An Overview of System Adequacy:

Winter Review and Summer Outlook Report 2010

Table of Contents:

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1. EXECUTIVE SUMMARY

The ENTSO-E Summer Outlook/Winter Review Report, prepared at European level as a monitoring tool for security of electricity supply, presents a summary of the national or regional power balances between forecast electricity generation and peak demand on a weekly basis for the summer 2010 period from June 1 to September 30, 2010.

The report also outlines what happened during the last winter period with reference to the weather conditions that occurred and the consequences for the power system in comparison to the forecasts for the winter made in December 2009.

The analysis and results are based on data collected and information made available by the ENTSO-E Members till the end of April 2010.

The summer outlook shows that on the whole, no particular critical event is expected for the coming summer under normal conditions.

In the different regions the balance between generation and supply is considered appropriate on a general basis.

Under normal conditions, some countries may rely on imports in some specific periods of the summer or for the whole period (such as Greece during the second half of June, July, and the first half of August and Hungary for the whole period).

Under severe conditions such as high temperatures and heat waves, the summer outlook shows reduced reliability margins and possible stressed situations for some countries.

This is particularly the case for France, where in June, July, and September imports close to 4000 MW may be necessary, Cyprus in weeks 30 and 31 (when the operating margins are at a minimum), Germany in July, and August, Greece in the second half of June, July and the first half of August, Italy in week 35, Hungary for the whole summer period, Montenegro from week 27 to 39 because of expectation of additional imports, Poland in June–July, Portugal in weeks 27 and 34, when remaining capacity is at the minimum level but no risk is expected for the system, and the Slovak Republic in weeks 36 to 39.

The main tense conditions identified for the coming summer are related to wind conditions and its effects on transmission networks and interconnections between countries, the cooling problems for thermal and nuclear power plants, in particular in case of high temperatures and the reduction in generation using nuclear or fossil fuels in order to comply with environmental requirements.

Transmission grid developments and network reinforcement in some countries have improved the security of electricity supply with respect to the previous years.

Winter review related to the period December 2009 to March 2010 shows that no major system adequacy problems occurred during the last winter notwithstanding the more severe temperature conditions in Europe. The main risk identified in the winter outlook for most of the countries was related to the sensitivity of the load to low temperatures.

The winter 2009/2010 was characterized by the coldest temperatures in most of the countries with frequent cold spells which made climatic conditions more severe with respect to the forecasts.

December and January have been the most stressed periods in most of the countries.

Some countries have even reported that last winter was the coldest for many years (since 1978/1979 in GB).

On the generation side, unavailability of nuclear power plants in some countries (i.e. BE, FR, SE) stressed greater reliability upon imports than forecasted. Technical incidents, storms, and

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unexpected events occurred without endangering system adequacy and system security in Europe.

Except in the Nordic countries, where the last winter was dry, favorable hydro conditions are generally expected for the summer period in other countries due to high precipitations during the winter.

The effects of the economic crisis still persist in the year 2010 but some positive signals due to the growth of electricity demand have been recorded in some countries (i.e. Italy, Hungary).

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1.1 Winter Review 2009/2010

NORTH SEA REGION

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

For the North Sea region, no major system operation or system adequacy problems arose during the winter 2009/2010, although temperatures during the last winter have been considered severe. The effects of the financial and economic crisis on load were largely or even more than compensated for by extremely low temperatures throughout the region. In Germany, high wind peaks have been stressing several parts of the grid (including the interconnection with the Netherlands, where capacities have been slightly restricted). In Belgium, an unforeseen unavailability of a nuclear power unit was compensated for by a net import within the North Sea region during the weeks in which the desired safety level was not obtained. In France, a technical incident on a transmission line led to a power cut in the south east on December 21. On February 27 and 28, the Xynthia storm caused a power disruption in the south west.

BALTIC SEA REGION

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

For the Baltic Sea region, a very low availability of Swedish nuclear power through the whole winter and low precipitation in Norway and Sweden led to a situation with a large import need to the Nordic market and to Sweden/Norway especially. Although security of supply remained on a sufficient level, margins became lower. As a result of this situation, market prices rose significantly.

In January and February 2010, consumption was very high because of very cold weather. However the financial crisis held down consumption. The load in Norway reached its historical maximum on January 6 while the total maximum load in the the Nordic countries was recorded on January 8. Similar circumstances, that is the highest ever peak load along with tough winter conditions, occurred in Poland. See also comments for Poland under the CCE region.

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

Although temperatures were far lower and precipitation was far higher than expected, the operation of the Spanish and Portuguese systems could be performed within comfortable margins, as they were identified in the last Winter Outlook Report. The higher temperature sensitivity in France (which was mentioned as one of the main risks for the French system in the Winter Outlook Report) has nevertheless led to a higher need for imports and demand side management measures in France in order to cope with the situation. Additional unexpected situations (a technical incident and the Xynthia storm) made power cuts in France unavoidable on the December 21 and February 27/28.

CONTINENTAL SOUTH EAST REGION

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

The winter period was characterized in general by colder weather conditions in comparison to the previous winter in Italy, Slovenia, Switzerland, Austria, Bulgaria, Croatia and Greece. The most significant periods during the winter were December and January in most of the countries in the region.

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High storage of water favourable to hydro power was recorded in Greece, the Former Yugoslav Republic of Macedonia (FYROM), Bulgaria, Montenegro and Slovenia. These favorable rain conditions during the winter are considered very important for the adequacy in the summer season.

The effects of the economic crisis had a different impact in the countries of the region and were within expectations in most of the countries.

In Bulgaria, the Former Yugoslav Republic of Macedonia (FYROM), and Greece, electricity demand continued to decrease during the winter months. In Greece in particular very low demand was registered during last winter, where starting from January electricity demand was lower than expected and even lower than the previous year due to the effect of the economic crisis.

In Italy and Hungary during January and March the monthly consumption increased significantly in comparison to the same period in the previous winter.

No significant problem with generation availability and system adequacy generally occurred during last winter within the region.

CONTINENTAL CENTRAL SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

In the continental Central South region winter 2009/2010 was colder in comparison to the previous year. The coldest period was December and January in most of the countries. Only in Slovenia was December warmer and January and February colder in comparison to the historical winter average.

On average, lower hydro conditions occurred during the first part of the winter in Italy.

Some of the expected forecasted risks in the winter outlook occurred in most of the countries. In particular in France winter 2009–2010 was one of the coldest characterized by successive cold spells. December and January have been the most stressed periods for system adequacy, mainly due to high levels of consumption with low temperatures. The main risk identified in the Winter Outlook Report, was that the sensitivity of the load to low temperatures occurred during the whole winter period.

In Germany very high wind peak conditions characterized the winter. Due to wind power generation, several parts of the transmission networks were highly stressed and temporarily market related measures were taken in order to prevent and solve n-1 violations.

Notwithstanding the decrease in electricity consumption with respect to the previous year due to the economic crisis, the very cold winter conditions produced a new peak load in France and Switzerland.

On the generation side, system adequacy was as forecasted in most of the countries in the region notwithstanding the fact that some nuclear power plants were out of service.

Unexpected events occurred in France, Germany, and Switzerland.

Low availability of the French generation fleet and high electricity consumption induced higher levels of imports in comparison to the previous winter.

CONTINENTAL CENTRAL EAST REGION

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

In the continental Central East region, winter conditions were in general colder in comparison to the previous year in most of the countries. In Austria and Poland, this caused higher peak loads while in both Slovenia and Czech Republic the coldest periods were January and February. A

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decrease in electricity demand continued during last winter due to the economic crisis in particular during the first part of the winter, with some positive signals starting from January onwards (in particular in Hungary and in the Slovak Republic).

Much snow in comparison to the previous year occurred in particular in the Czech Republic, Poland, Slovak Republic and Hungary.

In general there was not much wind during the winter in Germany but as forecasted there have been periods of high wind peaks.

The most stressed periods were experienced in particular in the Czech Republic and Poland.

In the Czech Republic during November the transmission grid did not fulfil the N-1 criteria in many hours. The main reason was the overloading of lines caused by high production by wind mills in Germany especially in the VE-T area. In January 2010 large icing were observed on many ČEPS transmission lines.

Due to tough weather conditions (heavy snow and ice, the large numbers of fallen trees) on January 9 and 21 in the central-southern part of Poland the network was constrained as a result of lines being tripped and damaged. The failure of a power plant in Poland caused the N-1 criterion to be unsatisfied for a period of about two hours on January 24. Very low temperatures resulted in the highest peak demand in the Polish power system on January 26.

A higher peak load with respect to the forecasts was experienced in the Slovak Republic, where the peak was 4246 MW in the fourth week of 2010 while the predicted monthly peak was 4160 MW. There was a 2.8% increase compared to January 2009.

ISOLATED SYSTEMS

Cyprus

The winter time was mild in Cyprus. On the day of the winter peak demand the temperature varied from 1.25°C to 9.25°C with a weighted average temperature of 3.93°C to 10.36°C. No risk occurred during the winter. Stressed periods for system adequacy generally occurred during the summer period.

An unexpected situation happened on the morning of December 11, 2009, when the disconnection of the system backbone power line due to the disconnection of three power station generators caused a load rejection of 30% of the total load of the system. The restoration took place in less than 40 minutes.

The most remarkable event was the commissioning of a combined cycle power plant of 220 MW in November 2009 that was available during the winter period.

Iceland

No significant system events or conditions occurred during last winter, 2010.

ADDITIONAL CONTRIBUTING COUNTRIES

Albania

During the last winter the climatic conditions were milder in comparison to the forecasted levels. December was warmer and precipitation levels above normal limits with positive effects on hydro power. The most important event that occurred during the last winter was a major disturbance on February 23, 2010. Under normal system operation Albania exports around 200 MW. Due to bad weather conditions at one of the main hydro power plants, two units were disconnected with consequent disconnection of the 220 kV north -south transmission. As a consequence the special protection scheme related to the Albanian interconnection lines was triggered and load shedding was activated. The disturbance was observed and recorded within the European System without effects on the operation of the neighboring TSOs.

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The high inflows during last winter showed limitations in available transmission capacity from north to south. The situation is expected to improve after the commissioning at the end of 2010 of the new 400 kV Podgorica–Tirana–Elbasan line and the implementation of the enhancement of the internal 220 kV north and south rings.

Ukraine West

No answer received.

1.2 Summer Outlook 2010

NORTH SEA REGION

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

The North Sea region analysis for the coming summer, 2010, is positive, assuming standard normal conditions. Under normal conditions, no country forecasts facing particular problems for the generation–load balances. CREOS and SONI declare they will have to rely on imports to meet demand in any case.

Under severe or extreme conditions the main situations of risk have been identified as follows:

- High wind situations might put several parts of Germany under stress. The continuously rising number of wind power plants intensifies the risk of n-1 violations and overloads within the German grids.
- Long periods of dry and hot weather threaten to cause cooling problems for thermal plants in the Netherlands, Belgium, France and Germany. These might limit thermal units' capacities, thereby limiting the generation-load balances of countries. As a result, in June, July and September, France might have to rely on imports of close to 4 000 MW to cover the minimum required margin under these circumstances. This could concern all neighboring countries in the region. In case of extreme heat wave and thermal constraints on the power plants in northern France, the availability of imports from Belgium to Germany could be slightly reduced.

BALTIC SEA REGION

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

Under normal conditions, no critical events are expected. Several countries have assessed the risk of critical events under conditions such as maintenance of main power plants or planned outages of interconnectors. All countries expect a surplus of power during the whole summer; however in the second part of the summer Poland might have a negative balance, which will be covered by the intervention reserve (part of the System Services Reserve) in pump-storage hydropower.

There could be increased load flows in the north of Germany during periods with high wind generation.

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

In Portugal and Spain, systems are expected to be secure in summer 2010, even under extreme conditions. For these countries, it is not foreseen that imports will be needed to cover security margins. In France, the situation is slightly different, in the sense that high temperatures or a heat wave might cause margins to be reduced. In June, July and September, this might lead to imports close to 4000 MW being needed to cover the minimum required margin.

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CONTINENTAL SOUTH EAST REGION

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

All countries declare continuing decrease of the electricity demand in 2010. None of the TSOs expect adequacy problems in normal conditions for the forthcoming summer. Greece declares a slightly higher risk for June, July and first half of August in case of extreme hot weather. Under severe conditions, Italy reports week 35 as the most critical period. FYROM and Hungary will rely firmly on imports as usual. As whole no serious adequacy problems are expected in the region

CONTINENTAL CENTRAL SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

Under normal conditions no supply/demand balance problems are expected in the region.

This is also due to moderated peak load forecasts due to the economic crisis.

In France, in the case of high temperatures or heat wave, margins would be reduced and the situation could be stressed during the whole period, except in August. In June, July, and September a potential request for imports close to 4000 MW necessary to cover minimum required margins could concern all neighboring countries, including Italy and Switzerland.

Under severe conditions the most stressed periods are forecasted for week 35 in Italy and in France during the whole summer period except August. In Germany, July, and August are forecasted to be the most critical when special attention is expected because the nuclear power plant Unterweser will be temporarily out of service for maintenance. Problems on the German transmission network might occur temporarily due to weather conditions and increased load flows in the north of Germany during periods of high wind generation. Problems may also arise from large transports due to wind power feed in from the North and high load flows towards France/Switzerland.

CONTINENTAL CENTRAL EAST REGION

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

Under normal conditions no particular problem in the balance between demand and supply is expected in the Central East region. Hungary is depending upon imports to reach adequate balance even under normal conditions with negative remaining capacity expected in July.

In the case of extremely low hydrology and reduction of interconnection capacity by neighboring TSOs, problems could be expected at peak load in Slovenia.

Under severe conditions generation capacity may be inadequate in some countries, such as the Slovak Republic. The most critical times are weeks from 36 to 39 in the Slovak Republic, the whole summer period in Hungary in particular weeks 28 to 30, and June and July in Poland.

During the summer period, the wind power generation in Hungary and in Austria can change the imports from day to day.

ISOLATED SYSTEMS

Cyprus

Under normal conditions no supply/demand balance problems are foreseen. No major problems are foreseen for this summer.

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In case of problems, a load reduction scheme will be put into operation. The most critical periods are regarded weeks 30 and 31 when the operating margin is at its minimum values and depends on the weather forecasts.

Iceland

No problems are expected for the coming summer in terms of balance between demand and supply in the isolated Icelandic power system under normal as well as severe conditions.

The ongoing volcanic activity which started on April 15 in Eyjafjallajokull is not expected to cause any disturbances in the production or transmission of electrical power. There are no power plants or transmission lines in the area of impact. Transmission lines are not in danger with respect to floods or lava. The ash fallout is limited to an area of only about 10–15 km around the volcano. However, the degree of alertness at Landsnet has been raised.

ADDITIONAL CONTRIBUTING COUNTRIES

Albania

Under normal conditions no supply demand problems are foreseen.

The year 2010 started with an adequate situation due to copious inflows at Drin River Cascade which is the main hydro producer of the country, producing about 90% of all the electricity generated.

Although during summer most of the transmission lines and generation units are under maintenance, no specific weeks or time periods have been identified which are regarded as high risk.

The remaining capacity even under severe conditions is positive, and no dependency upon imports of electricity from neighboring countries occurrs, although there are firm import contracts of about 200 MWh/h.

Ukraine West

No problems are expected in the system this summer.

There are adequate generation and demand balances without dependency upon imports of electricity from neighboring countries.

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2. INTRODUCTION AND METHODOLOGY

2.1 Scope & Objectives of the Report

2.1.1 Winter Review Report

The ENTSO-E winter outlook 2009/2010 was published on 2nd December 2010 on ENTSO-E website.

The winter outlook report is prepared at European level with the aim to present the summary of the national and regional power balances between forecasted electricity generation and peak demand on a weekly basis. The relevant period for the winter outlook report taken into consideration for the outlook was December 2009/March 2010.

The objective of the winter review is now to present what happened during the winter period in respect of weather conditions and which consequences on the power system occurred in reality in comparison to the forecasts made last December 2009.

2.1.2 Summer Outlook Report

The objective of the ENTSO-E Summer Outlook Report is to present its members TSOs' views as regards any national or regional matters of concern regarding security of supply for the coming summer and possibilities of neighboring countries to contribute to the generation/demand balance in critical situations.

The analysis is performed on a weekly basis (except for Poland).

The relevant period for the summer outlook is from 1st June- till 30th September 2010.

The survey gives TSOs the opportunity to share information on common basis and gives impetus to further studies on a bilateral basis.

2.2 Sources of Information & Methodology

2.2.1 Winter Review Report

The Winter review report is based on the answers to a questionnaire sent to every European TSO in April (see Appendix 3). The methodology is developed as a qualitative comparison of forecast and actual market conditions and events, based on a narrative description made by the TSOs with regards to the last winter.

TSOs have been invited to provide quantitative data where possible to illustrate how the Winter out-turned against what was forecasted (e.g. actual peak load and difference compared with forecast in normal and extreme conditions, major disturbances and their effect on generation or transmission capability etc.).

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

2.2.2 Summer Outlook Report

The summer outlook report is based on the answers to a questionnaire sent to every ENTSO-E member on April 2010 (see Appendix 3). The questions asked TSOs are aimed to identify any potential system problems forecasted for the coming summer, any mechanisms or arrangements in place to manage the identified risks, the source(s) and likely availability of power imports where required and to identify any issues likely to affect interconnectors or circuits which could affect the availability of imports.

If any particular high-risk weeks/periods were highlighted when answering the questionnaire, quantified generation and peak load data were sought for the periods in question. No specific

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analysis was carried out to simulate the power flows on the whole European High Voltage interconnected network.

Appendix 2 shows the individual country responses to the Summer Outlook Questionnaire.

2.3 Aims and Methodology

2.3.1 General Considerations

TSOs have presented their views as regards national and regional system adequacy forecasts for the coming summer time having regard to the balance between demand and supply and the possibility for neighboring countries to contribute to it in case of critical situations. The work undertaken by ENTSO-E in preparing the Summer Outlook report is expected to be a tool of compliance in terms of adequacy outlooks for the summer period to be provided in accordance to art. 8, lett. f) of the EC Regulation n. 714/2009. It is also a tool to show studies made by TSOs to report and forecast on system adequacy and it also stimulates further studies.

The report is also expected to facilitate the monitoring of security of electricity supply in Europe on a short term basis.

The information is based on the answers to a questionnaire sent to every TSO last April aiming to report about expected conditions from beginning of June till end of September 2010. The questions are related to TSOs' practices in order to present country's forecasts on a common basis.

2.3.2 Methodology and future implementation

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.

For future implementation of the report a review project on short term system adequacy methodology is currently under assessment within ENTSO-E.

2.4 List of Contributing Countries

This report has been drawn up by ENTSO-E "WG System Adequacy and Market Modelling" under the System Development Committee with the contributions of all TSOs belonging to the regions listed below.

The identification of blocks relates to the regions under the ENTSO-E System Development Committee, as it is shown below:

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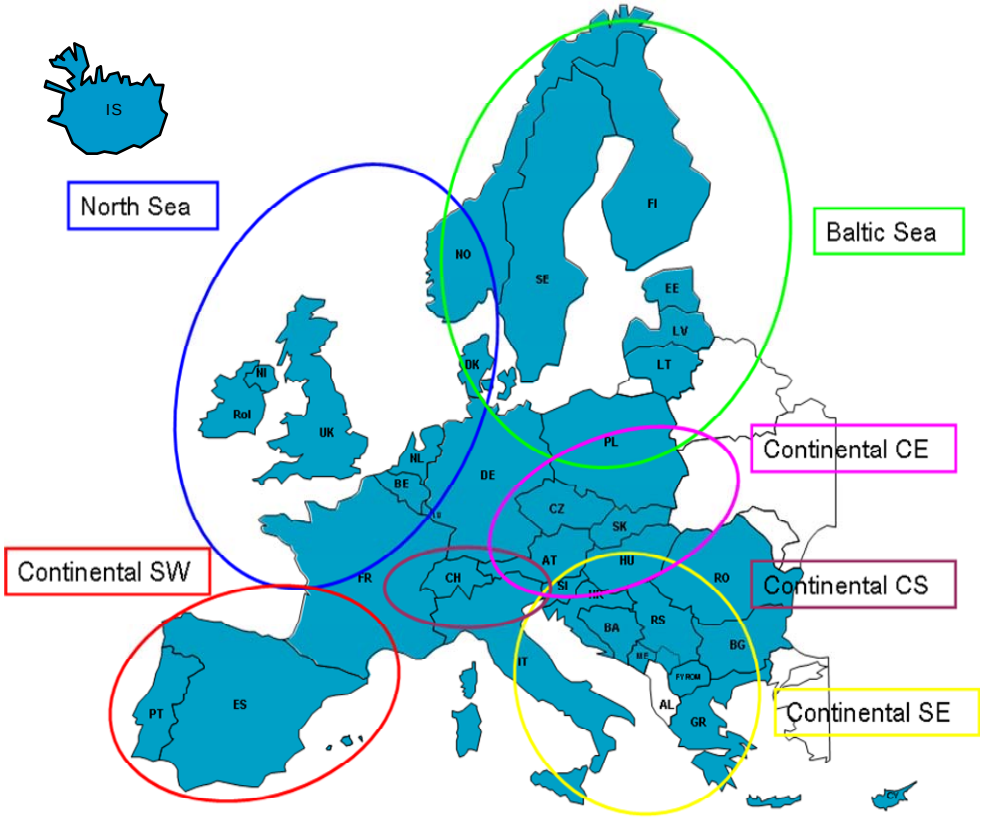

NORTH SEA REGION

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

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

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CONTINENTAL CENTRAL SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

CONTINENTAL CENTRAL EAST REGION

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

ISOLATED SYSTEMS

Cyprus, Iceland

ADDITIONAL CONTRIBUTING COUNTRIES

Albania, Ukraine West

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3. WINTER REVIEW 2009/2010

3.1 Summary of responses by regions in the ENTSO-E Winter Outlook Report 2009/2010

Here below the winter outlook summary published on December 2009 in ENTSO-E winter outlook report 2009/2010 shown the following forecasts by regions:

NORTH SEA REGION

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

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.

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 neighboring countries.

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 CENTRAL 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.

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CONTINENTAL CENTRAL 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.

3.2 Summary of responses by regions in the ENTSO-E Winter Review Report 2009/2010

In comparison to the forecasts made by TSOs for the last winter, the following occurred last winter and is reported here in after:

NORTH SEA REGION

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

Belgium

The adequacy forecast study “winter 2009-2010” carried out in September 2009 for the Elia control area, which comprises Belgium and the SOTEL area (a part of the G-D of Luxembourg), revealed that the desired safety level of 1050 MW for the generation-load balance would be reached during the entire winter period 2009-2010. This analysis remained valid even when assuming severe temperature conditions.

The two main risk factors for the Elia grid, potentially jeopardizing the positive winter adequacy assessment that were identified during this study were:

- a generation-demand imbalance for the whole of the ENTSO-E North Sea region;
- unplanned outages at the main generation plants in Belgium.

In reality, the desired safety level of 1050 MW for the generation-load balance was not attained during the peaks of weeks 49 till 50 of 2009 and the peaks of weeks 2 till 7 of 2010. In week 49 of 2009 and weeks 3 till 7 of 2010 this was mainly caused by the unavailability of a nuclear unit. The deviation between the forecasted and the observed unavailable capacity of power units ranged from an additional unavailable capacity of 821 MW in week 51 of 2009 up to 2451 MW in week 7 of 2010.

Figure 1 gives an overview of the forecasted remaining capacity (evaluation time September 2009) and the observed remaining capacity for the week peaks of winter 2009-2010.

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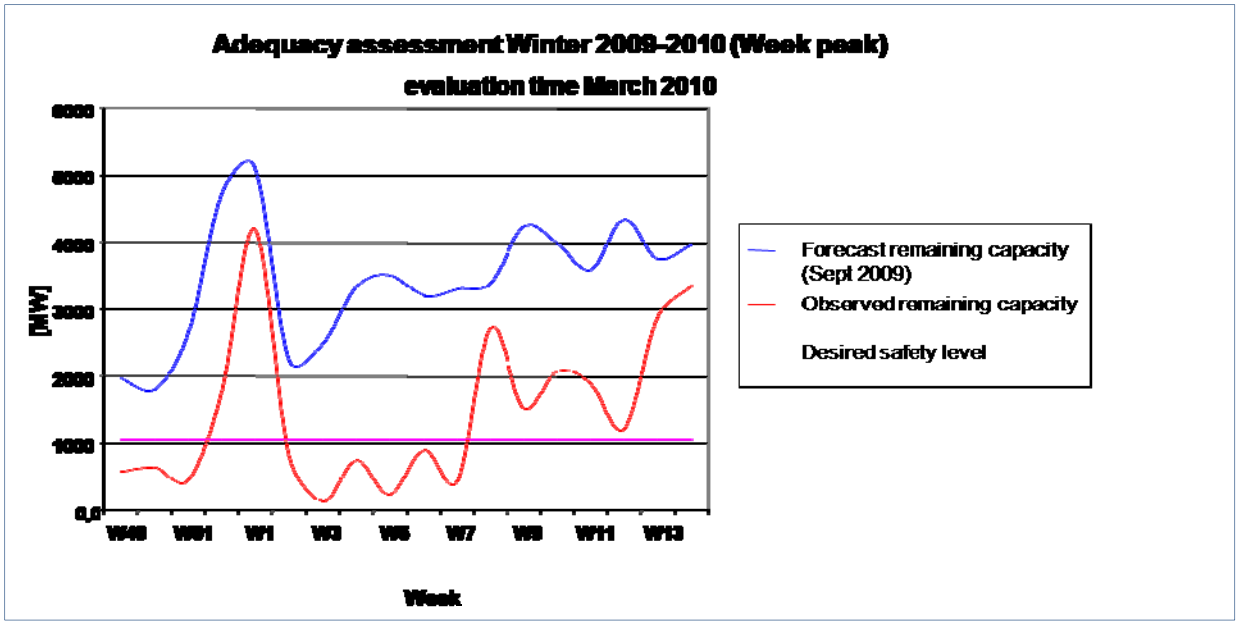
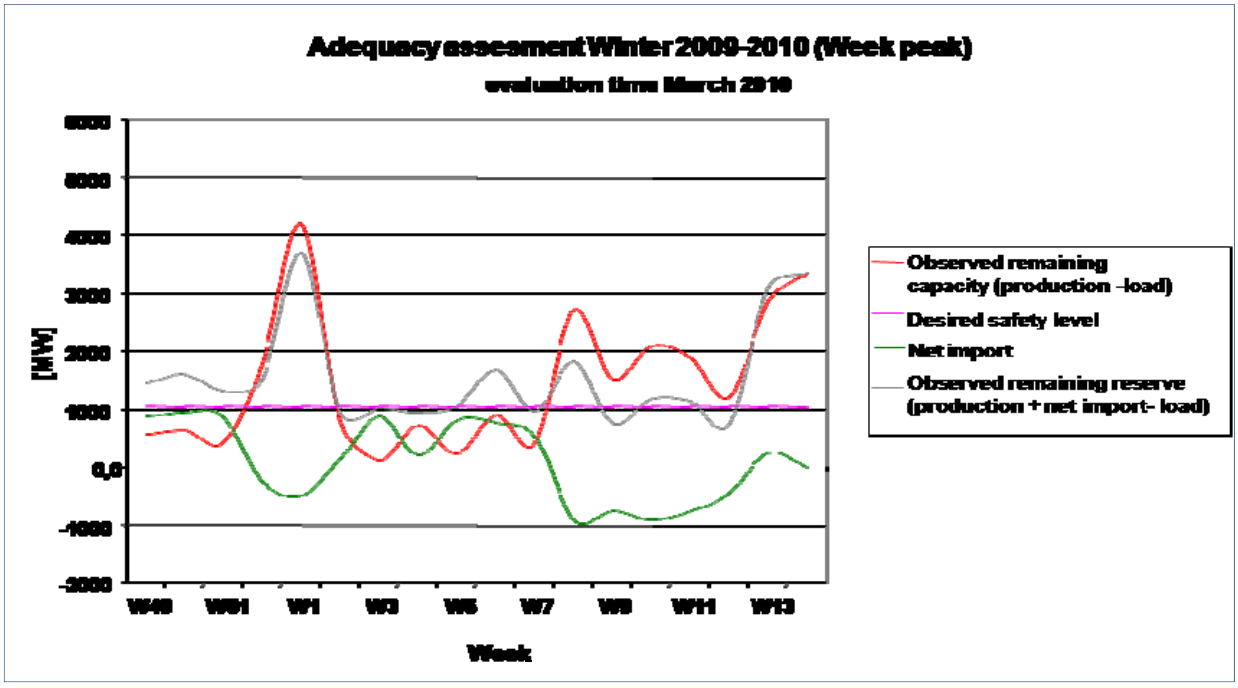


Elia did not expect any congestion problems on its grid for winter 2009-2010 due to the minimization of planned outages of international lines during critical winter periods. During the first semester of 2010, repair works were nevertheless needed in the internal grid so that at certain moments the simultaneous import capacity was reduced with approximately 130 MW. Furthermore atypical winter loop flows from the South to the North causing congestion problems in the Elia grid have been less problematic since the commissioning of a phase shifter in the Zandvliet substation and two phase shifters in the Van Eyck substation as they allow a better management of this type of loop flows.

In general, the system adequacy for winter 2009-2010 was positive, as unforeseen unavailability of power units was compensated by a net import within the North Sea region during the weeks in which the desired safety level was not obtained. This is illustrated by Figure 2.



Denmark

See the Baltic Sea Region.

France

The main risk for last winter as it was identified in the most recent Winter Outlook report was the sensitivity of the load to low temperatures. This risk occurred during the whole winter due to low temperatures.

During cold weather observed at the beginning of February, the French consumption reached a peak at 93 080 MW on 11 February 2010 (last winter, the peak reached 92 400 MW).

In addition, some unexpected situations arose during this winter:

- December 21: a power outage affecting almost 2 million customers (about 2 400 MW) occurred in South-Eastern France, following a technical incident on the transmission network.
- February 27-28: 'Xynthia' storm caused power cuts of more than 1 million customers mainly due to distribution grid and mainly in Western France.

During the cold weather observed at the beginning of February, the French consumption reached a peak at 93 080 MW on 11 February 2010, above the level recorded last winter (92 400 MW on 7 January 2009).

These levels of consumption caused low voltage problems and induced risk for the security of the system especially in Western France.

As a consequence, RTE has taken some measures:

- RTE used « safety order » to avoid voltage collapse especially in Western France.
- RTE used Short Message Service (SMS) and website alert to encourage people to reduce electricity consumption at peak demand period in West and Provence-Alpes-Côte d'Azur (PACA) regions.

During the cold snap of 14 to 21 December 2009, in both the West and PACA regions, RTE observed that demand side management measures by customers led to a reduction in electricity demand estimated at between 1% and 1.5% at peak times. That is equivalent to the energy consumption of a town of 50,000 inhabitants.

The balance of exchanges remained positive last winter (i.e. France remained a net exporter), with a lower level in comparison with previous winter.

Germany

In general German networks were not at risk during winter 2009/2010.

The winter period was characterised by long period of low temperatures starting from mid December till mid March.

A general concern is the increasing in feed of wind power in the network, putting several parts of the grid under pressure in high wind circumstances. In addition, high wind in combination with low load led to high negative prices during some periods.

Great Britain

Winter 2009/10 was the coldest winter since 1978/79 for the period December to January. The generally warm start to the winter was cancelled out by cold weather from mid-December. The weather was colder than normal for almost the entire 3 months of Jan to March. Despite these notable weather conditions demand was met in full.

The GB winter outlook report for 2009/10 had foreseen a comfortable margin in generation to allow the TSO to meet demand even under severe weather conditions. The experience of winter

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was very much inline with our expectations. No system warnings, that indicate a shortfall in our planned reserve holding in operational timescales were issued over winter 2009/10.

Higher relative power prices in France, impacted by concerns about margins have fed through into continued high exports of power from GB to France. This was in line with the TSO expectation as indicated by forward power price differentials between France and GB, though such a prolonged period of exports of power to France during winter is a change from the recent pattern of imports to GB over winter.

Cold temperatures and resulted in very high gas demands with 9 of the highest 20 gas demand days ever seen during winter 2009/10, and also the highest ever on 8 Jan at 465 mcm/d. These high gas demands and gas supply issues resulted in some Gas Balancing Alerts[1] being issued. Gas market prices responded and increased, resulting in a switch from generating power from gas into increased generation using coal. There were no gas to power interaction security of supply issues for power as a result of the Gas Balancing Alerts and gas supply/demand tightness. Gas supply issues were one of the external shock type factors we highlighted in our winter outlook report.

Ireland

There were no significant issues during the winter 2009-2010 period. The winter peak demand occurred on Thursday 7th January 2010. The peak was 5,165MW (generated), which equated to 4,950MW (exported). This was an increase on the previous year's peak of 5,085MW (generated). The wind generation at the time of the peak demand was 83MW. The predicted winter peak in the Winter Outlook was 4,680MW (exported). At the time of writing the Winter Outlook report (June 2009), the year-to-date average demand growth was negative at -5%. This trend continued for the rest of the year. However, due to extreme cold weather during December and January, the peak loads were significantly higher than expected. The system forced outage rate for January 2010 was 10.3%, which was in line with the system forced outage rate used in the Winter Outlook report. Notwithstanding the higher peak demands due to the unusual weather conditions, the system remained well within the capacity adequacy standard for the winter period.

Luxembourg

Although CREOS faced severe climatic conditions during the past winter (December with an average temperature of -1,6°C and January with an average temperature of -2,1°C were two very cold month, with a lot of snow), there were no problems in its grid. The 28th of February the storm Xynthia also reached Luxembourg, but there was no important outage in the grid. Due to the economic crises the consumption of industrial clients went down, but this was compensated partially by a higher consumption of household clients due to the climatic conditions.

Netherlands

In the winter outlook 2009-2010 no risks were foreseen and in reality no risk occurred. Average temperatures were lower than expected. There were no stressed periods for the Dutch network during the winter 2009/2010. There were no specific fuel, generation, demand or exchange pricing events that caused serious stressed periods.

The interconnection cable between Norway and the Netherlands (NorNed cable) was unforeseen out of order as from January 29th and will be operational before May 2010.

In times of huge wind power flows in Germany the interconnection capacity was partly restricted to the permissible level at that specific moment (grid safety analysis). The average reduction occurred in 20% of the working days up to approximately 500 MW in respect of a total import capacity of 3850 MW exclusive the NorNed cable.

[1] http://www.nationalgrid.com/uk/Gas/OperationalInfo/GBA/

Northern Ireland

Over the winter period 2009/10, Northern Ireland suffered several significant cold spells with low temperatures that had not been experienced since the early 1980's. However, there was no major ice accretion or storm damage to the transmission network during this period. Although the cold periods arose there was no reduction in generation availability suffered. There were some periods of gas price fluctuation, however there were no scares in relation to lessening gas supplies. The winter peak demand remained on a par with 2008/09. All interconnection supplies were sustained and obtained as required.

Norway

See the Baltic Sea Region.

BALTIC SEA REGION

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

Denmark

A normal winter 2009/2010 was expected with a positive power balance. The winter was, colder than what has been seen in a long time. However, the Danish security of power supply was not affected.

Estonia

The domestic generation capacity was sufficient to cover peak loads during the winter season. The economic downturn and resulting lower production output at industrial enterprises have had a negative impact to electricity consumption. However the outdoor temperature was colder than average, which exerted a positive impact. Despite economic recession, decreasing of production volume and policy of economy electricity consumption increased compared to the same period last year approximately 2%-3%. The most appreciable difference between expected and actual values occurs in December/January.

Finland

The cold period in winter 2009-2010 was exceptionally long in Finland. The economic recession has resulted in substantial reduction of the electricity consumption. The production capacity in Finland is a mixture of hydro, nuclear, CHP industrial, CHP district heating and condensing power. Some 600 MW of generation capacity was 'mothballed' because of forecasted market conditions. The rest of generation capacity operated as planned and the reliably available capacity corresponded to estimated amount. Fingrid's system worked as planned throughout the winter period and the transmission grid did not experience any significant faults affecting the transmission capacity.

Germany

See North Sea Region.

Latvia

Latvian generating capacity was sufficient for the Latvian TSO to manage the balance. This was also due to a new power plant (RigaCHP2) with installed capacity 407 MW and an increased generation capacity of hydro power plants on Daugava river due to sufficient amount of water. Starting from the weeks 9-11, the Latvian power system became even capable to export up to 400-500 MW to the neighboring systems.

The economic recession was the main factor why the total electricity consumption during winter period decreased compared to previous year however due to low temperatures the electricity consumption in December and January increased compared to previous year.

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Lithuania

Average temperature that was higher than normal winter temperature was observed only on January. Average temperature was near normal on December and lover than normal on February and March. Economic recession was the main factor that total electricity consumption during winter period decreased approximately 4% compared to previous year. The power plant Ignalina NPP was closed without occurrences. There were no stressed periods for system adequacy during winter 2009/2010 and no specific events during the winter period.

Norway

The average temperatures during the winter were lower than normal. At the end of March there are 60% of normal amounts of snow in the mountains that will become available for hydropower production. Production has been higher than expected all winter. On 6th January, new maximum load occured.

Poland

Severe winter in Poland with the average temperature (from December to March) 1.8°C lower than during previous year and average temperature in January of -7.09°C resulted in average hourly peak load 4% higher than the previous year. On 26th of January 2010 (-16.2°C) PSE Operator registered historically highest ever peak load – 23 583 MW – as a momentary value at 17:30 (average hourly peak load in monthly statistics for the day amounts for 23 447 MW).

Between 9th and 21st of January in the Central-Southern part of Poland network constrains took place as the result of 8 lines of 220/400 kV being tripped and damaged, which was caused by weather conditions: heavy snow, thick layer of ice on the lines and other elements of the system as well as the fallen trees (the number goes into dozens for the line). The most affected transmission lines were: the Rogowiec-Tucznawa and Trębaczew-Dobrzeń lines.

On 24th of January the failure in Dolna Odra thermal power plant – coal dust explosion in coal handling building took place. The must–run power plant (1600 MW net generating capacity of 8 units), located in North-Western part of Poland – next to PL–DE border, from operational point of view allows for limiting high load flows coming, among others, from German wind generation. Between 18:15 and 20:38 no units of the Power Plant were synchronized with the power system, the consequence of which was not satisfying the n-1 criterion for the time period for the PL-DE 2x220 kV line Krajnik-Vierraden. To provide secure operation of Polish power system emergency delivery of 300-600 MW from Sweden was launched.

Sweden

Sweden had a long relatively cold winter. There was a cold spell from Dec 17 to Dec 22, 2009 and from Jan 5 to Jan 10, 2010.

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In comparison to the winter forecasts the availability of nuclear power was much lower although the winter time had effects on high prices on the Nordic electricity market.

The availability was approx. 45% during Oct 2009 to Jan 2010, and then it increased to approx. 75% during March and April 2010.

The low nuclear power input to the grid reduced the transfer capacity marginally.

Due to that the power situation became much worse. There was a deficit compared to average of stored hydro power all winter. The deficit was 3-7 TWh with 7 TWh deficit in Feb - Mar 2010.

Because of the global financial crisis the Swedish industry has reduced its demand approximately. 7 TWh between Jan 2009 and Jan 2010.

The domestic and services demand show little change.

Because of low temperatures the demand became high and on Dec 17, 2009 the power balance in Sweden was under stress. The SvK power reserves were activated and the spot prices became very high (approx. 1400 €/MWh). The same thing occurred on Jan 7-8, 2010 but the maximum price was approx. 1000 €/MWh.

On Feb 22, 2010 the price became very high (approx. 1 400 €/MWh) due to deficit of production bids. The temperatures were not very low.

The most stressed periods occurred on Dec 17-24, 2009, and Jan 5-10, 2010, the temperatures were lower than 10°C below normal. The nuclear capacity was only approx. 45% of normal. But the situation relieved by an increase of import than forecasted in the winter outlook.

The demand was as expected for normal winter temperatures except for the industrial demand which was lower. The transmission capacity in the Swedish grid was close to normal and counter trade was used in order to maintain power system reliability.

During three periods, Dec 17-24, 2009, Jan 5-10, 2010 and Feb 21-22, 2010 the SvK power reserves were activated because of strained power balance. The import capacity from DK1 was reduced all through the winter.

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

France

See the North Sea Region.

Portugal

In general, the system's operation was performed within the comfortable margins identified in the Winter Outlook Report. In the end of December, the occurrence of an unusually strong wind storm resulted in damages in transmission lines which constrained transmission capacity, for a few days, in the western part of the country. However, this only had a small and local impact.

Spain

General weather conditions have been worse than expected for the past period of time. Snow and rain precipitations have been higher than average. Nevertheless the risks mentioned in the last Winter Outlook Report did not occur, neither did other unexpected situations urging the generation-load balance to become unsecure.

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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

No adequacy problems were reported during the winter period.

Bulgaria

There were no stressing periods of the system adequacy during the months of analysis. Failure rates of generation units were as expected. Water levels in the big reservoirs were slightly above target levels and hydro plants experienced normal operation in peak zone of the daily load curve. There were no critical outages in the transmission network.

Croatia

No adequacy problems were reported during the winter period. Winter consumption was recorded 1,5% lower in respect of the previous winter due to stagnation and recession.

Former Yugoslav Republic of Macedonia (FYROM)

No critical unexpected events occurred during winter 2009/2010. Conditions were very close to forecasted.

Greece

There were no adequacy problems in Greek power system during last winter. The demand starting from January has been lower than expected and even lower than the previous year. The reason for this reduction is that economic conditions have had an effect on the industry production process and led to lower energy consumption.

Hungary

In Hungary compared to the previous year, winter of 2009/10 was lower temperature and much more snow. From October 2009 to December 2009 the demand was lower but from January 2010 to March 2010 it was higher compared to the previous year. No unexpected situation happened. The needed import was available at every time. Availability of generation capacity was good through the whole winter period. Demand was lower in the first part of the period, but it was within the expectations after January, 2010. Operation of the transmission grid was according to the plans, harmonised with the other TSOs of the region. Import was higher than planned (in December the total import was an average of 600 MW in peak). There was no problem with the availability. Export-import activity of the market players is mainly a price issue. However, availability of cross-border capacities may be an issue on some borders. Compared to previous years, ancillary services are involving more reserve in the down direction from 1 January, 2010. This will increase controllability of the system.

Italy

See under Continental Central South Region.

Montenegro

During the winter there were no significant system events. In this part of the year high hydro conditions were registered

Republic of Serbia

Serbian power system passed through winter period without serious problems. Import from neighboring systems was realized in January with beginning of low temperatures as it was planned.

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Romania

Due to severe winter conditions in the period 16 -20 December 2009 four 400 kV lines tripped one by one in the south-eastern region of the country. The result was the isolation of the south-eastern part of the Romanian Power System and also the tripping of the two units in NPP Cernavoda, belonging to this region, in house load operation. During this event the Romanian Power System kept the normal synchronous operation with the interconnected Continental European Network. Also all NPP Cernavoda installations, protections and automations worked properly.

Slovenia

See under Continental Central South Region.

CONTINENTAL CENTRAL SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

Austria

Winter 2009/2010 was colder compared to winter 2008/2009. This could be the reason for the peak loads which were higher than expected. During the first half of the winter there was more rainfall, and in the second half less compared to the previous winter. No extreme weather conditions occurred.

No critical events concerning the Austrian power grid occurred in Winter 2009/2010. After a sharp decrease of the total consumption of electric energy in the previous year as a consequence of the financial crisis a slight increase was recognized at the end 2009.

