. Demand should remain below last winter season's level, due to the economic crisis, and with a new combined cycle in industrial service since August 2009, remaining capacity margin is expected to stay comfortably above the 10% threshold, even in an extreme peak demand condition scenario.

Additional information

These results are based on studies undertaken in the framework of security of supply analysis. The 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. The studies are not public and are made for the horizon of up to the end of the following year.

The remaining capacity margin was computed according to the ENTSO-E 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

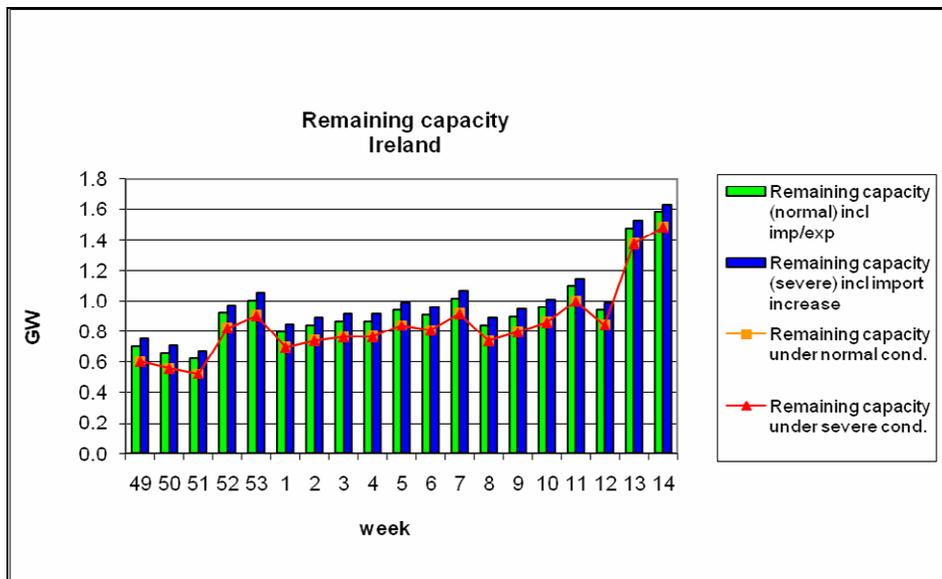
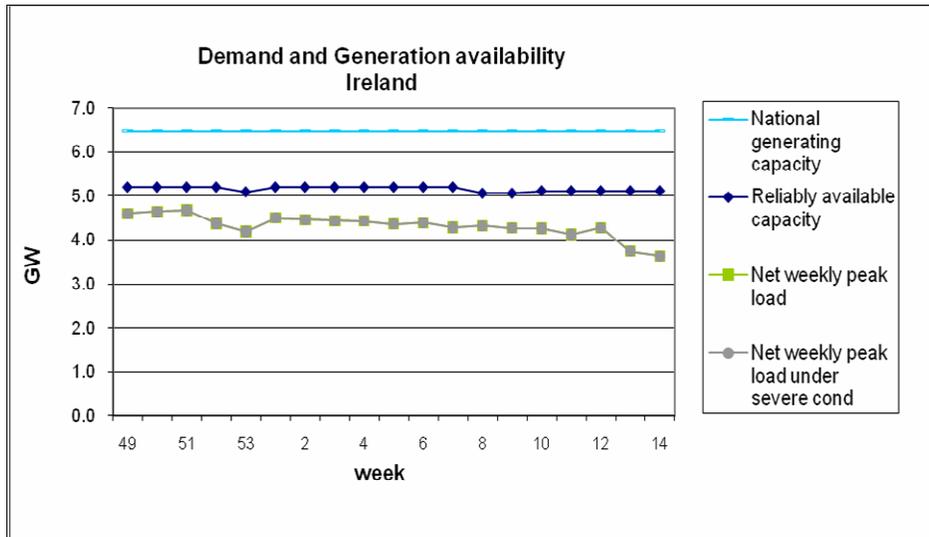
From our simulations, generation/demand balance is not at risk for the coming winter, so we are not considering any demand management measures.

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

Extreme conditions from the supply side were also taken into account in the studies. As the contribution from intermittent energy sources - especially wind - is very significant in the Portuguese system, we have analysed the outcome of the combination of a low hydro inflow scenario with an extremely reduced wind production (5% probability of occurrence) in severe load conditions.

Although interconnection capacity plays an important role on the operation of the Portuguese transmission grid, our results show that power balance can be achieved in all scenarios without importing from neighbour systems.

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.

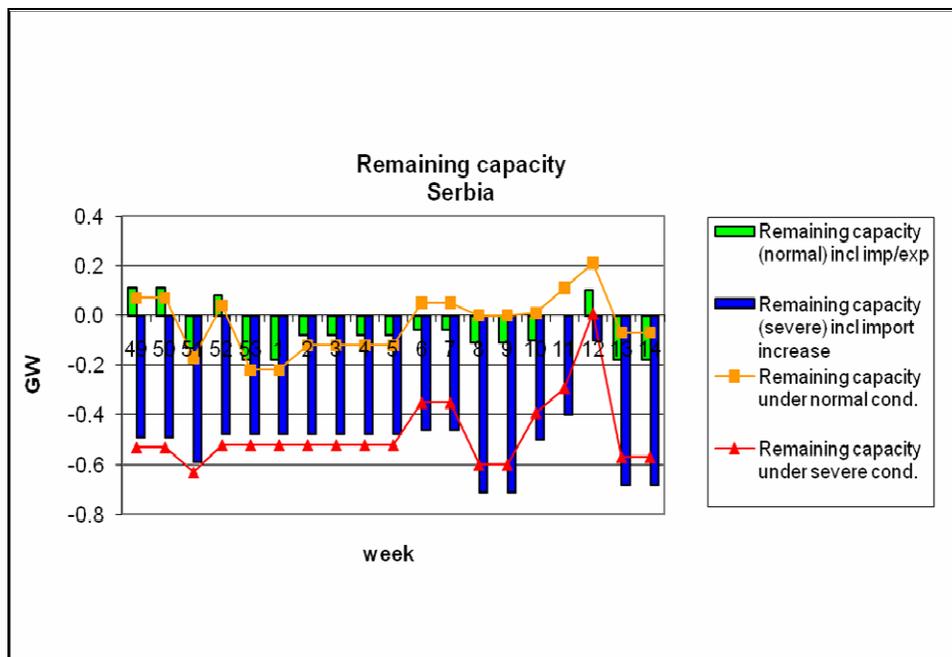
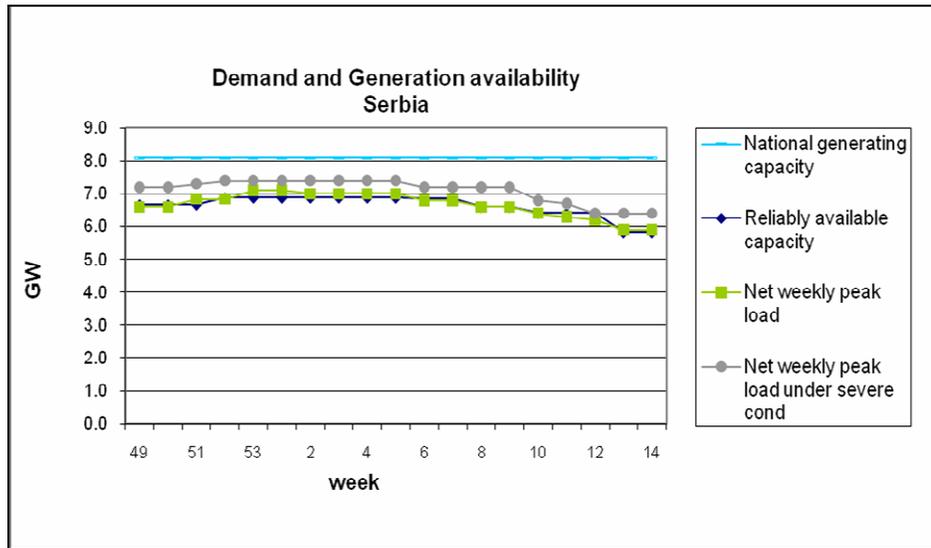
Comments