France

See under North Sea Region

Germany

See under North Sea Region

Italy

The adequacy assessments for 2009-2010 winter period has not shown particular risks for capacity adequacy and peak load cover as well as the national supply system's. A winter season with little increase of temperatures characterised the first part of the period leading to a sensible decrease of demand also due to the effects of the economic crisis. In addition low hydro conditions marked this part of the year: values below the multi-year average capability factor were recorded, confirming a winter scarce of rainfall.

During the first period of winter (October to December 2009) both load and energy requirements were low. Record power peak normally got in winter was not exceeded in this period. Over this period (January – March 2010) the monthly consumption increased significantly as compared to the same period 2009 but the volume still remained low respect those of the 2008.

Slovenia

No risk was identified in the Winter Outlook report 2009/2010 and no unexpected events actually occurred.

Winter time was generally colder in respect to the previous year. December was warmer than historical winter average. January and February were colder than historical winter average. The precipitation in December was above historical winter average. The precipitation in January and February were beloved historical winter average

The demand during the winter (49th week 2009 - 8th week 2010) was lower than the forecasts in winter outlook Report 2009/2010. It was mainly due to the economic conditions and recession.

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Because of recession and consequently lower consumption particularly stressed periods in winter 2009/2010 were not observed.

No specific event or and reduction of gas supply occurred. There were 4 planned hydro generation overhauls in winter 2009/2010, but on network level of 110 kV with installed capacity below 100 MW. Good hydrological conditions resulted in higher hydro production than expected in winter 2009/2010.

Due to lower consumption as a result of economic crisis the winter peak was lower than forecasted. The winter peak consumption took place at 19:00 in 4rd week of the year 2010 and reached 1.936 MW (losses included) i.e. lower than expected. The main periods of peak demands were in January mainly due to low temperatures. No reductions, disconnections or any other special measures were necessary.

Switzerland

No risk was forecasted for the winter period. December 2009 and January 2010 were very cold. The colder winter conditions produced a new historical peak load as of 10261 MW on 16th December 2009. An unplanned outage of one of the two blocks of the nuclear power plant Beznau (generating capacity lost: 400 MW) occurred on the 4th November 2009 but no critical situation resulted.

CONTINENTAL CENTRAL EAST REGION

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

Austria

See under Continental Central South Region.

Croatia

See under Continental South East Region.

Czech Republic

In Czech Republic both November and December were quite mild moths. The cold winter (with a lot of snow and ice) started on January and continued till the mid of March. The January average temperature was minus 4.9°C which is about 4.1°C lower than the long-term average. Due to continuing economic crises the consumption of electricity (for the duration of all winter 200/2010) was approximately on the same low level as in previous winter period. During November 2009 (especially on 18th November and from 23rd to 28th November) the Czech transmission grid didn't fulfill the "N-1" criteria in many hours. The main reason was the overloading of lines caused by high production in wind mills in Germany especially in VE-T area. The most affected lines were as follows: V445, V446 (both tie-lines Hradec CZ – Röhrsdorf VE-T) and V412 (internal line Hradec – Řeporyje). To reduce possible problems ČEPS had to use the existing "ČEPS – ČEZ redispatching agreement" on 18th November. This agreement allows changing production diagrams of ČEZ units in cases of emergency. ČEPS also had to change the grid topology in all days mentioned above. During January 2010 (especially from 10th to 26th) large icing were observed on many ČEPS transmission lines. To solve these situation ČEPS had to switch off all affected lines. No restriction of consumption or production was recorded.

Germany

See under North Sea Region.

Hungary

In Hungary compared to the previous year, winter of 2009/10 was lower temperature and much more snow. From October 2009 to December 2009 the demand was lower but from January

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2010 to March 2010 it was higher compared to the previous year. No unexpected situation happened. The needed import was available at every time. Availability of generation capacity was good through the whole winter period. Demand was lower in the first part of the period, but it was within the expectations after January, 2010. Operation of the transmission grid was according to the plans, harmonised with the other TSOs of the region. Import was higher than planned (in December the total import was an average of 600 MW in peak). There was no problem with the availability. Export-import activity of the market players is mainly a price issue. However, availability of cross-border capacities may be an issue on some borders. Compared to previous years, ancillary services are involving more reserve in the down direction from 1 January, 2010. This will increase controllability of the system.

Poland

See under Baltic Sea Region.

Romania

In Romania the winter was very cold and some unexpected events occurred between 16th December and 20th December 2009 in the Romanian Power System with no effect on security of the neighboring systems.

During this time interval under extreme winter conditions (white frost and strong winds) four 400 kV lines tripped one by one due to active conductor breakages.

As a consequence the south-eastern part of the Romanian Power System was isolated. The two units of NPP Cernavoda were tripped safely in house load operation. Remedial actions were taken with the purpose of resynchronisation. During this event the Romanian power system kept the normal synchronous operation with the interconnected Continental European Network.

Slovak Republic

In Slovak Republic, during the whole winter period, no critical situation or unusual event in the power system occurred. The operation was secure and reliable. Months December and January were colder than in the winter before and in March weather was warmer. Totally the weather conditions were similar with winter before, the average temperature from December to March was 1.2 °C (1.4 °C winter before). In December, the consumption decreased (-2.4%) and copied situation of the year 2009, but from January 2010 there is a small increase of consumption compared to 2009. During the winter period there was the peak 4246 MW in the 4th week of 2010 (predicted monthly peak 4160 MW) and it was 2.8% higher than in January 2009. Neither weather nor increase of consumption had any impact on reliability of the power system operation. There was no significant lost of production during the reported period.

Slovenia

See under Continental Central South Region.

ISOLATED SYSTEMS

Cyprus

The winter time was mild in Cyprus. At the day of the winter peak demand the temperature varied from 1.25ºC to 9.25ºC with a weighted average temperature of 3.93ºC to 10.36ºC. No risk occurred during the winter. Stressed periods for system adequacy generally occurred during the summer period.

Unexpected situation happened in the morning of 11th December 2009, when the disconnection of the system backbone power line due to the disconnection of three power station generators caused a load rejection of 30% of the total load of the system. The restoration was taken in less than 40 minutes.

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The most remarkable event was the commissioning of a Combined Cycle Power Plant of 220MW in November 2009 that was available during the winter period.

Iceland

No unusual or significant system events or conditions occurred during the winter 2010.

ADDITIONAL CONTRIBUTING COUNTRIES

Albania

During last winter the climatic conditions were milder in comparison to the forecasted levels. December was warmer and precipitation levels above normal limits with positive effects on hydro power. The most important events occurred during last winter was a major disturbance on 23th February 2010. Under normal system operation Albania exports around 200 MW. Due to bad weather conditions in one of the main hydro power plants, two units were disconnected with consequent disconnection of the 220 kV North - South transmission. As a consequence the special protection scheme related to the Albanian interconnection lines triggered and load shedding was activated. The disturbance was observed and recorded within the European System without effects on the operation of the neighboring TSOs.

The high inflows during last winter showed limitations in available transmission capacity from north to south. The situation is expected to improve after the commissioning at the end of 2010 of the new Podgorica-Tirana-Elbasan line, 400 kV and the implementation of the enhancement of the internal 220 kV North and South rings.

Ukraine West

No information available

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4. SUMMER OUTLOOK 2010

4.1 Main Results – Risk Factors

There are a number of key factors which are likely to affect the balance between demand and supply when preparing the short term outlook reports on system adequacy. These factors rest on the information made available by TSOs and include in particular the following:

- **Temperatures,** which influence the level of the load;
- **Precipitation levels** affecting hydro generation availability in particular as a consequence of the winter rainfall.

Particular attention has been given since the year 2008 to both effects and to the drop in electricity demand due to **the economic and financial crisis. This attention will still continue for the year 2010.**

Other factors having effects on the generation side are in particular:

- **Outages of large units** (in particular thermal and nuclear plants), including of course overhauls and unplanned unavailability, but also extension of the duration of planned outages;
- **Hydrologic conditions**, with low inflows leading to reduced generation by hydro units;
- Market conditions of fuels, especially **gas**, with possible effects 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 in wind generation and wind capacity**.**
- **Generation-load imbalances in other countries** of the same interconnected block, which can lead to unforeseen flows through the country.

4.2 Main Features

The most stressed periods occur generally at peak load.
Under normal conditions high risk periods have been considered as to be follows:

- The second half of June, July, and the first half of August (i.e. weeks 28–30 and 32) in Greece
- Weeks 24, 26, 28–30, 37–38, in Hungary, which is dependent upon imports.

Under severe weather conditions, in the case of high temperatures and heat waves, the high risk periods are reported as follows:

- The whole summer period, except August, in France
- Weeks 30 and 31 in Cyprus
- The second half of June, July, and the first half of August (i.e. weeks 28-30 and 32) in Greece

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- The whole summer period in Hungary, which is dependent upon imports
- Week 35 in Italy
- Weeks from 27 to 39 in Montenegro because of the expectation of additional need for imports
- June–July in Poland
- Weeks 27 and 34 in Portugal, when remaining capacity is at the minimum level but no risk is expected for the system
- Weeks from 36 to 39 in the Slovak Republic.

More detailed information is reported on a country basis in Appendix 2.

4.3 Comments by Regions

NORTH SEA REGION

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

The North Sea region analysis for the coming summer 2010 is positive assuming standard conditions. In general, daily peak load values in this region are expected to be at the same level or slightly higher than those in 2009. Under normal conditions, all countries feel comfortable regarding the generation-load balances they are facing. Due to its grid structure, CREOS will anyhow have to rely on imports to cover demand. In addition, SONI might have to rely on imports from Great Britain and/or Ireland to cover its peak demand.

In Germany problems on the transmission network might temporarily appear due to weather conditions and increased load flows due to wind power.

Under severe or extreme conditions, some additional risks occur:

- High wind situations might put several parts of Germany under stress. The continuously rising number of wind power plants intensifies the risk of n-1 violations and overloads within the German grids.
- Long periods of dry and hot weather threaten to cause cooling problems for thermal plants in the Netherlands, Belgium, France, and Germany. These might limit thermal units' capacities, thereby limiting the generation-load balances from countries. As a result, in June, July, and September France might have to rely on imports of close to 4000 MW to cover the minimum required margin under these circumstances. This could concern all neighboring countries in the region. In the case of extreme heat wave and thermal constraints on the power plants in northern France, the availability of imports from Belgium to Germany could be slightly reduced.
- In August 2010, the nuclear power plant of Unterweser will be temporarily out of service for maintenance (expected time frame: August 7–23, 2010). During this period, low wind generation and high energy demand in the Scandinavian countries (e.g. resulting from a dry spell) could together lead to high loads especially on the Wolmirstedt–Helmstedt tie-line between Transpower and 50Hertz Transmission. Special topological measures are already prepared to reduce the load.

BALTIC SEA REGION

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

Under normal conditions no critical events are expected. Several countries have assessed the risk of critical events under conditions such as maintainance of central power plants or planned

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outages of interconnectors. All countries except Poland expect a surplus of energy all summer. In the second part of the summer Poland will have an energy deficiency.

There could be increased load flows in the north of Germany during periods with high wind generation.

CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

Under normal conditions no particular problem in the balance between demand and supply is expected in the Iberian System. In Portugal the generating capacity increased with respect to the previous summer and the system is considered adequate even under severe conditions. In Spain generation adequacy is good even considering very low wind generation, high drought conditions and a very high thermal forced outage rate.

In France under normal conditions no problem is expected. Under severe conditions in the case of high temperatures or heat waves margins would be reduced, stressing the situation for whole summer time except August. The availability of imports should not be at risk for France in the case of potential need for imports (close to 4000 MW in June, July, and September) under severe conditions.

CONTINENTAL CENTRAL SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

Under normal conditions no supply/demand balance problems are expected in the region.

This is also due to moderated peak load forecasts due to the economic crisis.

In the case of severe weather conditions Slovenia expects problems at peak load if extreme low hydrology and reduction of interconnection capacity by neighboring TSOs occur.

In Italy, the situation in Sicily (one of the main islands) still requires some consideration because of the forecasted tight margins.

In France, in the case of high temperatures or heat wave, margins would be reduced and the situation could be stressed during the whole period, except in August. In June, July, and September a potential request for imports close to 4000 MW necessary to cover minimum required margins could concern all neighboring countries, including Italy and Switzerland.

Under severe conditions, the most stressed periods are forecasted for week 35 in Italy and during the whole summer period except August in France. In Germany, July and August are forecasted to be the most critical, when special attention is expected because the nuclear power plant of Unterweser will be temporarily out of service for maintenance. Problems on the German transmission network might temporarily appear due to weather conditions and increased load flows in the north of Germany during periods of high wind generation. Problems may also arise from large transports due to wind power feed in from the North and high load flows towards France/Switzerland.

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, Bulgaria, Croatia, FYROM, Italy, Slovenia, Montenegro, the Republic of Serbia, and Romania do not expect problems with system adequacy during the coming summer under normal conditions.

Bosnia-Herzegovina, Bulgaria, and Croatia do not rely on imports to cover the load. FYROM depends upon imports of energy to reach an adequate balance between supply and demand but

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no specific problem is expected. Imports are forecasted to be lower than in the previous year because of the good hydrology conditions during the winter, the decrease in demand from eligible customers and the entry into operation of a new combined gas power plant which will take place in July. Hungary expects remaining capacity to be negative in July and close to zero for the whole summer period. Under severe conditions Hungary will rely upon imports to cover demand.

Greece expects a high load during the whole summer and in particular between June 20 and August 25 because of high temperatures.

In comparison to the previous summer, Greece can count on more favorable hydro reservoirs due to increased rainfall. Moreover the commissioning period of a new gas unit of 430 MW will start.

No shortages in transmission capacity are expected during the summer period except in case of unexpected fires. The availability of interconnections is critical in particular the interconnections with Bulgaria and the HVDC cable with Italy.

It is estimated that the trial period of parallel operation of the Turkish system with the European system through the Greek and Bulgarian grids will start at the beginning of the summer period.

In case of severe conditions Montenegro would need imports from week 27 to 39.

CONTINENTAL CENTRAL EAST

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

Under normal conditions no particular problem in the balance between demand and supply is expected in the Central East region. Hungary depends upon imports to reach adequate balance even under normal conditions, with negative remaining capacity expected in July.

In the case of extreme low hydrology and reduction of interconnection capacity by neighboring TSOs, problems could be expected at peak load in Slovenia.

Under severe conditions generation capacity may be inadequate in some countries, such as Slovak Republic.

The most critical periods are weeks 36 to 39 in the Slovak Republic and whole summer period in Hungary, in particular in week 28 to 30.

During the summer period, the wind power generation in Hungary and Austria can change the level of imports from day to day.

In Poland in late August and September the intervention reserve in pumped storage can be used by the TSOs to cover peak demand. Severe conditions are expected mainly in June and July with a possible increase of the load and a higher level of unavailability of generation plants.

ISOLATED SYSTEMS

Cyprus

Under normal conditions no supply/demand balance problems are foreseen. The installed capacity is 1455 MW and the maximum demand under normal weather conditions is expected to increase to 1105 MW and in the case of extended heat wave to 1145 MW. Therefore no major problems are foreseen for this summer.

In case of problems, a load reduction scheme will be put in operation. The most critical periods are regarded as weeks 30 and 31, when the operating margin is at its minimum values and depends on the weather forecasts.

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Iceland

The generation capacity is expected to be adequate to meet peak demand under both normal and severe conditions. Landsnet does not report any particular problems in the isolated Icelandic power system.

The ongoing volcanic activity in Eyjafjallajokull is not expected to cause any disturbances in the production or transmission of electrical power. There are no power plants or transmission lines in the area of impact. Transmission lines are not in danger with respect to floods or lava. The ash fallout is limited to an area of only about 10-15 km around the volcano. However, the degree of alertness at Landsnet has been raised.

ADDITIONAL CONTRIBUTING COUNTRIES

Albania

Under normal conditions no supply demand problems are foreseen.

The year 2010 started with an adequate situation due to copious inflows at Drin River Cascade which is the main hydro producer of the country, producing about 90% of all the electricity generated.

Although most of the transmission lines and generation units are under maintenance during the summer, no specific weeks or time periods have been identified regarded as high risk.

The remaining capacity even under severe conditions is positive, and no dependency upon imports of electricity from neighboring countries occurs, although there are firm import contracts of about 200 MWh/h.

Ukraine West

No problems are expected in the system this summer.

There are adequate generation and demand balances without dependency upon imports of electricity from neighboring countries.

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5. LESSONS LEARNT

The main learning points experienced via ENTSO-E reporting and outlooks can be summarized as follows:

- Attention should be paid to economic conditions, which are of importance for system adequacy forecasts as they have a significant impact on the load; nearly all TSOs underline the difficulty of making accurate forecasts of generation demand patterns in the current circumstances due to uncertainties about the recovery of economic activity and its impacts on the electricity demand.
- The persistent negative trend of electricity consumption may still necessitate regulatory mitigation mechanisms through which the impact on transmission businesses is limited in order to avoid affecting planned investments in network development.
- Attention should be paid to the sensitivity of the load to high temperatures and also the availability of the generation fleet (i.e. nuclear).
- Attention should be paid to the increase in wind generation capacity and its effects on the network constraints.
- Efficient coordination with gas operators and market players is needed (especially in case of stress on gas supply).
- The coordination of TSOs in “special cases” is important and market-related mitigation measures may be needed. In addition, some neighboring networks may be affected by loop flows and even congestion, underlining the need for good cross-border coordination.
- Possible generation reductions (e.g. reduction in lower hydro generation due to drought, reduction in available thermal generation due to problems with cooling water or increased level of outages) should be considered when assessing the summer outlook as they may have a significant impact on the generation-load balance.
- Common mode failures of generation may occur (e.g. simultaneous loss of several units at the same time due to climatic conditions).
- In some countries grid transmission capacity may also be an issue in the case of heat wave.
- The forthcoming participation of Turkey in the South Eastern European Market of Electricity is expected with great interest.
- Dependence on data available to external parties is considered a great concern for some TSOs when performing short term adequacy reports.
- The ongoing volcanic activity in Eyjafjallajokull is not expected to cause any disturbances in production or transmission of electrical power.

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6. APPENDICES

6.1 Appendix 1: Detailed Individual Country Responses to Winter Review 2009/2010

ALBANIA

AUSTRIA

BELGIUM

BOSNIA & HERZEGOVINA

BULGARIA

CROATIA

CYPRUS

CZECH REPUBLIC

DENMARK

ESTONIA

FINLAND

FORMER YUGOSLAV REPUBLIC OF MACEDONIA (FYROM)

FRANCE

GERMANY

GREAT BRITAIN

GREECE

HUNGARY

ICELAND

IRELAND

ITALY

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LATVIA

LITHUANIA

LUXEMBOURG

MONTENEGRO

NETHERLANDS

NORTHERN IRELAND

NORWAY

POLAND

PORTUGAL

REPUBLIC OF SERBIA

ROMANIA

SLOVAK REPUBLIC

SLOVENIA

SPAIN

SWEDEN

SWITZERLAND

UKRAINE-WEST

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ALBANIA

The year 2009 ended with December being warmer and milder than predicted with an average temperature of about 12ºC (normal is 7ºC) and precipitation levels above normal limits. The year 2010 started out as forecasted with lower temperatures compared with December 2009, but the average temperature and precipitation level in the first three months were higher than the average ones.

Monthly inflows at Fierza HPP, versus multiyear average inflows (m3/s) are shown at the table:

Month	Measured inflows	Predicted inflows
December 2009	340	260
January 2010	438	250
February 2010	585	270
March 2010	484	280

In such conditions with big inflows at Drin River Cascade, there has been spilling water started from last week of December and continued time to time till middle of April. No unplanned overhauls or maintenance works occurred on the generation side. Generating units have been all in operation and no any load shedding are applied. The peak loads in winter months in MW were as follows:

Month	Measured peak load	Predicted peak load
December 2009	1280	1360
January 2010	1340	1380
February 2010	1330	1350
March 2010	1230	1240

Interconnectors were mostly used for export.

Specific Events Occurred during the winter 2009/2010

Major Disturbance on February 23th 2010.

Albania exports around 200 MW, normal system operation.

At 21:09 h due to bad weather conditions and corresponding lightning strokes in one of the main hydro power plants of Drin Cascade, two units were disconnected.

Subsequently an important 220 kV North-South transmission line was disconnected.

Interconnection Vau Deja-Podgorica was disconnected and Fierza-Prinzren was overloaded and finally disconnected.

The special protection scheme related to the Albanian interconnection lines triggered and consequently activated load shedding.

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Due to following overloading of the second Vau Deja – Tirana line additional load shedding was activated and corresponding load was shed.

The above load shedding caused an excess power flow of 600 MW directed towards Greece. Consequently the interconnector 400 kV Zemblak-Kardia opened.

Due to the extreme resulting power surplus in the remaining system, frequency increase over 52 Hz. The power plant overspeed protection tripped all units and almost the complete Albanian system blacked out at 21:10.

Restoration started immediately and was finished within 40 minutes.

Conclusions

The disturbance was observed and recorded within the whole CE system but doesn't affected the operation of the neighboring TSOs.

The special protection scheme operated in the way it was designed but it finally leads to a blackout of the Albanian system. The SPS was set-up only for import situation; on 23th of February Albania was in export situation.

OST is reviewing the SPS logic in order to cover also the export situation and consequently improve this system.

Restoration plan was proved in practice to be efficient and effective; the resulted system restoration time was good enough.

Lessons Learnt for winter 2010-2011

North-South Transmission System Capacity:

The increase of internal generation from HPPs ,due to high inflows this winter, shows the limitations in available transmission capacity North to South that currently represents the main bottleneck, this situation is expected to be improved after:

Commissioning (end of 2010) of the new Podgorica-Tirana-Elbasan line, 400 kV

Implementation of the enhancement of the internal 220 KV North and South rings. Related projects are in progress.

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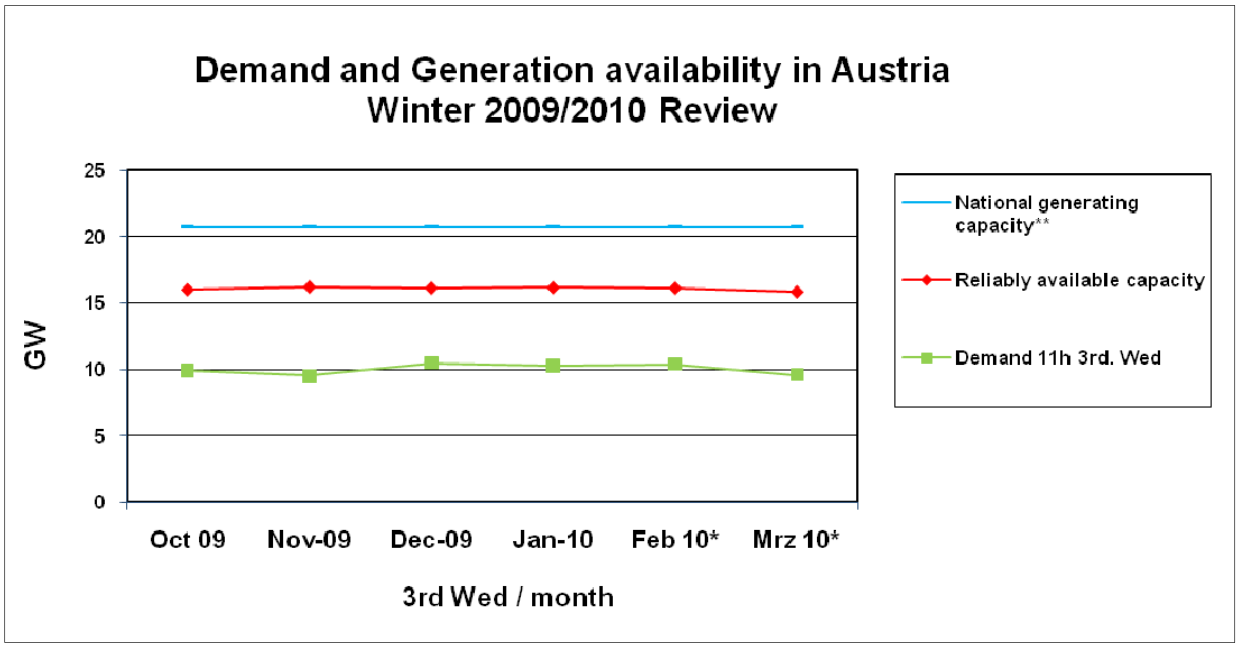
AUSTRIA



General comment on winter conditions:

Winter 2009/2010 was colder compared to winter 2008/2009. This could be the reason for the peak loads which were higher than expected.

During the first half of the winter there was more rainfall, and in the second half less compared to the previous winter. No extreme weather conditions occurred.

Review of the situation by monthly period:

No critical events concerning the Austrian power grid occurred in Winter 2009/2010. After a sharp decrease of the total consumption of electric energy in the previous year as a consequence of the financial crisis a slight increase was recognized at the end 2009.

Demand and Generation balance:

Due to the high share of pump storage power plants the reliably available capacity is above demand.

Critical situation when applying second system:

In winter 2009/2010 the 380 kV circuit Wien Süd Ost (AT) – Szombathely (HU) has been installed. During the construction phase the disconnection of three 380 kV circuits on two days were needed. To cope with this situation grid and redispatch measures in the region of Vienna had to be realized. The additional circuit Wien Süd Ost (AT) – Szombathely (HU) will be commissioned by 3 May 2010.

BELGIUM

General comment on winter conditions

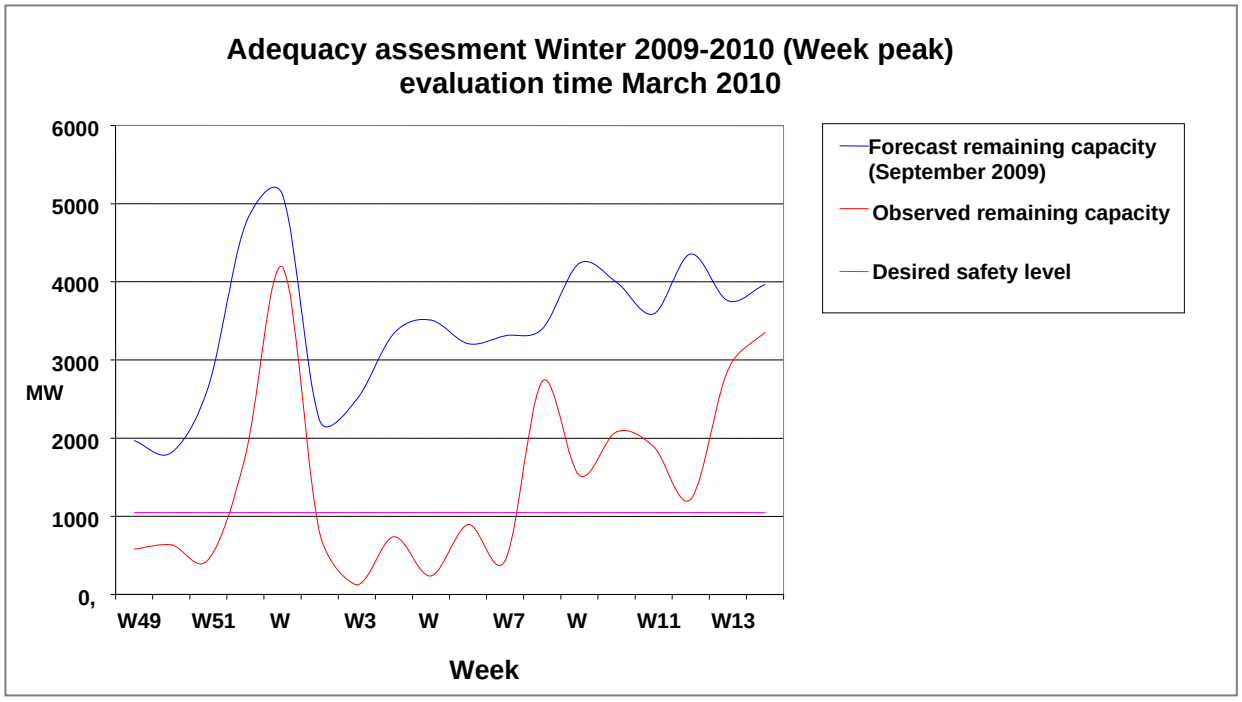
The adequacy forecast study "winter 2009-2010" carried out in September 2009 for the Elia control area, which comprises Belgium and the SOTEL area (a part of the G-D of Luxembourg), revealed that the desired safety level of 1050 MW for the generation-load balance would be reached during the entire winter period 2009-2010. This analysis remained valid even when assuming severe temperature conditions.

The two main risk factors for the Elia grid, potentially jeopardizing the positive winter adequacy assessment that were identified during this study were:

- a generation-demand imbalance for the whole of the ENTSO-E North Sea region;
- unplanned outages at the main generation plants in Belgium.

In reality, the desired safety level of 1050 MW for the generation-load balance was not attained during the peaks of weeks 49 till 50 of 2009 and the peaks of weeks 2 till 7 of 2010. In week 49 of 2009 and weeks 3 till 7 of 2010 this was mainly caused by the unavailability of a nuclear unit. The deviation between the forecasted and the observed unavailable capacity of power units ranged from an additional unavailable capacity of 821 MW in week 51 of 2009 up to 2451 MW in week 7 of 2010.

Figure 1 gives an overview of the forecasted remaining capacity (evaluation time September 2009) and the observed remaining capacity for the week peaks of winter 2009-2010.



Elia did not expect any congestion problems on its grid for winter 2009-2010 due to the minimization of planned outages of international lines during critical winter periods. During the first semester of 2010, repair works were nevertheless needed in the internal grid so that at certain moments the simultaneous import capacity was reduced with approximately 130 MW. Furthermore atypical winter loop flows from the South to the North causing congestion problems in the Elia grid have been less problematic since the commissioning of a phase shifter in the Zandvliet substation and two phase shifters in the Van Eyck substation as they allow a better management of this type of loop flows.

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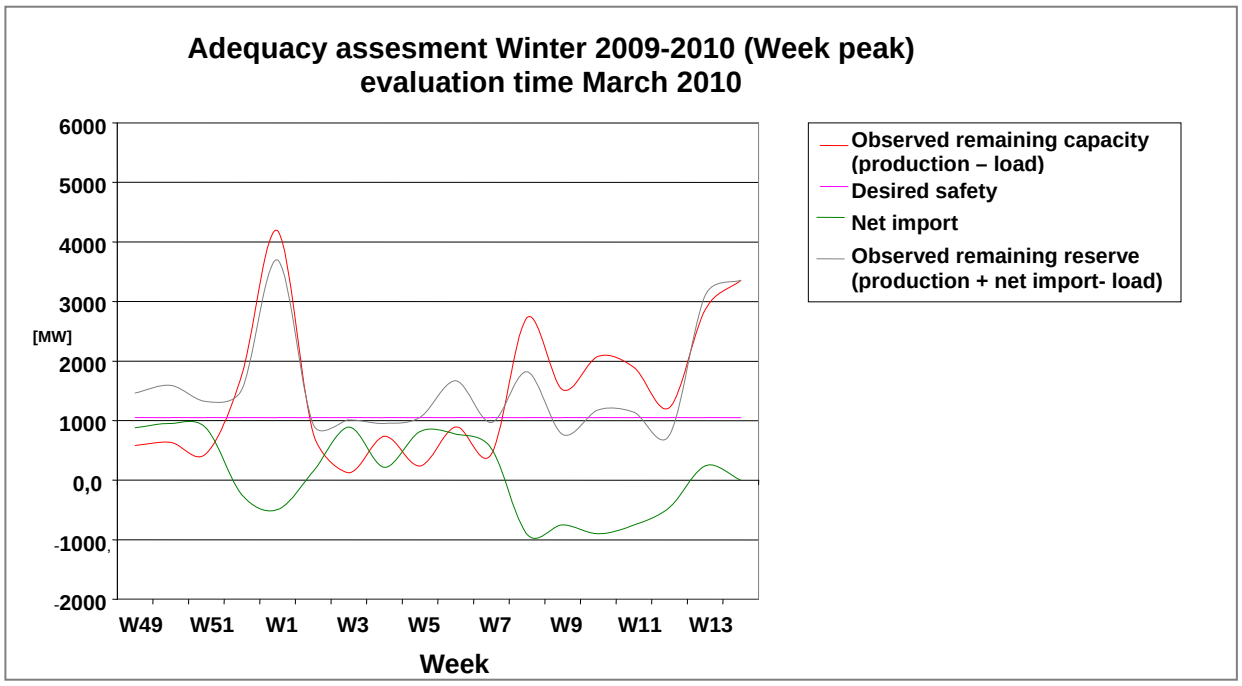
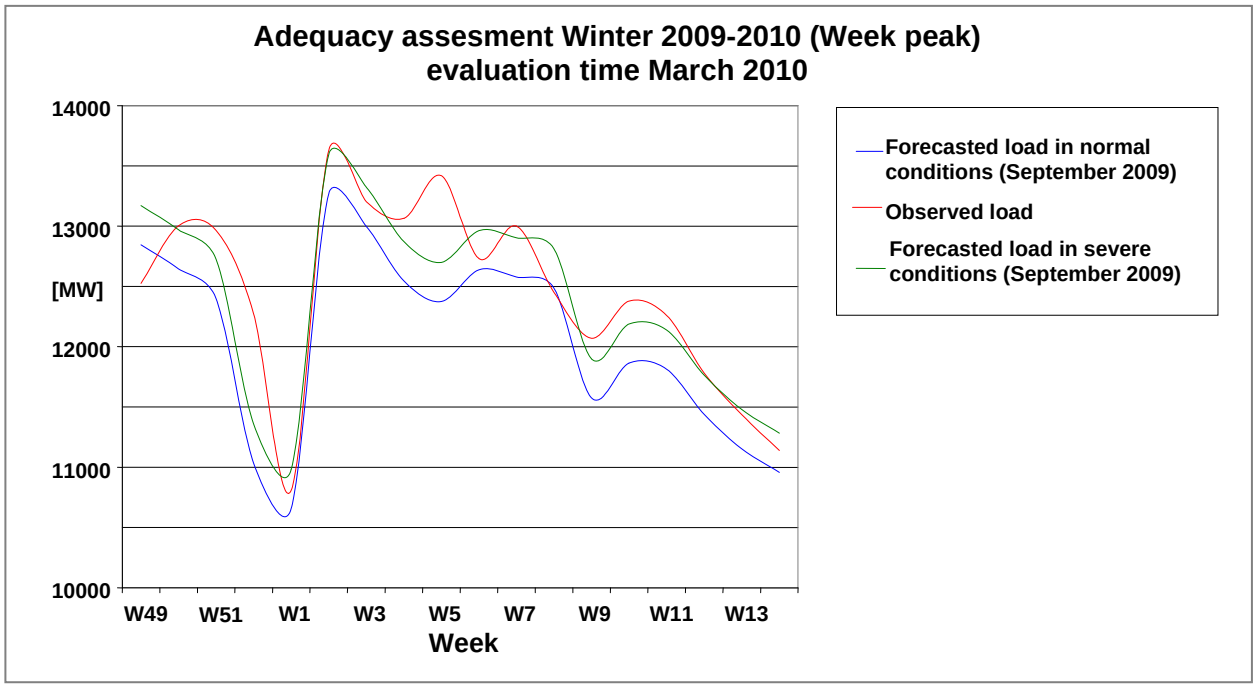
In general, the system adequacy for winter 2009-2010 was positive, as unforeseen unavailability of power units was compensated by a net import within the North Sea region during the weeks in which the desired safety level was not obtained. This is illustrated by Figure 2.



Demand

The forecasted demand levels took into account normal temperature conditions and severe conditions. The average temperature during winter 2009-2010 was on average much lower than the decennial average winter temperature (2000-2009). The observed load should therefore be compared with the forecasted load under severe conditions (see Figure 3).

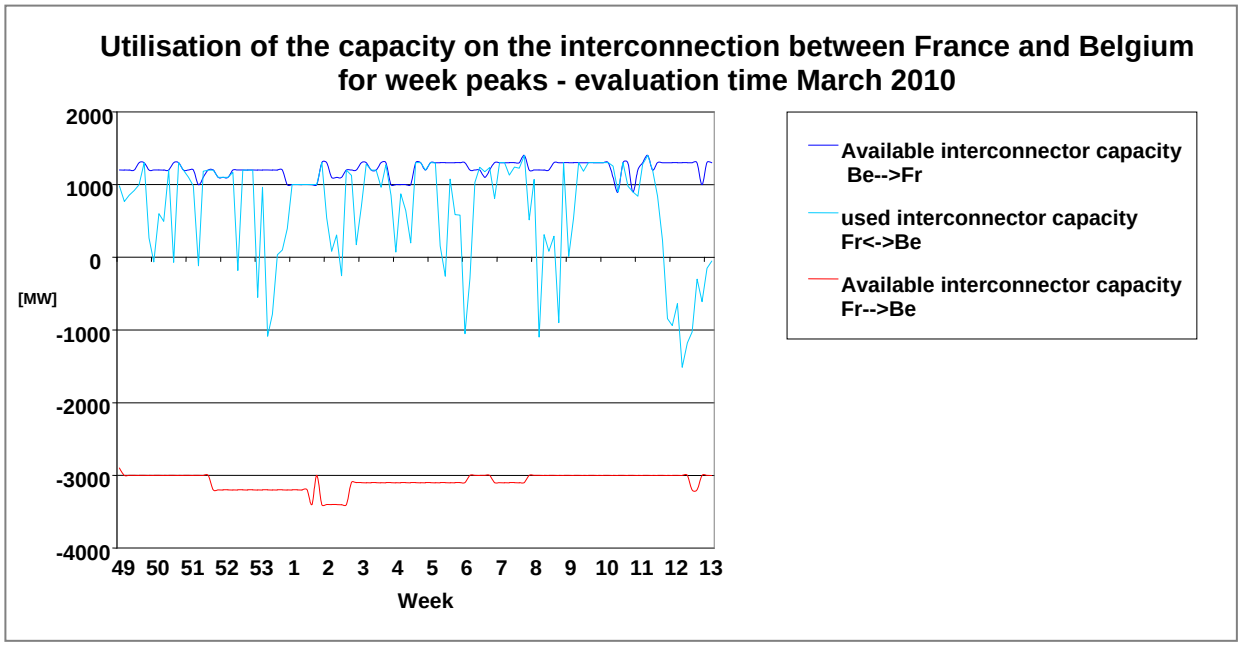


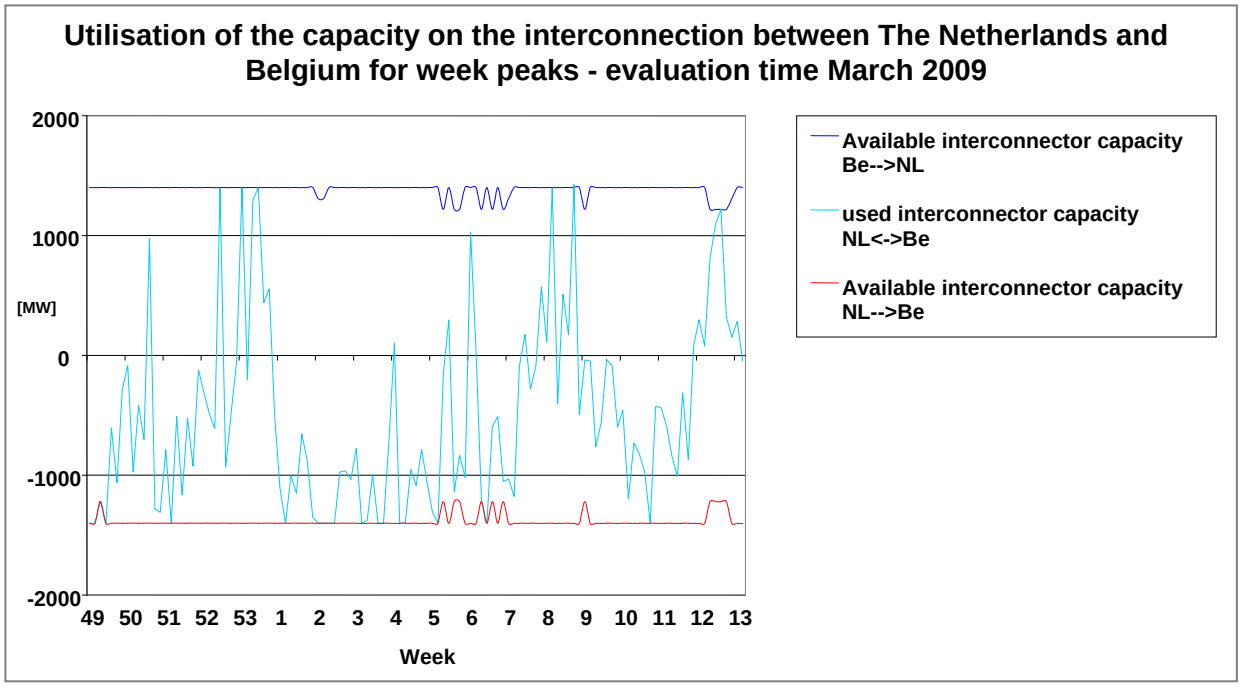
Transmission infrastructures

In line with planning, the simultaneous import capacity was reduced with approximately 130 MW during a number of days in February and March 2010.

Use of interconnections

Figure 4 and Figure 5 give an indication of the utilisation of the capacity of the interconnection between France and Belgium and between the Netherlands and Belgium during winter 2009-2010. In order to assess the utilisation of an interconnection the available interconnection capacity (based on the assessment of the day before) is compared to the nominated interconnection capacity (based on the assessment of the day before). Figures 4 and 5 illustrate that during winter 2009-2010, the interconnection between France and Belgium (Figure 4) was used much more in the direction of France during the winter week peaks and that the interconnection between the Netherlands and Belgium (Figure 5) was used most of the time in the direction towards Belgium during the winter peaks.





Summary of market conditions

As a fall-out of the economic crisis, November 2009 was characterized by lower than usual demand, causing low electricity prices compared to the previous winters. In January 2010, residential energy demand increased due to the cold weather, somewhat supporting electricity prices.

Due to unavailability of French production capacity combined with a cold winter, Belgium was a net exporter of electricity to France, contrary to what happened in winter times the previous years.

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BOSNIA & HERZEGOVINA

No comment submitted.

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BULGARIA

Compared with 2009 the decrease of the monthly consumptions (after reducing the values to normal

temperatures of each month) for January, February and March 2010 is as follows: January (-5.1%), February (-1.3%), March (-3.2%) The decrease in December 2009 compared to December 2008 is -5.4%. The monthly peak loads in the period were as follows: December 2009 – 6525 MW, January 2010 – 7270 MW, February 2010 – 6673 MW, March 2010 – 6438 MW. The average monthly temperatures were: December 2010 – (+3.8°C)', January 2010 – (+ 0.3°C), February 2010 – (+2.7°C), March 2010 – (+6.1°C), while the normal average temperatures for the same month are: December – (+1.8 °C), January – (-0.1°C), February – (+2.3°C), March – (+6.5°C).

Due to the global financial and economic crisis and the resulting impact to Bulgaria the electricity demand in the country continued to decrease. There were no stressing periods of the system adequacy during the months of analysis.

The coldest day in Bulgaria in the last winter period was on 26th January 2010 (Tuesday). The weighted temperatures of the country were as follows: T_{min} = -15.6°C, T_{ave} = -10.6°C, T_{max} = -5.6°C. The average temperature was with 10.3°C below the normal. On the same day, the peak load – 7221 MW occurred. The generation mix at that hour was as follows: Nuclear – 2075 MW. Thermal – 4255 MW, Hydro – 1819 MW, Wind – 19 MW. The export was 898 MW.