EirGrid carries out a Winter Outlook analysis every year in July and publishes a Winter Outlook Report. 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 report looks at the period from November 2009 to March 2010. The following were the key assumptions:

- The installed conventional generation capacity will be 6,013 MW of dispatchable plants. 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, are based on past performance and EirGrid's discussions with the generators. The system average Forced Outage Rate for the analysis is 10%. There are no major scheduled outages during the winter period but there may be some maintenance carried out at low load periods.
- The installed capacity of wind generation will have increased to approximately 1,500 MW this winter and the capacity credit for wind is assumed to be 250 MW.
- 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 Scotland) and the status of the transmission network on both the Irish and Northern Ireland systems. Consistent with previous years, the analysis has assumed that 200MW of capacity is available from Northern Ireland.
- The demand for electrical energy is has been falling since the start of 2009. For 2009 and 2010, it is forecasted that there will be a reduction in demand this year of between 4% and 5% and a further 0%-1% in 2010. For the coming winter period, the peak is estimated to be in the range of 4% - 5% down on last year (giving a peak demand of 4,635 MW – 4,680 MW). 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, 4,680 MW, was chosen. The peak demand for electricity in 2007 was 4,906 MW and it occurred on the Tuesday 18th December.

A sensitivity analysis was also carried out. This analysis examined the situation where there was a significant reduction in available capacity (400 MW) 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, the results would indicate that this further loss of 400 MW, the projected margins would remain within the capacity adequacy standard.

REPUBLIC OF SERBIA



Synopsis

Under normal weather conditions Serbia is able to satisfy most of its energy demand with its own generation capacities. In case of severe cold weather energy import from neighbouring control areas will be inevitable.

PE “EMS” uses software for winter adequacy assessment. In accordance with the Grid code weekly, monthly and yearly forecast are performed regularly.

Generation – Demand balance

Non-usable capacity at peak load is actually equal to the unavailable capacity for our system for the whole estimated period, since it assumes two thermal units in power plant Kosovo A, which are out of service for several years.

Overhauls of all power plants are going to be performed in accordance with repairing plan of Serbian generation company Electric Power Industry of Serbia (EPS).

Outages are estimated according to the average outage power for the winter 2008/2009.

System reserve has been decreased comparing to the last year, but it is still in compliance with the new policies of interconnection.

Forecast for the severe winter peak load has been calculated for case of simultaneous occurrence of several unfavourable conditions, like temperature much below average, specific days with additional increase of load (religious holidays, New Years eve), strong wind, etc. Due to allowed voltage reduction, load reduction of 100 MW is available.

Role of interconnection

The Serbian generation company EPS has a long term contract with the Montenegrin generation company EPCG which belongs to the neighbouring control area. According to the contract, EPS exports band energy to Montenegro. In exchange EPS has the right to use EPCG hydro power plant Piva.

Serbia is planning to import electric energy during December and January, but that will not be enough to cover demand in peak hours in case of severe weather conditions.

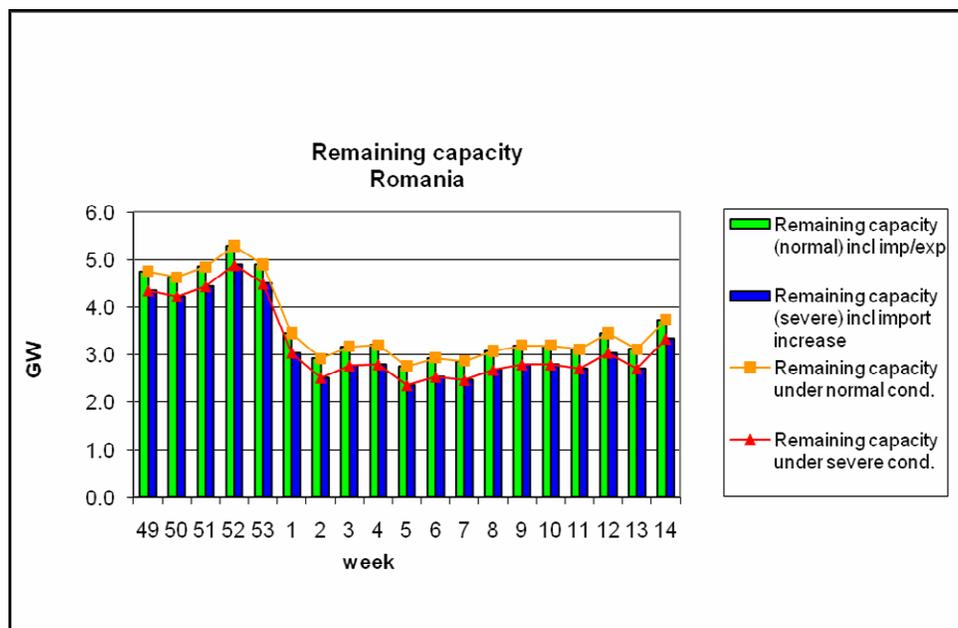
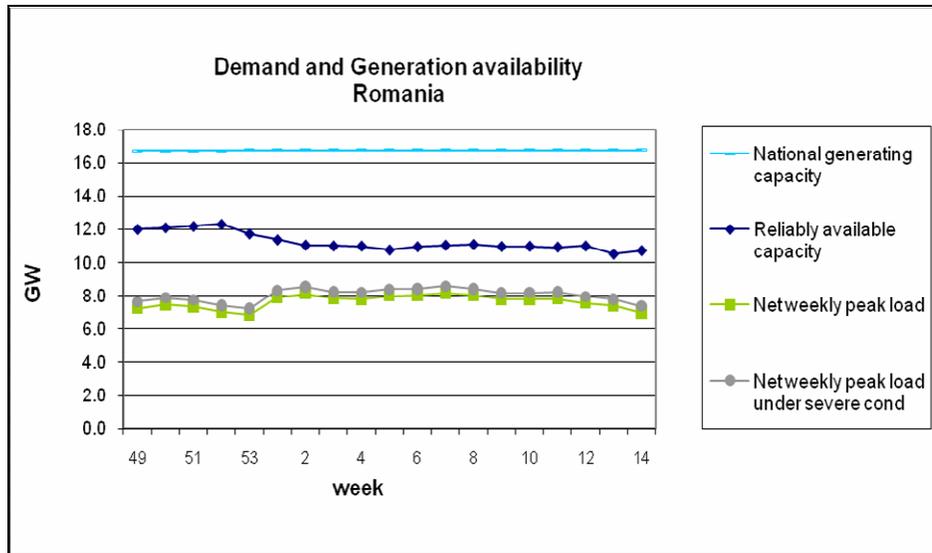
Available cross border capacity allows compensation of eventual energy deficit and transit of energy for successfully functioning of electrical market.

Potential additional areas for comments

In case of shortage in gas supply, Serbia will use its own reserves which are secured according to the announcement of Government of Republic of Serbia. Gas power plants cover only 4% of generation capacity of Serbia and can easily be suppressed with the additional import from the neighbouring control areas.

Due to the influence of world economic crisis on Serbian industry, drop of consumption has been registered. On the other hand, since significant number of households use electric energy for heating impact of world economic crisis on total consumption in Serbia during the winter will be small.

ROMANIA



Contribution to main report

The national generating capacity in the Romanian Power System will be able to ensure the coverage of the consumption and the eventual export requirements. In case of a normal winter a consumption decrease of about 7% is expected in respect with the last winter. Also, in case of severe winter conditions with 10°C lower than each monthly average temperature, there is not any foreseeable risk.

Synopsis

From the point of view of system adequacy, the next coming winter is not expected to cause any problems to our system safety operation. The remaining capacity can cover any unit tripping which exceed the expected value for outages in either case for a normal or a severe winter.

A consumption value higher than the estimation for a severe winter can be managed by the remaining capacity as well.

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 ENTSO-E rules, Transelectrica performs all the activities in order to ensure a reliable and stable operation to our network the main duty is to coordinate the operation of all installations with the purpose of satisfying the power demands in quality and safety conditions.

There are performed semestrial planning studies based on load forecast, load flow, steady state and dynamic stability analyses. The network input data are based to the following items:

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

The results include information concerning the necessary generation amount, the network topology, voltage level measures in order to obtain a safety power system operation in those time intervals.

When there are some deviations from the input data, Transelectrica has to perform another analysis on monthly basis.

However with updated data Transelectrica should carry out operational programming on short term, in fact one day, sustained at least on load flow computations as a means to detect daily network bottlenecks, which are removed by using of the Balancing Market.

Generation – Demand balance

The national generating capacity value is established related to the yearly declaration of the producers. The planned maintenance/overhauls programme corresponds to the producers schedules, 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 that the last weeks of 2009 will have a 7% lower demand as compared with the same period of 2008 due to economical situation, but 2010 will start with slightly higher demand than in 2009. Relied to statistics the peak load sensitivity for winter interval is approximately 40 MW/°C.

Concerning the system services reserve, yearly or for any interval is needed, Transelectrica signs contracts with the producers in order to be able to: control the system frequency and balance exchange after a disturbance, compensate the consumption forecast deviation or network losses, maintain the voltage level within regular range.

There is a regulatory frame regarding the load reduction, but in despite of this there are not any solicitations to license the consumers at present.

Role of interconnection

The synchronous interconnection allows to Transelectrica to facilitate the performing of the commercial exchange power with the neighbouring TSOs and even to carry out some emergency help when required.

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 synchronous operation, for the forthcoming 2009/10 winter, the maximum indicative and non guaranteed values are 1900 MW for import and 1900 MW for export, including values with West Ukraine.

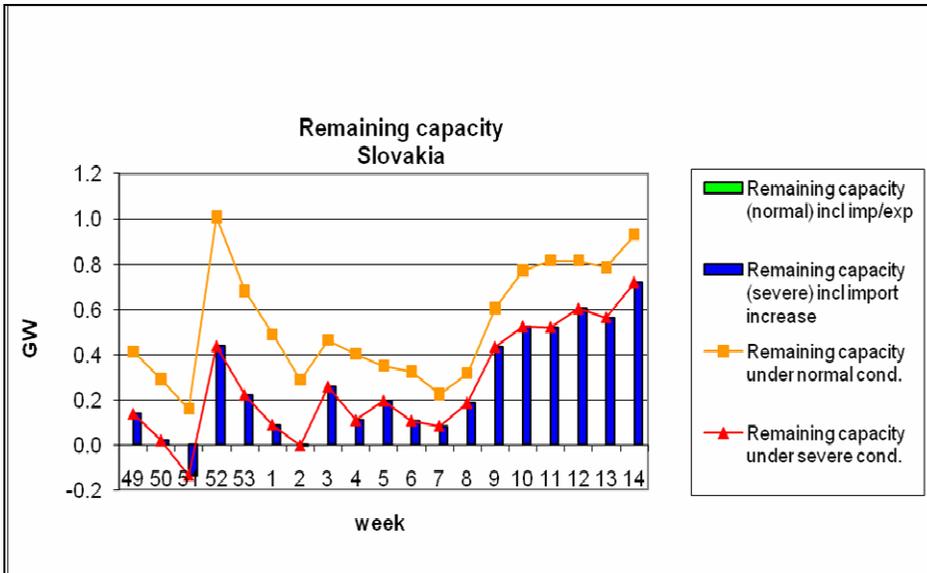
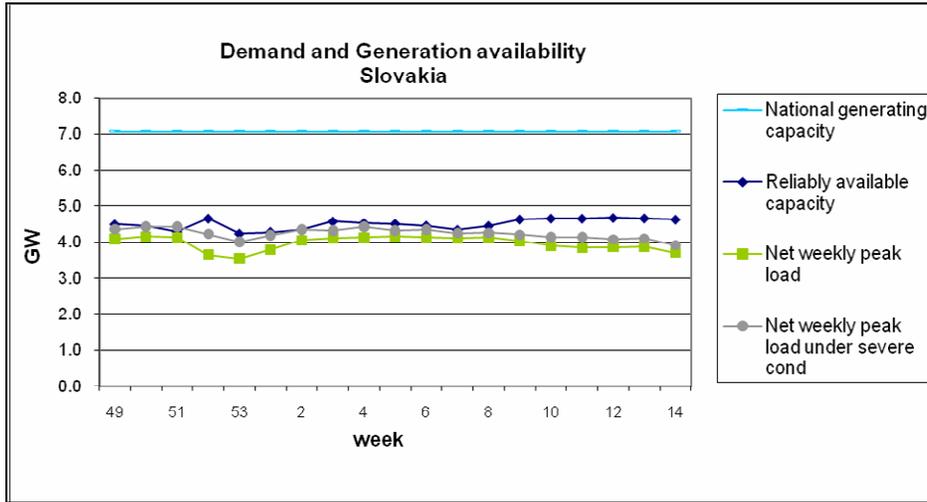
All these values do not include the capacity values for possible involved lines in island operation with non-UCTE countries which are 480MW import and 350MW export.

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

Summer Review 2009

The Romanian system did not experience unusual events or conditions during the 2009 summer period.

SLOVAK REPUBLIC



Generation - Load balance:

No particular problem regarding the load/generation balance is foreseen in Slovakia under normal conditions. Import of electricity is expected on the level of the last winter (from January to March). Cross-border capacities are sufficient to allow import of the required level. During the year the installed capacities of nuclear power plants increased due to upgrading of technology (plus 160 MW). Other installed capacities are on the same level as the last winter.

Existence of critical period:

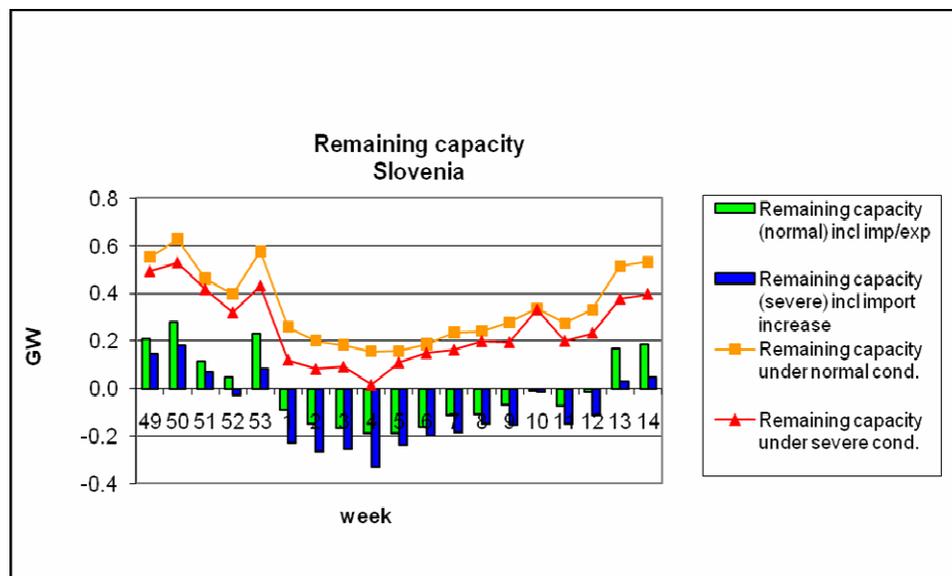
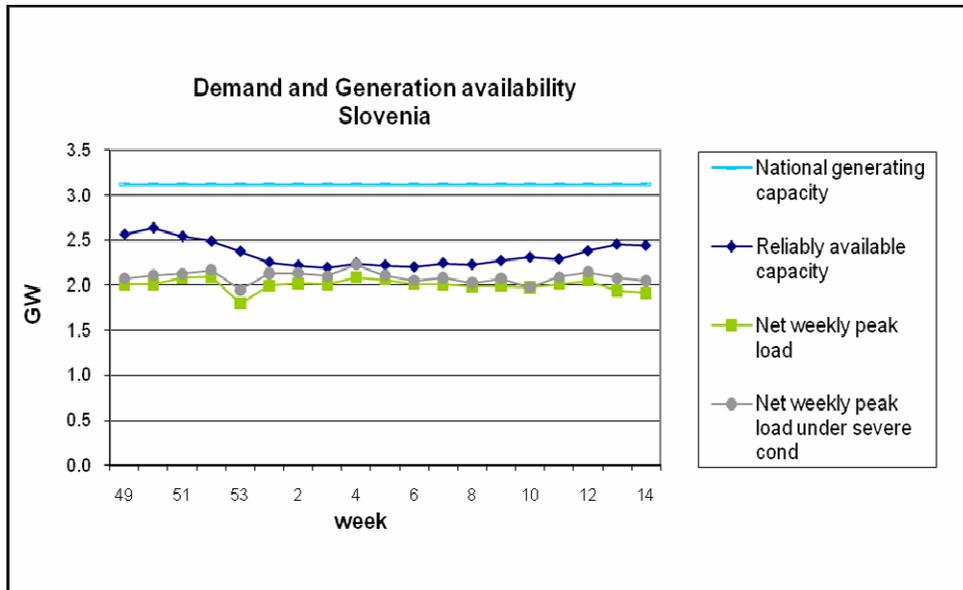
The critical periods in the coming winter are not expected under normal weather conditions. Under severe winter conditions ARM is below 5% from December to February. The gas crisis may have an impact mainly on ancillary services. During the last gas crisis (in January) the load was much lower than expected due to the reduction of gas supplies to industry and economic situation, so it did not influence the power system strongly. In the case of gas crisis the Slovak republic has possibilities to import “emergency” gas supplies also from other countries.