There were no significant problems with generation capacities in the period. Failure rates were as expected. Water levels in the big reservoirs were slightly above target levels and hydro plants experienced normal operation in peak zone of the daily load curve.

The demand in the period was within the confidence interval of the forecast. The load sensitivity to temperature changes is estimated to be 90 MW/°C on daily average basis. During the whole period Bulgaria exported electricity to neighboring countries.

There were no critical outages in the transmission network.

During the whole period Bulgaria exported electricity to neighboring countries. There were no unplanned outages of all interconnection lines.

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CROATIA

During the winter period 2009/2010 the operation of Croatian power system was secure and reliable.

As it was expected, due to the stagnation of economical growth the winter consumption for the season 2009/2010 was 1,5% lower then previous winter season 2008/2009 and the weekly peak loads were approximately similar to last winter season.

The absolute peak load in this winter period (3120 MW) was 3,7% higher in comparison to the winter 2008/2009 due to severe weather conditions in that paticular period.

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CYPRUS

General comments

Climatic conditions of Cyprus winter are considered mild. At the day of the winter peak demand the temperature varied from 1.25°C to 9.25°C with a weighted average temperature of 3.93°C to 10.36°C.

No risks actually occurred.

At the morning hours of 11th December 2009, during lightning activity, a system backbone power line was disconnected resulting to a disconnection of three power station generators, with a load rejection of 30% of the total load of the whole system. The Under Frequency Load Rejection Scheme operated successfully restoring the generation and demand balance. The National Energy Control Central restored electrification to all disconnected consumers in less than 40 minutes.

External factors on demand have been identified in prices of electricity which depend on the international prices on the crude oil.

For Cyprus stressed periods for system adequacy generally occur during summer period.

Review of the situation

No critical period occurred during Winter 2009/ 2010 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 was not at risk even with loss of the largest power unit of 130MW. A Combined Cycle Power Plant of 220MW was commissioned at 11/11/2009 and was available during the winter period.

A provisional overhaul schedule of the power units was communicated to TSO of Cyprus by the Electricity Authority of Cyprus and the final schedule was approved by the TSO, having taken into consideration the load forecast carried out by the TSO. The maintenance program was executed successfully during this period without any problems on the system operation.

Demand

It is mentioned that the maximum demand in Cyprus occurs during the summer period and therefore no significant problems arise during winter time. The recorded maximum demand for the week 4 of 2010 was 927 MW whereas the predicted maximum demand value was 938 MW. Generally the wither 2009-2010 had no capacity availability problems.

Transmission

The network was reinforced by a total 23,26km of Underground Cables 132kV, 0,03km of Overhead lines 132kV and 467MW Transformer capacity.

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

Although the Market Rules in the Cyprus Electricity Market are applied, no competitors have entered the market yet.

Lessons Learnt for Winter 2010-2011

In October 2010 the first wind park of capacity 82,5 MW is expected to enter the generation system. TSO is studying the availability of adequate spinning reserve of the system regarding the entrance of this plant.

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CZECH REPUBLIC

In Czech Republic both November and December were quite mild moths. The real winter (with a lot of snow and ice) started in January and continued till the mid of March. For example the January average temperature was minus 4.9°C, which is about 4.1°C lower than the long-term average.

Due to continuing economic crises the consumption of electricity (for the duration of all winter 2009/2010) was approximately on the same low level as in previous winter period.

During November 2009 (especially on 18th November and from 23rd to 28th November) the Czech transmission grid did not fulfil the N-1 criteria in many hours. The main reason was the overloading of lines caused by high production in wind mills in Germany especially in VE-T area. The most affected lines were as follows: V445, V446 (both tie-lines Hradec CZ – Röhrsdorf VE-T) and V412 (internal line Hradec – Řeporyje). To reduce possible problems ČEPS had to use the existing "ČEPS – ČEZ redispatching agreement" on 18th November. This agreement allows changing production diagrams of ČEZ units in cases of emergency. ČEPS also had to change the grid topology in all days mentioned above.

During January 2010 (especially from 10th to 26th) substantial iced coating was observed on many ČEPS transmission lines. To solve these situation ČEPS had to switch off all affected lines. No restriction of consumption or production was recorded.

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DENMARK

A normal winter 2009/2010 was expected with a positive power balance. The winter was, colder than what has been seen in a long time. However, the Danish security of power supply was not affected.

There were no critical outages in the transmission system.

On the marked site, we had very high prices - especially in Eastern Denmark. The reasons for this were:

- Fault on KontiSkan (DK1 - Sweden) from October 16, 2009 to November 1,.2010 (expected).
- Low production in Sweden due to outage on Swedish nuclear power.
- Cold Winter with high consumption.
- Very high prices in Sweden.

The import from Germany was higher than expected.

Because of the high prices, we experienced periods in Eastern Denmark, where all production units were producing power. This occurred due to marked situations and did not influence Energinet.dk's access to power reserves.

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ESTONIA

The year 2009 ended with December being the coldest then predicted with an average temperature of –3.9ºC (normal -2.8ºC, lowest -25.2ºC) and with records of precipitation. The year 2010 started out as assumed with low temperatures in January and reached minimum at 24.01.2010. The average temperature and precipitation level of January was higher than normal, average temperature was in range -6.9ºC till –14.4ºC (normal -5.5ºC, lowest -32.4 ºC), precipitation level 16 - 35 mm (average 28 - 49 mm). February weather condition was in normal limits with average temperature in interval -5,5ºC till - -9.2ºC (normal -5.7 ºC, lowest -22.9 ºC). March was the coldest of times. The average temperature of March was -3.5ºC (normal -2.1 ºC). Our domestic generation capacity was sufficient to cover peak loads during the winter season. The economic downturn and resulting lower production output at industrial enterprises have had a negative impact to electricity consumption. However the outdoor temperature was colder than average, which exerted a positive impact. Despite economic recession, decreasing of production volume and policy of economy electricity consumption increased compared to the same period last year approximately 2%-3%. The most appreciable difference between expected and actual values occurs in December/January.

December was coldest than predicted and with records of precipitation that cased the appreciable difference between expected and actual values of demands. Due to a long period of cold weather the level of generation was higher than expected. At the same time the planned and unplanned generation overhaul and the availability of fuel for power plants did not cause major problems to security of supply. The wind conditions also did not cause problems for system operations since the capacity of wind power connected to the grid is not very high yet. The problems caused during a day by tripping of generation units were solved with regulation power, although at the times the capacity for regulation was very limited and the prices were high.

The peak loads by winter months was as follow:

- forecasted of December peak load 1320MW, actually occurs 1510MW,
- forecasted of January peak load 1440MW, actually occurs 1585MW,
- forecasted of February peak load 1450MW, actually occurs 1400MW,
- forecasted of March peak load 1420MW, actually occurs 1306MW.

The most severe unplanned outages were two tripping of EstLink HVDC connection between Estonia and Finland (20.12.2009 and 14.02.2010), but since all these two events lasted only few hours, their effect on security of supply was not very serious.

Despite of closure of Ignalina nuclear power plant in Lithuania, interconnection (EstLink) was mostly used for exports.

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FINLAND

General comments

The cold period in winter 2009/2010 was exceptionally long in Finland. The lowest temperatures were not exceptionally low, however. The reservoir contents in Finland were remarkably lower than long term average.

Consumption and demand

The economic recession has resulted in substantial reduction of the electricity consumption. In 2009 total consumption was more than 7% lower compared to 2008. The monthly consumption in winter months November 2009 to February 2010 was 9 to 12% higher than in previous year, however. This is partly due to economic recovery but mainly due to cold weather.

Monthly peak demand in December 2009 to February 2010 was higher than a year before. Anyhow, the all winter peak of about 14450 MW (one hour average) in January 2010 was remarkably lower than the all time high peak of about 14900 MW in 2007.

The winter peak exceeded the estimated 14100 MW. The difference is explained by unexpected long cold period and wind resulting in high heating demand and, economic recovery.

Production

The production capacity in Finland is a mixture of hydro, nuclear, CHP industrial, CHP district heating and condensing power.

Some 600 MW of generation capacity was 'mothballed' because of forecasted market conditions. The rest of generation capacity operated as planned and the reliably available capacity corresponded to estimated amount.

One unit of the production capacity based on the Power Reserve Act was once started. This capacity is reserved for securing the power balance during extreme conditions. Necessary frequency controlled and fast disturbance reserves were available the whole winter.

Interconnections

Most of the time there was electricity export to Sweden. Maximum export capacity is 1650 MW which was at times reduced due to different operational reasons. The import capacity is normally 2050 MW with reductions at times as in the export capacity. With a few exceptions the capacity was sufficient for the market needs.

Electricity imports from Russia and Estonia to Finland continued with almost full capacity (1750MW) during the whole period. Import from Estonia continued at full capacity despite the closing of Ignalina nuclear power. Maximum capacity of the link to Estonia is 350 MW. The import capacity from Russia is 1460 MW. In addition Fingrid has agreement on some frequency controlled reserve capacity on the interconnection with Russia.

Anyhow, the whole time there was net import of electricity to Finland.

Transmission network

Fingrid's system worked as planned throughout the winter period and the transmission grid did not experience any significant faults affecting the transmission capacity.

Market prices

Market prices were high often during daytime. However, exceptionally high peaks occurred on three days only:

- December 17, 2009 the price rose to 1400 Eur/MWh for two hours,
- January 8, 2010 to 1000 Eur/MWh for three hours and,
- February 24, 2010 to 1400 Eur/MWh for three hours and to 1000 Eur/MWh for four more hours.

In all these cases the price resulted in remarkable decrease of demand (demand response).

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FORMER YUGOSLAV REPUBLIC OF MACEDONIA (FYROM)

During last winter the weather conditions were good. The peak load was on 4th of January, (18h) and it was 1515 MW. The most critical period remains December and January. Imports were needed to meet our operating criteria under normal conditions. No critical unexpected events occurred during winter 2009/2010. Conditions were very close to the forecast ones. All planned repair works were completed in the accordance with the plans.

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FRANCE

General comments on winter conditions

Winter 2009/2010 was one of the coldest winter but not the worst. It was characterized by successive cold spells.

Climatic conditions have been severe with:

- four spells of cold weather (mid-December, beginning of January, mid-February and beginning of March)
- a severe storm named 'Xynthia' which happened on the last days of February.

Since mid-December, temperature has been lower than seasonal norm:

	Monthly average	Deviation from normal temperature	Deviation from the same month one year before
November	10.5 °C	+1.9°C	+2.3 °C
December	5.0 °C	-0.4 °C	+0.8 °C
January	2.0 °C	-3.1 °C	-0.7 °C
February	4.4 °C	-2.3°C	-0.5 °C
March	7.6 °C	-1.4°C	-0.5 °C

The main risk identified in the Winter Outlook report was the sensitivity of the load to low temperatures. This risk occurred during the whole winter due to low temperatures.

During cold weather observed at the beginning of February, the French consumption reached a peak at 93 080 MW on February 11, 2010 (last winter, the peak reached 92 400 MW).

In addition, some unexpected situations arose during this winter:

- December 21: a power outage affecting almost 2 million customers (about 2 400 MW) occurred in south-eastern France, following a technical incident on the transmission network.
- February 27-28: 'Xynthia' storm caused power cuts of more than 1 million customers mainly due to distribution grid and mainly in western France.

In 2009, French electricity demand fell due to the impact of the economic crisis.

The decline in demand slowed toward the beginning of this winter. Since November 2010, the electricity consumption has exceeded the level reached at the end of 2008, when the effects of the economic crisis were already visible.

The trends of the adjusted consumption (adjusted for winter climate conditions) compared with the same month of the previous winter are as follows:

- +2.1% in November
- +0.9% in December
- +1.7% in January
- +2.4% in February

- +6.1% in March

RTE's website encourages customers to take simple steps to moderate their energy demand, especially during demand peak period.

As identified in the Winter Outlook report, December and January have been the most stressed periods for system adequacy, mainly due to high level of consumption with low temperatures.

Detailed review of the most stressed periods

Low availability of the French generation fleet and high electricity consumption induced higher levels of imports in comparison with previous winter.

Globally, it should be noted that during spells of cold weather, exchanges of electricity between France and neighboring European countries remained fluid.

Regarding the load, the main issues were the successive cold spells. Climatic conditions have been severe with four cold spells from mid-December to March.

During the cold weather observed at the beginning of February, the French consumption reached a peak at 93 080 MW on February 11, 2010, above the level recorded last winter (92 400 MW on January 7, 2009).

These levels of consumption caused low voltage problems and induced risk for the security of the system especially in Western France.

As a consequence, RTE has taken some measures:

- RTE used « safety order » to avoid voltage collapse especially in Western France.
- RTE used Short Message Service (SMS) and website alert to encourage people to reduce electricity consumption at peak demand period in West and Provence-Alpes-Côte d'Azur (PACA) regions.

During the cold snap of 14 to 21 December 2009, in both the West and PACA regions, RTE observed that demand side management measures by customers led to a reduction in electricity demand estimated at between 1% and 1.5% at peak times. That is equivalent to the energy consumption of a town of 50,000 inhabitants.

Outages:

Regarding the transmission infrastructures, the main events are the following unplanned outages:

- December 21: A power outage affecting almost 2 million customers (about 2 400 MW) occurred in the PACA region, following a technical incident on the transmission network.
- February 27-28: 'Xynthia' storm caused power cut of more than 1 million customers, mainly due to distribution grid and mainly in Western France (about 10 transmission substations switched off and 80 lines tripped). This damage is less important than damage caused by 'Klaus' storm last year.

Reinforcement realised

In December, some new transformers (600 MVA) were installed in two substations: one in South-Eastern France and another one in South of Paris.

Local congestion, loop flows

From December to February, low voltage constraints occurred during the period of high consumption especially in Western and Northern France due to cold spells and high power flows from Belgium and Germany.

On January 11-13 and February 15-16, low voltage constraints in West-Southern France due to high electricity consumption caused a reduction of exchanges from France to Spain.

Use of interconnections

The balance of exchanges remained positive this winter (i.e. France remained a net exporter), with a lower level in comparison with previous winter.

	EXPORTS			IMPORTS			CUMULATIVE TOTAL			EXPORT BALANCE *		
	November 2009 (GWh)	Trend / nov 2008	Cumulative trend since 1st Jan	November 2009 (GWh)	Trend / nov 2008	Cumulative trend since 1st Jan	November 2009 (GWh)	Trend / nov 2008	Cumulative trend since 1st Jan	November 2009 (GWh)	Trend / nov 2008	Cumulative trend since 1st Jan
Belgium	132	-70%	-73%	521	82%	n.s.**	653	-10%	-34%	-389	n.s.**	-126%
Germany	441	13%	9%	2 022	53%	-1%	2 463	44%	1%	-1 581	71%	-7%
Switzerland	2 129	1%	-1%	339	-18%	20%	2 468	-2%	4%	1 790	6%	-10%
Italy	1 657	-7%	0%	159	42%	-43%	1 816	-4%	-4%	1 498	-10%	4%
Spain	390	-17%	-6%	424	50%	22%	814	8%	4%	-34	-119%	-36%
Great Britain	462	-42%	-41%	760	189%	n.s.**	1 222	16%	-19%	-298	-156%	-67%
TOTAL	**5 211**	**-13%**	**-17%**	**4 225**	**58%**	**+23%**	**9 436**	**9%**	**-5%**	**986**	**-70%**	**-45%**

* A negative value indicates a net import balance. ** Since the beginning of 2009, the volume of imports from Belgium totals 5 173 GWh, compared with 1 518 GWh in 2008 ; imports from Great Britain totalled 3 525 GWh compared with 1 036 GWh in 2008 ; in november 2008, the balance of exports to Belgium was +154 GWh.

	EXPORTS			IMPORTS			CUMULATIVE TOTAL			EXPORT BALANCE *		
	December 2009 (GWh)	Trend / dec 2008	Cumulative trend since 1st Jan	December 2009 (GWh)	Trend / dec 2008	Cumulative trend since 1st Jan	December 2009 (GWh)	Trend / dec 2008	Cumulative trend since 1st Jan	December 2009 (GWh)	Trend / dec 2008	Cumulative trend since 1st Jan
Belgium	126	-43%	-73%	595	64%	207%	721	24%	-32%	-469	231%	-131%
Germany	460	75%	12%	1 982	26%	1%	2 442	33%	4%	-1 522	16%	-5%**
Switzerland	2 123	-11%	-2%	469	22%	20%	2 592	-6%	3%	1 654	-17%	-10%
Italy	1 631	-14%	-1%	232	92%	-34%	1 863	-7%	-4%	1 399	-21%	2%
Spain	345	-30%	-8%	526	79%	28%	871	11%	4%	-181	-191%	-47%
Great Britain	412	-32%	-40%	726	95%	202%	1 138	16%	-16%	-314	-234%	-70%
TOTAL	**5 097**	**-13%**	**-17%**	**4 530**	**46%**	**+25%**	**9 627**	**7%**	**-4%**	**567**	**-79%**	**-47%**

* A negative value indicates a net import balance - ** decrease in the import balance

	EXPORTS			IMPORTS			CUMULATIVE TOTAL			EXPORT BALANCE *		
	February 2010 (GWh)	Trend / feb 2009	Cumulative trend since 1st Jan	February 2010 (GWh)	Trend / feb 2009	Cumulative trend since 1st Jan	February 2010 (GWh)	Trend / feb 2009	Cumulative trend since 1st Jan	February 2010 (GWh)	Trend / feb 2009	Cumulative trend since 1st Jan
Belgium	143	-67%	-69%	589	+71%	+45%	732	-6%	-11%	-446	n.s.***	n.s.***
Germany	497	-13%	-34%	1 592	+22%	+32%	2 089	+11%	+13%	-1 095	+49%	+74%
Switzerland	2 047	-9%	-10%	295	+32%	+24%	2 342	-6%	-6%	1 752	-14%	-16%
Italy	1 693	-3%	-12%	65	n.s.**	+153%	1 758	+0%	-8%	1 628	-6%	-16%
Spain	38	-86%	-85%	371	-6%	-6%	409	-39%	-40%	-333	+193%	+209%
Great Britain	291	-38%	-44%	788	+219%	+138%	1 079	51%	31%	-497	n.s.***	n.s.***
TOTAL	**4 709**	**-18%**	**-24%**	**3 700**	**47%**	**+42%**	**8 409**	**2%**	**-2%**	**1 009**	**-69%**	**-91%**

* A negative value indicates a net import balance ** In February 2009, imports from Italy totalled 11 GWh.
*** In February 2009, the balance of exports to Belgium was 88 GWh, and to Great Britain was 220 GWh; since 1st January 2010, the cumulative export balance to Belgium was –988 GWh (compared with -44 GWh for the same period in 2009), whilst for Great Britain the cumulative figure was -1147 GWh (compared with 309 GWh for the same period in 2009).

	EXPORTS			IMPORTS			CUMULATIVE TOTAL			EXPORT BALANCE *		
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TOTAL	**4 709**	**-18%**	**-24%**	**3 700**	**47%**	**+42%**	**8 409**	**2%**	**-2%**	**1 009**	**-69%**	**-91%**

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Summary of markets conditions

The monthly average market price was:

- 40,5 €/MWh in November,

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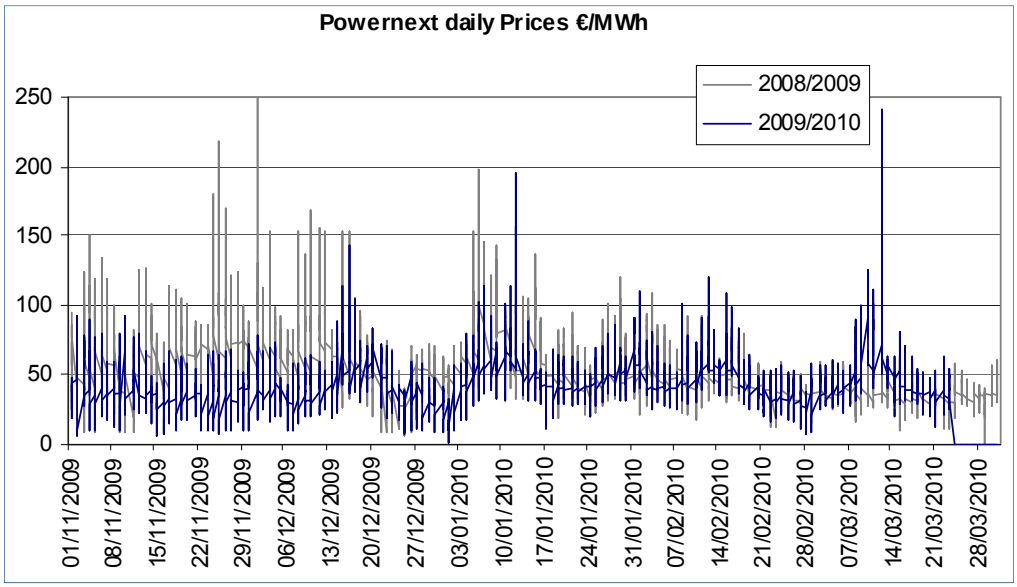
- 44,2 €/MWh in December,
- 51,8 €/MWh in January,
- 47,4 €/MWh in February,
- 44,7 €/MWh in March.

These prices are lower than those last year. The maximum day-ahead hourly peak price was registered on 12th March (241 €/MWh).



Lessons Learnt for Winter 2010/2011

The forecast of French consumption is still difficult to perform due to uncertainties about the recovery of economic activity and its impacts on the electricity demand.

Consumption forecasts have to take account of these impacts.

Attention should be paid to the sensitivity of the load to low temperatures and also the availability of the French generation fleet.

GERMANY

General comments on winter conditions

50Hertz Control Area:

The winter 2009/2010 was characterized by a long period of low temperatures starting in mid-December and lasting (with short interruptions) until mid-March. Very low temperatures have been measured between the 19th and 21st December, as well as on the first and the last days of January.

There has not been very much wind during the winter months. But as expected, there have been periods of high wind peaks.

Some of the expected risks of the Winter Outlook Report occurred. Due to the generation of wind power, several parts of the grid have temporarily been highly stressed.

There have also been periods of high negative prices for energy in the German energy market.

Detailed review on the most stressed periods

50 Hertz Control Area:

On 5 December, the failure at a cable end closure in the Marzahn substation was the reason for an outage of the 380 kV cable Friedrichshain - Marzahn 921. The failure did not lead to an interruption of energy supply. Possible causes are still analysed. It is expected to have the cable repaired by the end of 2010, at the latest.

For the integration of the resulting wind power, topological as well as market-related measures had to be taken to prevent or resolve n-1 violations in the grid of 50Hz Transmission. On 26th December, commonly agreed topological and market-related measures had not been sufficient to reduce the load flow on the tie line between the German TSOs 50Hertz Transmission and Transpower. For solving this problem, the generation of power plants and renewables-based generating units had to be adapted in accordance with Article 13 (2) EnWG. Additionally on 30th January, the local adaptation of generation was necessary for the integration of wind power in the grid of 50Hertz Transmission.

Unexpected high consumption in the night between the 19th and 20th December has been the reason for large deviations of the control area balance of 50Hertz Transmission. The forecasts of the responsible balancing groups have been incorrect. For reducing energy deficits, emergency energy was delivered by neighboring TSOs.

The Krümmel and Brunsbüttel nuclear power plants have still been out of service. The resulting impacts on the load flow and the voltage control in the region of Hamburg had to be considered at any time.

The average energy feed-in during the period from November to March in the control area of 50Hertz Transmission was 2129MW, based on approximations (Winter 2008/2009: 2110MW). The highest feed-in of wind energy in this period was 9603MW, also based on approximations. It occurred on 1st March 2010 (Winter 2008/09: 8257MW).

Transpower Control Area:

Extreme wind situations occurred on October 16th, November 18th, December 25th/26th 2009 and on January 27th 2010. The resulting energy feed-in required market-related measures according to Article 13(1) EnWG. Measures according to Article 13(2) EnWG were not necessary.

Large North-South power-flows due to wind energy feed-in strongly affected the 50Hz Transmission - Transpower Redwitz-Remptendorf interconnection. Here, construction measures carried out by 50Hz Transmission and agreements concluded between 50Hz Transmission and Transpower have led to an increased transmission capacity during the last winter.

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Amprion Control Area:

High wind feed-in along with low load conditions (weekend and bank holidays) led to high negative prices on the EEX/EPEX (e.g. on 26/12/2009); also on 3-4/10/2009 (not considered in the Winter review).

EnBW Control Area:

EnBW TSO had no forecast of the network load at that time, there were no untypical profiles.

Lessons learntd for Winter 2010-2011

EnBW Control Area:

The implemented congestion management including the “C function” on the borders of D-CH and D-F has proved to be successful.

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GREAT BRITAIN

General comments on winter conditions

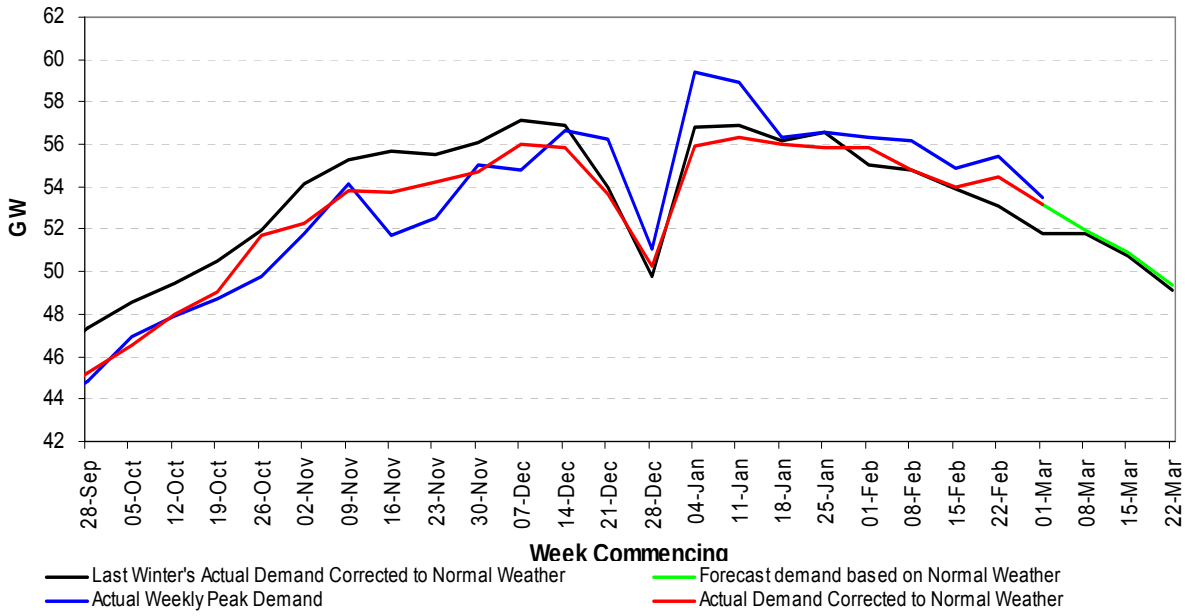
Winter 2009/10 was the coldest winter since 1978/79 for the period December to January. The generally warm start to the winter was cancelled out by cold weather from mid-December. The weather was colder than normal for almost the entire 3 months of Jan to March. Despite these notable weather conditions demand was met in full.

Our winter outlook report for 2009/10 had foreseen a comfortable margin in generation to allow us to meet demand even under severe weather conditions. The experience of winter was very much inline with our expectations. No system warnings, that indicate a shortfall in our planned reserve holding in operational timescales were issued over winter 2009/10.

Higher relative power prices in France, impacted by concerns about margins have fed through into continued high exports of power from GB to France. This was inline with our expectation as indicated by forward power price differentials between France and GB, though such a prolonged period of exports of power to France during winter is a change from the recent pattern of imports to GB over winter.

Cold temperatures and resulted in very high gas demands with 9 of the highest 20 gas demand days ever seen during winter 2009/10, and also the highest ever on 8 Jan at 465 mcm/d. These high gas demands and gas supply issues resulted in some Gas Balancing Alerts[2] being issued. Gas market prices responded and increased, resulting in a switch from generating power from gas into increased generation using coal. There were no gas to power interaction security of supply issues for power as a result of the Gas Balancing Alerts and gas supply/demand tightness. Gas supply issues were one of the external shock type factors we highlighted in our winter outlook report.

Demand

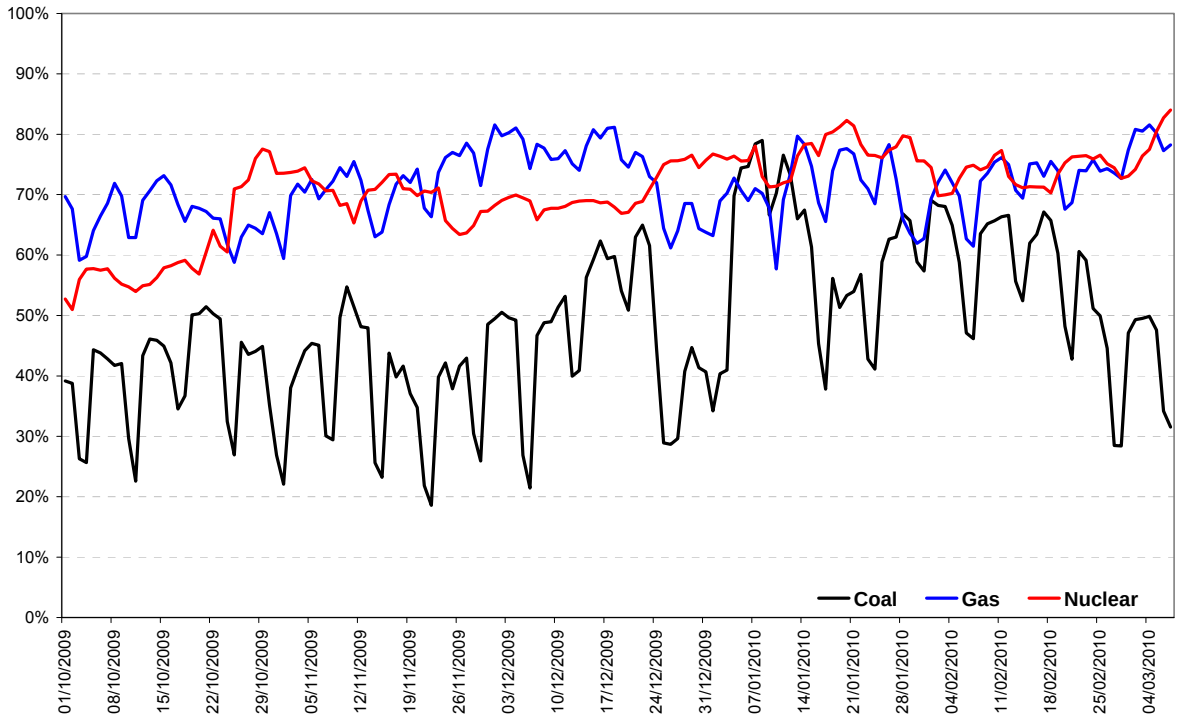


The outturn peak demand for winter 2009/10 was 59.3GW including a 200MW export to France that occurred on the 7th Jan 2010. This demand was increased by around 3GW's by the cold weather, giving an equivalent 56.0 GW peak if normal weather had prevailed. Demand was consistent with our forecasts within the winter outlook report.

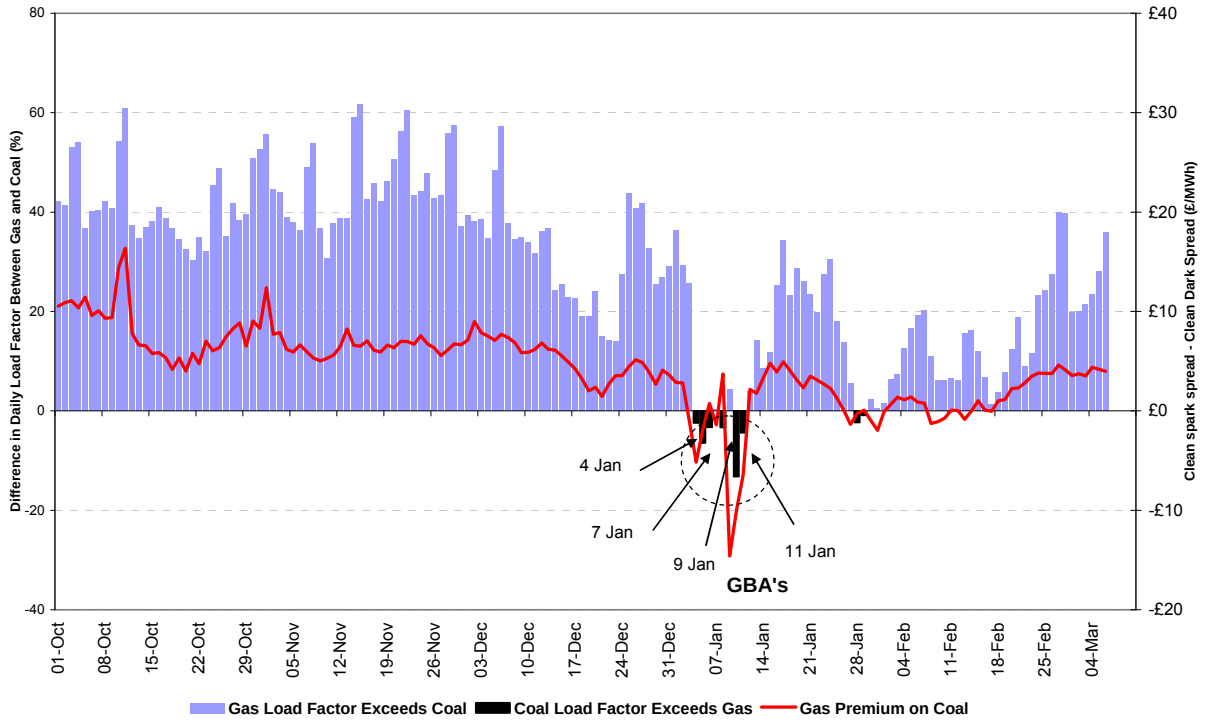
[2] http://www.nationalgrid.com/uk/Gas/OperationalInfo/GBA/

Interestingly the actual demand of the following week (11th Jan) corrected to normal weather was very marginally higher than 56.0 GW at 56.2 GW. Weather corrected demands in the first few weeks of 2010 are very similar to those of the first few weeks of 2009. Our electricity demand levels are now at the levels of twelve months ago and do not seem to falling further, indicating the recession's impact to reduce demands has now worked through.

Generation



The generation fleet performed inline with our expectations, shown in the chart of load factor above. Over winter the Nuclear fleet has generally increased its load factor as units have returned from outages and performance now seems to be back at high levels (circa 80% availability) last achieved in 2005/06. Reflecting relatively cheap gas, the gas load factor was consistently high too, with coal operating more within peak periods where spreads are more attractive than overnight. Coal therefore had the capacity available to react to the cold temperatures. Between Christmas week coal dropped to a 30% load factor but shot back up to a near 80% load factor in early January. Particularly the period of gas market tightness led to a reduction in gas fired generation output and increase in coal generation output.



The left scale of the chart above shows the difference in load factor in percent between gas and coal on a daily basis. The right scale shows the clean spark spread where a negative number corresponds to greater profit from burning coal to generate power. The blue bars represent periods where gas fired power generation load factor exceeds coal and generally these correspond to where the gas profit premium on coal is positive. This was the case almost throughout the whole winter. When the gas profit premium goes negative in January we see a switch to coal load factor exceeding gas. There was a market reaction to the GBA's it seems and the market worked smoothly from what we saw on electricity.

We saw a low output from wind power during the high demands and cold period in early 2010. At the time of the observed peak demand GB wind power was at 7% output relative to the installed capacity metered by National Grid. Note that on the night of the 5th to 6th January, wind load factor exceeded 60%, so for periods you can see high outputs. This also illustrates the variability of wind power output over relatively short periods.

While GB experienced low wind (less than 10% output) we also noted that other regions such as Ireland, Germany and Denmark also had similar low wind power output conditions. However there were above average wind conditions in Southern European regions (Spain and Italy) and therefore at an EU level the wind load factor is higher. We estimate that while GB was experiencing 7% wind output across our peak demand day that the EU wind fleet as a whole was generating around 22%. This analysis supports the need for increased interconnection that is being developed across Europe.

GREECE

General comments on winter conditions

At the beginning of the winter Greece experienced very high storage of water in the hydro reservoirs. There was a lot of snow and rain during the winter, and the hydro reservoirs have been raised to very high level. This is crucial for the summer season, which is the season with the maximum demand of the year. For that reason the hydro generating production was kept very high to control the rising water level of the reservoirs.

In general, the winter did not have severe conditions. The temperatures were in general lower than normal and during the Christmas holidays the weather was very mild.

The generation overhauls were generally realised as planned.

The demand starting from January has been lower than expected and even lower than the previous year. The reason for this reduction is that economic conditions have had an effect on the industry production process and led to lower energy consumption.

Review of the situation

Wind conditions were on a typical level during this winter. The establishment of new wind parks mainly in the south region reinforced system stability in this area. The maximum wind production was 650 MW on the January 2010.

The installed generation capacity of wind parks in the Interconnected System today is

MW (970 MW). A significant increase of wind production is expected in the following years.

At present, the stored energy in the hydro electric power plant reservoirs is at very high levels, due to the severe rainfalls (extremely wet period) during the last 3 months.

On the demand side, in the following Table the values of net monthly peak load (forecast and actual) are presented.

	NET MONTHLY PEAK LOAD (Average values per hour in MW)			
	DECEMBER	JANUARY	FEBRUARY	MARCH
Forecast	8220	8700	8250	8060
Actual	8059	8714	8317	7862
Difference	161	-14	-67	198

The deviations between forecast and actual values are mainly due to the financial crisis and very mild climatic conditions (especially in temperature).

The peak net electricity demand (excluding pumping loads) for the interconnected system in the winter 2009-2010 amounted to MW, on (CET).

Additionally, during the winter there was no need to select any resources from the demand side response.

Transmission infrastructures outages, realised reinforcements

During the winter no crucial transmission expansion or reinforcement took place.

Use of interconnections

The Greek system continuously used all capacity (NTC) from the neighboring countries in the incoming direction. The NTC was up to 1200 MW.

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Summary of market conditions

Explicit auctions for the allocation of Physical Transmission Rights (PTRs) were held by HTSO for 50% of the NTC in the northern Greek interconnections in the importing direction. In the exporting direction, HTSO held explicit auctions for the 100% of the NTC, taking into account the excess production capacity of the Greek production system. The Auction Rules are fully compliant with the Regulation 1228. The same is valid for the Auction Rules for the interconnection with Italy.

In the following table the maximum and minimum SMP values are presented.

	MAX and MIN SMP (prices in € / MWh)			
	DECEMBER	JANUARY	FEBRUARY	MARCH
Max	85,707	89,808	87,707	87,508
Min	19,44	28,076	28,439	28,018

Description of remarkable events

During the winter 2009-10 we observed very low demands. It is notable that the SMP was lower during these months because there was no need to use the oil units production, due to very low gas prices and due to low consumption generally.

Lessons learnt for winter 2010-2011

Consumption forecasts have to take account of the impact of the economic crisis which is difficult to forecast.

The forthcoming participation of the Turkish in the South Eastern European Market of Electricity is expected with great interest.

The basic key points for the forthcoming winter will be the consumption of electric energy especially if the rate of reduction should continue. If this happens, it may be useful to review the estimations about the needs for energy in the future.

For the Greek energy system, the most critical period about the energy is the summer. Therefore, the summer outlook report is more useful.

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HUNGARY

In Hungary compared to the previous year, winter of 2009/10 was lower temperature and much more snow. From October 2009 to December 2009 the demand was lower but from January 2010 to March 2010 it was higher compared to the previous year. No unexpected situation happened. The needed import was available at every time. Availability of generation capacity was good through the whole winter period. Demand was lower in the first part of the period, but it was within the expectations after January, 2010. Operation of the transmission grid was according to the plans, harmonised with the other TSOs of the region. Import was higher than planned (in December the total import was an average of 600 MW in peak). There was no problem with the availability. Export-import activity of the market players is mainly a price issue. However, availability of cross-border capacities may be an issue on some borders. Compared to previous years, ancillary services are involving more reserve in the down direction from 1 January, 2010. This will increase controllability of the system.

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ICELAND

No unusual or significant system events or conditions occurred during the winter 2010.

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IRELAND

There were no significant issues during the winter 2009-2010 period. The winter peak demand occurred on Thursday 7th January 2010. The peak was 5,165MW (generated), which equated to 4,950MW (exported). This was an increase on the previous year's peak of 5,085MW (generated). The wind generation at the time of the peak demand was 83MW. The predicted winter peak in the Winter Outlook was 4,680MW (exported). At the time of writing the Winter Outlook report (June 2009), the year-to-date average demand growth was negative at -5%. This trend continued for the rest of the year. However, due to extreme cold weather during December and January, the peak loads were significantly higher than expected. The system forced outage rate for January 2010 was 10.3%, which was in line with the system forced outage rate used in the Winter Outlook report. Notwithstanding the higher peak demands due to the unusual weather conditions, the system remained well within the capacity adequacy standard for the winter period.

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ITALY

General comment on winter conditions

The adequacy evaluations for 2009-2010 winter period has not shown particular risks for capacity adequacy and peak load cover as well as for the national supply. A winter season with a moderate increase of temperatures characterised the first part of the period leading to a decrease of the demand. It was also due to the effects of the economic crisis. In addition average low hydro conditions characterised this period of the year: values below the multi-year average capability factor were recorded, confirming a winter scarce of rainfall.

Review of the situation

Any to remark for generation availability in respect to the planned maintenance. Wind power and thermal plants generation increasing over than 1100 MW, while the hydro generation plants remained steady.

In the first period of winter (October to December 2009) both load and energy requirements were low. Record power peak which normally occur during the winter was not exceeded in this period. Over this period (January – March 2010) the monthly consumption increased significantly as compared to the same period 2009 but the volume still remained low in respect to 2008.

The operation of the interconnection confirmed the robustness of the NTC calculation methodology.

Nevertheless, the loop-flows were higher than the expected ones, with particular regard to the French and Slovenian borders.

The physical flow from France was systematically lower than the exchange program, while the Slovenian border raised up to almost 2000 MW in March.

This circumstance did not endanger the security of interconnection, nevertheless in real time it was necessary to apply the coordinated procedures for import curtailment.

Transmission

New lines and devices entered into operation reinforcing the transmission network and relieving congestions.

In terms of physical flows on the interconnection, the import transfer capacity was basically fully used. During the winter period the interconnections allowed to balance the sensible decreasing on internal production.

Description of remarkable events

The total net production, very low in the first period of winter, has showed a constant increase during the first months of the 2010. On the contrary the monthly hydroelectric capability factor has showed a constant decrease with percentage values below the corresponding values recorded in the previous winter. Same result for the fullness factor of hydro reservoirs.

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LATVIA

Last winter, Latvian internal generation was relatively sufficient for Latvian TSO to manage the balance. It is associated with the new power plant (RigaCHP2) operation with installed capacity 407MW and more generation capacity, available from hydro power plants, due to sufficient water amount of Daugava River.

In the beginning of spring flood period (with increase of water inflow) more generation capacity was available from hydro power plants. Starting from the weeks 9-11 Latvian power system becomes self sufficient and is even capable to export up to 400-500 MW of power to the neighboring power systems. Flood period usually continues for 6 weeks.