Role of interconnection:

In general the interconnections are sufficient for export or import of electricity. From the 1st September 2009, the daily markets of CEPS and SEPS, a.s. are integrated that has good impact on import/export possibilities.

Concerning simultaneous importable capacities, at the time of preparing the report the exact numbers are not known because of negotiations with neighbouring TSOs of the tie-lines operation schedule for the next year. Firm contacts of import and export are also not available to SEPS, a.s. at this time.

SLOVENIA



Synopsis

Similarly to the last year, Slovenia will be dependant on imports during winter 2009/10. Physical imports are expected on the Austrian and Croatian border and exports on the Italian border.

Due to high transfer capacities on Croatian and Austrian interconnectors, no problems with security of supply are expected.

The fourth week of 2010 is expected to be the most critical one due to low temperatures and adverse hydrological conditions. At this point, an import from 200 to 300 MW is needed to cover the peak load.

Framework and the method used for making the winter adequacy assessment

A general study of System Adequacy is made on a monthly basis once per year. In order to prepare the ENTSO-E Winter Outlook report, a separate study is made using TSOs statistic data. Two scenarios (normal/severe load) have been considered.

Generation – Demand balance

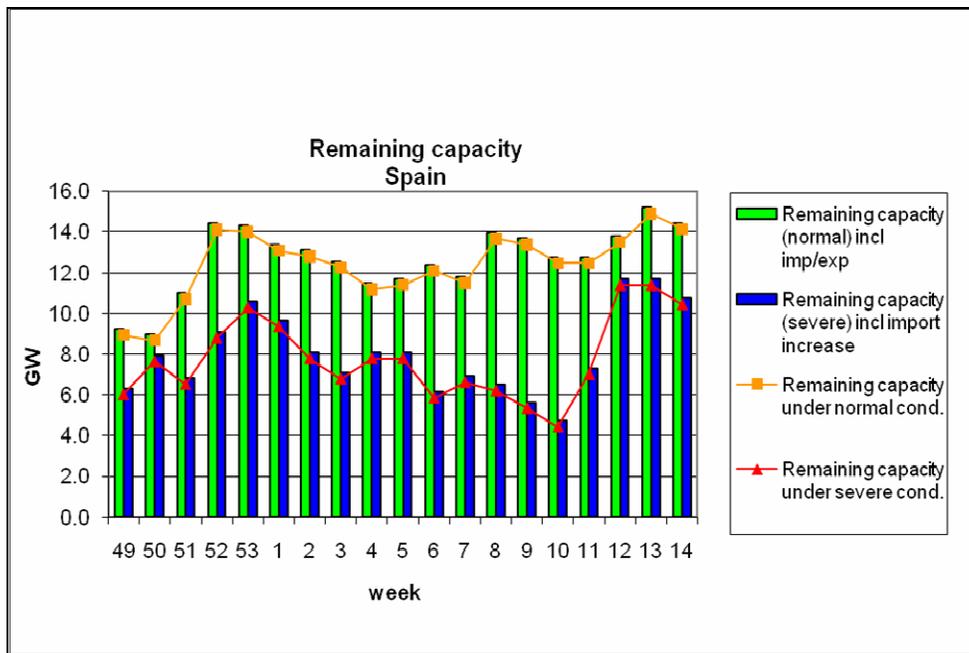
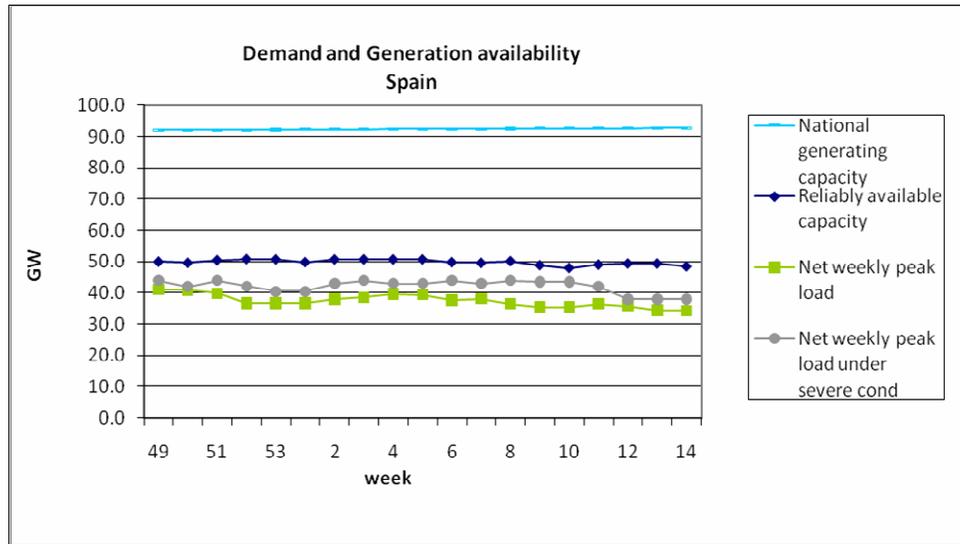
Worst case scenario: in case of deficiency of generation (low hydrology, loss of major units) or unavailability of imports from neighbouring countries, purchased reserve power will be used. If the system reserves could not cover the lack of energy, last measure load reduction is possible according to national defence scheme.

Firm import/export contracts

Ownership of the nuclear power plant Krsko 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.

Due to high imports of Italy, high transit-flows over Slovenian EPS are frequently observed. In case of internal congestions on Podlog-Beričevo corridor, NTC reduction and disconnection of interconnectors on SI-IT border may occur in accordance with pentilateral agreement.

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. If average conditions are considered, remaining capacity will be around 12200 MW. The minimum value will decrease to 8800 MW.

Only in case of simultaneous extreme peak demand, very low wind generation (less than 7% of wind installed capacity), very drought conditions and a very high thermal forced outage rate, one can find values of remaining capacity of 4600 MW.

The adequacy index forecast value, defined as the relationship between available capacity and peak demand, is in case of normal conditions always over 1,24. Only in case of severe conditions as described before, it could decrease down to 1,13.

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

Framework and method used for making the winter 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).

The 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.