Minimum and maximum temperature and maximum load in each winter month is shown in the table. Average temperatures were lower than normal on each winter month:

	December 2009	January 2010	February 2010	March 2010
Min T	6.1ºC	-1.2 ºC	1.9 ºC	1.6 ºC
Max T	-12.1 ºC	-20.3 ºC	-8.6 ºC	-3 ºC
Max Load, MW	1288	1323	1210	1116

Risks of import and export availabilities during cold period in this winter didn't occur. There were no significant outages in power transmission lines and generation or unexpected situations during the 2009-2010 winter season.

Economic recession was the main factor why total electricity consumption during winter period decreased compared to previous year, however during cold period total electricity consumption of December-January increased, compared to previous year.

There were no stressed periods for system adequacy during winter 2009-2010 and no specific events during the winter period.

LITHUANIA

Average temperature that was higher than normal winter temperature was observed only on January. Average temperature was near normal on December and lover than normal on February and March.

	December 2009	January 2010	February 2010	March 2010
Average T	-2,1 °C	-10,1°C	-3,3°C	0,9°C
Normal T	-2 °C	-5,1 °C	-4,6 °C	-0,7 °C

Risks of import availabilities during cold period after closure of Ignalina NPP didn't occur. There were no significant outages in generation or unexpected situations during the winter season.

Economic recession was the main factor that total electricity consumption during winter period decreased approximately 4% compared to previous year. However during cold period total electricity consumption of January increased 1,5% compared to previous year. The peak loads by winter months was as follow:

	December 2009	January 2010	February 2010	March 2010
Forecast MW	1610	1580	1470	1380
Actual MW	1665	1695	1537	1414

There were no stressed periods for system adequacy during winter 2009-2010 and no specific events during the winter period.

As it was scheduled, on 31st of December Lithuania has closed down Ignalina Nuclear Power Plant (1300 MW). Such decision has been made under the European Union Accession Treaty 2003. There were no other unexpected outages in generation during the winter season. Demand decreased and overall electricity consumption was less than expected due to the economic recession. During the winter period Lithuania was able to cover demand without any imports.

No any specific remarks on market prices. The decreased demand leads stable production prices.

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LUXEMBOURG

General comments on winter conditions

Although Luxemburg faced severe climatic conditions during the past winter (December with an average temperature of -1,6°C and January with an average temperature of -2,1°C were two very cold months, with a lot of snow), there were no problems in their grid.

The 28th of February the storm Xynthia reached also Luxembourg, but no important outage was noticed in the grid.

No risks were identified, and no unexpected situations occurred. Due to the economic crisis the consumption of industrial clients went down, but this was compensated partially by a higher consumption of household clients due to the climatic conditions.

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MONTENEGRO

During the winter there were not any unusual or significant system events. In this part of the year high hydro conditions were registered.

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NETHERLANDS

Winter 2009-2010 in the Netherlands: mean temperature 1.1°C (long term mean temperature is 3.3°C), however it was not a firm cold period. In total 55 days the minimum temperature was below 0°C (normally 38 days) and in total 20 days the maximum temperature was below 0°C (normally 8 days). At 4 days the minimum temperature was below -10°C. The lowest temperature was measured on December 19th, 2009: -18,4°C.

The winter precipitation was at a normal level of 201 mm (long term means 194 mm). More rare was the quantity snowy days: 42 days (long term mean 13 days).

The amount of 179 of Sunshine hours was a normal situation (long term mean 172 hours), mostly in December and January.

In the Winter Outlook 2009/2010, no risks were foreseen and in reality no risks occurred. There were no stressed periods for the Dutch network during winter 2009/2010. There were no specific fuel, generation, demand or exchange pricing events that caused serious stresses periods.

The interconnection cable between Norway and the Netherlands (NorNed cable) was unforeseen out of order as from January 29th and will be operational before May 2010.

In times of huge wind power flows in Germany the interconnection capacity was partly restricted to the permissible level at that specific moment (grid safety analysis). The average reduction occurred in 20% of the working days up to approximately 500 MW in respect of a total import capacity of 3850 MW exclusive the NorNed cable.

Further there were no unexpected situations.

The economic effects in 2009 (BBP -4 % with respect to 2008) on electricity demand in 2009 has shown a significant decreasing figure (sized -5.9 %) in comparison with the demand 2008.

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NORTHERN IRELAND

Over the winter period 2009/2010, Northern Ireland suffered several significant cold spells with low temperatures that had not been experienced since the early 1980's. However, there was no major ice accretion or storm damage to the transmission network during this period. Although the cold periods arose there was no reduction in generation availability suffered. There were some periods of gas price fluctuation, however there were no scares in relation to lessening gas supplies. The winter peak demand remained on a par with 2008/2009. All interconnection supplies were sustained and obtained as required.

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NORWAY

December

December in Norway was 1.1°C colder than normal and with 30% less precipitation than normal. Furthermore, the precipitation did mainly come in a rather local area without hydropower storage. Low temperatures resulted in high demand and high production. As a consequence, the total Norwegian hydropower storage was reduced from 79% in week 49 to 65% in week 53. This is about 4 percentage points more than the median (1993-2008).

January

The average temperature in January was 2.9°C colder than normal, and the precipitation was 55% of normal values. Production and consumption was even higher than in December. The Norwegian hydropower storage was reduced from 65% in week 53 to 51% in week 4. This is about 5 percentage points more than the median. By the end of January, the percentage of filling was more than 10% below normal.

February

The average temperature in January was 3.6°C colder than normal. The precipitation was 70% of normal values, but the regions where the major hydropower producers are located, got only 25% of normal values. This has consequences for the inflow during the spring and summer. Neither the consumption nor the production were as high as in December or January, but still sufficiently high to reduce the Norwegian hydropower storage by 3% more than the median. The storage level was 38% by the end of February.

March

At the end of March there are 60% of normal amounts of snow in the mountains that will become available for hydropower production.

The NorNed cable (700 MW) was out of operation from the end of January till end of April. Prices indicate that it would have been net import to Norway in this period. The effect of the outage seems so far to be of minor importance because the southern part of Norway is a surplus area.

Cold weather and precipitation lower than normal resulted in an alert power situation in Mid and West-Norway. These areas were separated as own price areas to ensure high imports. Statnett is following the power and energy situation in these areas especially closely.

The continuous delay of the restart of Swedish nuclear production affected the Norwegian power system considerably. The Nordic power systems are tightly connected, and low nuclear production in periods with high demand contributed to scarcity of power, a high price level and several price spikes.

Consumption in power intensive industry has been less this winter compared to consumption in 2006/2007, 2007/2008 and even 2008/2009. The consumption in power intensive industry constituted 17% of total consumption this winter, compared to 22% in 2006/2007 and in 2007/2008 and 20% in 2008/2009. The actual consumption in power intensive industry this winter was about 1600 GWh less than in 2008/2009.

The power intensive industry started to reduce its consumption at the end of 2008, and was at its lowest summer 2009 before it started to increase consumption again. It is however still below the level from 2007 and 2008.

There were three especially stressing periods for the Norwegian power system:

- The 17th of December
- The 8th of January
- The 22nd of February

In several hours during these days, there were problems in the Nordics to meet the power demand. The power deficit originated in Sweden, but was transmitted to the neighboring countries, including Norway.

The months from December to February have been colder than normal.

Production has been high all winter, and higher than expected. Some minor hydropower storages were empty already in the beginning of February. Due to less precipitation than normal, the storage level is considerably below normal.

Due to the low temperatures, the demand has been higher than expected. In spite of reduced demand from power intensive industry and periods with disconnection of consumption without priority, old records for peak demand during an hour, during a day and during a week has been beaten several times.

The expected peak demand for winter 2009/2010 was 22.35 GW. Actual peak demand was 23.99 GW. This happened the 6th of January, hour 10. Demand has been high from the end of December all through February.

The reinforcement of the transmission line between Mid-Norway and Mid-Sweden was completed the 28th of March after about a week‘s work without capacity on the line. This improved the import capacity to Mid-Norway with up to 600 MW.

There have been several internal bottlenecks in the Norwegian grid:

- From North-Norway to Mid-Norway (approximately all winter)
- From Southwest-Norway eastwards (approximately all winter)

There have also been bottlenecks into the Norwegian power system:

- Between South-Sweden and South-Norway (periodically, and in different directions)
- From Jutland to South-Norway (periodically).

Norway has imported from the Netherlands in about 55% of the time the NorNed-cable has been in operation this winter. Net import from the Netherlands is approximately 85 GWh (week 49-12). During the winter, Norway has imported from Jutland in 60% of the time. Net import from Jutland is approximately 1040 GWh (week 49-12).

Mid-Norway relies on imports from Sweden to meet demand. This region has been a net importer of 700 GWh from Sweden this winter (week 49-12).

When the Winter Outlook Report was written in September, the hydropower storages were almost full, and consumption was lower than normal due to the financial crisis. A calm winter in the power market was expected. However, a long lasting cold period resulted in high demand, and also high production. In combination with less precipitation than normal, the storage level sunk more rapid than normal, increasing the value of the remaining water. Low nuclear production in Sweden contributed to increase the prices. Altogether, these factors resulted in a higher price level than expected in September. Hours with power pricing drove the spot prices up to 1400 €/MWh for some hours, increasing the weekly average power price considerably.

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POLAND

Severe winter in Poland with the average temperature (from December to March) 1.8°C lower than during previous year and average temperature in January of -7.09°C resulted in average hourly peak load 4% higher than the previous year. On 26th of January 2010 (-16.2°C) PSE Operator registered historically highest ever peak load – 23 583 MW – as a momentary value at 17:30 (average hourly peak load in monthly statistics for the day amounts for 23 447 MW).

Between 9th and 21st of January in the Central-Southern part of Poland network constrains took place as the result of 8 lines of 220/400 kV being tripped and damaged, which was caused by weather conditions: heavy snow, thick layer of ice on the lines and other elements of the system as well as the fallen trees (the number goes into dozens for the line). The most affected transmission lines were: the Rogowiec-Tucznawa and Trębaczew-Dobrzeń lines.

On 24th of January the failure in Dolna Odra thermal power plant – coal dust explosion in coal handling building took place. The must-run Power Plant (1600 MW net generating capacity of 8 units), located in North-Western part of Poland – next to PL-DE border, from operational point of view allows for limiting high load flows coming, among others, from German wind generation. Between 18:15 and 20:38 no units of the Power Plant were synchronized with the power system, the consequence of which was not satisfying the n-1 criterion for the time period for the PL-DE 2x220 kV line Krajnik-Vierraden. To provide secure operation of Polish power system emergency delivery of 300-600 MW from Sweden was launched.

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PORTUGAL

General comments on winter conditions

Last winter in Portugal was characterized by particular severe weather conditions with high precipitation (the number of rainy days was, in some places, the highest in the last 20 years) and low temperatures (sometimes stressed by wind chill effect). February was the rainiest of the last 24 years. March was the coldest of the last 24 years and, in terms of precipitation, the third of the last 30 years.

In general, the system's operation was however performed within the comfortable margins identified in the Winter Outlook Report. In the end of December, the occurrence of an unusually strong wind storm resulted in damages in transmission lines which constrained transmission capacity, for a few days, in the western part of the country. However, this only had a small and local impact. Apart of that, no remarkably stressed periods could be identified.

Actually, demand has registered an increase from last Winter values, even discounting the estimated effect from temperature.

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REPUBLIC OF SERBIA

Planned maintenances of generation capacities were successfully completed before cold snap so Serbian power system passed through winter period without huge problems. Import from neighboring systems was realized in January with beginning of low temperatures as it was planned.

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ROMANIA

During the time interval between 16th of December and 20th of December, 2009 under extreme winter conditions (white frost and flurries) four 400 kV OHLs connecting Dobrogea area with remaining part of Romanian Power System were tripped one by one due to active conductor breakages. After the first and the second tripping re-dispatching generation measures were taken by National Dispatch Center in order to maintain the stability of this area including the NPP Cernavoda. The last two 400 kV OHLs tripped one by one in two minutes due to active conductor breakages as well. Consequently the both NPP units were tripped in house load operation. After 87 minutes covering the time interval needed for dispatching countermeasures, the NPP Cernavoda unit no. 1 began to feed the consumers in island operation. The load not supplied was 335 MW and the loss of power was around 1300 MW (net value). After remedial actions on the first 400 kV OHL, the Dobrogea area was resynchronized with the rest part of Romanian Power System. During this event the Romanian Power System kept the normal synchronous operation with the interconnected Continental European Network. Also all NPP Cernavoda installations, protections and automations worked properly.

Transelectrica started an expertise on the lines involved in this event. A programme will be developed based on the results to reinforce the existent lines to face these new extreme weather conditions occurred in Dobrogea area.

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SLOVAK REPUBLIC

During the whole winter period, no critical situation or unusual event in the power system occurred. The operation was secure and reliable. Months December and January were colder than in the winter before and in March weather was warmer. Totally the weather conditions were similar with winter before, the average temperature from December to March was 1.2°C (1.4°C winter before).

In December, the consumption decreased (-2.4%) and copied situation of the year 2009, but from January 2010 there is a small increase of consumption compared to 2009. During the winter period there was the peak 4246 MW in the 4th week of 2010 (predicted monthly peak 4160 MW) and it was 2.8% higher than in January 2009. Neither weather nor increase of consumption had any impact on reliability of the power system operation. There was no significant lost of production during the reported period.

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SLOVENIA

General comments on winter conditions

Average winter temperature in December was 2°C, in January -1,5°C and February 1°C. Lowest detected temperature in December was -12°C in January -10°C and February -8°C. December was wormer than historical winter average; January and February were colder than historical winter average. The precipitation in December was above historical winter average. The precipitation in January and February were beloved historical winter average.

No risks were identified in the Winter Outlook 2009/2010 and no unexpected situations occurred.

Economic conditions and recession played major part in demand conditions. The demand in current winter (49th week 2009 - 8th week 2010) became lower than estimated in winter outlook 2009/2010 forecast. Because of poor economic aspects and crisis the consumption of industrial consumers reduced for about 21,1% (approx. 83 GWh) and the consumption of distribution companies rose about 1,3% (approx. 36 GWh). The total consumption of electrical energy on transmission network in winter 2009/2010 was about 1,5% (47 GWh) below estimated forecast. All data are for period December-February.

Because of recession and consequently lower consumption particularly stressed periods in winter 2009/2010 were not observed.

No specific event or and reduction of gas supply occurred.

There were 4 planned hydro generation overhauls in winter 2009/2010, but on network level of 110 kV with installed capacity below 100 MW.

Good hydrological conditions results in higher hydro production than expected in winter 2009/2010.

Due to lower consumption as a result of economic crisis the winter peak was lower than forecasted. The winter peak consumption took place at 19:00 in 4rd week of the year 2010 and reached 1.936 MW (losses included) i.e. lower than expected, The main periods of peak demands were in January mainly due to low temperatures. No reductions, disconnections or any other special measures were necessary.

In the winter period of 2010, the escalation of power-flows in the direction from Slovenia to Italy occurred. The flows reached 1800 MW, but because of the flow pattern never breached the N-1 security criterion. To limit high loop-flows which threatened Slovenian system security, the pentalateral procedure was triggered on the 31st of March.

The numbers in the table below shows that Slovenia was constant net exporter in the observed period (49th week 2009 - 8th week 2010), exporting 251 MWh on average per hour. The saldo balance of Slovenia varied from max 70,6 GWh (export of energy) to min 3,3 GWh (export of energy) on the weekly level. For the time being there is no transparent price index on Slovenian market; therefore, the only data that we can rely on are the prices from monthly and daily cross-border capacity auctions. On one side those prices are very much related to the energy situation in the SE Europe which dependents mainly on hydrology and on the other side from the situation on the Italian and German market. That is also the reason for changes of Slovenian saldo balance practically on the weekly level.

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		SLO-I		SLO-A		SLO-CRO	
Year	Week	Imp [MWh]	Exp [MWh]	Imp [MWh]	Exp [MWh]	Imp [MWh]	Exp [MWh]
2009	49	155	158.418	55.088	1.095	113.071	72.005
2009	50	668	161.305	73.171	300	112.295	84.449
2009	51	6.108	95.599	57.240	1.552	81.584	85.646
2009	52	20	136.683	51.173	1.694	98.232	71.057
2009	53	451	138.223	21.410	10.764	108.779	52.286
2010	1	306	110.599	10.645	12.120	105.159	53.296
2010	2	4.568	180.539	26.823	8.192	144.062	37.450
2010	3	13.140	204.406	33.401	4.864	161.479	31.980
2010	4	3.719	180.785	52.210	2.963	157.899	47.311
2010	5	492	177.819	50.967	2.590	156.883	49.160
2010	6	4.627	183.406	58.740	617	165.426	48.040
2010	7	314	205.107	29.221	8.576	191.817	25.088
2010	8	1.420	206.719	6.763	23.714	192.142	23.240

Lessons Learnt for Winter 2010-2011

During economic crises period, which may least also to year 2010 it is hard to predict overall estimation of generation/demand and /import/export pattern.

Winter outlook report is found useful in the process of more effective power system provision, operation and control in our TSO.

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SPAIN

General comments on winter conditions

General weather conditions have been worse than expected for the past winter. Snow and rain precipitations have been higher than average.

Month by month

December 2009:

Temperatures have been colder than average. Effect on demand increase of 1,6%

Water inflows in reservoirs were much higher than average (133% of average).

Higher specific wind production than in December 2008 (increase of 8%)

January 2010:

Temperatures have been colder than average. Effect on demand increase of 1,7%

Water inflows in reservoirs were much higher than average (161% of average).

Higher specific wind production than in January 2009 (increase of 2%)

February 2010:

Temperatures have been colder than average. Effect on demand increase of 1,5%

Water inflows in reservoirs were higher than average (123% of average).

Higher specific wind production than in February 2009 (increase of 21%)

March 2010:

Temperatures have been colder than average. Effect on demand increase of 1%.

Water inflows in reservoirs were much higher than average (180%).

Higher specific wind production than in March 2009 (increase of 22%)

Neither the risks identified in the last winter outlook report, nor other expected situations arose during last Winter. There have not been significant stress levels for the Spanish system adequacy.

As far as demand is concerned, after the decreasing trend of last year, it has slightly increased in January 2010 and raised steadily in February and March.

Detailed Review of the Most Stressed Periods

Even though there were very high productions of wind and hydro, making most of the hydro also a fluent resource, system security was unaltered. On some days wind production curtailments were carried out in order to maintain proper downward reserves. As far as generation overhauls are concerned, they occurred as expected.

Actual demand was lower than expected for the month of December 2009, and slightly higher than expected for the period from January 2010 to March 2010. Colder weather and lower temperatures have had a positive effect of 1,5% in demand increase. The winter peak demand was reached in the first half of January 2010 (44.100 MW), due to the low temperatures on that period. However, this winter peak demand was lower than the historical peak demand (44.900 MW, reached during winter 2007).

During the winter 2009/2010 the use of interconnections capacities has shown some changes in relation to previous winters. Specifically, the Spanish (S) -French (F) interconnection was used more in the S->F direction as a consequence of the Spanish – French spot market prices differentials. The Spanish (S) –Portuguese (P) net programs established during this winter was 199 GWh (S->P), but the utilization level increased in the P->S direction due to the Portuguese-

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Spain spot market prices differentials too. Finally, the use of the Spanish (S) – Moroccan (M) interconnection (S->M) fell during this period.

With the same downward trend of the European prices evolution, MIBEL prices fell sharply at the last months of 2009 in the context of high productions of wind and hydro. Thus, the spot market average price during the winter 2009/2010 was 45% lower than the average in the same period of the previous year.

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SWEDEN

General comments on winter conditions

Sweden had a long relatively cold winter. There was a cold spell from Dec 17 to Dec 22, 2009 and from Jan 5 to Jan 10, 2010.

The lower availability of nuclear power during last winter caused high prices on the Nordic electricity market. The availability was approx. 45% during Oct 2009 to Jan 2010, then it increased to approx. 75% during March and April 2010.

The low nuclear power input to the grid reduced the transfer capacity marginally.

SvK did not foresee the very low availability of nuclear power. The power situation became much worse. There was a deficit compared to average of stored hydro power all winter.

The deficit was 3-7 TWh with 7 TWh deficit in Feb - Mar 2010.

Because of the global financial crisis the Swedish industry has reduced its demand approximately 7 TWh between Jan 2009 and Jan 2010. The domestic and services demand show little change.

Specific events occuring during the winter 2009/2010

Because of low temperatures the demand became high and on Dec 17 2009, the power balance in Sweden was put under stressed conditions. The SvK power reserves were activated and the spot prices became very high (approx. 1400 €/MWh).

The same thing occurred on Jan 7-8 2010 but the maximum price was approx. 1 000 €/MWh.

On Feb 22 2010, the prices became very high (approx. 1400 €/MWh) due to deficit of production bids. The temperatures were not very low.

Detailed Review of the most stressed periods

During the periods Dec 17-24 2009 and Jan 5-10 2010, the temperatures were lower than 10°C below normal.

The nuclear capacity was only approx. 45% of normal. But the situation was helped by more import that forecasts in the winter outlook.

The demand was as expected for normal winter temperatures except for the industrial demand which was lower.

The transmission capacity in the Swedish grid was close to normal and counter trade was used in order to maintain power system reliability.

During three periods Dec 17-24 2009, Jan 5-10 2010 and Feb 21-22 2010, the SvK power reserves were activated because of strained power balance.

The import capacity from DK1 was reduced all through the winter.

Lessons Learnt from Winter 2009 /2010

Sweden experienced a long and relatively cold winter; but the temperatures were not low enough to statisically represent a winter out of ten which is what was planned for (so called: Ten Year Winter).

- If Sweden had had a Ten Year Winter it would not have had enough resources to meet maximum demand. This time more import was available and a maximum demand lower than expected in the Ten Year Winter.
- Increased experience of the TSO in activating contracted power reserves helped the market to achieve balance in the nordic spot market.
- High spot price of electricity were experienced.

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- Further experience of the TSO in activating contracted power reserves has allowed maintainance of the operational power system security.
- Deficit in selling bids that causes special measures that permit balance in the spot market (i.e. activating of contracted power reserves), may cause extremely high spot price of electricity.

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SWITZERLAND

General Commentary on Winter Conditions

The December 2009 and January 2010 were very cold. The lowest average daily temperature amounted to ca. -8.0°C.

No risk was forecasted for the winter.

The impact of the economic crisis led in 2009 to ca. 2.0% less electricity consumption then in 2008. On the other hand, a very cold winter produced a new historical peak load as of 10261 MW on the 16th December 2009.

On the 4th November 2009 there was an unplanned outage of one of the two blocks of the nuclear power plant Beznau (generation capacity lost = 0.4 GW). In the course of this no critical situation occurred.

Dependence on the data of the Swiss Federal Office of Energy does not allow the TSO to deliver more specific reports.

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6.2 Appendix 2: Individual Country Responses to Summer Outlook 2010

ALBANIA

AUSTRIA

BELGIUM

BOSNIA & HERZEGOVINA

BULGARIA

CROATIA

CYPRUS

CZECH REPUBLIC

DENMARK

ESTONIA

FINLAND

FORMER YUGOSLAV REPUBLIC OF MACEDONIA (FYROM)

FRANCE

GERMANY

GREAT BRITAIN

GREECE

HUNGARY

ICELAND

IRELAND

ITALY

LATVIA

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LITHUANIA

LUXEMBOURG

MONTENEGRO

NETHERLANDS

NORTHERN IRELAND

NORWAY

POLAND

PORTUGAL

REPUBLIC OF SERBIA

ROMANIA

SLOVAK REPUBLIC

SLOVENIA

SPAIN

SWEDEN

SWITZERLAND

UKRAINE-WEST

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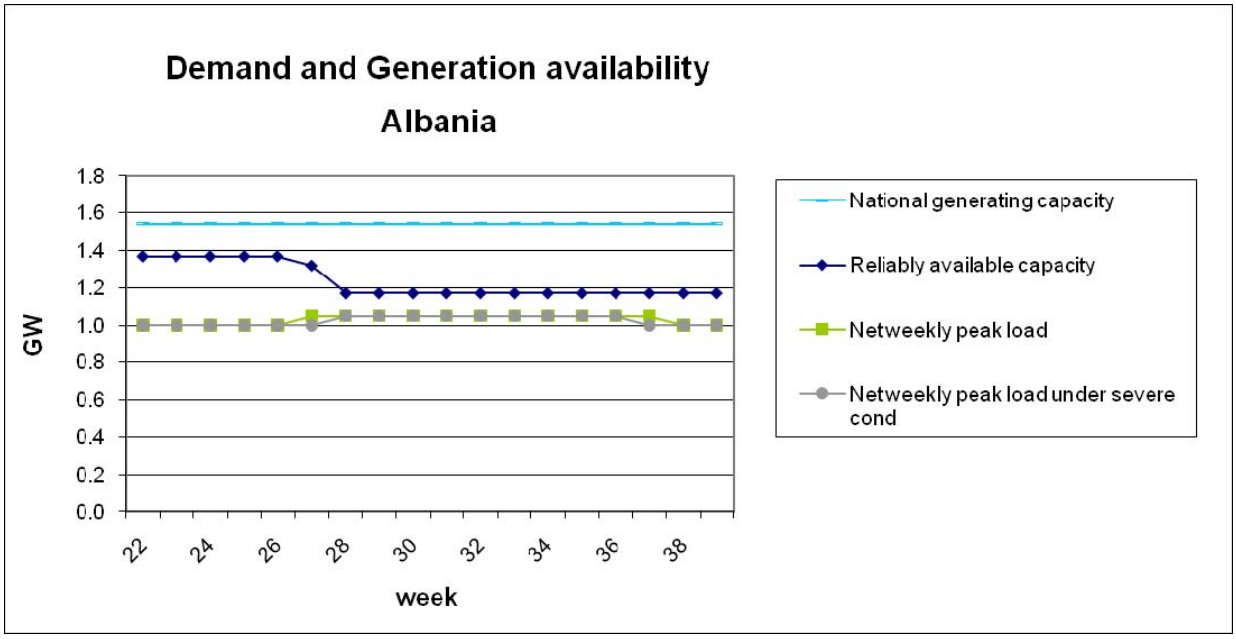
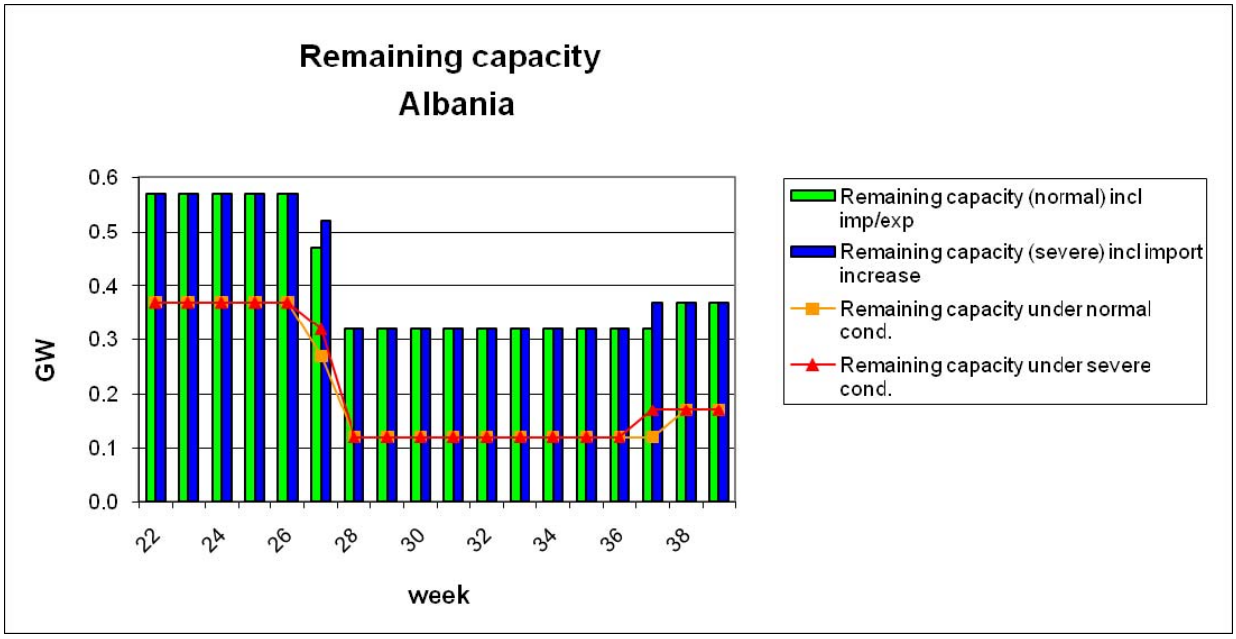
ALBANIA





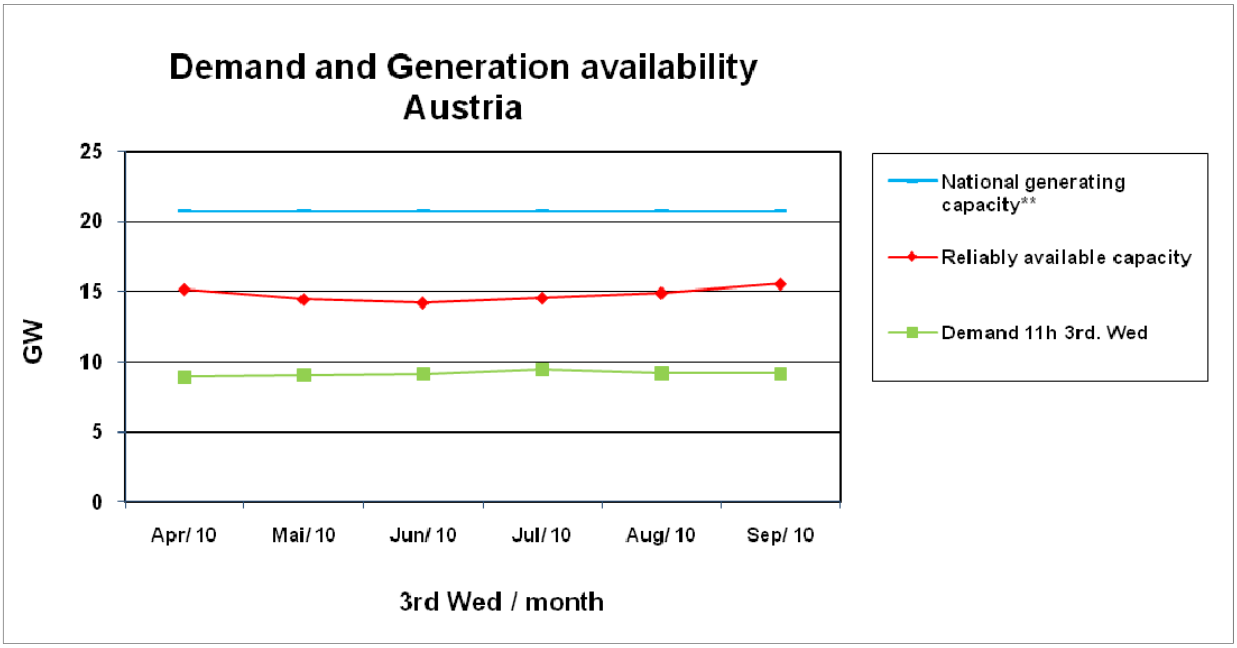
The TSO does not expect any problem on its power system related with inadequate generation/demand balance, shortages of transmission capacity, or very high demands during summer 2010.

The year 2010 started with a very good energetic situation due to abundant inflows at Drin River Cascade, which is the main producer of the country with about 90% of the whole electricity generated.

Though it is the time of maintenance period for most of transmission lines and generating units, we do not identify any specific week or time periods that are regarded as high risk.

The remaining capacity even under severe conditions is positive. Albania is not dependent upon imports of electricity from neighboring countries, though there are firm import contracts of about 200 MWh/h.

AUSTRIA



For the coming summer period an increase of load compared to the previous year is expected as the economic situation seems to change for the better.

In Austria no critical events for the coming summer season are expected, assuming normal climate and generation conditions. Some of the Austrian power grid problems described in previous reports is mitigated due to the commissioning of new lines.

Congestions

The situation improved due to the commissioning of new lines.

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 until the commissioning of the planned lines Salzburgleitung I +II.

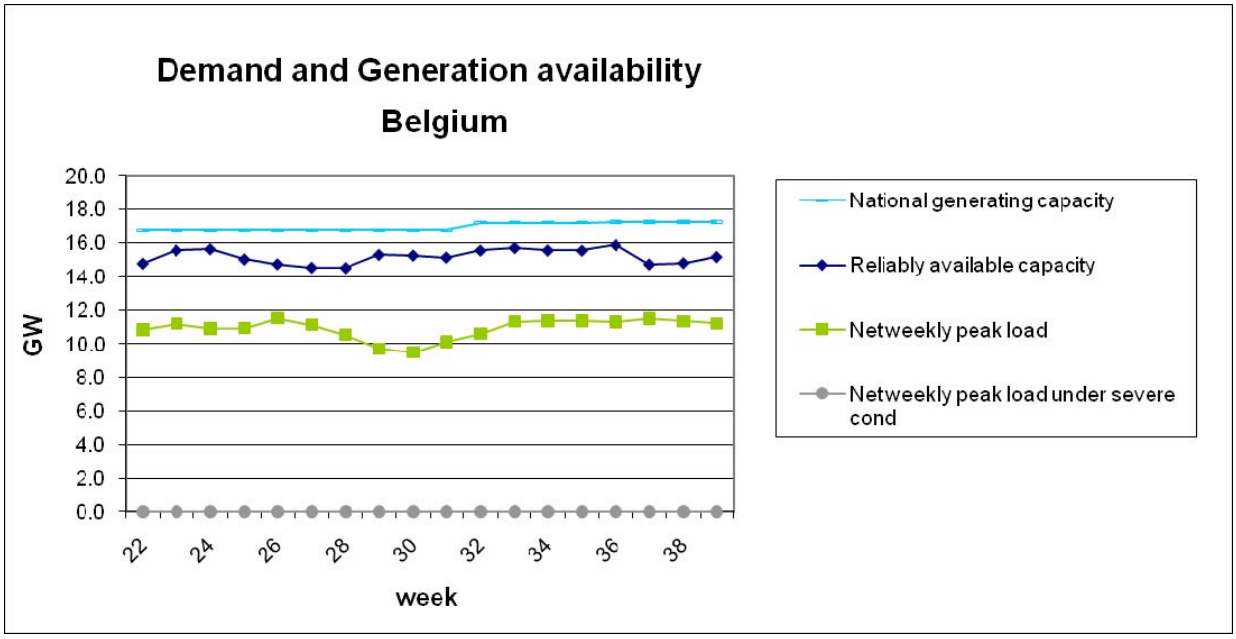
In the construction phase of the Salzburgleitung I congestion measures will be needed. Especially during five month (starting in August 2010), when the disconnection of both systems of the 220 kV line St. Peter – Salzach is required.

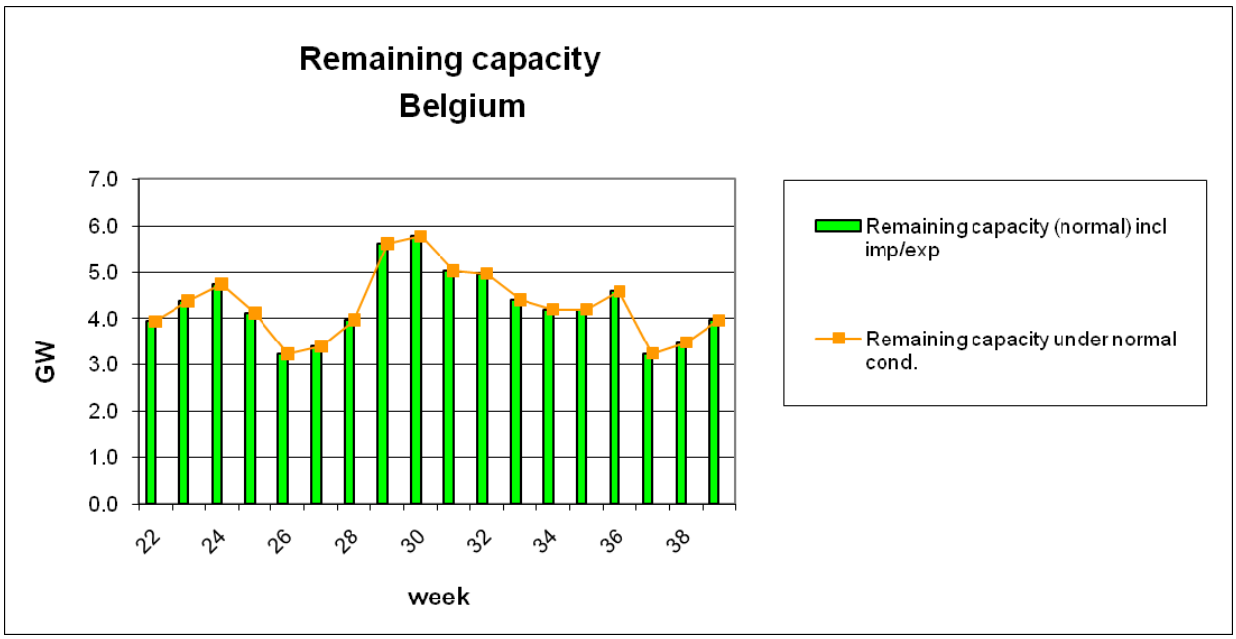
High loop flows on tie lines caused congestion on the Czech-Austrian lines in the past. This problem was solved by the installation of the second circuit Slavetice – Dürnrohr which was put into operation in November 2008.

Commissioning of new second circuit.

An additional circuit on the line Wien Süd Ost (AT) – Szombathely (HU) will be commissioned by 3rd May 2010.

BELGIUM





The adequacy forecast study for the summer 2010 is carried out for the Elia control area, which comprises Belgium and the SOTEL area (a part of the G-D of Luxembourg). The desired safety level of 1050 MW for the generation-load balance is reached during the whole summer period, for the peaks of weeks 22 to 39 of 2010. Nevertheless, the weather conditions of the summer 2006 revealed that a long period of dry and hot weather can reduce significantly the available generation capacity. If these circumstances occur, the safety level might be affected.

The lowest remaining capacity level in normal conditions is foreseen for the peak of week 26 of 2010, namely a remaining capacity of 3228 MW. This assessment takes into account the actual, announced overhaul and outage schedules of the generator units connected to the Elia grid known by the TSO at the time of the assessment, namely end March 2010. In the summer of 2009 the deviation between the forecasted unavailable generation capacity and the observed unavailable capacity was on average 949 MW. Taking this average expected value into account

the lowest remaining capacity decreases to 2279 MW largely above the desired safety level of 1050 MW.

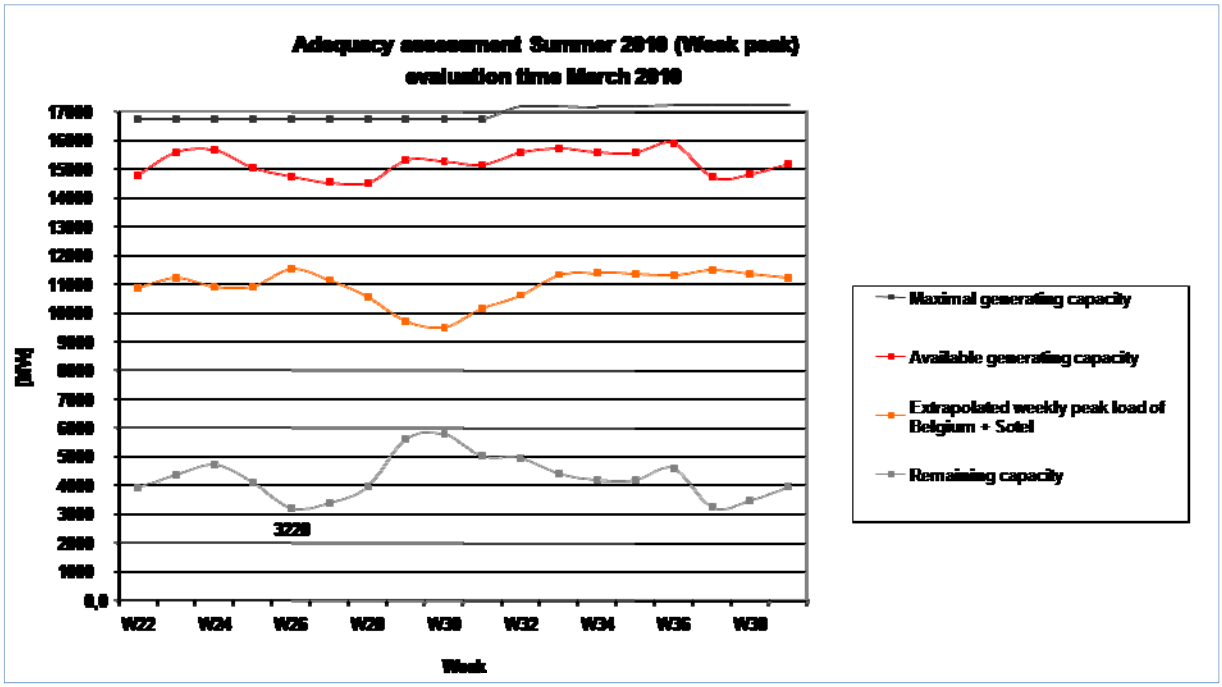
In case of extreme weather conditions, Elia has the option to reschedule planned outages of 380kV international lines. In case of shortage of reserves Elia can also activate international emergency reserve contracts with TenneT and RTE and load shedding contracts with industrial customers.

The daily peak load values of the Elia control area are foreseen to increase with 1.5 percent compared to the peak load values measured in 2009.

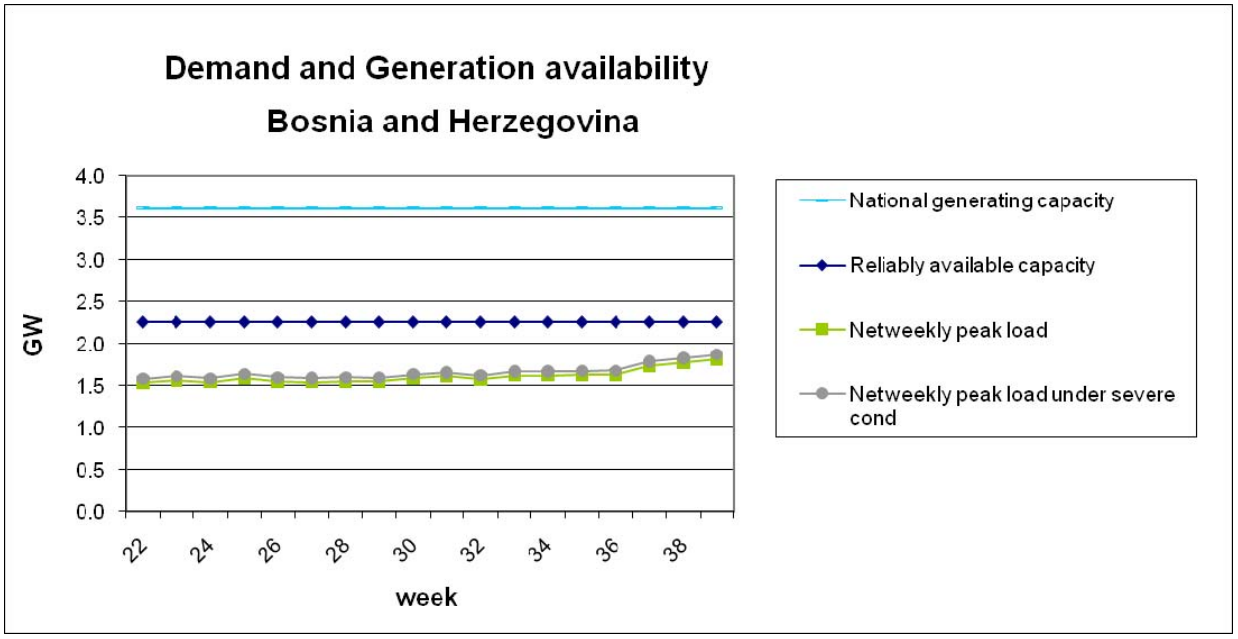
The average simultaneous import capacity for the coming winter is approximately 2253 MW whereas the average simultaneous export capacity is approximately 1413 MW. The simultaneous import and export capacity was obtained by adding the average NTC-values (according to the ENTSO-E definition) of both borders and multiplying this sum with a simultaneous coefficient of 70 percent.

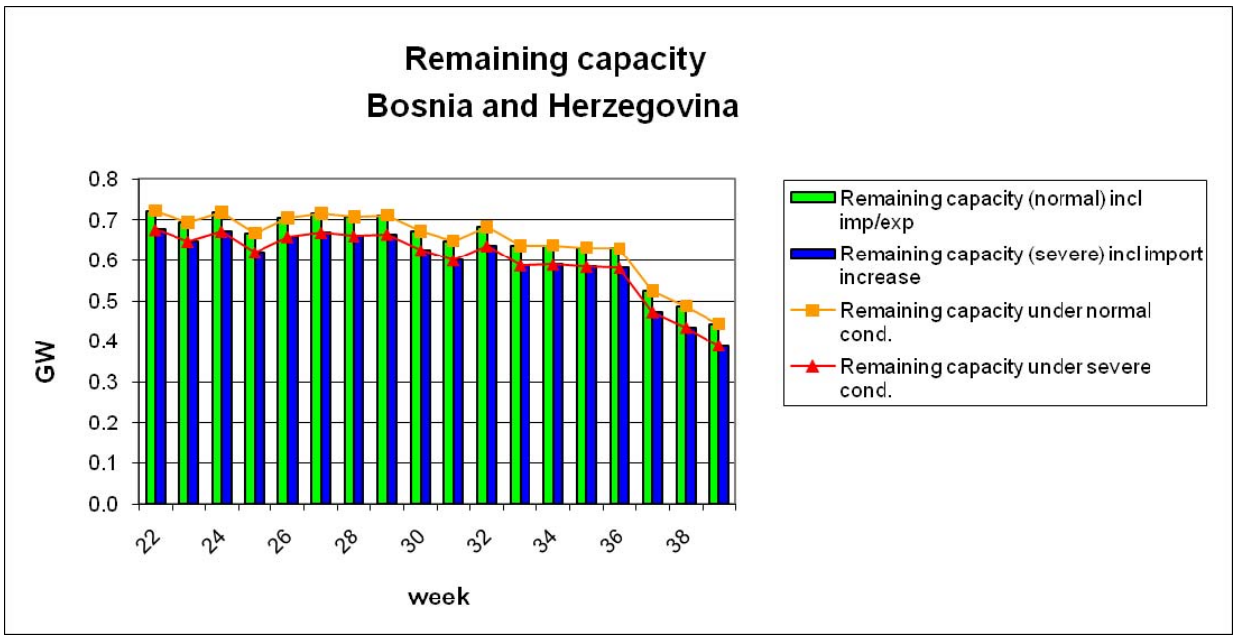
The first analysis of the system adequacy for the coming summer 2010 is positive.

The main risk factors for the Elia grid that may jeopardize the current positive summer adequacy assessment are (1) a long period of dry and hot weather, which would reduce the flow of cooling water from the rivers and therefore the available generation capacity and (2) a generation-demand imbalance for the whole of ENTSO-E North Sea and Continental Central South region.



BOSNIA-HERZEGOVINA

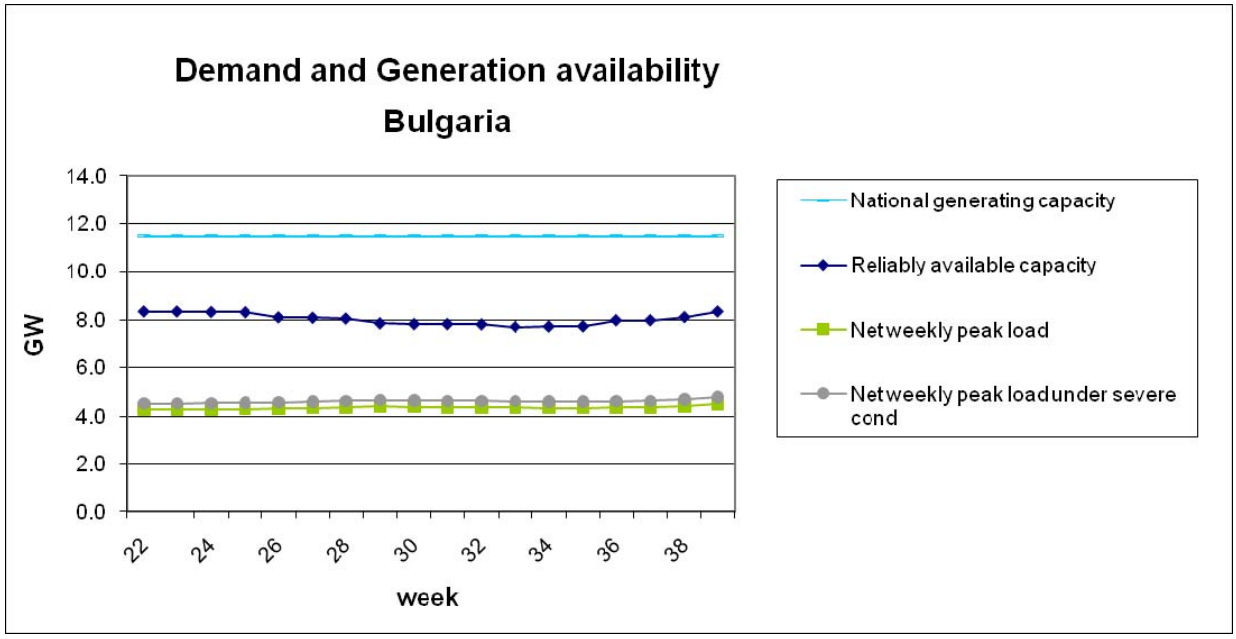


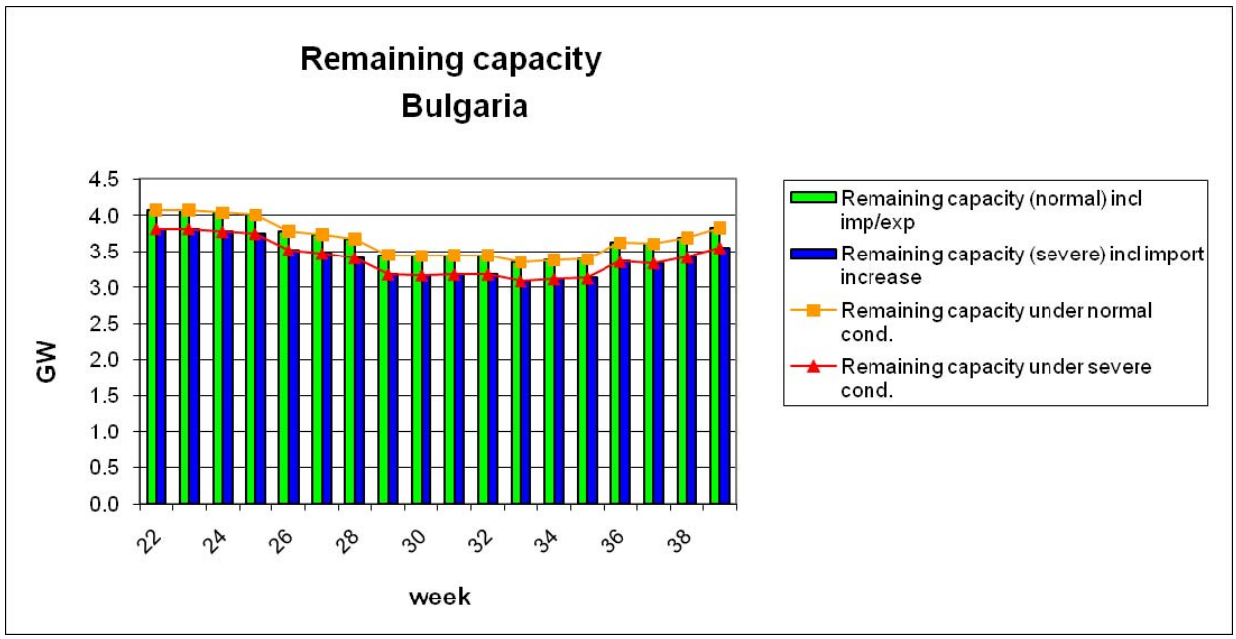


We do not expect any problems regarding system adequacy this summer, our generation could cover our demand, and also transmission capacities are adequate.

We are not dependent on imports of electricity from neighboring countries.

BULGARIA





No problems concerning power system adequacy are expected in the forthcoming summer period.

No imports are needed to secure the power system adequacy.

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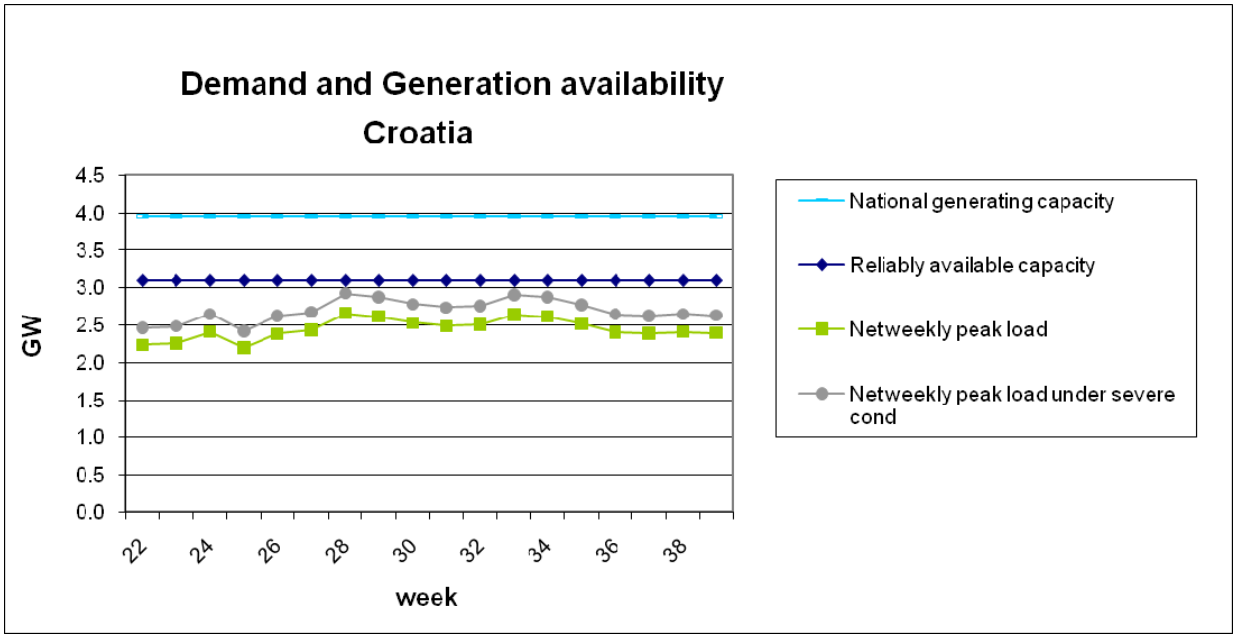
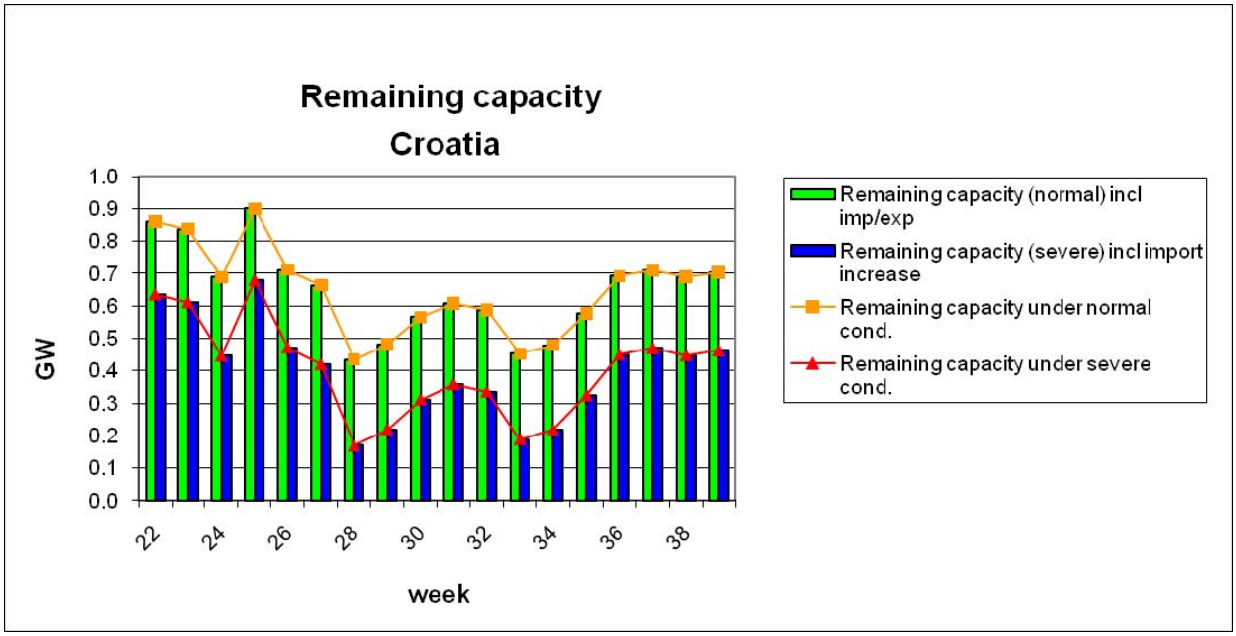
CROATIA

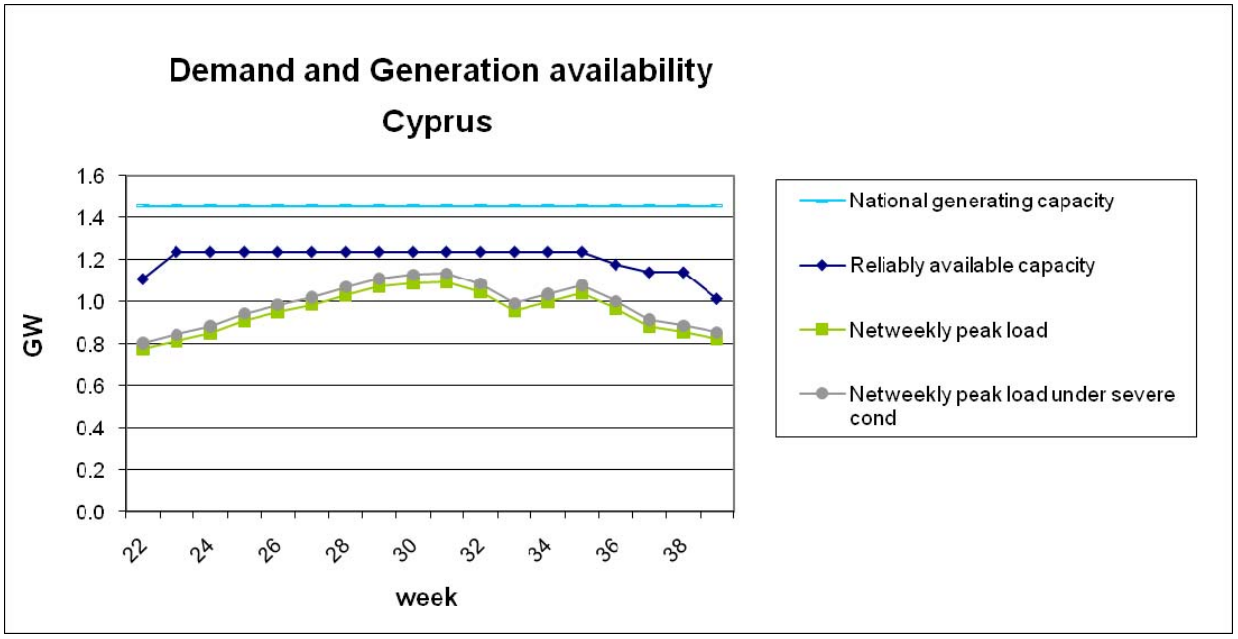


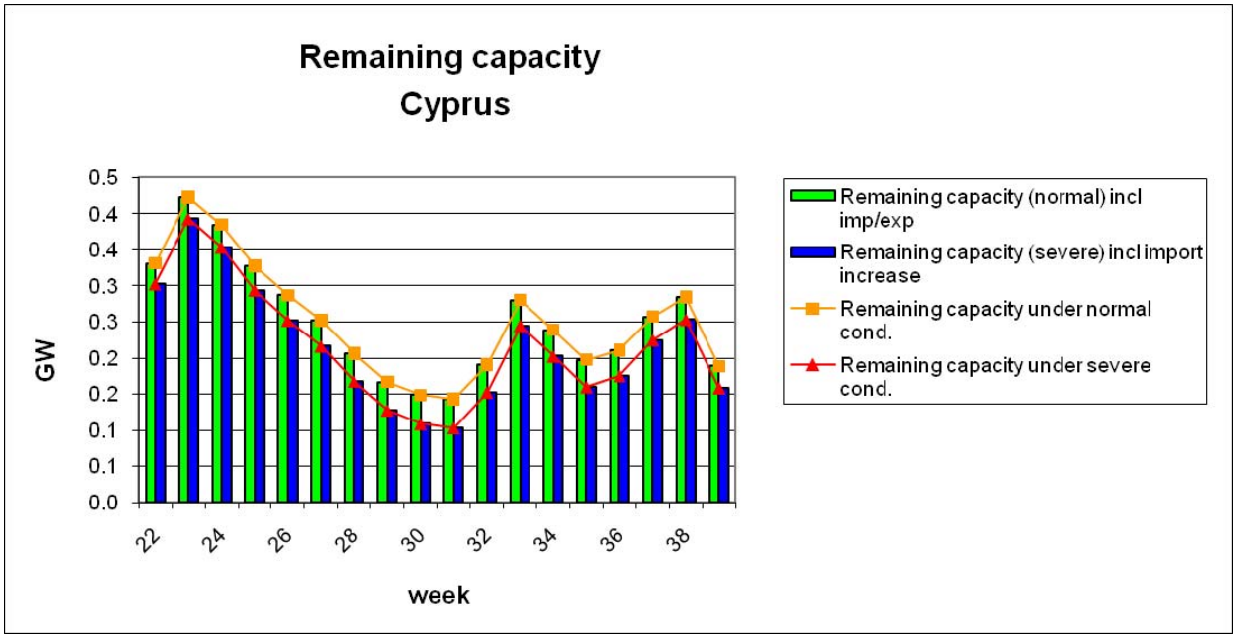


Due to the sufficient generation and transmission capacities, in Croatian power system no problems regarding system adequacy in this summer season 2010 are expected.

The Croatian power system, due to significant share of hydro power plants, primarily depends on hydrological circumstances of the region. The total amount of production of hydro power plants in extremely dry or extremely wet period can vary for approximately 50% of expected production (annually up to 6 TWh). In average hydrological circumstances, the Croatian power system depends on imports of energy to cover difference between consumption and production caused by different hydrological circumstances, where important part of import 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).

CYPRUS





The installed capacity is 1455 MW and taking into account this year's anticipated maximum demand of 1105 MW no major problems are foreseen for this summer.

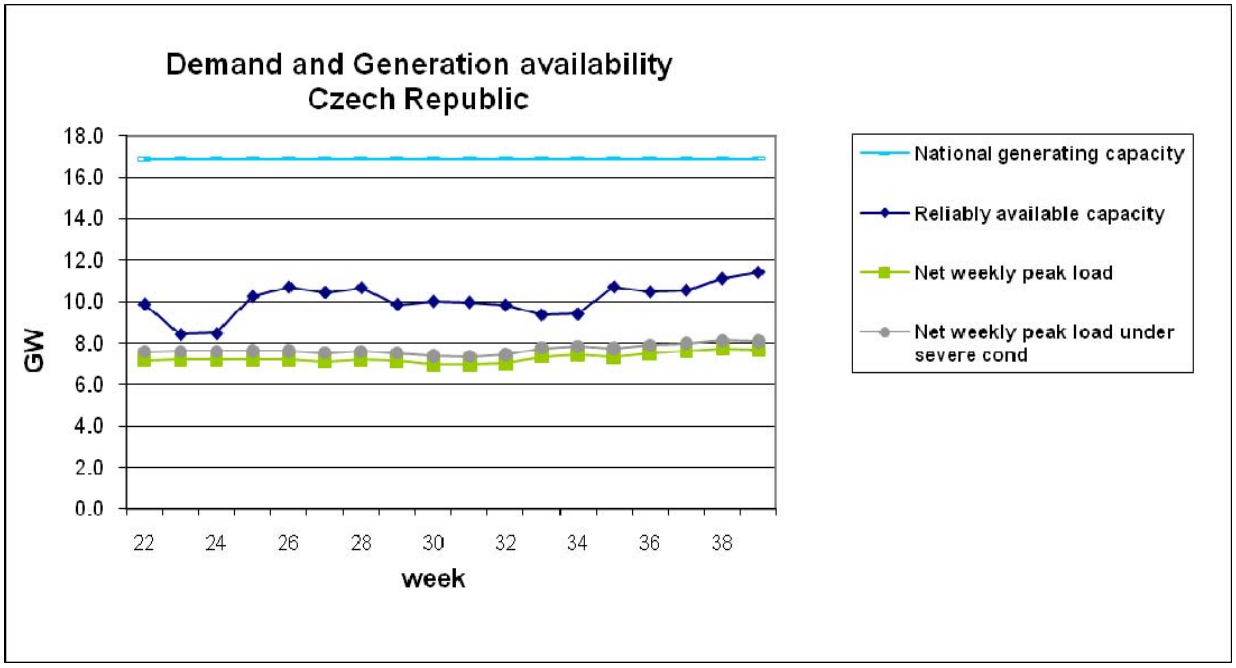
The maximum demand under normal weather conditions is expected to increase to 1105 MW and with extended heat wave to 1145 MW. The operating margin in this case will be 103 MW and 83 MW respectively.

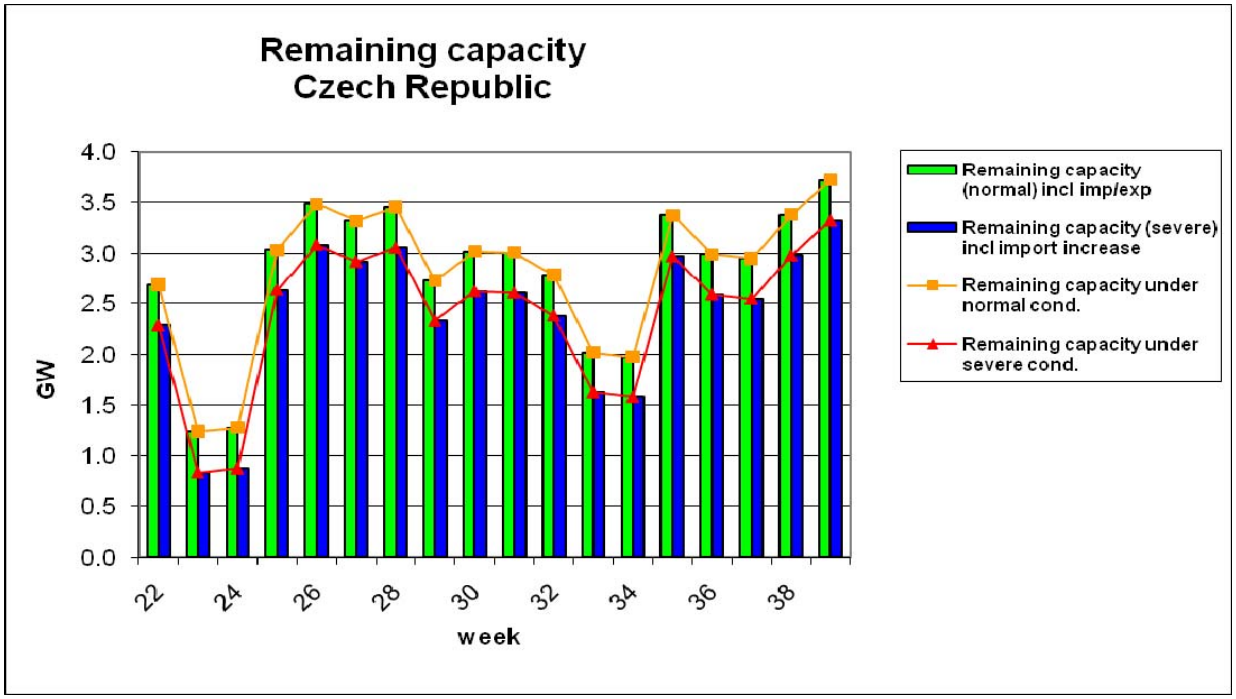
In the case of multiple planned outages a load rejection scheme will be put to force. This includes central Air conditioning load of 50 MW and irrigation water plants of 15 MW. Additional load shedding if needed will be carried out using cyclic control of 11kV feeders to rural areas.

Weeks 30 and 31 where the operating margin is at its minimum values but still depends on the weather forecast.

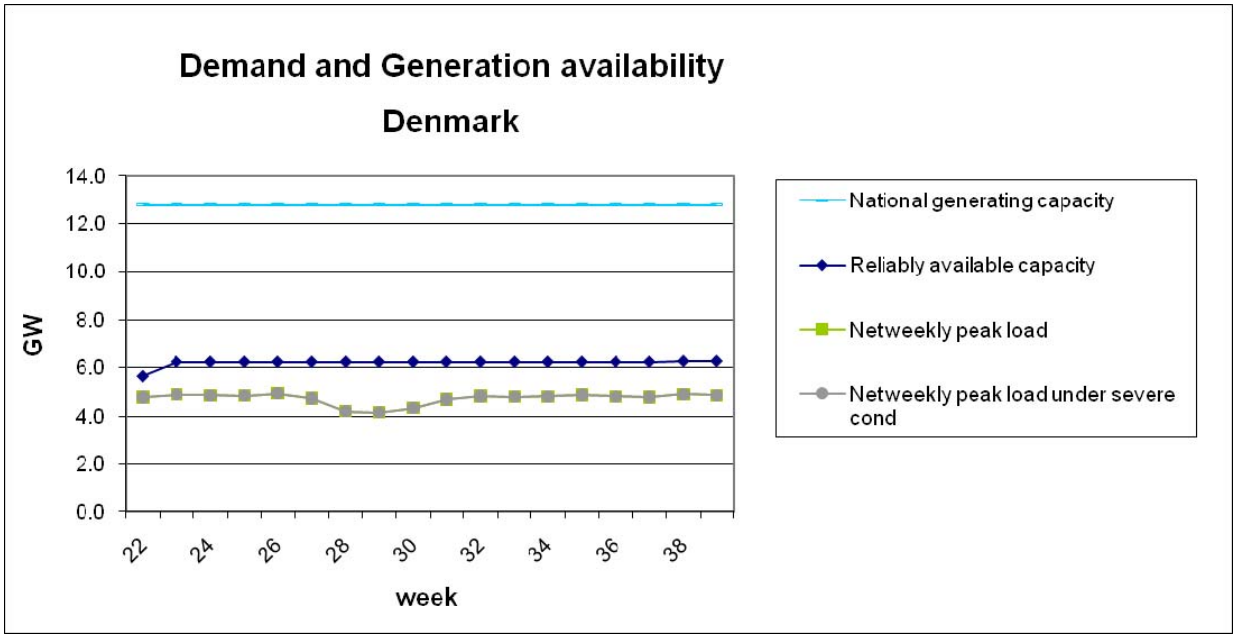
Cyprus Transmission System is an isolated system.

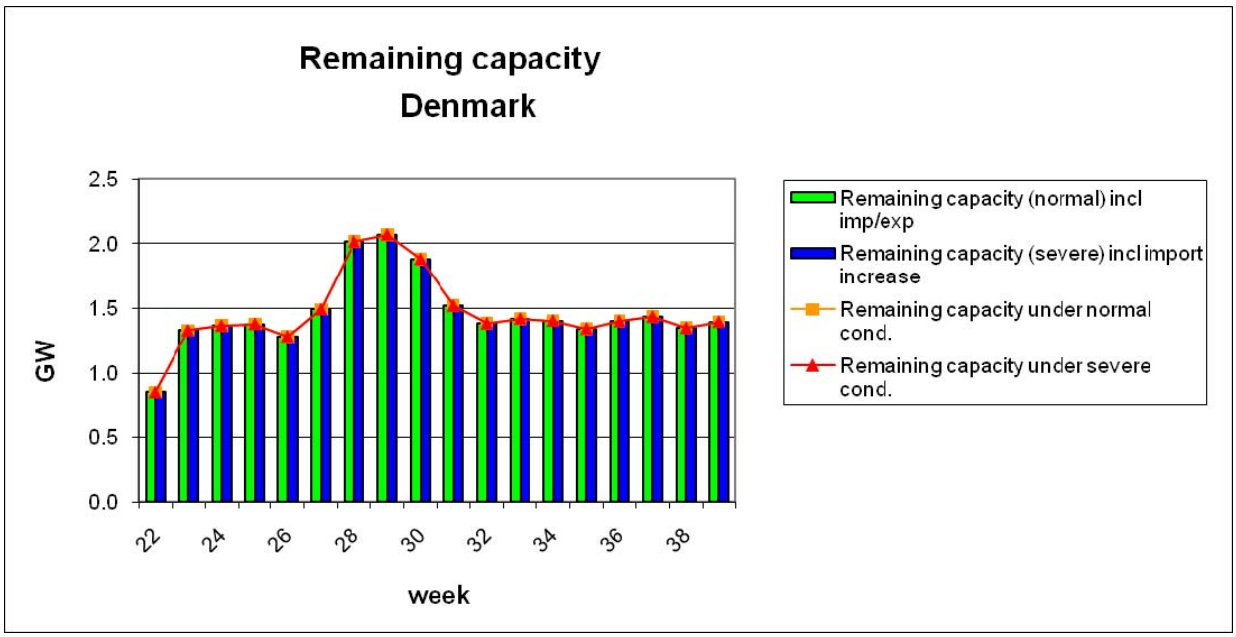
CZECH REPUBLIC





DENMARK





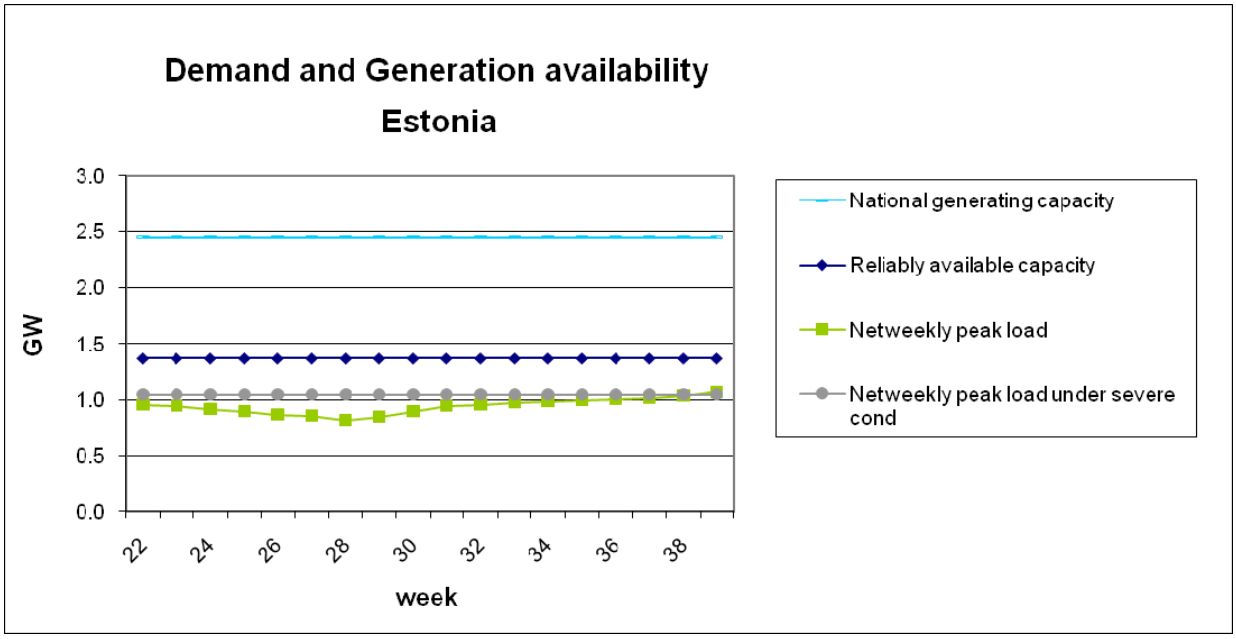
The Danish power balance in summer 2010 is expected to keep status quo compared to the winter balance 2009/2010.

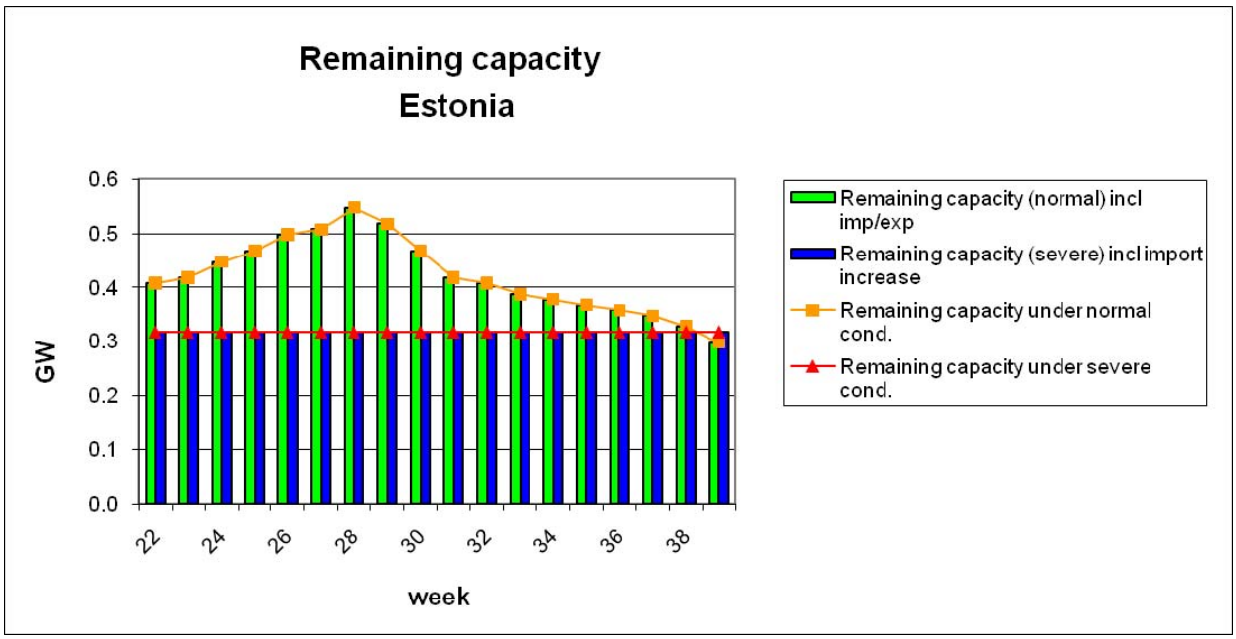
The production unit Studstrup værk blok 4 (380 MW) and the production unit Asnæs 5 (640 MW) will be taken out of the spotmarket and only to be started under special circumstances (with increased startup notice).

On the other hand the interconnector between the two parts of Denmark will be operational in the end of August.

It is also expected that the consumption, due to seasonal fluctuations, will be lower than in winter. The consumption is still effected negative as a consequence of the financial crisis.

ESTONIA





The estimation of electricity demand and supply balance for Estonia power system does not consider the probable extraordinary events. We are expected some shortages of transmission capacity Finland-Estonia and Estonia-Latvia caused by renovations and maintenance of 330kV OHL.

Estonian grid will cause export limitation to Finland through Estlink from May till October 2010.

High risk periods are from May to October 2010.

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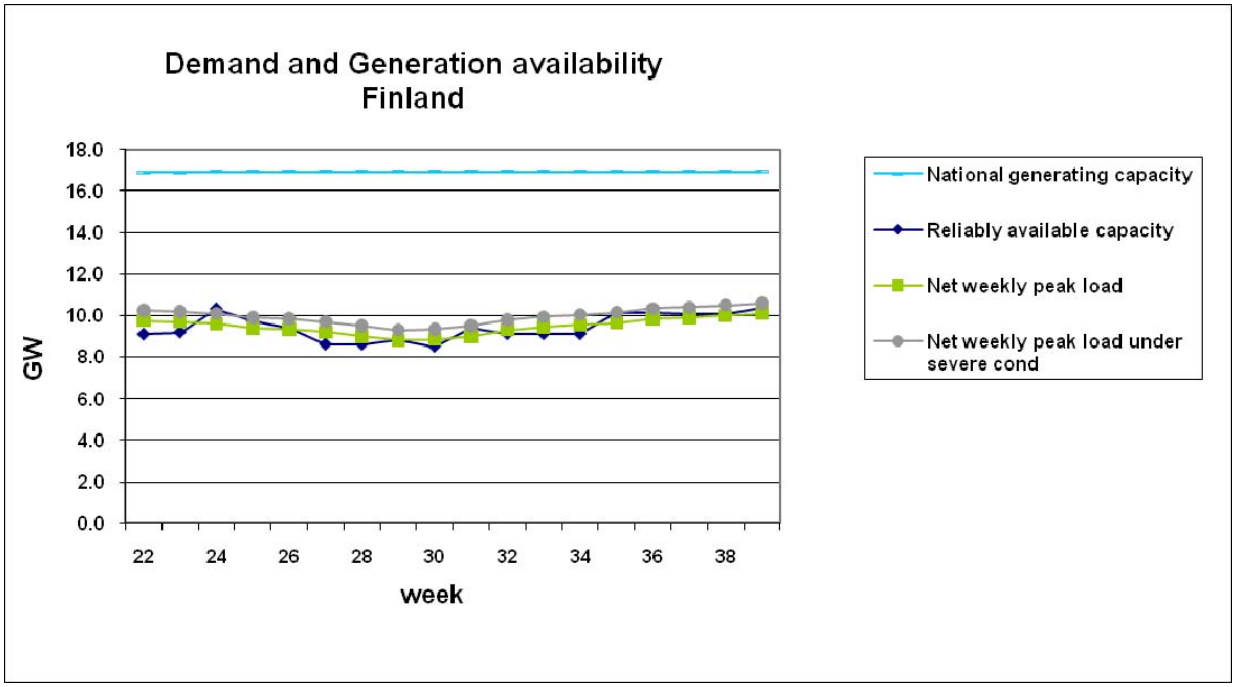
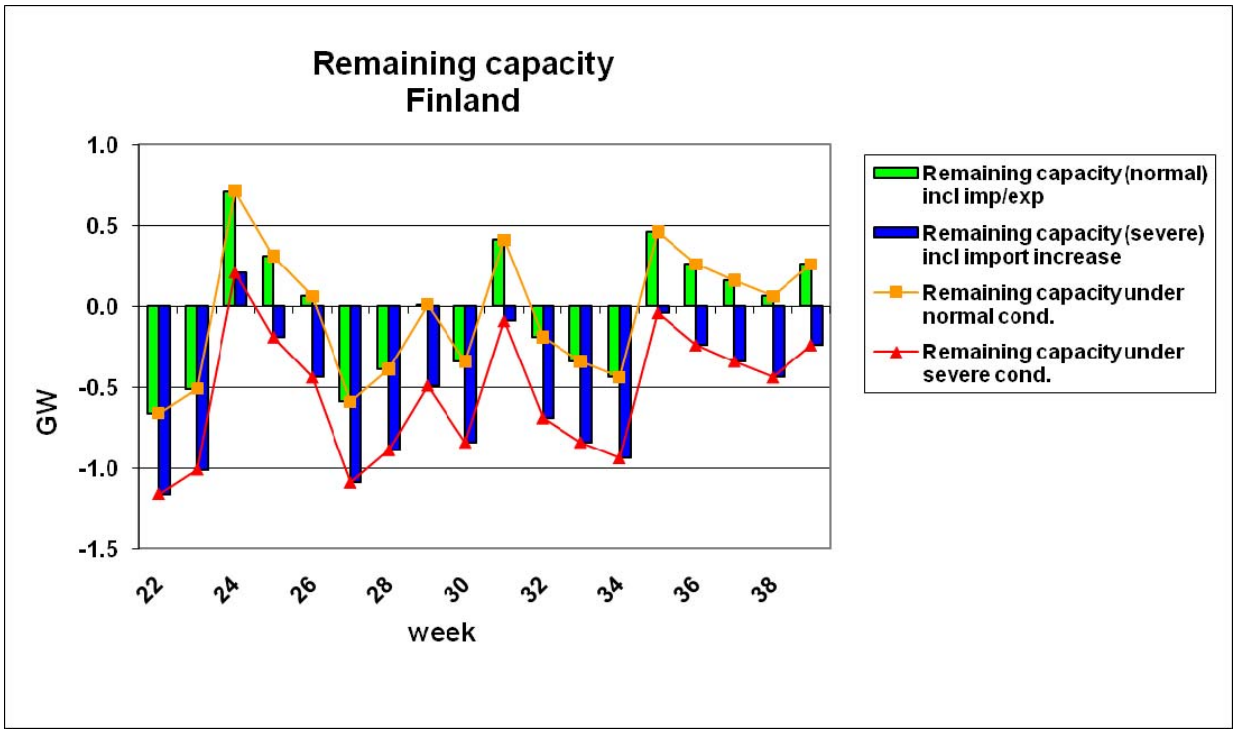
FINLAND





Summer is not forecasted as a critical period on the Finnish power system. The typical peak load in summer is 60 to 70% of corresponding winter peak. Even though combined power and heat power plants (CHP) for district heating produce remarkably less electricity than in winter and, even though overhauls of thermal generation units are scheduled for the summer period, the remaining margin is higher in the summer period than in winter.

Interconnections with Sweden and Estonia will export or import electricity depending on markets. Import from Russia is expected to continue during the summer season. According to

market message some capacity limitations may exist in import capacity from Estonia to Finland. Maintenance periods result in capacity limitations in interconnections with Estonia, Sweden and Russia. The limitations will not risk the system adequacy.