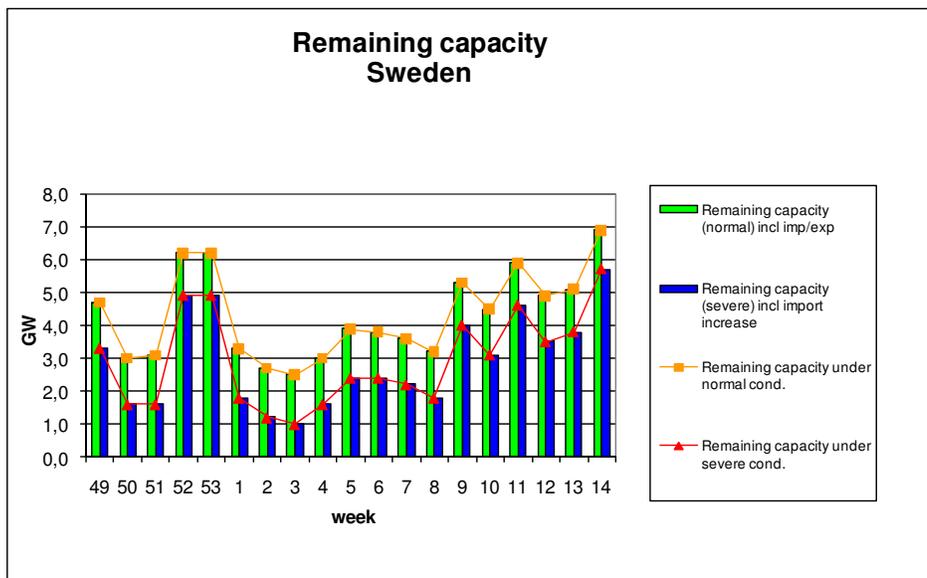
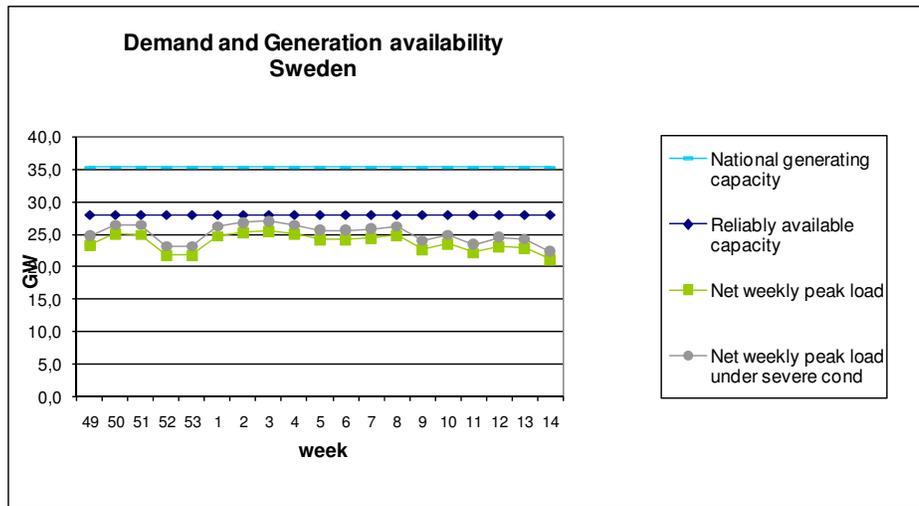
All scenarios are built under the following assumptions:

- 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 7% 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 higher (around 3800 MW).

SWEDEN



Synopsis

Svenska Kraftnät does not expect any critical situation during the winter 2009/10. The available generation capacity is higher than the expected peak load, even on a cold winter day. If situations with revisions/overhauls/outages occur, Sweden has the opportunity to import from its neighbouring countries.

Framework and method

The weakly peak load and severe peak demand bases on historical data. The data forms a load curve which has been scaled up to meet the prognosis for highest peak load for respective case for the coming winter 2009/2010.

For wind power 94% of the capacity, a statistical figure, is calculated to be unavailable because of the uncertainty of the wind.

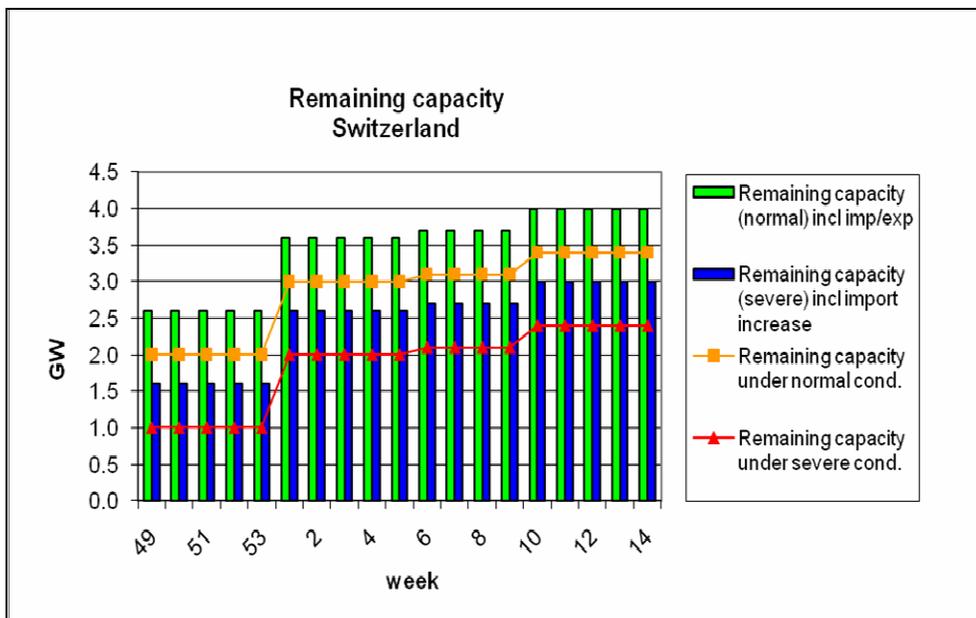
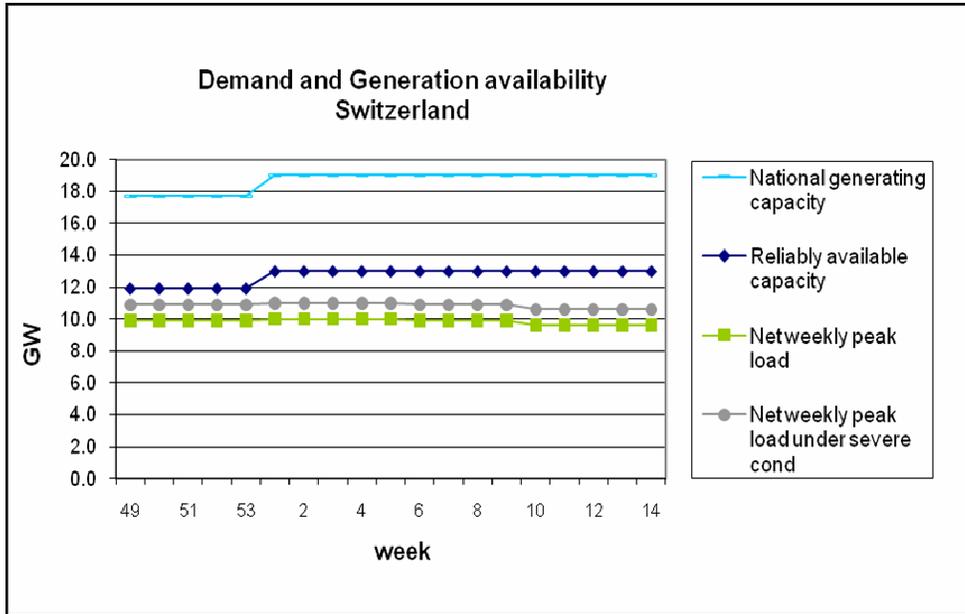
The load figures for the winter outlook concerns the load for a normal winter and a load for a severe winter.

Generation – Demand balance

The balance is not considered as a risk for the system; firstly it is positive, secondly if there will be more planned revisions/overhauls/outages than expected this could get covered by importing electricity via connections from other countries.