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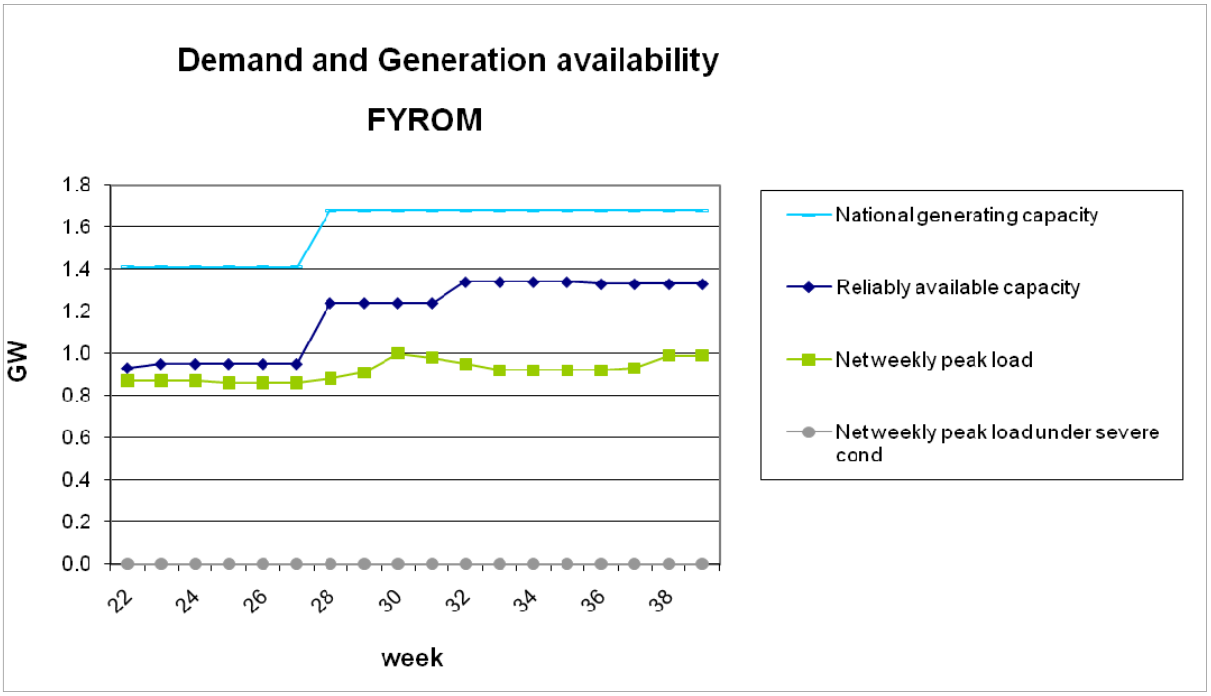
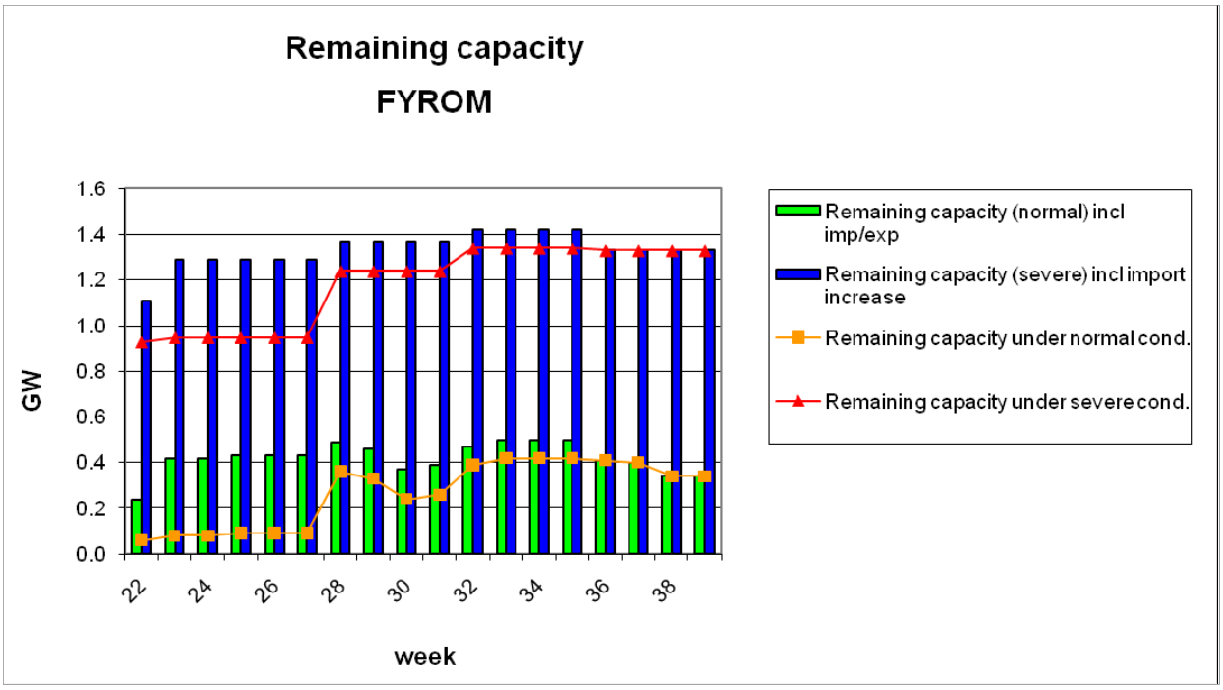
FORMER YUGOSLAV REPUBLIC OF MACEDONIA (FYROM)





MEPSO does not expect any problems this summer. FYROM depends upon imports of energy to reach adequate balance between consumption/export and production/import. This year the import will be lower than previous year, because the hydrology was very good, the levels of the water reservoirs are very high, all of them are at their maximum. Also ,the demand of eligible customers is lower than the previous years (because of the global crisis). We expect, that in July, new combined gas power plant will be put in operation, so after that, the import will be very low, and we expect that in September and October we will export energy.

We don’t expect any problems, but in the case of risk, we have arrangements with neighboring countries for emergency help, and contract with trader for reserve power, system reserve, and so on. The generation-load balance on the Macedonian system was not considered at risk for the coming summer.

The interconnections with our neighbors Serbia, Greece and Bulgaria are in good condition, so we do not expect any problems with these 400 kV lines. FYROM does not have direct interconnection line with Albania.

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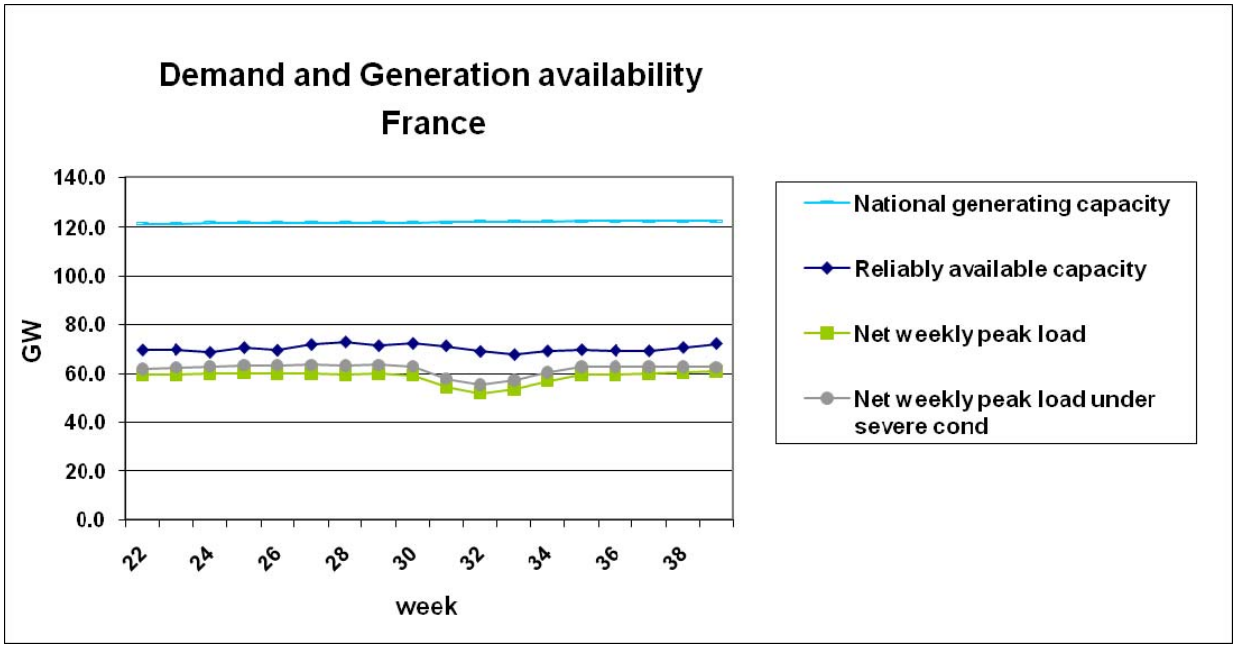
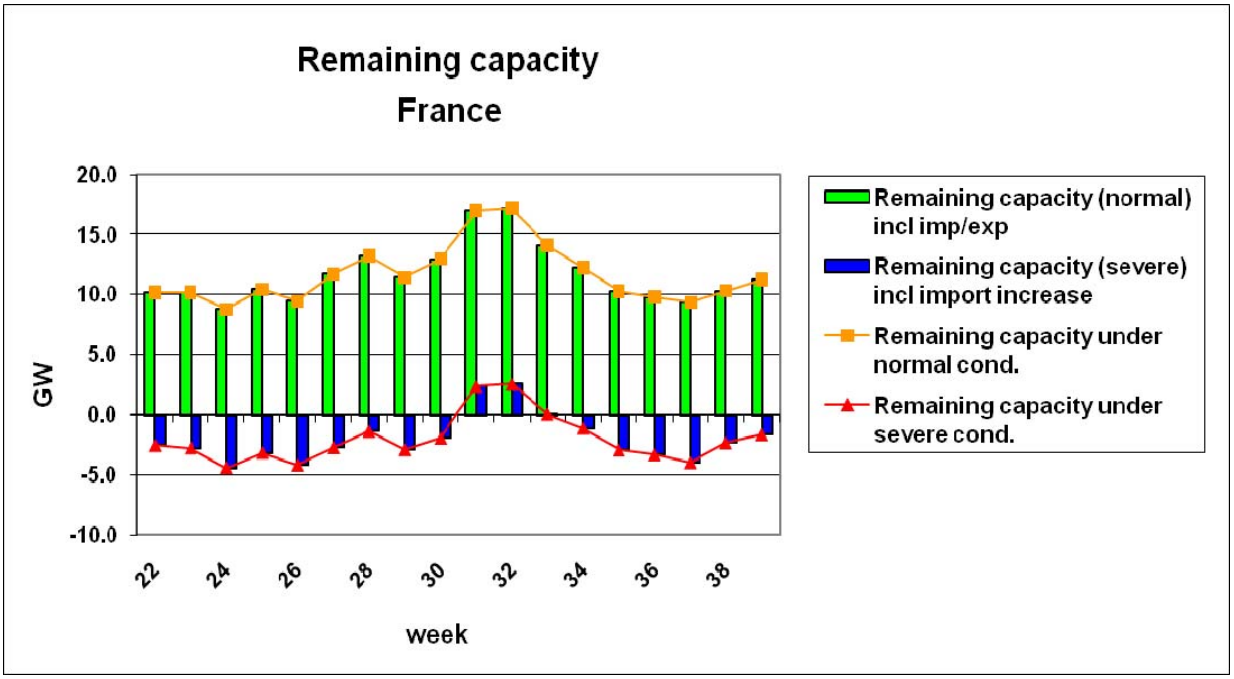
FRANCE





RTE has conducted a prospective study of the supply-demand balance in mainland France for the coming summer period.

RTE studies a scenario with high temperatures affecting demand and generating facilities, like what happened during heatwaves in August 2003 and July 2006.

The studied phenomena are the following:

- An increase of consumption (because of air-conditioning), which is calculated at +7°C above normal temperatures.

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- Many generation reductions on nuclear or fossil power units in order to comply environmental requirements (to respect limits of temperature in the rivers for example). These generation reductions come from information provided by the power suppliers.
- Reduction in available capacity of hydro-electric units (drought) and reduction in wind generation.

RTE expexts no particular problem under normal conditions. However, in case of high temperatures or heat wave, margins would be reduced and the situation could be stressed during the whole period of study, excepted in August. In June, July, and September imports close to 4 000 MW would be necessary to cover the minimum required margin.

In case problems would occur, exceptional mechanisms (in addition to specific measures like temporary overloading of certain generating units and voltage reduction) can be activated by RTE to face extreme events without shading consumption:

- Modification of the power plants maintenance schedules,
- Activation of emergency reserves contracted with neighboring system operators,
- Use of the conditions allowed in exceptional situation by existing ministerial decrees concerning the environment-related limits
- Demand of exemption of certain tourism-related limits affecting hydro-power plants generation.
- Before taking these exceptional measures, RTE could also activate demand response offers made by French consumers or by international consumers via the balancing mechanism.

When depending upon imports, all tie-lines may be concerned, except during the following outages:

- Lonny (FR) – Achene (BE) from the 1st of June until the 11th of June
- IFA Bipole 1 (FR-GB) from the 10th of may until 2nd of July
- Bassecourt (CH) – Sierentz (FR) from 21st of June until the 9th of July
- Bois Tollot (FR) – Chamoson (CH) from the 12th of July until the 16th of July
- Venaus (IT) -Villarodin (FR) from the 2nd of August to the 12th of September
- Bois Tollot (FR) – Verbois (CH) from the 20th of September until the 1st of October
- Vigy (FR) - Uchtelfangen 1 (DE) from the 4th of September until the 16th of September
- Vigy (FR) -Uchtelfangen 2 (DE) from the 17th of September until the 25th of September

In addition, all neighboring countries (UK, Belgium, Germany, Spain, Italy and Switzerland) may be concerned by potential RTE's need of imports.

There should not be any issue likely to affect the availability of imports. However, in case of extreme heat-wave and thermal constraints on the power plants in Northern France, the imports could be slightly reduced from Belgium, Germany and Spain.

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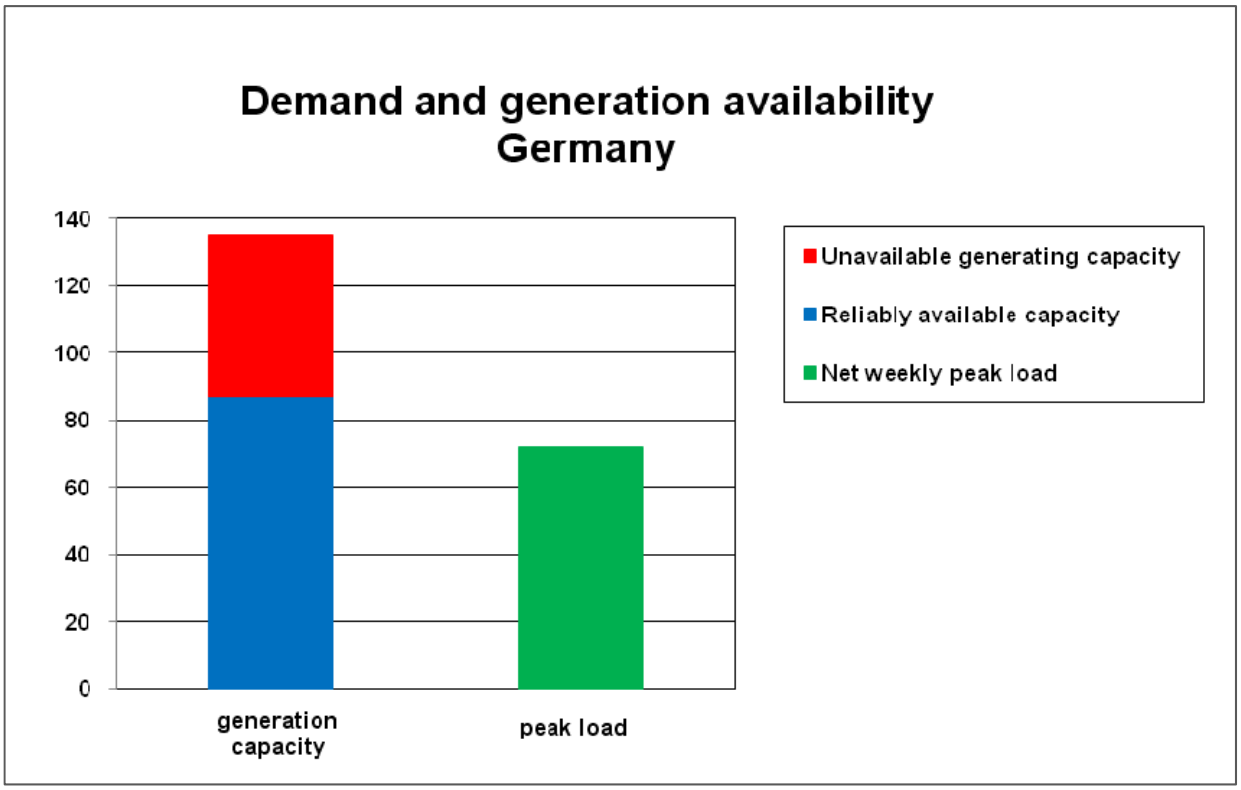
GERMANY



Remarks:

The German contribution to ENTSO-E Summer Outlook Report 2010 has been prepared on the basis of the 3rd Wednesday figures of July 2010 which have been delivered to ENTSO-E in the framework of the inquiry for the ENTSO-E System Adequacy Forecast 2010-2025 (according to the former UCTE Methodology). The result is that peak load is expected to amount to 72.2 GW (i.e. peak load at reference time + margin against peak load). Taking the different elements of the Power Balance Forecast into account, this will result in a so-called "Remaining Capacity" of around 18.7 GW which means that the "Adequacy Reference Margin" will be met. Concerning the other summer months, experience shows that the situation is most severe in July and August and that the figures can be applied to August too. The remaining months of June and September are usually not critical.

General concerns

50Hertz Control Area:

In summer 2010, problems on the transmission grid might temporarily appear again. They may result from weather conditions. There could be increased load flows in the North of Germany during periods with high wind generation. The continuously rising number of wind power plants intensifies the risk of n-1 violations and overloads within the grid of 50Hertz Transmission and on the tie lines between 50Hertz Transmission and the neighboring transmission grids. Very high demands are not expected in summer 2010.

Where long periods of high temperatures occur, heat crises are also possible. Sustained hot and dry spells could lead to problems e.g. with cooling water for major power plants. Such crises are likely to occur in July and August. In case of dry spells in Poland and thus reduced generation capacity, we expect high loads especially on the tie-lines 507 and 508 between Vierraden and Krajnik as well as on directly connected lines.

In August 2010, the nuclear power plant of Unterweser will be temporarily out of service for maintenance (expected time frame: 07/08/2010 – 23/08/2010). During this period, low wind generation and high energy demand in the Scandinavian countries (e.g. resulting from a dry spell) could together lead to high loads especially on the tie-line Wolmirstedt – Helmstedt between Transpower and 50Hertz Transmission. Special topological measures are already prepared to reduce the load.

Problems are also expected in the transmission grid of Berlin. The 380 kV cables Mitte - Friedrichshain (919) and Friedrichshain - Marzahn (921) will still be out of service. Additionally, the generation within Berlin will be significantly lower.

Transpower Control Area:

The already large wind power capacity installed in the Transpower area is expected to increase further. Thus, market-related measures are likely to occur also during the summer months.

The increasing photovoltaic power capacity installed especially in the South of the Transpower area is expected to affect the demand for balancing power.

Shortages due to missing capacity of generating units are not expected.

EnBW Control Area:

Problems may arise from large transports due to wind power feed-in from the North and high load-flows towards France / Switzerland. A heat crisis, resulting i.e. from a sustained heat spell, may give rise to problems in terms of cooling water.

Mechanisms for managing risks

Relevant for all German Control Areas:

Network and market-related measures are prepared and will be applied to comply with the request of full integration of renewable energy and to avoid or clear congestions. Support by neighboring TSOs is included in these measures. The application of topological measures requires the consent of neighboring TSOs to avoid negative influences on their grids. Usually applied market-related measures are redispatch and counter-trading, as well as the suspension of intraday trading. All network and market-related measures are based on Article 13 (1) of the German EnWG (Energy Industry Act). In case these measures are not sufficient, it is also possible to adapt the generation of power plants and renewables-based generating units. This emergency measure can be applied in accordance with Article 13 (2) EnWG.

EnBW Control Area

The following mechanisms are in place: reduction of the “C function”, operation of a minimum generating plant park, application for acquiescence to the Ministry for the Environment of Baden-Württemberg (German Land) regarding the continued operation of the power stations within the minimum generating plant park.

Specific periods of risk

Relevant for all German Control Areas:

Generally, the access to detailed generation data is limited in Germany. Many of the data required for the Power Balance are estimations and approximations. As a result of the process of unbundling and the very large number of players in the market, the situation is getting more and more difficult every year.

As in the last years, there is an increasing number of generators and especially embedded and renewable generation. We are not sure about the quality of the data concerning the large number of small generation companies. Consequently, it is almost impossible to make a weekly assessment.

EnBW Control Area:

A heat crisis is likely to occur in July / August.

Dependence on imports

Amprion Control Area:

Since Amprion is an exporting TSO, questions are not relevant. Available transmission capacity can be found on the web page: http://www.amprion.net/prognosen-ueber-dem-markt-zur-erfuegung-stehende-uebertragungskapazitaet.

EnBW Control Area:

This issue is not relevant due to the tight meshing in the Southwest of Germany.

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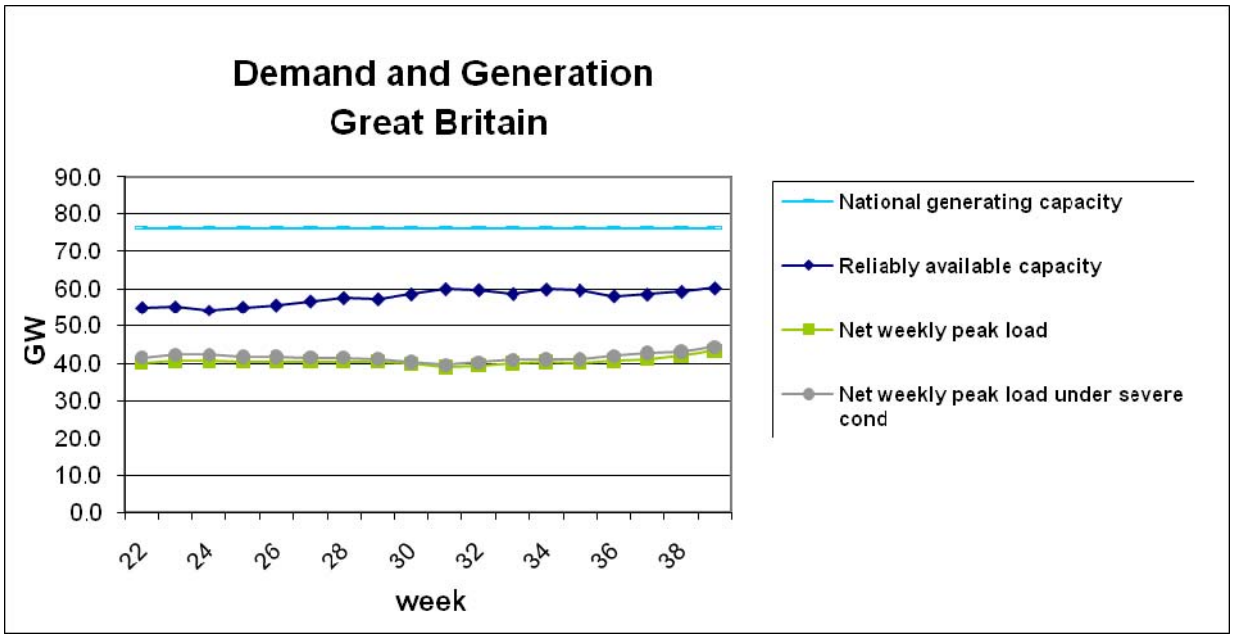
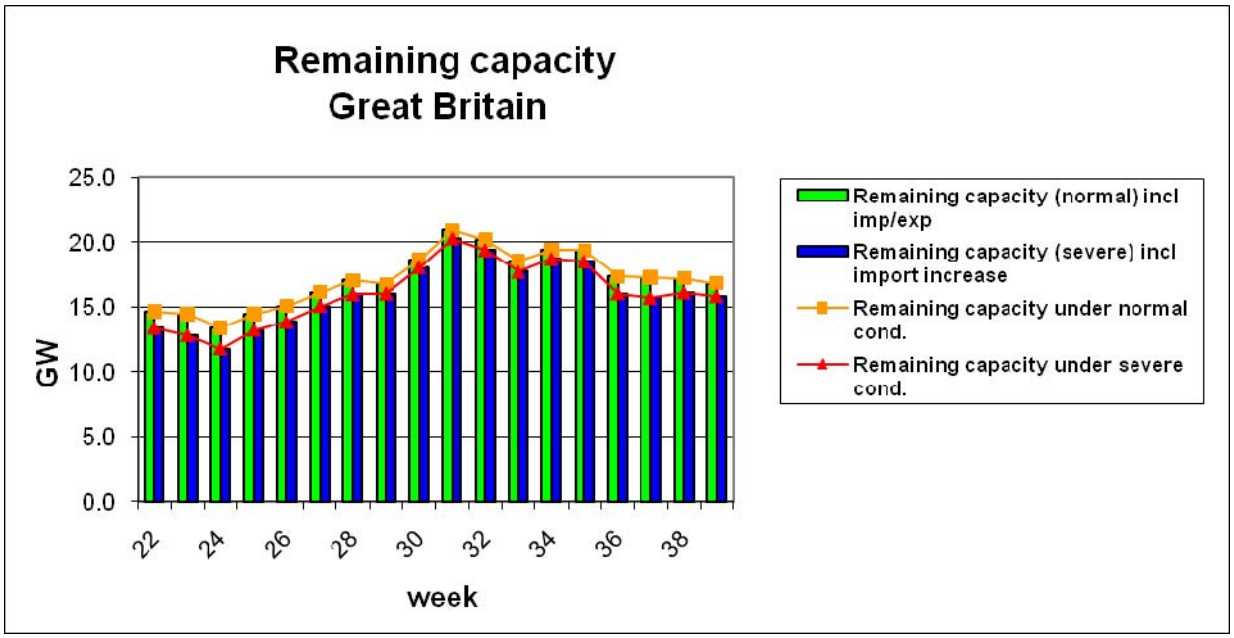
GREAT BRITAIN

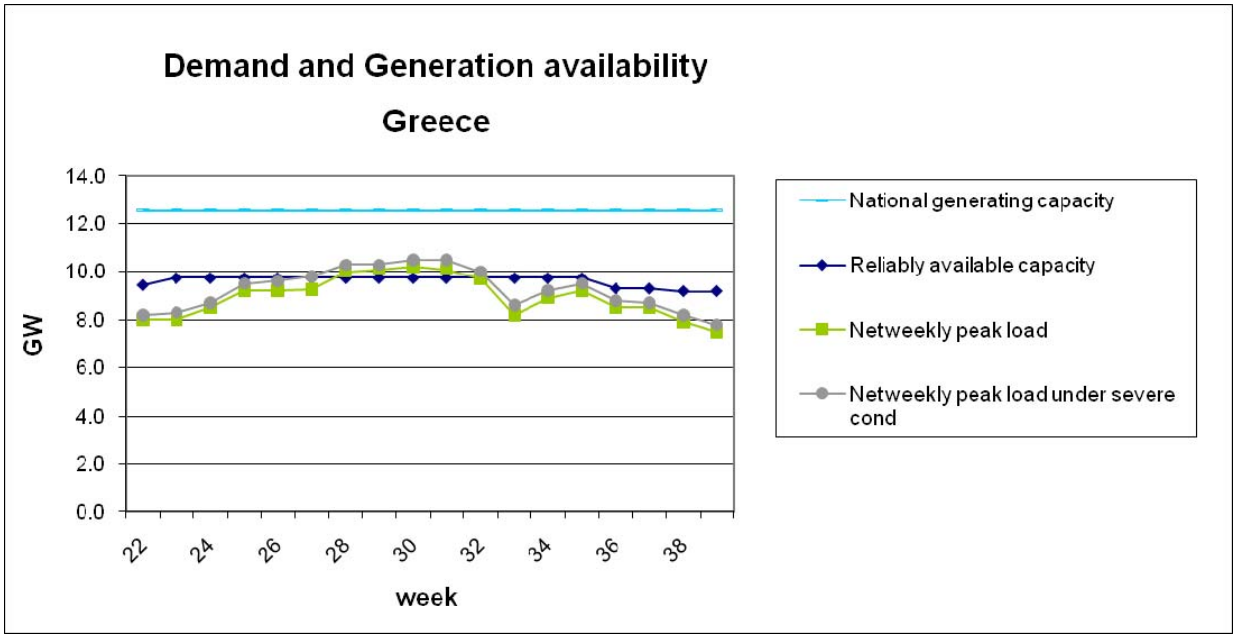


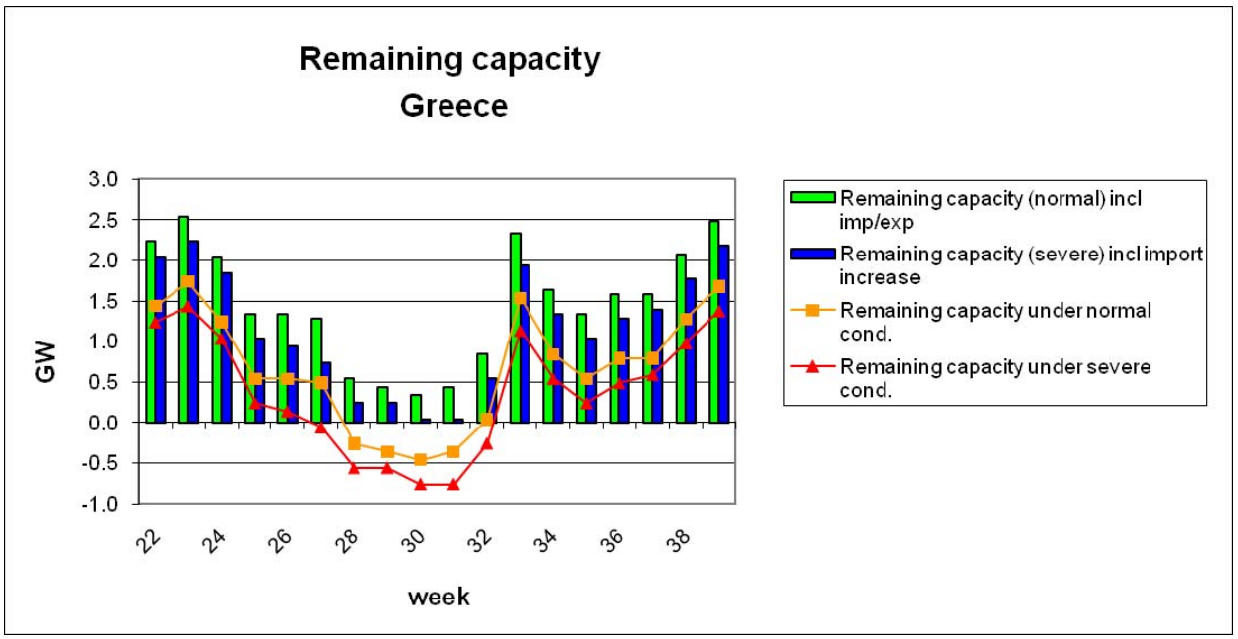


The outlook for the GB electricity market in summer 2010 currently shows higher plant surpluses than at the same point in time before summer last year. This means that the outlook for electricity security of supply for the coming summer appears comfortable, more so than at the same time last year. The issues with electricity security of supply over recent summers have either been caused by exceptional events, such as exceptionally high levels of near coincident generation losses (May 27th 2008), or a period of hot temperatures without sufficient timely market response, and are considered a rarity.

National Grid does not expect to be dependant upon imports of electricity from neighboring countries.

GREECE





As usual the Greek TSO expects high load (demand) during the summer and particularly between 20 June and 25 August, because of the high temperatures. Economic crisis caused unexpected reduction of demand, so our estimation for the forthcoming summer period is that the demand will be lowest in relation the situation without crisis influence. The total installed capacity of production of electricity estimated to increased, because a new producer (gas unit 430 MW) will be start the commissioning period in this summer. An other one independent producer with the same capacity, will be ready to start the operation till the end of the current year. However this year the water levels in the hydro reservoirs are very high due to increased rainfall which will increase the hydro generators capacity for the summer. In addition concerning the grid situation, during the summer months forest fires can affect the availability of transmission lines. In case of any risk the mechanisms in place are: Incentives to interruptible customers to reduce their consumption during peak hours and maximization of our north import

capacity in collaboration with our neighboring TSOs. High risk periods are forecast for the second half of June, July and the first half of August

We do not expect any shortages of transmission capacity during the summer period except the above referred causes concerning the unexpected fires.

In terms of interconnections, the most critical are the interconnection with Bulgaria and the HVDC cable with Italy. An other item in relation of the interconnections is that in the beginning of summer period estimated to start the trial period of parallel operation the Turkish system with the European system through the Greek and Bulgarian grids.

Concerning the fuel gas supply for the Greek system there is no problem because LNG (as an alternative gate of importing gas) covered the gas demand during the unexpected periods.

The countries relied upon to provide exports are Bulgaria, Italy and Romania.

The reliability of assets could affect the availability of imports.

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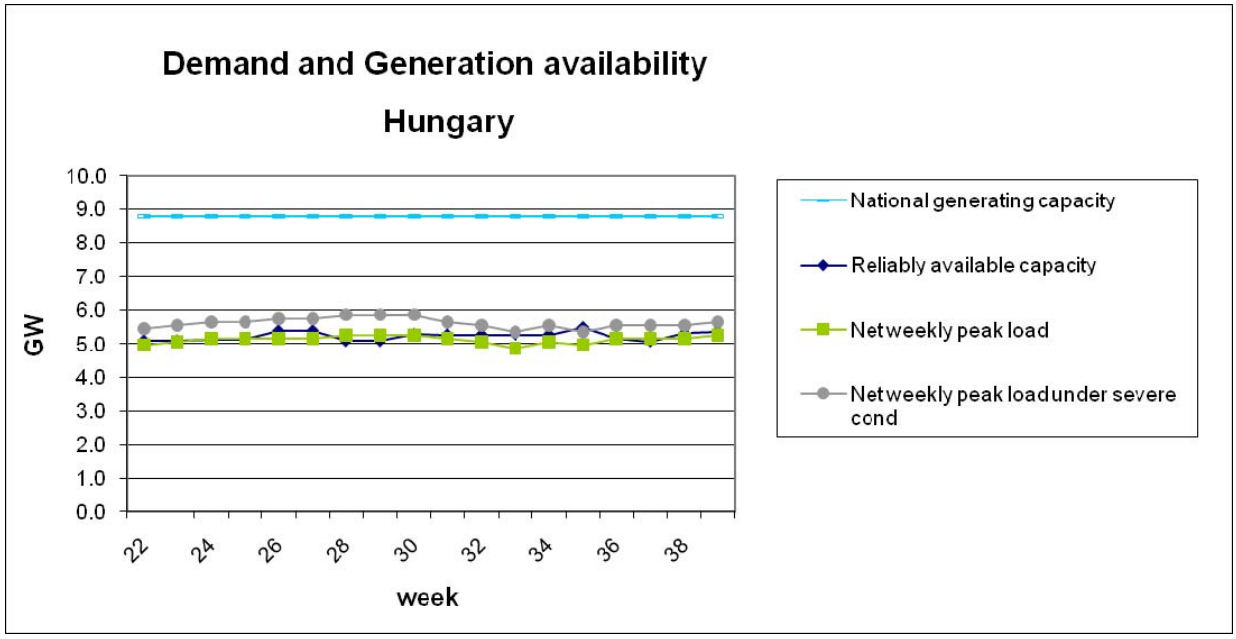
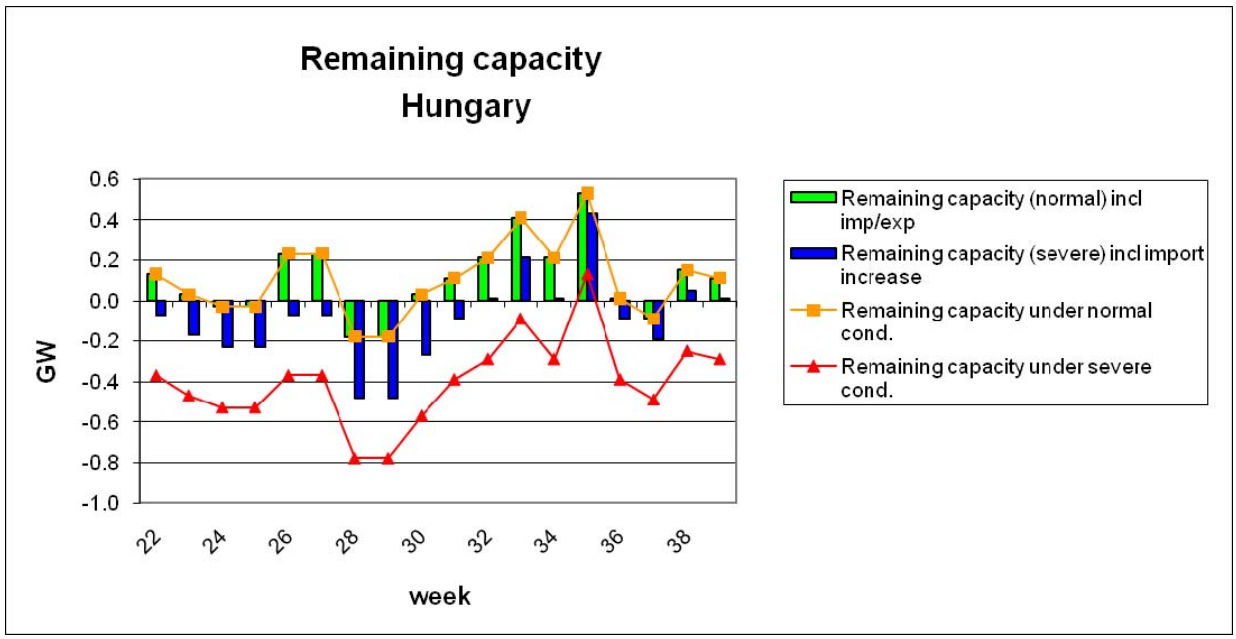
HUNGARY





In Hungary on July, the remaining capacity is negative, and all over the summer period, it is near zero. Demand (especially under severe conditions) can only be supplied by additional imports. During the summer period, we should take into consideration that the wind power generation in Hungary and in Austria can change the import day by day. Use of air-conditioning can increase the demand during a long heatwave. Lack of capacity is caused by overhauls of generating units. And after all, historically, Hungary is depending on import. These four reasons can cause the above mentioned negative remaining capacity. There are enough cross-border capacities available on fair monthly and daily capacity auctions for market participants. The Hungarian TSO (MAVIR) has concluded market maker contracts for provision of reserve generation capacities even from abroad. Therefore the necessary balance energy must be available, if market players – for any reason – do not fulfil their obligations. As a last resort, inter-TSO emergency energy deliveries are also contracted. A procedure exists for risk management:

when, following the development of events, the TSO realises the necessity, relevant market players and the regulator are involved to define special actions – either market based, or additional to normal market operation.

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ICELAND

The generation capacity in Iceland is expected to be sufficient to meet peak demand this summer under normal as well as severe conditions. Landsnet does not anticipate any particular problems in the isolated Icelandic power system.

The installed generation capacity connected to the Icelandic transmission system is 2.4 GW, of which 77% is hydro based and 23% based on geothermal energy. The summer period is used for scheduled maintenance on the generating units. The maintenance is scheduled such that it does not jeopardize the power and energy balances.

Long term Generation Capacity Assessment and Load Forecast for the Icelandic power system are made by Landsnet every year and reported in the Transmission System Development Plan and Energy and Power Balance report. For short term assessment, studies are made by Landsnet on a weekly basis for Generation Capacity, Reserves and Load Forecast.

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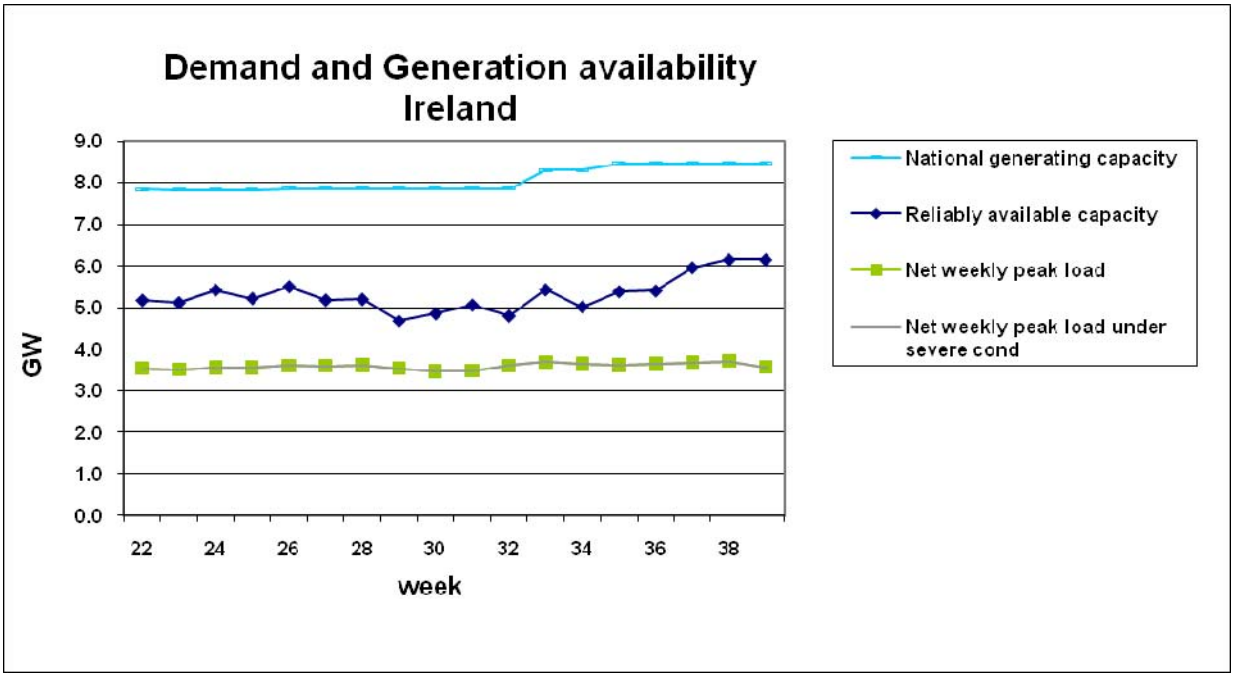
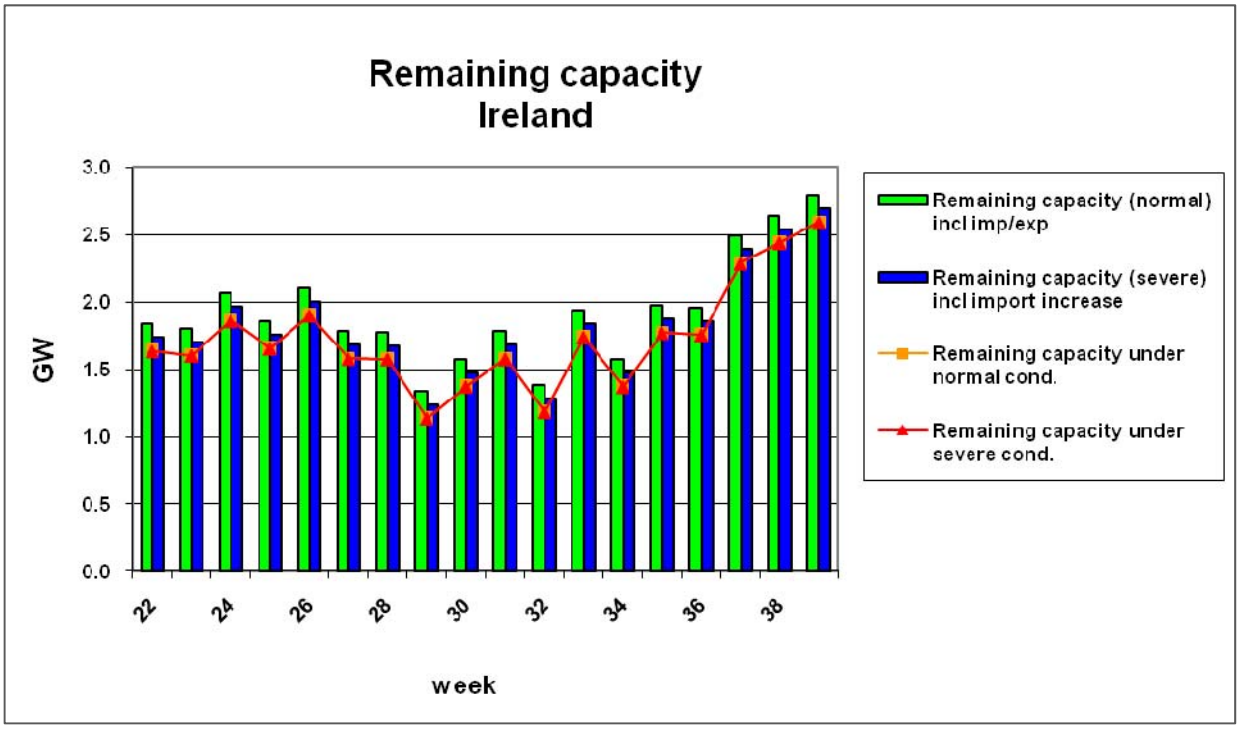
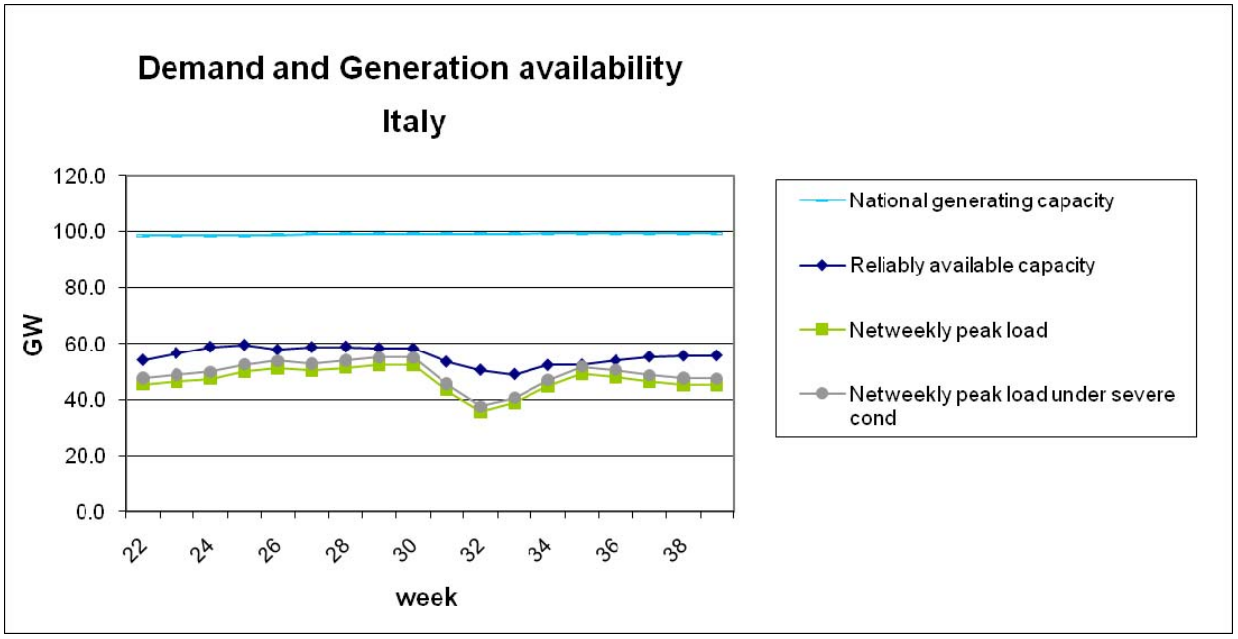
IRELAND

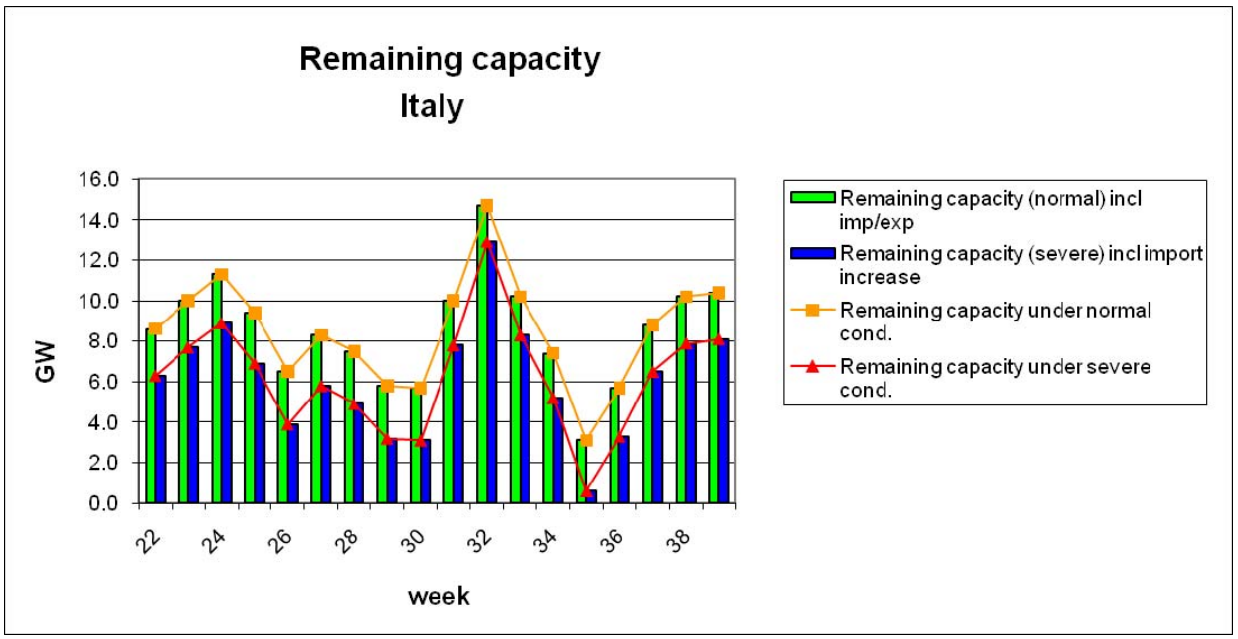




EirGrid does not expect any capacity or demand issues on the Irish system this summer. According to the latest analysis, there will be sufficient capacity to meet the demand over the entire summer period. Demand growth is relatively flat at present and this is expected to continue for the rest of the year. While there are a number of major outages of large units this year, there is sufficient spare capacity to deal with unexpected forced outages.

ITALY





Under normal conditions the general situation expected in the summer is not critical. This is due to both a reduction in peak load forecasts (reduction of about 2GW versus last summer outlook report) and a further increase in thermoelectric (CCGT and coal plants) capacity.

Some consideration is required for the situation in Sicily where the forecast margins are still tight.

In Sardinia forecast margins are greater than in the previous years due to the coming into operation during November '09 of the first of the two new 500 MW HVDC undersea links with the peninsula (SAPEI). However, only with the second cable (planned for the end of 2010) a comfortable adequacy level will be reached.

It should be noticed that extreme and unexpected events (i.e. very high temperatures, severe shortening of hydro resources or unforeseen outages of fundamental grid elements) may lead to possible critical periods.

Nevertheless proper countermeasures are already foreseen.

Week 35 is expected to be the most critical.

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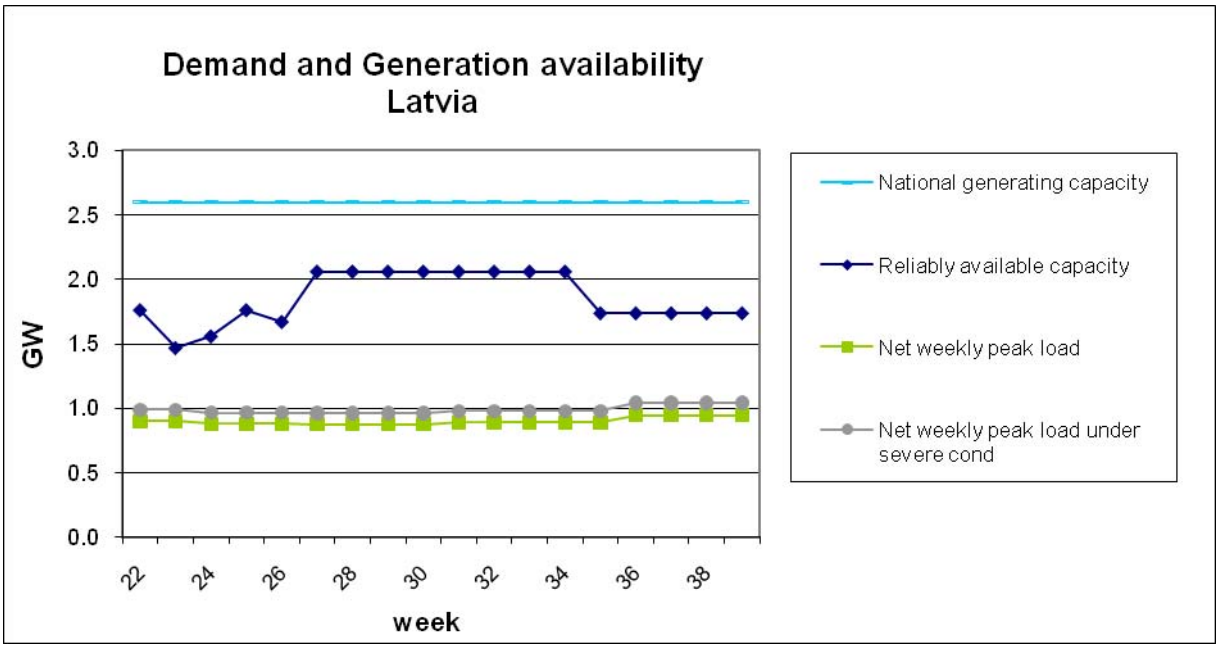
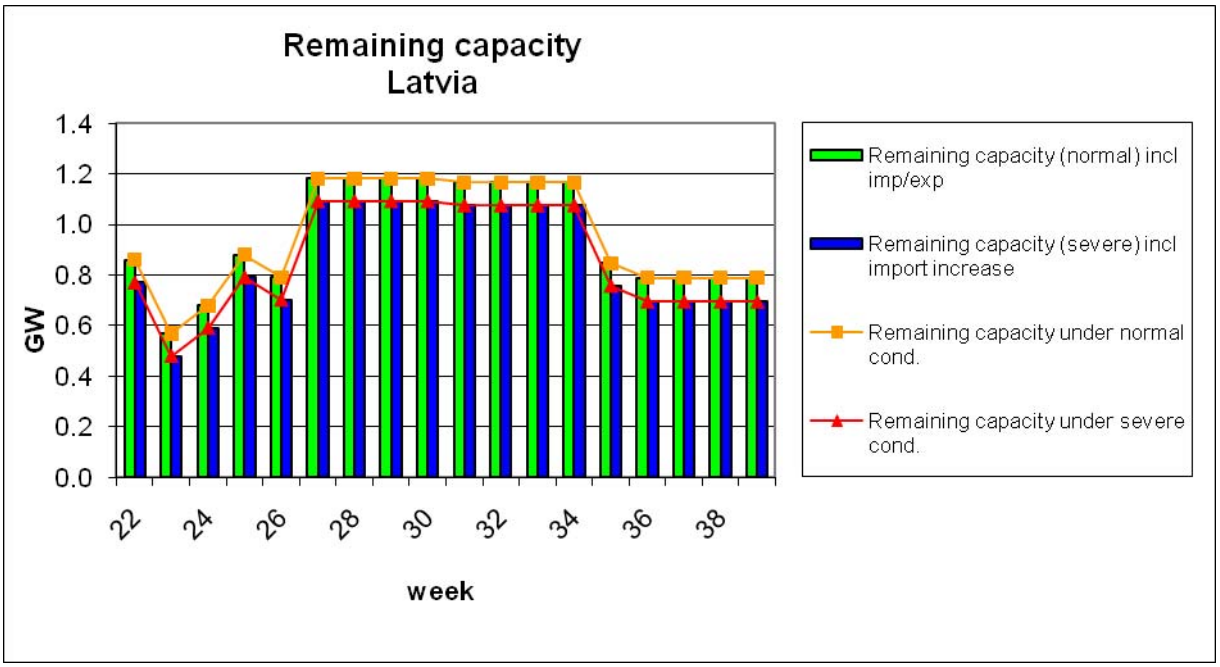
LATVIA

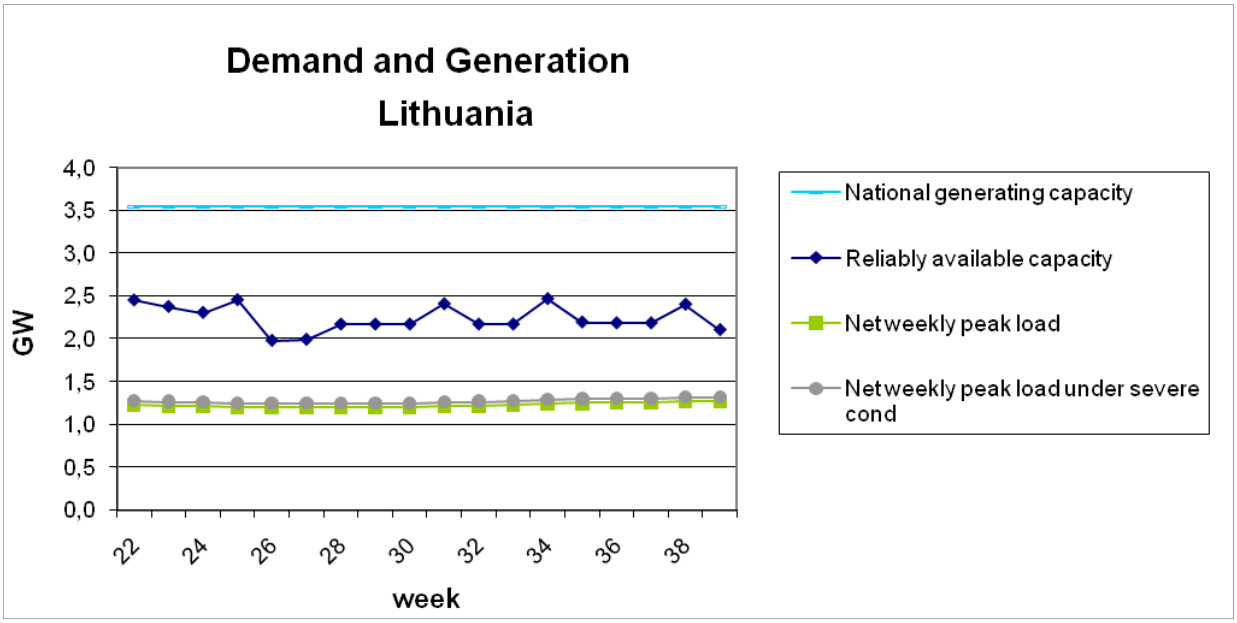


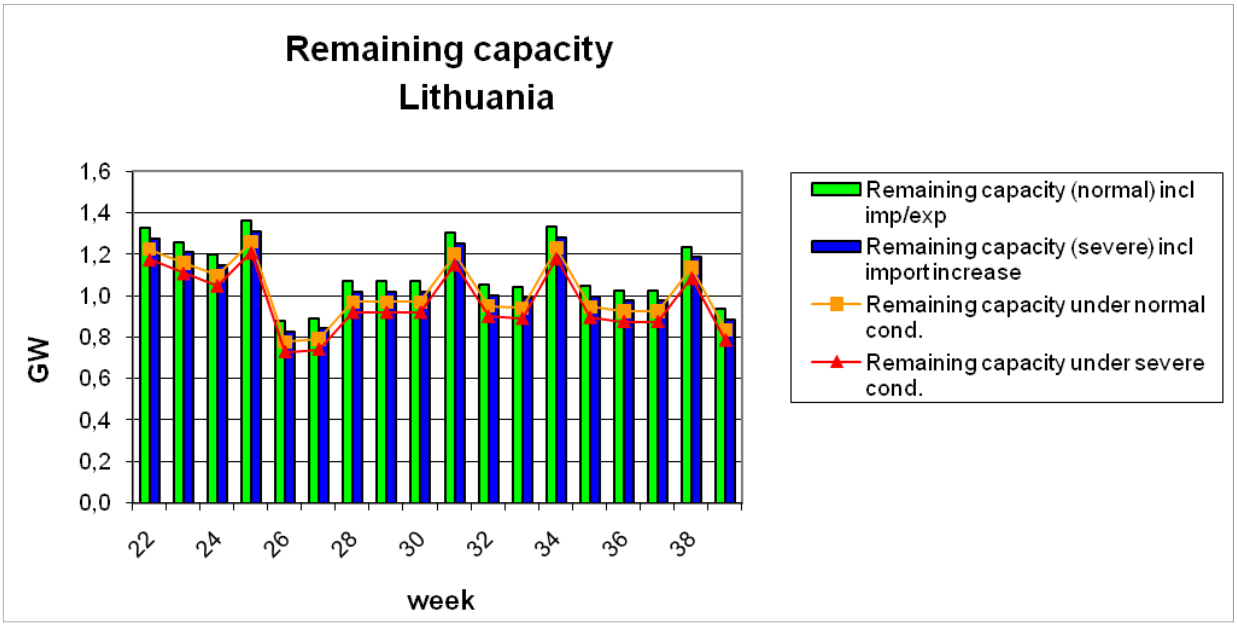


The estimation of electricity demand and supply balance for Latvian power system does not consider the probable extraordinary events.

High risk periods are from May to October 2010, what is related to the restrictions in the cross-border Estonia-Latvia, due to transmission line maintenance. Risks with transmission capacities in Latvian-Lithuanian cross-border are not expected in 2010 winter period.

LITHUANIA



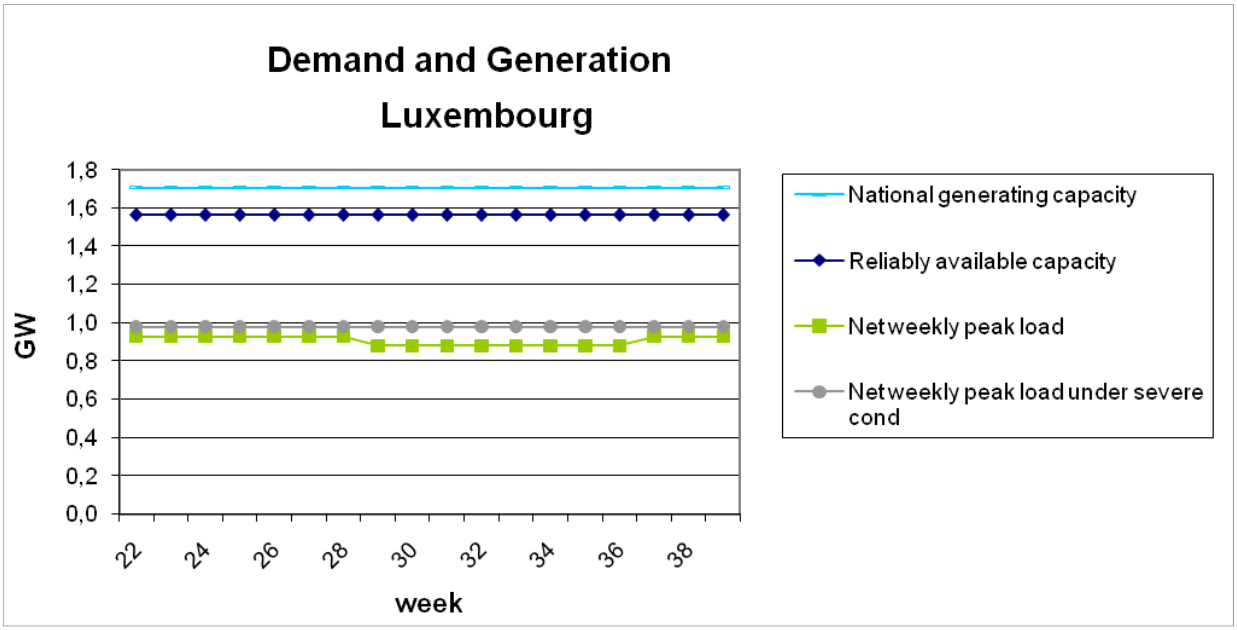


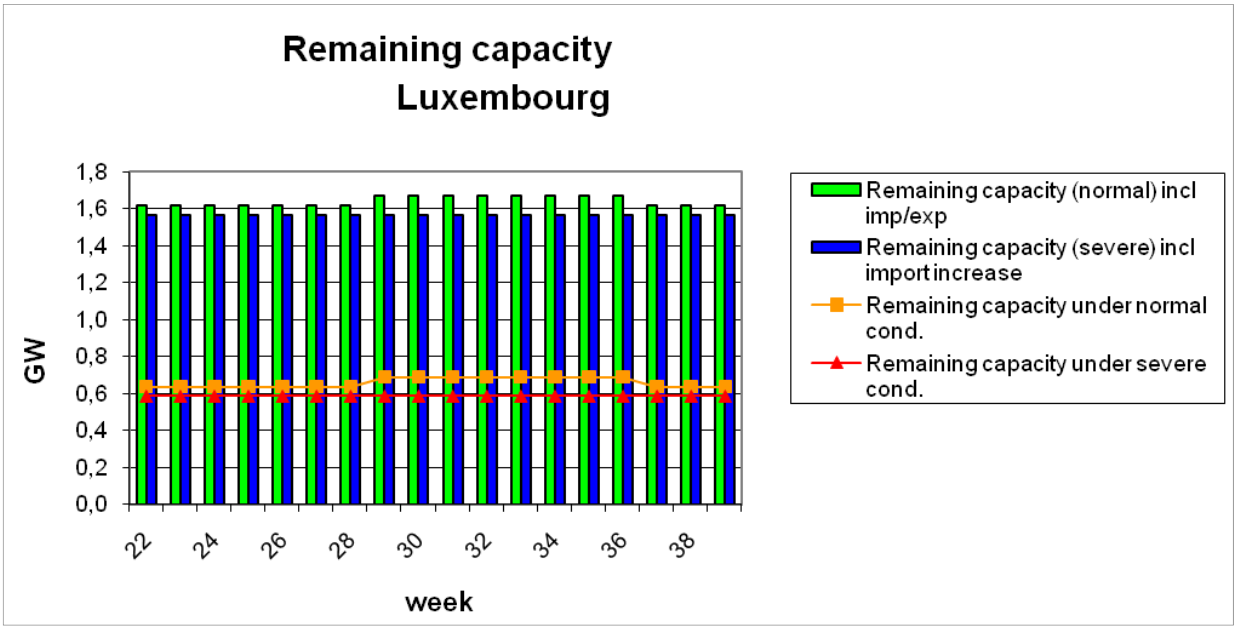
No problems are expected under normal conditions. Demand will be decreasing and overall electricity consumption is forecasted to be less than previous summer due to the economic recession.

Import of electricity from neighboring countries will be relied upon cross-borders with Belorussia and Latvia. All traders from neighboring countries have equal rights to import to Lithuania Power system through the Power Exchange. At the moment there are traders from Russia, Belorussia, Latvia and Estonia.

The availability of imports mainly depends on the generation/demand balances in neighboring countries and also available cross-border transmission capacities. None of these factors are considered as high risk in this summer.

LUXEMBOURG





CREOS does not expect any problems in its system for next summer. The overall generation capacity in Luxembourg (including pump storage power) is higher than the consumption. Due to grid structure nearby the whole energy has first to be exported and then re-imported again. Creos is still a net importer of about 85% of electric energy. All the existing interconnectors are needed for normal operation. The N-2 criterion is always used for defining necessary interconnection capacity for the public grid. As no planed outages of lines are foreseen, the capacity of the interconnection lines is at all moments sufficient to cover the national load.

Creos don't expect having problems during summer 2010 period.

The public grid of Creos is interconnected via two double lines to the German grid of Amprion. Transmission capacity is sufficient even in N-2 case. Energy delivering is assured on contractual basis.

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The industrial grid in the southern part of Luxembourg and the CCGT power plant are operated in radial with the Belgium grid of ELIA and capacity of the lines are sufficient. Energy delivering is assured on contractual basis.

No special risk is expected during summer 2010 for dependency of availability of imports.

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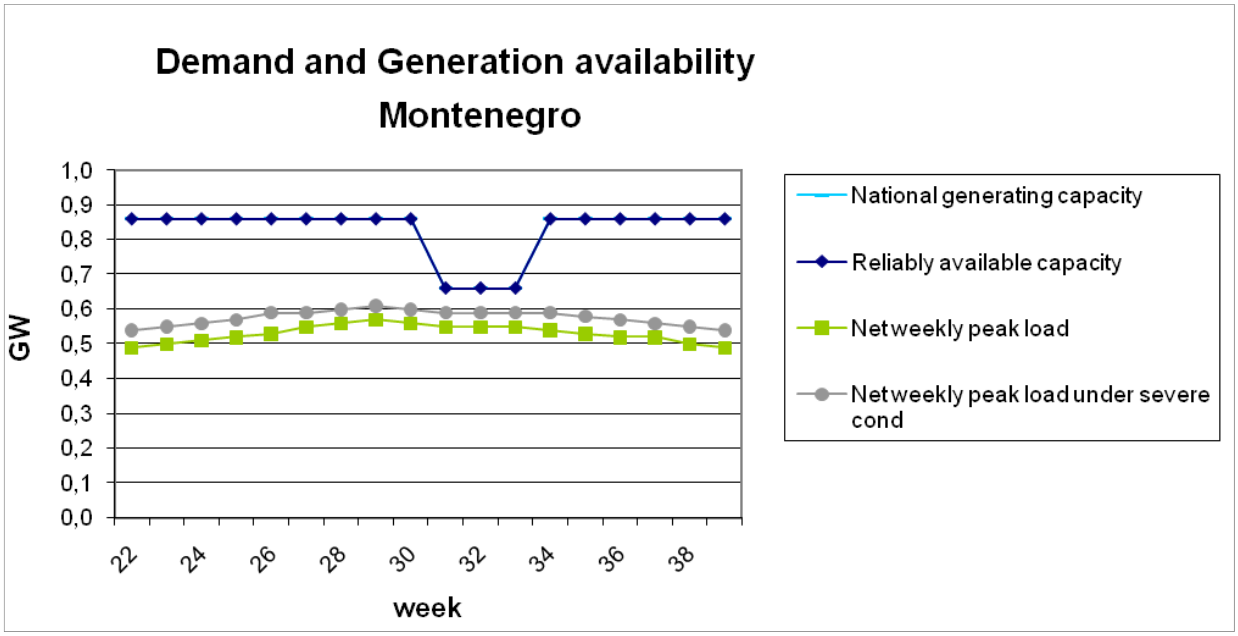
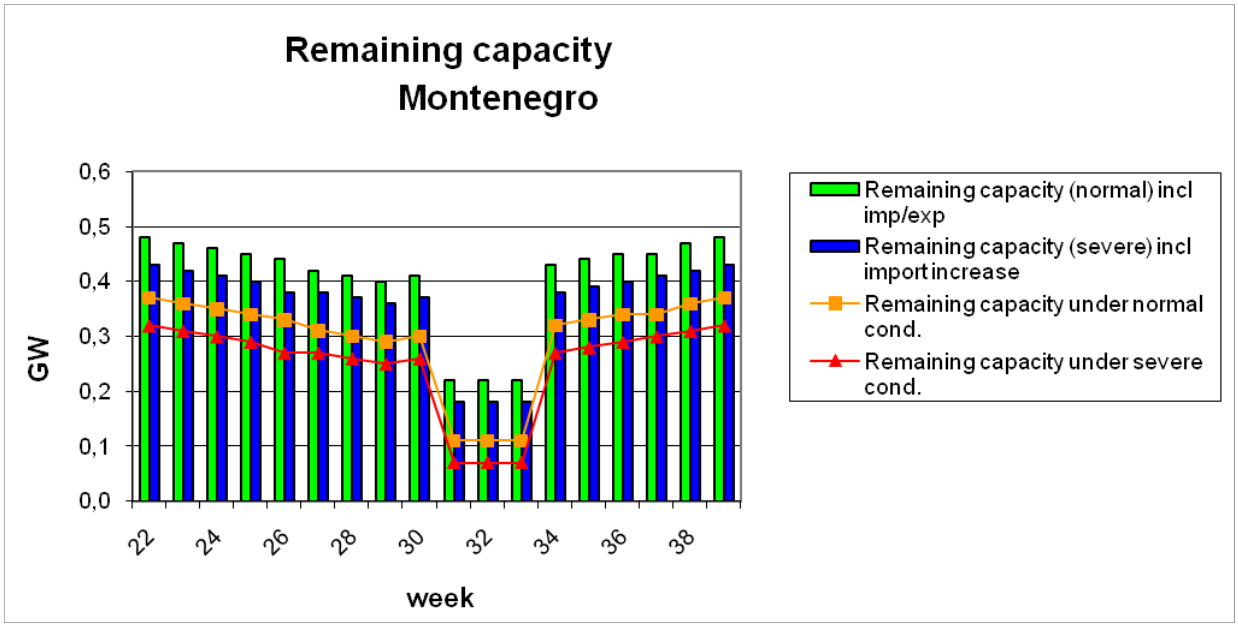
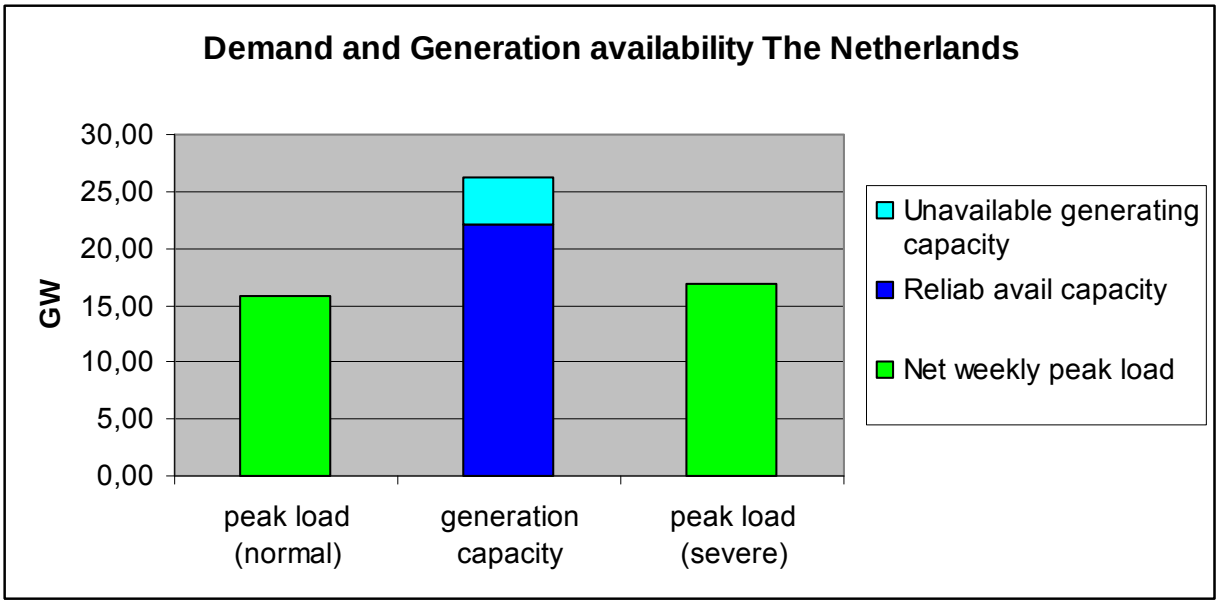
MONTENEGRO





The Montenegrin TSO does not expect any problems in the system during summer, under normal conditions. In case of exeptional severe weather conditions in term of high temperature and reductions in generation Montenegro would need imports in weeks 27 to 39.

NETHERLANDS



Note on the graph: For the Netherlands, no specific summer or winter adequacy forecast is done so far. Long term adequacy assessments will be done by TenneT on a legal basis every year 15 years ahead (Monitoring Security of Supply). As a grid manager TenneT Publishes also a 7 years ahead capacity plan (Quality and Capacity Plan) in order to provide an inside view how to create a well functioning electricity transport high voltage grid for all suppliers and market players concerned. TenneT also published a vision document (Visie 2030) with a much broader horizon of TenneT's vision how and why to design an adequate grid.

At a short term, TenneT has to balance the total system of supply and demand. Therefore this balance will be calculated just before the actual period, not being a summer or winter outlook, but when adequate measures can be met based on actual events. Thus, nothing specific can be said on beforehand about when or how events will occur.

TenneT TSO B.V. does not expect any problem within the national system of the Netherlands for the coming summer, for the following reasons.

- There is nearly no hydraulic generation in the Netherlands and as a consequence there is no problem with hydro availability even when there is low precipitation.
- The summer peak loads are still lower than the winter peak loads, although there is a tendency that they are growing due to the increasing use of air-conditioning equipment. On the other hand there is an increasing amount of CHP generation by green-house farmers, which in summer could appear as a lower load of the High Voltage-network.
- There is a fair chance of cooling water restrictions for river located plants after longer periods of reduced precipitation and high summer temperatures. Their maximum output capacity could then be reduced by restricted condenser outlet temperatures. This affects only a reduced part of larger plants, because most of them are on coastal locations, where until now there were no cooling water restrictions. Due to learning effects the market now schedules maintenance of these generators in off-summer periods. Since last summer the cooling water restriction policy has changed to a decentralized approach with less expected reduction of affected generation capacity.

Although no problems are expected and thus no special mechanisms are in place for the upcoming summer the following mechanisms are active to handle stressed balance situations in general:

- the Netherlands' market has shown good response in situations of scarcity. Supported by a well functioning and incentive compatible imbalance pricing system, supply and demand side of the market both react well to extreme prices as the experience of the 2003 summer situation with a long period of low precipitation and high temperatures has shown.
- for emergency situations TenneT TSO has the availability of domestic emergency reserves and, depending on availability, up to 500 MW of foreign emergency reserves under contract of mutual assistance with a neighboring TSO. These domestic reserve power can be called in through agreements with generation companies, and secondly the instrument of load management can be taken into force.

No specific weeks/time periods have been forecast as high risk. The Netherlands should not depend on imports for the summer.

In the coming summer no dependency is detected The interconnection cable between Norway and the Netherlands (NorNed cable) was unforeseen out of order as from January 29th and will be operational before May 2010.

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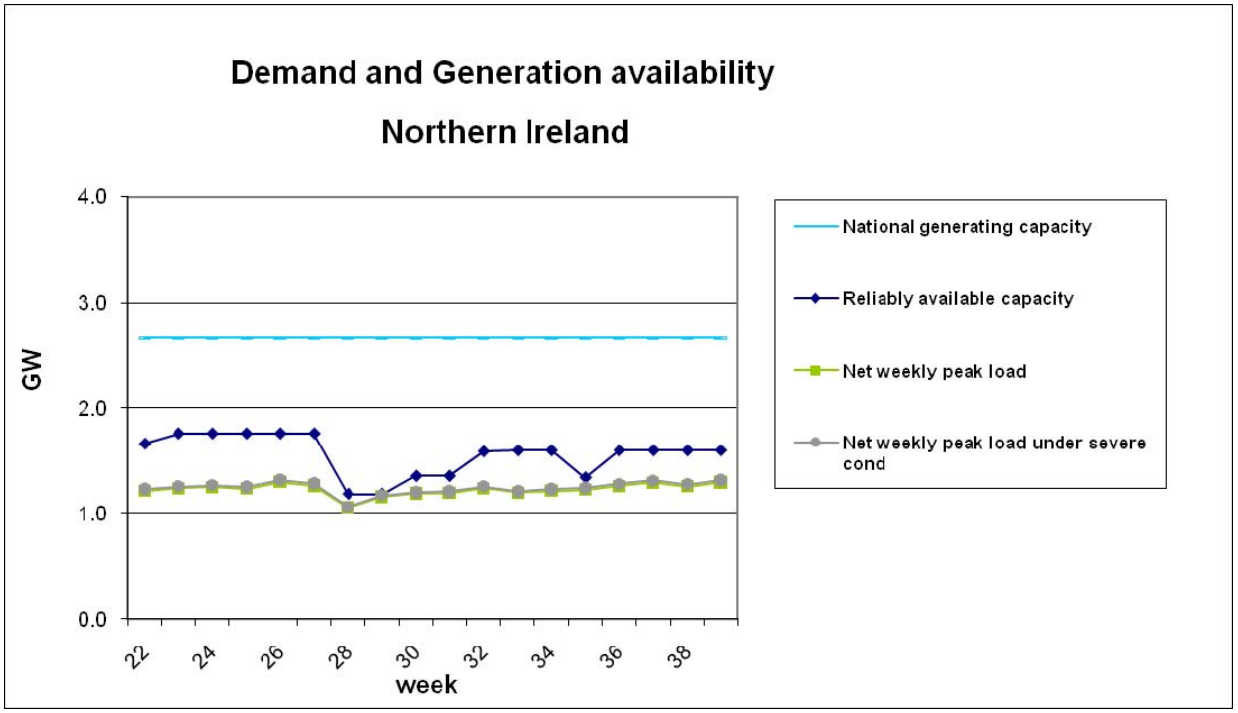
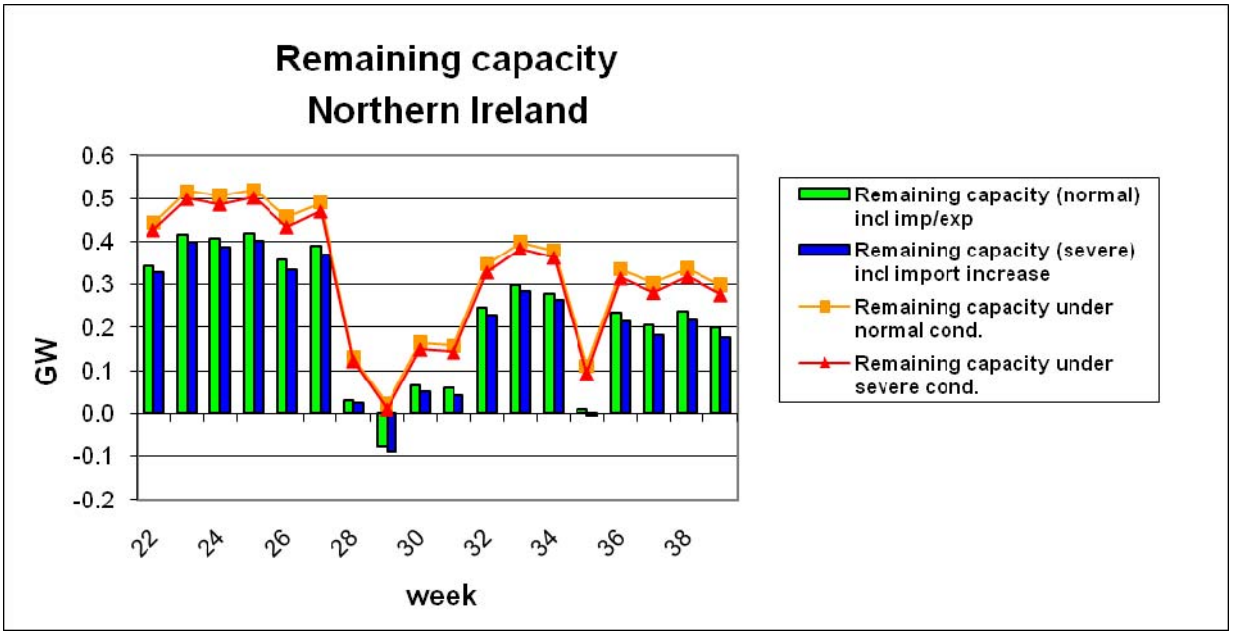
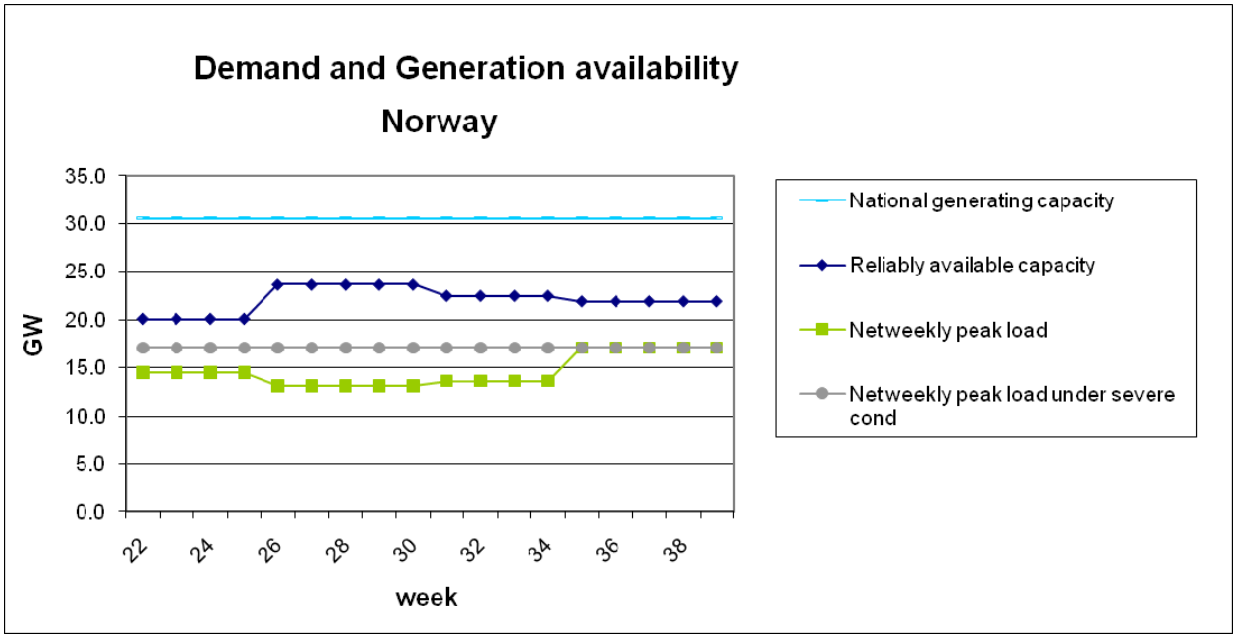
NORTHERN IRELAND

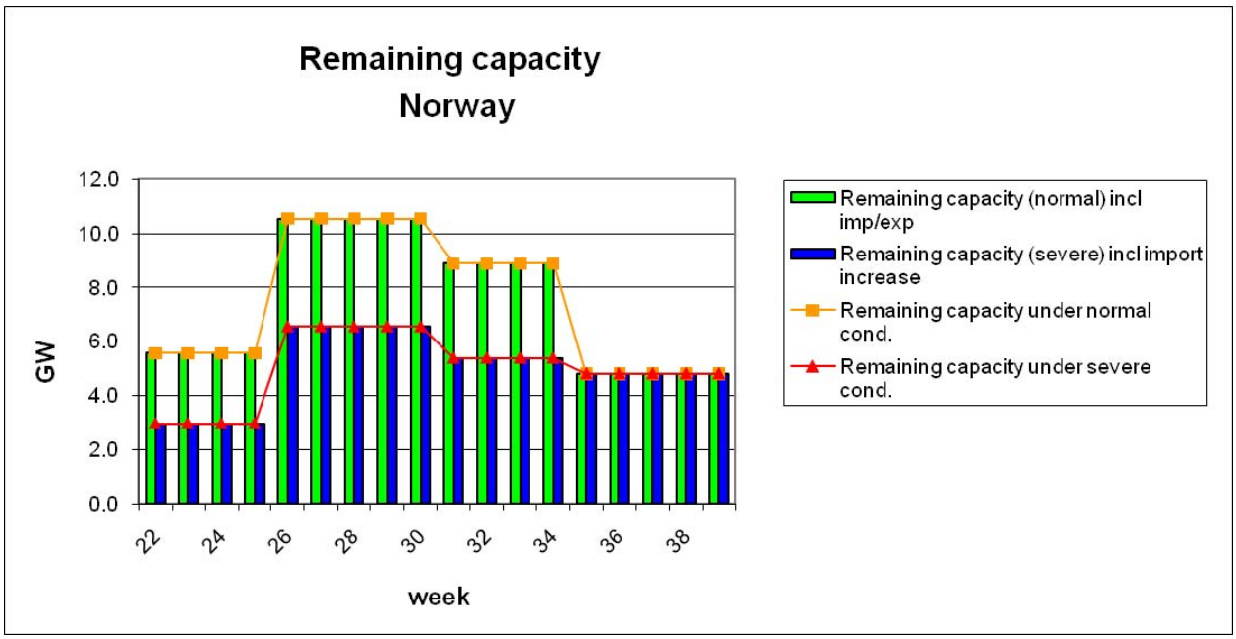




Current SONI plans anticipate no significant problems on the system this summer. At present there are no events envisaged that could be regarded to represent a high risk period to SONI. To ensure that peak demand is met in Northern Ireland, SONI may be dependant upon imports on the Moyle interconnector and/or the North-South tie line. This dependency would impact upon Great Britain via the Moyle interconnector and the Ireland via the North-South tie line. A maintenance outage planned for the Moyle interconnector during the period of 14th June to 9th July. Contingences are in place to cover the outage. There is also a planned outage on the North – South tie-line, however these outages do not overlap and there is no cause for concern regarding generation availability. Demand for the summer period in 2010 is anticipated to be on a par with 2009 as world economic fears remain.