The effect of the economic crisis on demand is that at least 5 % lower electricity demand compared to previous years, i.e. approximately 7 TWh. This reduction has its explanation in the decreased electricity demand by the industries, which together with lower fuel prices have affected electricity prices by at least 15 %.

SWITZERLAND



General comments

The remaining capacity in Switzerland will amount to at least 1 GW even in critical situations during the winter 2009/10. Additional 0.6 GW are assured even during severe weather conditions through firm import contracts. Therefore, swissgrid appreciates the generation/load balance as unproblematic regarding the security of supply.

The main result of the Winter Outlook Assessment is that under foreseeable conditions Switzerland won't have any problem with the electricity supply during the winter 2009/10. This

will be true even in critical situations and even in the case of disturbed interconnections, because the inland generation capacity will be sufficient to cover the expected load.

Synopsis

No critical periods are expected during the winter 2009/10, because the load can be covered by 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 2010 – 2025 states that in January 2010 the Swiss remaining capacity will be as of 2 GW under normal weather conditions by taking into account the outage of the largest nuclear power plant (1.2 GW).

On the other hand, the Swiss reference adequacy margin amounts to 1.5 GW at the same time.

It contains three elements:

- 1.0 – 1.1 GW for severe winter conditions (-15°C),
- 0.2 GW as an average expected value for unexpected bigger (>0.1 GW) hydro power plant outages (the sum of the latter two, i.e. $1.0 + 0.2 = 1.2$ GW amounts to ca. 7% of the national generating capacity ($19 \times 0.07 = 1.3$ GW) and, by coincidence, it is equal to the power that can be lost at the outage of the largest nuclear power plant, i.e. 1.2 GW),
- 0.2 – 0.3 GW for the margin (i.e. excess) against the peak load measured at 11:00 hours.
-

As the most critical situation we consider either the case from the System Adequacy Forecast 2010 – 2025 i.e. normal weather conditions and the outage of the largest nuclear power plant (there are only 5 nuclear power plant units in Switzerland, i.e. this event is very rare) or an other case that is partially included into the reference adequacy margin i.e. a very cold winter (severe weather conditions, which are also very rare) and the outage of an average bigger (>0.1 GW) hydro power plant (their number will amount to 37 in January 2010, i.e. this event is quite probable).

The Swiss remaining capacity in January 2009 as of 2 GW is beyond the reference adequacy margin which amounts to 1.5 GW. From this it follows that Switzerland will match the reference adequacy margin during the winter 2009/10 even without taking into consideration the firm import contracts, which assure additional 0.6 GW.

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 won't be at risk during the winter 2009/10. In Switzerland there are 5 nuclear power units. Under normal conditions there is no maintenance or overhaul of nuclear power plants during the winter.

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

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 ($+1.0^{\circ}\text{C}$ in both months). In November the mean daily temperature is as of $+3.7^{\circ}\text{C}$ and in March as of $+5.0^{\circ}\text{C}$. Our observations suggest that there is a load temperature dependency that amounts to about $70\text{ MW}/^{\circ}\text{C}$. In the Excel sheet the load is given in accordance to this finding.

The remaining capacity in normal conditions will be sufficient during all the winter 2009/10.

Nevertheless, the following should be kept in mind. For the Winter Outlook Report the average capacity of power plant outages is recorded in the Excel sheet. It amounts to ca. 0.2 GW and is estimated using a probabilistic approach. On the other hand, for the System Adequacy Forecast the outage of the biggest power plant unit with its full capacity (1.2 GW) is normally 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, 3 GW in the Winter Outlook Report versus 2 GW in the System Adequacy Forecast).

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 $70\text{ MW}/^{\circ}\text{C}$ one finds that additional load of about 1 GW will arise under these conditions.

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. We don't expect any variations of the interconnection capacities during the winter 2009/10.

Firm import/export contracts

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

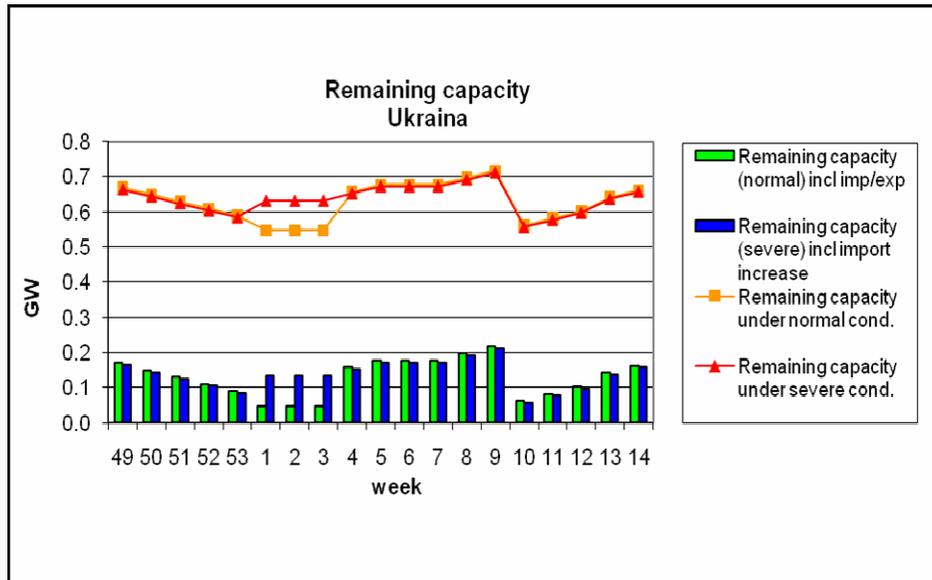
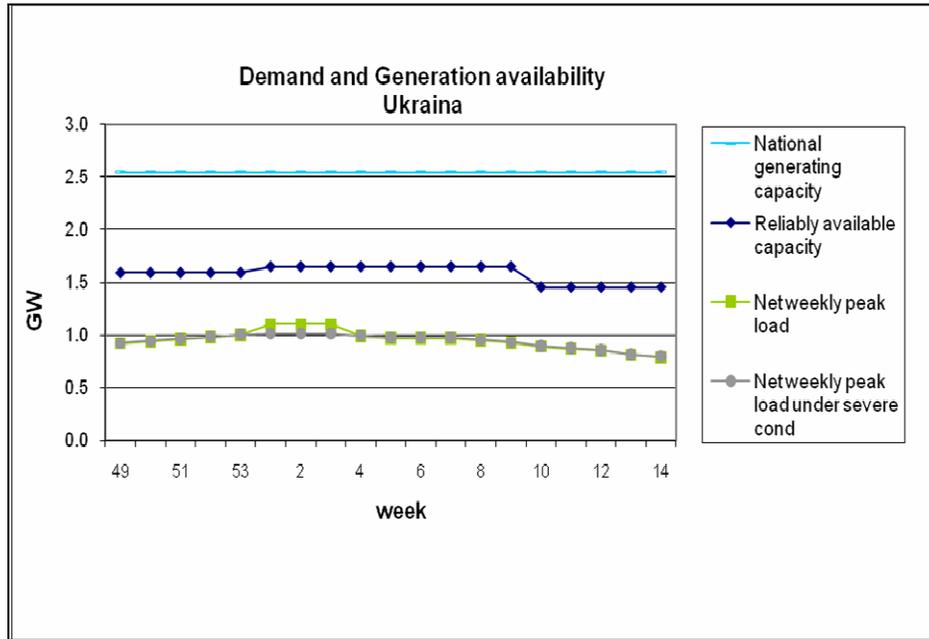
Additional flows due to transits are not expected during the winter 2009/10. However, the transit flows throughout the Swiss transmission network are permanent and high. If necessary they will be reduced by using the NTC procedures.

Other issues

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 2009/10 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).
The impact of the economic crisis was felt in the end of the winter and during the spring 2009. There is no indication that a similar impact could be expected during the next winter 2009/10.

UKRAINE WEST



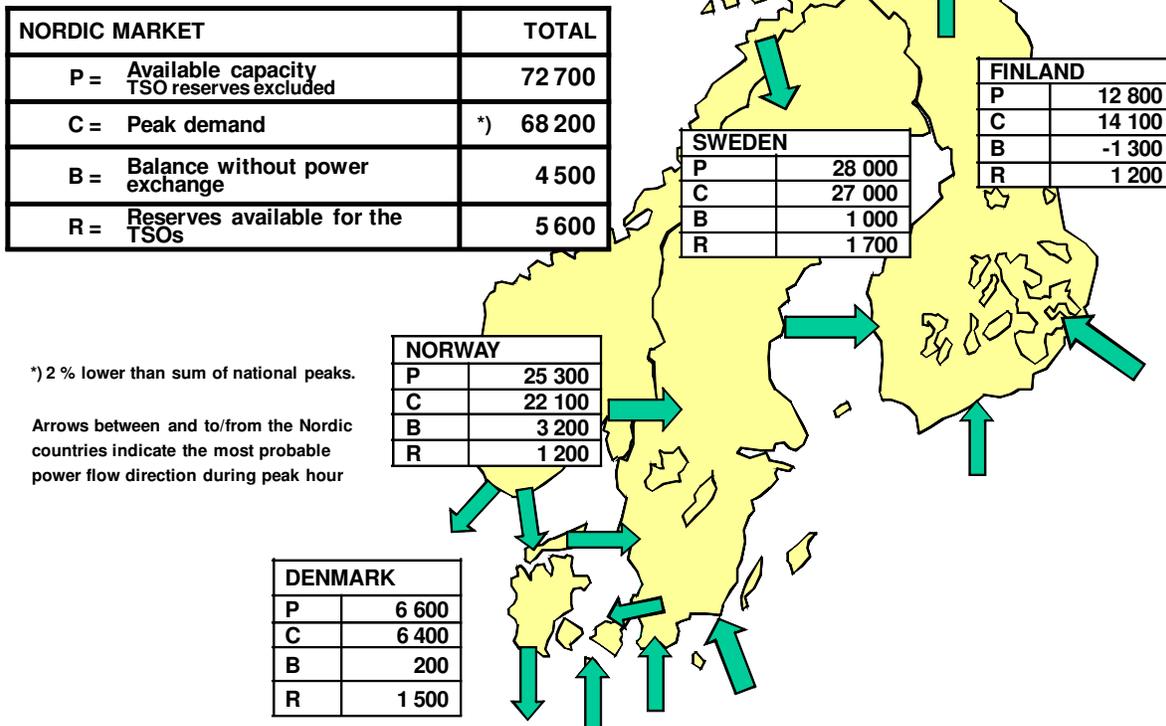
No other comments available.

Nordic market
(Denmark, Finland, Norway, Sweden)

POWER BALANCE 2009/2010

With estimated power exchange [MW] ***

Cold winter day in 1 of 10 winters

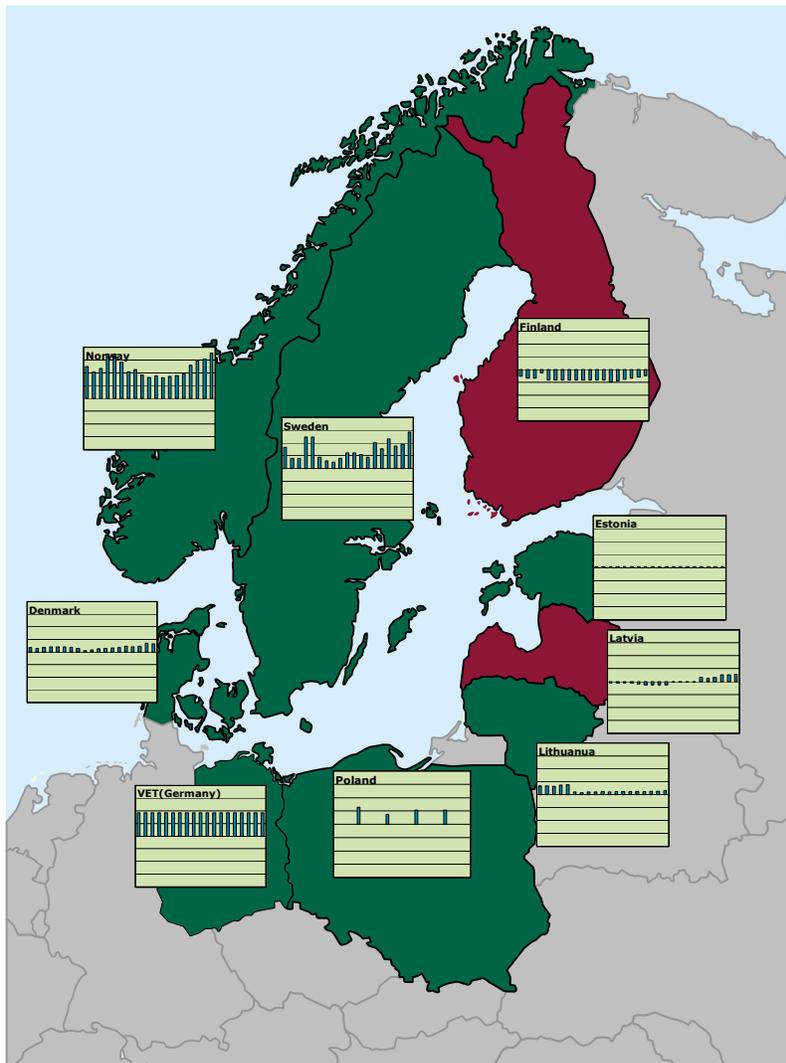


The total Nordic power system is for the winter 2009/2010 expected to have a positive power balance in peak hours, both in a normal and in a severe winter situation. The balance has improved compared to last winter. The main reason for this is that the expected peak demand has decreased a lot compared to last winter's prognosis. This is due to the decreased demand as a result of the financial crisis.

Norway, Sweden and Denmark have a positive power balance, both under normal and under severe conditions (1 out of 10 winters). Finland has a negative power balance, both under normal and under severe conditions (1 out of 10 winters). The deficit for Finland under severe conditions is expected to be 1300 MW.

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.

Baltic Sea region
(Denmark, Finland, Norway, Sweden,
Estonia, Lithuania, Latvia, Germany, Poland)



Regional overview of individual power balances under severe load conditions and without import or export. The columns represent weeks 49 to 14 in 2009/2010 and are based on either weekly, monthly (Poland) or seasonal estimates. The scale for all graphs is from -8 GW to +8 GW.

In total, the Baltic Sea region has a positive power balance for the winter 2009/2010 under both normal and severe load conditions. When viewed nation by nation, few countries have a negative power balance (see Fig.1), but when taking possible import from neighbouring countries into account these are balanced out as both the necessary power surplus and transmission capacities are expected to be available.

Adding all the individual balances in the region show that in total, the region has a positive balance of 9-20 GW (depending on the week) under severe load conditions. This is under the assumption that the severe load conditions of all countries occur simultaneously. Previous statistical assessments, however, indicate that the simultaneously peak load is less than 98% of the sum of all peak loads. Also, wind power is not necessarily available at peak load and therefore only a smaller part of the installed wind capacities are included in the power balance.

There are 19 GW of installed wind power in the Baltic Sea region. Countries in the region have included between 0% and 25% in their national power balance, and on average for the Baltic Sea region, approximately 5,6% of this is included in the power balance. Looking at this from a regional view, it was chosen to assume 6%¹ availability of all wind power in the regional power balance.

A regional power balance has been calculated based on the individual power balances which are described in more detail for each country in this report. The regional power balance, which assumes a 2% reduction in severe load conditions and that the wind power in each country has an availability of 6%, improves the overall power balance to 11-23 GW (depending on the week) under severe load conditions.

¹ Based on previous assessments for the Nordic region alone, where at least 6% of the installed wind power capacity will be available with 90% probability.

Appendix 2: Winter Outlook/Summer Review Questionnaire

ENTSO-E Winter Outlook/Summer Review Report – Contents and Guidelines
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The period covered by the Winter Outlook Report will be from 1 December 2009 to 31 March 2010. The Summer Review covers the period June – September 2009

FOREWORD

The winter outlook 2009-2010 will be published on ENTSO-E web-site.

If any information (figures or comments) are to be kept confidential for use within ENTSO-E only, please identify them clearly and they won't be made available to other parties.

Because of the limited time available to prepare this report, the methodology employed will be largely based on the methodology of the former ETSO and UCTE reports. For future reports, the System Adequacy and Market Modelling Work Group will be developing a dedicated ENTSO-E methodology and format.

The proposed plan for the report is therefore mainly inspired by last year's document:

Main Report (about 10 pages)

1. Executive Summary
2. Introduction and methodology
3. Main Results by Countries
4. Additional analysis
5. Conclusion
6. Summer 09 review

Appendix (about 3 pages per country and when relevant per area.

On a country by country basis, graphs illustrating the generation-load balance and comments provided by each country.

The information provided should reflect the actual state of the analysis made by the TSO and based on the available materials.

For your reference the former ETSO Winter Outlook 2008-2009 is available on:
http://www.entsoe.eu/library/publications/etso/WOR0809_Final_311008.pdf

1. INPUT FROM EACH COUNTRY

The input expected from each country comprises 3 main parts:

- **One or two paragraphs** emphasising the TSO's appreciation of the generation – load balance for the coming winter; this synopsis will be included in the main report. No common form is suggested in order to fit with each country's specific case.
- **A table with quantitative elements** with a common format; this table will not be published but sent only to those TSOs taking part in the exercise; the data will be used for building graphs attached in appendix to the report and illustrating the winter outlook for the country.
- **A one-page or half-a-page synopsis and 1-2 pages comments** on the generation-load adequacy for the coming winter that will be included in the Appendix of the report. In order to facilitate the production and use of these comments, common guidelines are provided hereafter, including a section for additional comments to highlight the issues that are particularly relevant for that country next winter.

2. QUANTITATIVE ELEMENTS

See attached excel sheet.

If weekly data are not available, the data for the third Wednesday of January should be at least available for countries of the Regional Groups "Continental Europe" (as provided in the framework of the system adequacy forecast); it is asked to provide again these data, possibly updated in order to take into account the increased knowledge of the situation since last SAF 2009-2020 (outages, status of hydro reserves, etc.) .

3. GUIDELINES FOR COMMENTS *(each TSO shall provide the following information)*

3.1 Contribution to main report

A few lines on the main results of the assessment: general situation, most critical periods, expected role of interconnections, measures to be activated or foreseen in case of gas crisis

3.2 Synopsis

It is very important that TSOs express their appreciation of the situation for the coming winter at least in a qualitative manner.

This assessment should stress the main critical periods and the main factors of risk.

It would be useful to indicate, if any, which level of remaining capacity they consider as necessary when making this forecast in order to ensure a secure operation for the next winter (i.e. what is the reference adequacy margin).

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

Is this kind of study undertaken, at which time horizon (e.g. for the whole winter, on a monthly basis), considered items, internal or public documents, probabilistic/deterministic, use of scenarios....

3.4 Generation – Demand balance

Precise if this balance is considered at risk for the system, the main factors of risk (e.g. availability of generation, load sensitivity to temperature), how is this risk managed by the TSO, the time horizon of the studies made in this respect. This part will be included in the appendix only if the TSO wants to.

Please comment each of the following items and use the associated definitions in order to fill the associated excel-table.

According to their availability please provide these quantitative data either:

- for each week of the considered period,
- for each month of the considered period
- for typical weeks or days (at least the third Wednesday of January)

3.4.1 Generation Available (lines 1 to 12):

1. The total generation capacity notified to the TSO as being planned to be available each week for the same period.
2. This available generation capacity could be computed according to a methodology directly inspired from the one used for the former ETSO system adequacy forecast report and within the former UCTE for generation adequacy assessment.

The following data are requested:

- National generating capacity (line 1 to 6)
- Non-usable capacity at peak load (line 7): resulting from lack of primary sources (hydro, wind), insufficient fuel availability due to actual contracts, mothballed plants not in operation during the winter....., with detailed values for mothballed plants and wind power
- Overhauls (line 8): notified by generators to TSOs
- **Planned available capacity** (line 9) : corresponds to the generating capacity declared available by producers
- Outages (line 10): corresponds to the average statistical data resulting from short notice breakdown according to TSO experiences
- System services reserves (line 11): amount of capacity required by the TSO to provide operating response/reserves ; it corresponds to the level required one hour before real time (additional short notice breakdowns are already considered in the amount of outages).
- **Reliably available capacity** (line 12): result of the above data but it is possible for TSO's to only fill this line. It corresponds to the average generating capacity which should be available for the current week to meet the load.

Additional relevant variations to the generation capacity can be mentioned so that a range of possible outcomes can be seen corresponding for example to scenarios covering lower availability of generating units.

3.4.2 Demand (lines 13-15): weekly peak demands (excluding any demands on interconnectors and net of any demand management/demand price response) in normal weather conditions for the period from December 1 to March 31 (line 13). Possible load reductions in normal conditions should be mentioned (line 14). It results in the net weekly peak load (line 15).

3.4.3 Remaining capacity in normal conditions (line 16): it corresponds to the generating capacity available above net demand; it is the basis of the TSO appreciation of the generation adequacy for the current week.

3.4.4 Severe load conditions (lines 17 – 20): additional relevant variations to the demand levels to be shown for each week so that a range of possible outcomes can be seen rather than a single forecast: it is possible to describe a scenario resulting from specified extreme weather conditions; the probability and characteristics of such scenario should be indicated.

3.5 Role of interconnection

Specific information is collected in order to highlight the potential role of interconnection in the power balance and the possible contribution of each national system to the generation balance of the other countries.

For that purpose the following items should be covered:

3.5.1 Interconnection capacity with other national systems expected to be available each week and a range of possible outcomes for Interconnection power flow (line 21 - 22).

3.5.2 Firm import/export contracts (line 23-26): for countries where firm import/export contracts are notified to the TSO, their influence on the remaining capacity should be mentioned.

Information on the possibility of export reduction or import increases will give a more complete view of the situation.

3.5.3 Comments on expected additional loads of interconnections due to transit-flows which affect the import/export capacity

3.6 Potential additional areas for comments

1. Contribution from intermittent energy sources e.g. wind included in generation available and assumptions made concerning availability (expected wind supply during wintertime) and whether included or excluded in above assessments (line 7a)
2. Treatment and amount of mothballed plant. Under what circumstances (if any) could it be made available? (line 7a)
3. Issues, if any, associated with utilising interconnection capacity e.g. existence of transmission constraints affecting interconnectors for export or import at time of peak load (such as maintenance or foreseen transit or loop flows)
4. Energy constraint issues particularly for hydro based systems.
5. Any other fuel supply issues which could affect availability e.g. gas supply issues
6. Following last winter's Russia-Ukraine gas dispute, what actions do you plan to activate in case of shortage of gas supply this winter?
7. Please describe the effects on demand of the economic crisis in Europe and if any mitigation measure has been undertaken in your country (such as measures to improve forecasting, measures to mitigate the effects on TSOs revenues and so on)
8. Please describe any other forecast issues (such as effects on wind generation)
9. Any other issues of relevance

3.7 Summer Review 2009

Following the publication of the ENTSO-E Summer Outlook 2009, a summer review will be provided with the objective to present what happened during the summer as regards weather conditions, and other factors and their consequences on the power system (temperatures, hydro and wind conditions), availability of generating units, market conditions, use/availability of interconnections and imported energy, and to compare what happened in reality with the risks identified in the Summer outlook.

1. Did your system experience any significant/unusual events or conditions during the Summer period (e.g. major losses of supply, loss of interconnection availability/capacity, emergency situations etc.)
2. What were the cause(s) and remedial action(s)
3. Lessons learned for future prevention/management

For your reference the former ENTSO-E Winter Review and Summer Outlook Report 2009 is available on:

http://www.entsoe.eu/library/publications/entsoe/outlookreports/090605-Rp-WRRSOR_2009_Final_report.pdf