NORWAY





Norway is normally self-supplied during the summer. This does not mean that we are not going to import from neighboring countries during the summer, but we expect net export in this period.

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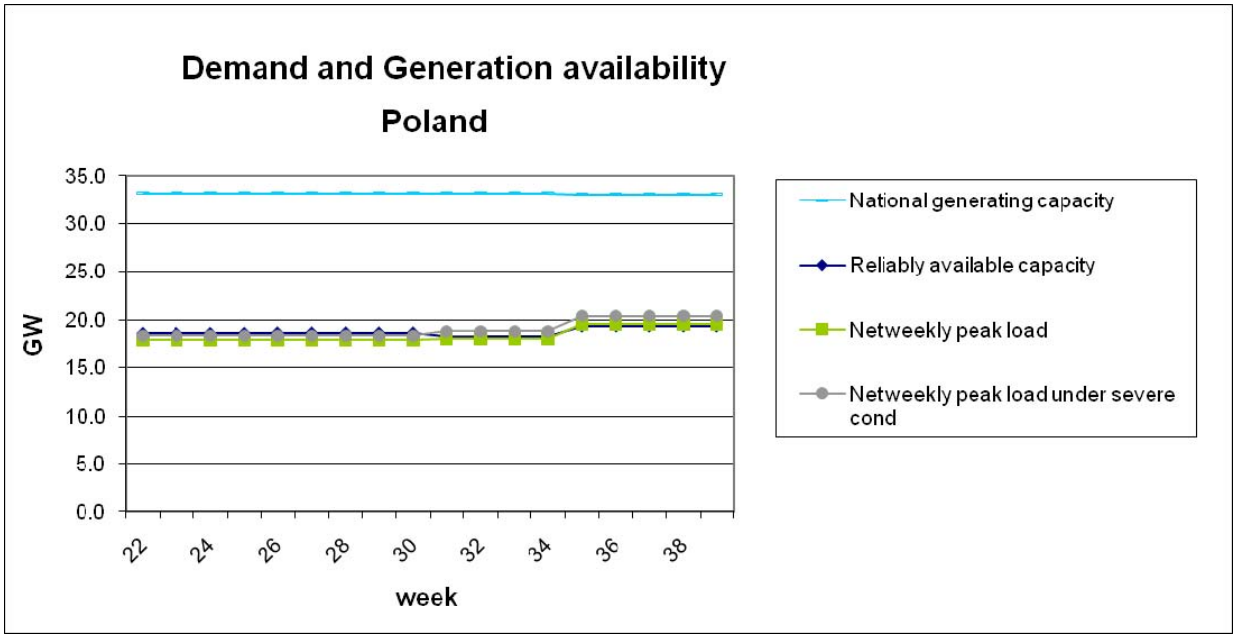
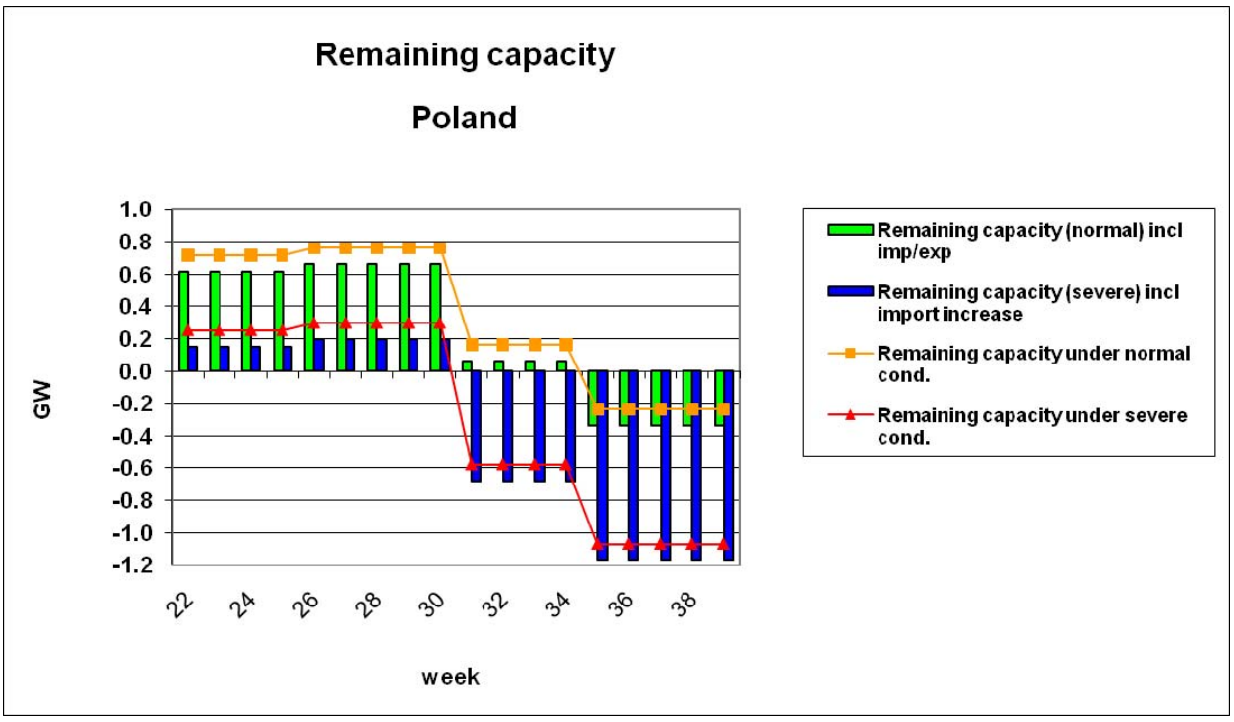
POLAND





In Poland no special assessment for summer is made. Forecast plans (yearly coordinated plans) are done for the whole year on a monthly basis till 30th of November every year.

This summer, for normal conditions, Polish TSO does not expect significant problems in operation and is able to balance the system by itself without electricity import. Minor unbalance in September - visible on the second graph - is the result of increase of peak load at the end of the summer period (lower temperature, peak load in the evening) and the overhauls going on while the operation of the Combined Heat & Power plants have not started yet. However, in late August and September period of evening high demand is very short (maximum two hours) and PSE Operator can use intervention reserve from pumped-storage hydropower stations to cover

the peak demand. The intervention reserve constitutes part of system services reserve and is at Polish TSO's full disposal.

Severe conditions, mainly in June and July (extremely high temperatures and dry weather) may cause not only the increase of the forecast load (see demand under severe summer conditions on the first graph) but also higher unavailability of units caused by:

- restrictions in operation due to too high cooling water temperature in certain thermal power plants (i.e. increase of the non-usable capacity) as well as low level of natural sources of cooling water,
- transmission network constraints (i.e. increase of the non-usable capacity),
- increase in the level of forced outages.

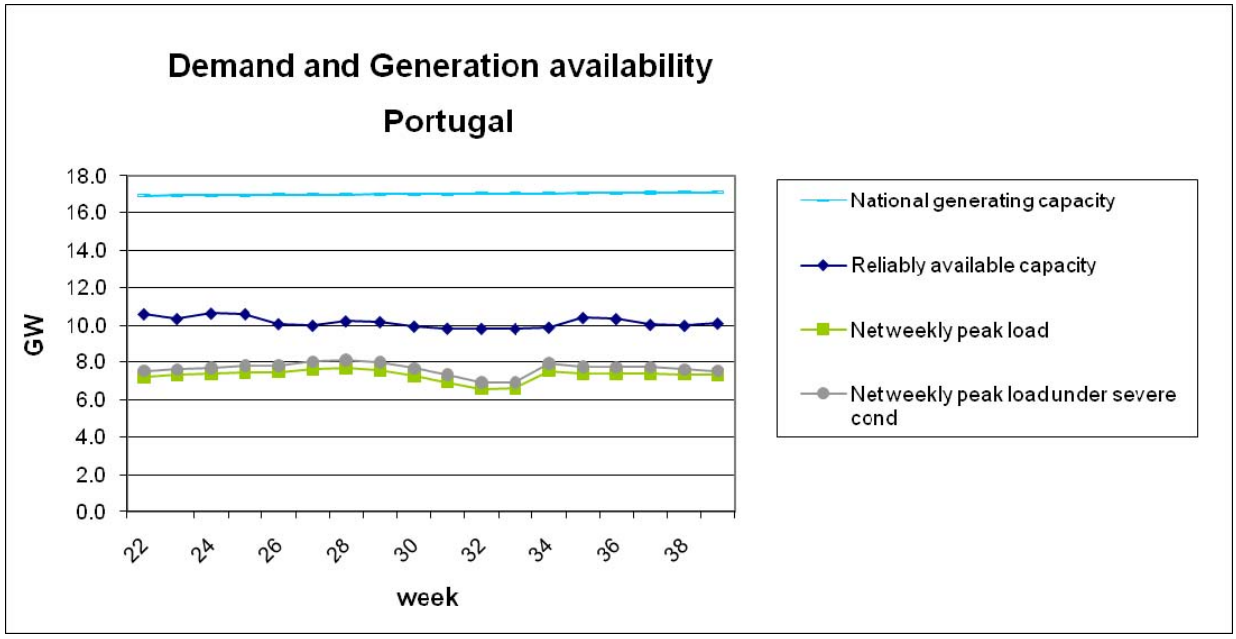
In case of emergency situation, there are agreements concluded between PSE Operator S.A. and neighboring TSOs for emergency energy delivery.

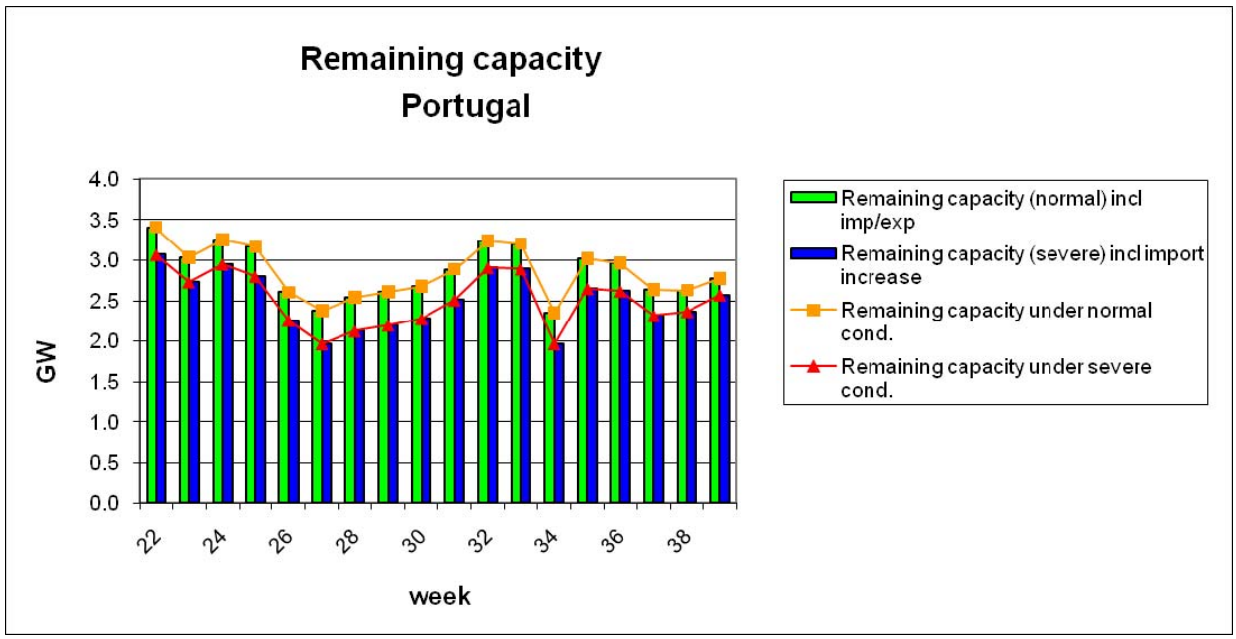
Directions / weeks	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
DE/CZ/SK → PL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PL → DE/CZ/SK	700	600	700	700	700	700	500	500	500	500	500	300	400	700	0	0	0	0
UA → PL	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
PL → UA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SE → PL	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	0	600	600
PL → SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum of PL import	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	220	820	820
Sum of PL export	700	600	700	700	700	700	500	500	500	500	500	300	400	700	0	0	0	0

PSE Operator S.A. provides aggregated data of NTC for the whole 220/400 kV synchronous PL-DE/CZ/SK profile. Import and export capacities include also capacities of 220kV line PL-UA (radial operation) and of PL-SE DC link (commercial interconnection).

Values (in MW) presented in the table above take into consideration network constrains caused by planned switching off of the internal/international lines (or other elements), which limits transportable capacity on the Polish profile.

PORTUGAL





During next summer, generation/demand balance is expected to be met in a secure level, even without resorting to imports. With an increased generating capacity (since last summer) and hydro storage in a decade highs, the Portuguese system shows a good adequacy in a wide range of load scenarios. In an extreme load scenario, remaining capacity may have a minimum of about 11% on weeks 27 and 34. Please note this is still a no risk situation. In the analysis, no importable capacity has been considered, so the availability and reliability of imports is not an issue.

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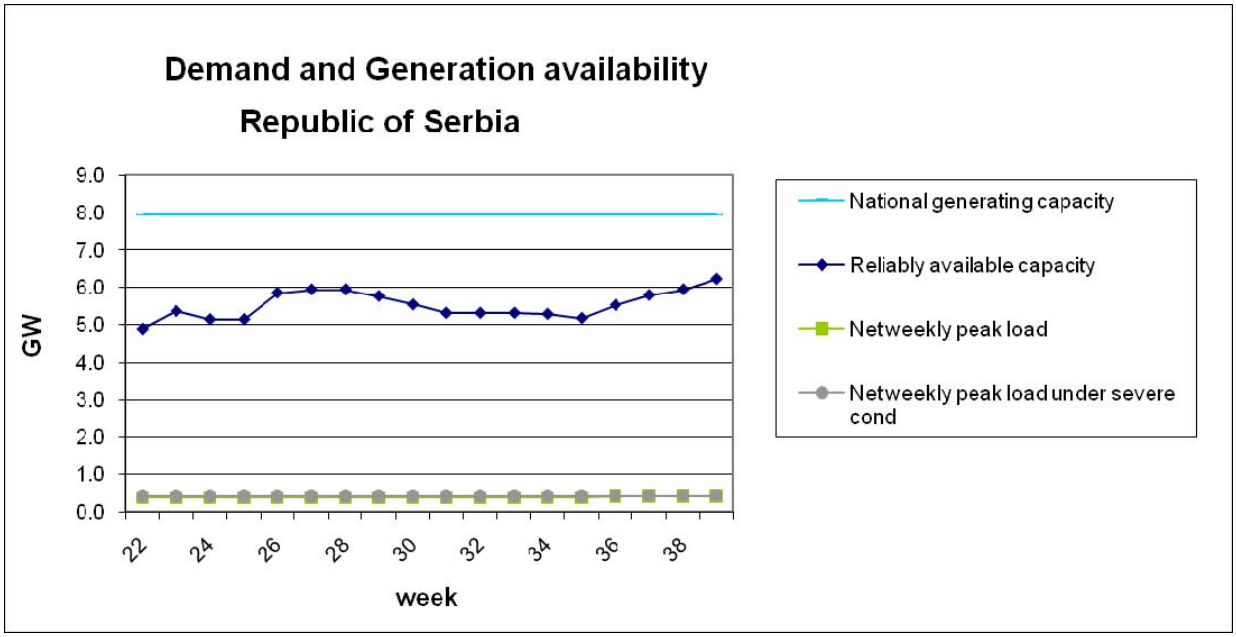
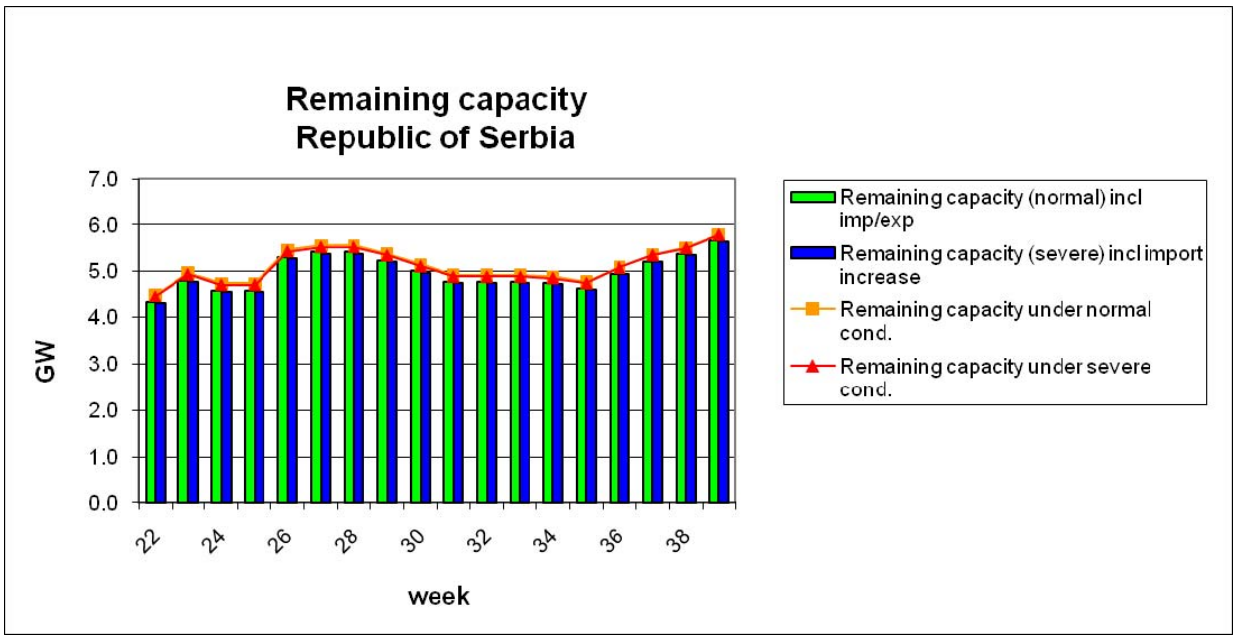
REPUBLIC OF SERBIA

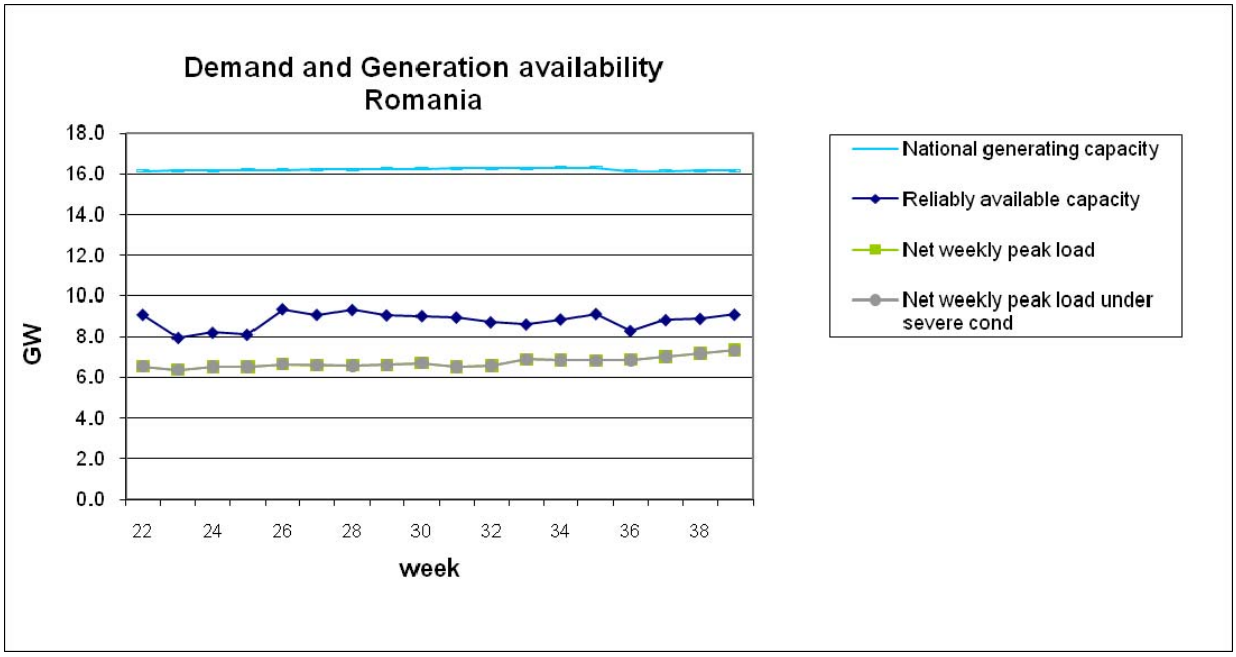


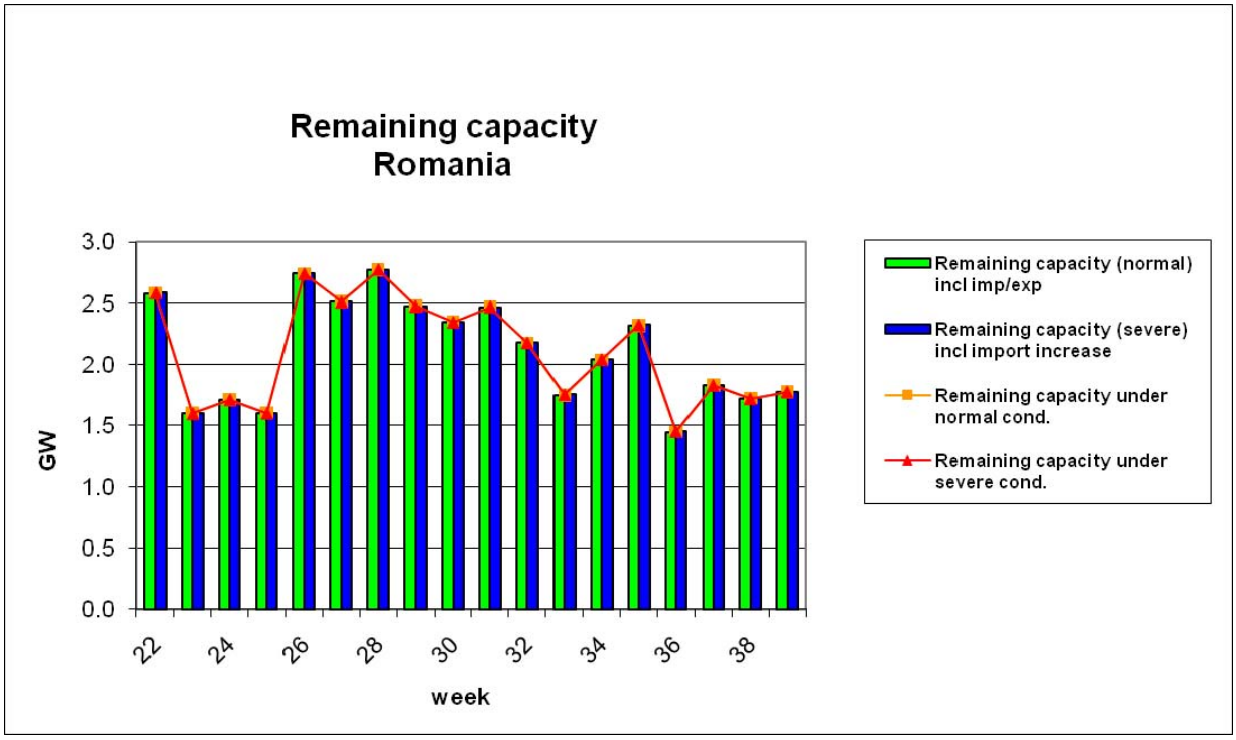


Near history is shown that demand is always covered during summer period so we don't expect any significant problems in Serbian power system. Even in sever weather conditions we will be able to deal with situation.

Long term contract between Serbian generation company EPS and Montenegrin generation company EPCG which belongs to the neighboring control area Montenegro which includes using of hydro power plant Piva is still force. According to this contract from Serbian control area previously agreed band energy is exported to Montenegro control area and in exchange EPS has a right to use hydro power plant Piva.

ROMANIA





The forecast for the becoming summer 2010 does not indicate any problem which could affect the Romanian power system adequacy.

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SLOVAK REPUBLIC

Slovak Republic expects no particular problems regarding the load/generation balance under normal conditions or severe conditions. The critical periods in the comming summer are not expected under normal weather conditions.

The summer load in normal conditions for this outlook is foreseen at the same level as the last summer. The load in severe conditions was also analysed. In normal scenario (climate conditions) the generation capacities are sufficient for all weeks, under severe climate conditions the insufficient of generation capacities may occur in the weeks from 36 to 39.

Last year the Slovak Republic was an importer of electricity (4.79% of total consumption). Also this year Slovak Republic is in the same position but in the summer the electricity import will probably decrease because of lower demands during summer months in our country. Cross-border capacities are sufficient for import or transit / export. No changes concerning the volume of cross-border capacities are expected (e.g. new tie-line).

In June 2010 there will be an expected increase of installed capacities. A new CCGT power plant Malzenice (about 430 MW) will start its trial operation.

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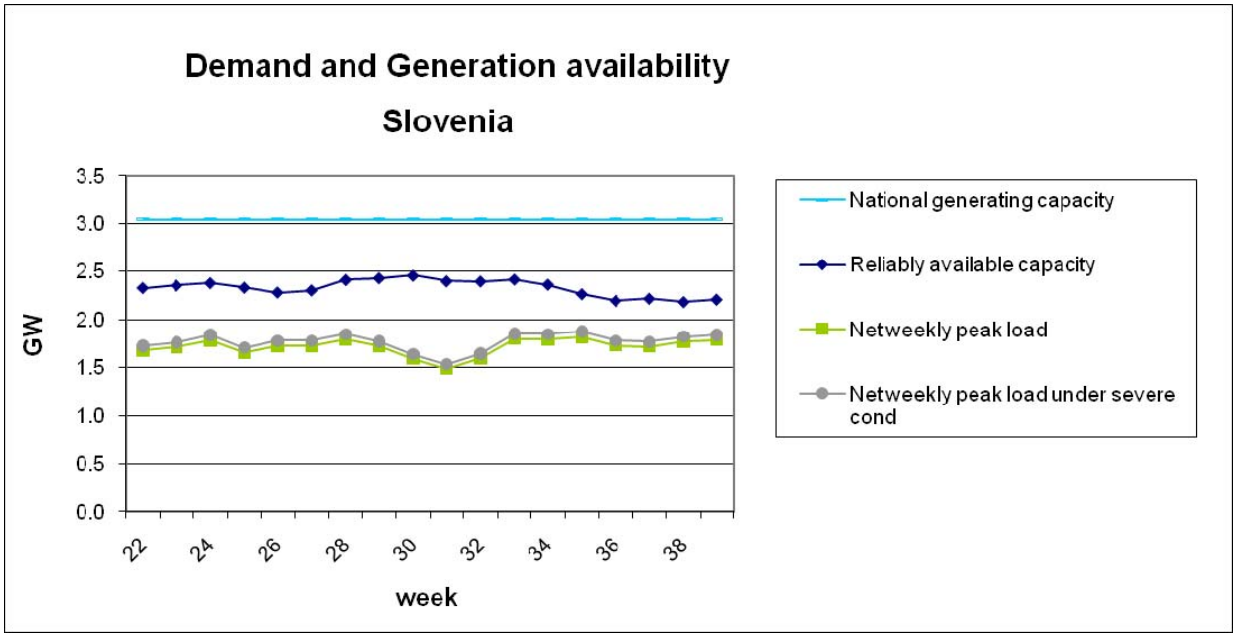
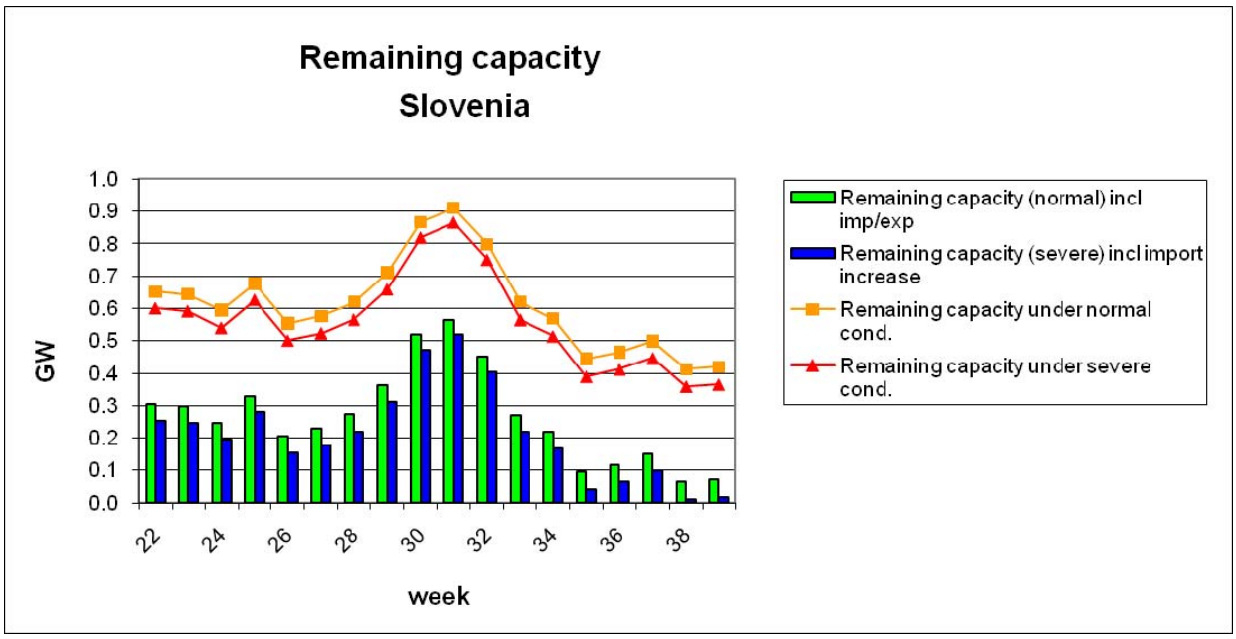
SLOVENIA





No problems are expected under normal conditions. In case of extreme low hydrology and reduction of interconnection capacities by neighboring TSO's, problems could be expected at peak-load. Due to effects of economic crises on electricity demand extremely high load is not expected.

Firm export contracts represents half of the generation in nuclear power plant Krško. Its ovnership is equally divided between Slovenia and Croatia, thus half of its generation is delivered to Croatia in accordance with the international agreement.

On the statistics data basis, the import usually takes place on Austrian and Croatian border. In extreme drought in wide Europe region, power flows can reverse and import from Italy is possible.

The commercial flows reflect markets' conditions in different regions. TSO maintains only real-time unbalances on the energy market, hence this information cannot be provided.

All maintenance works on network elements were scheduled on the basis of past experience. In case of normal operation conditions no problems are anticipated on network level during the summer 2010.

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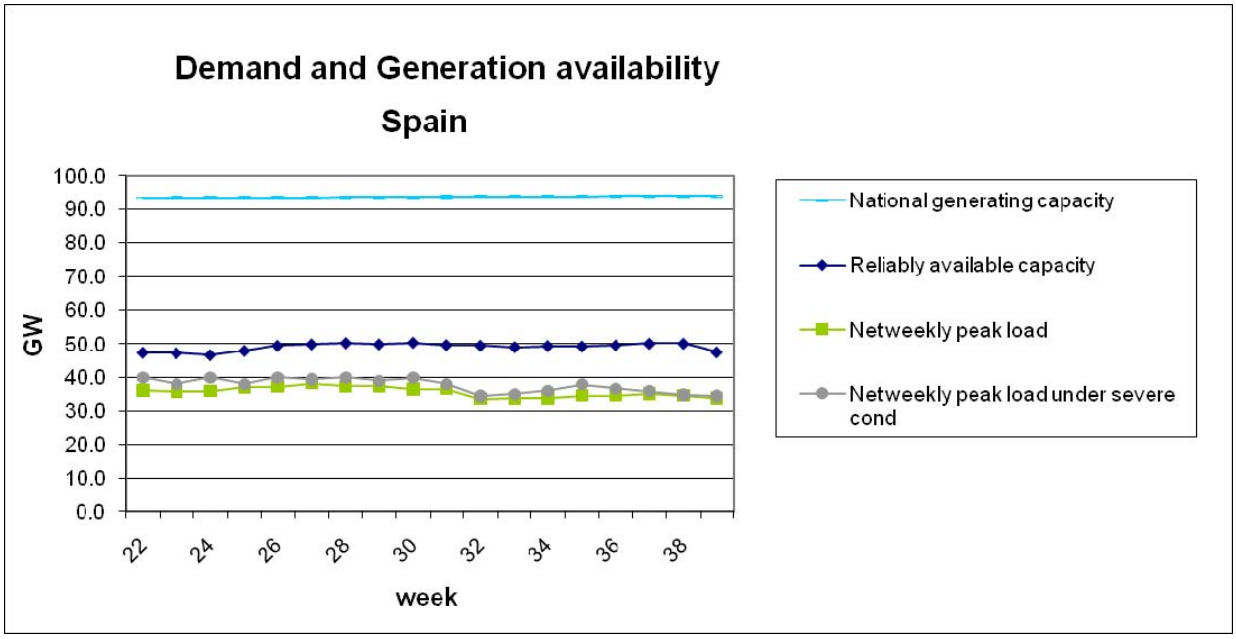
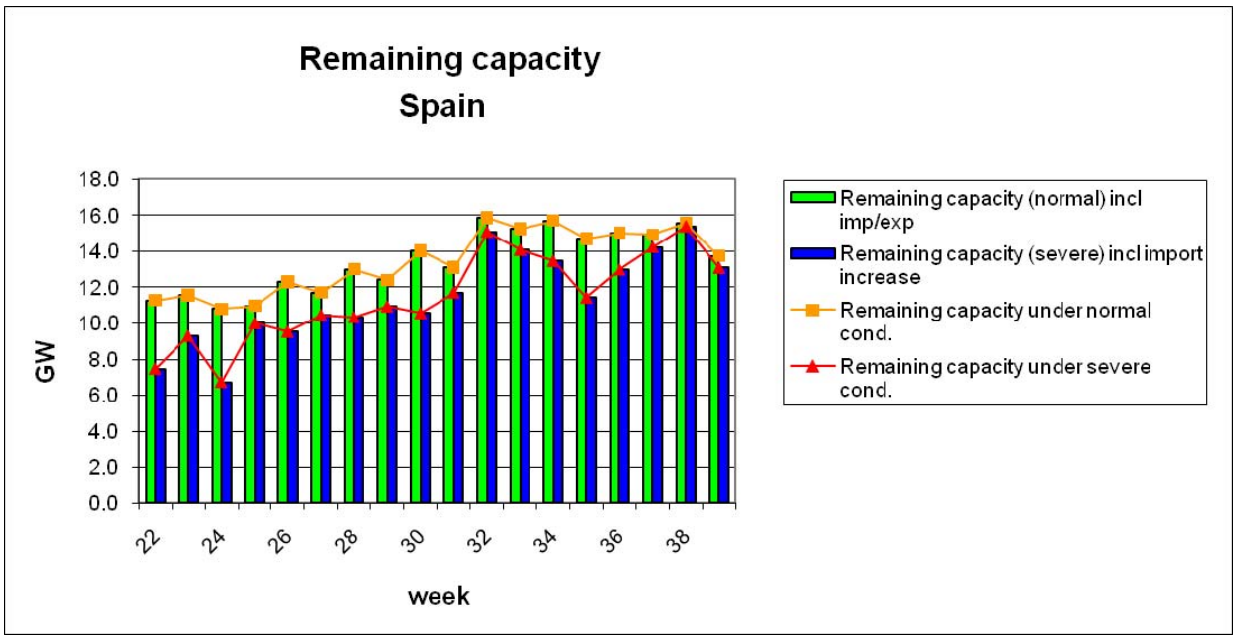
SPAIN

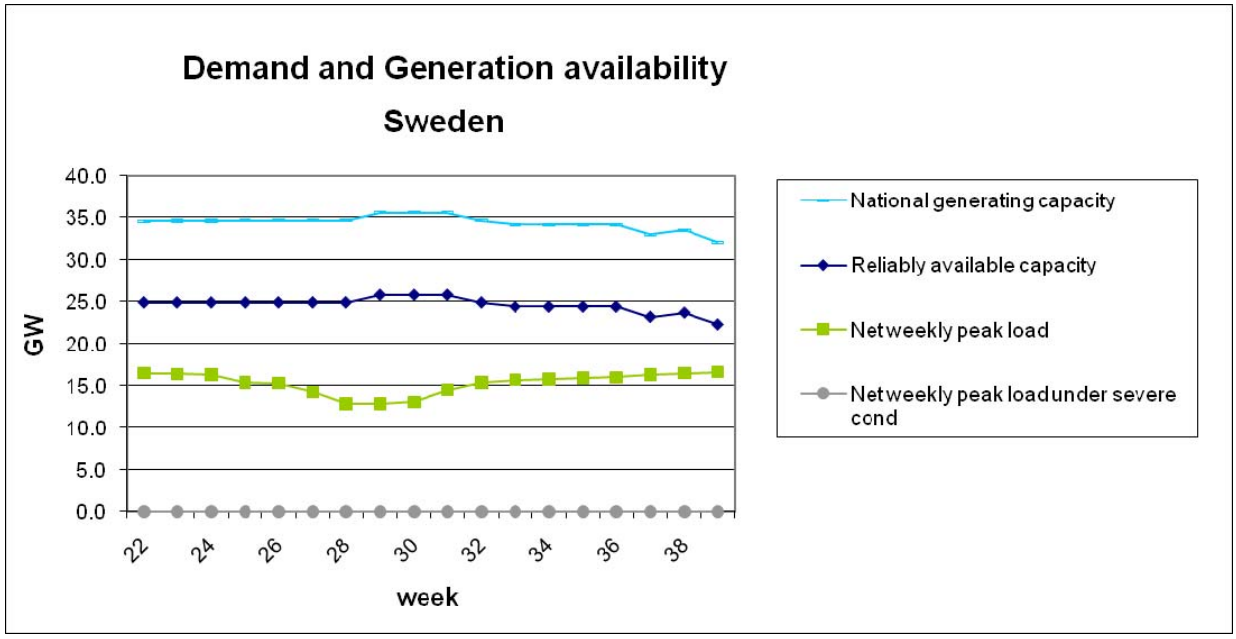


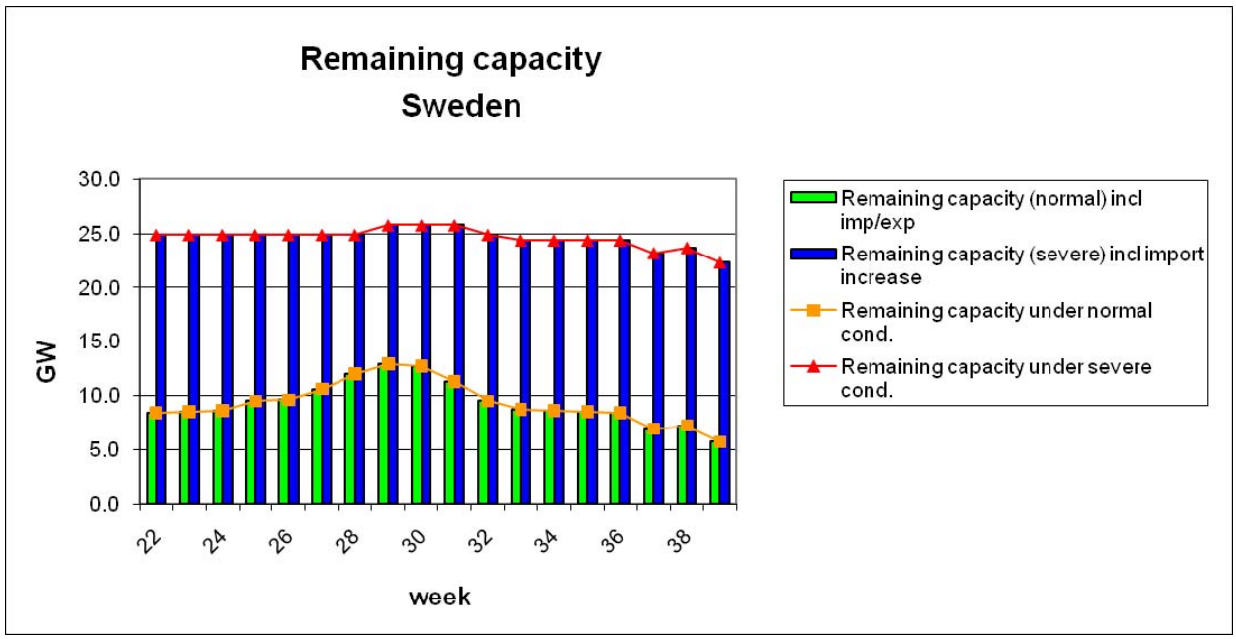


From the point of view of generation adequacy, the situation in the Spanish peninsular system is not critical for the coming summer, even considering very low wind generation (95% probability), very drought conditions and a very high thermal forced outage rate.

Even in extreme conditions problems in meeting the load are very unlikely to happen at any week of the period. The expected demand is similar to the previous summer. Besides, less than three months ahead of summer the hydro reserves are much higher than the average level and water inflows from snow melting are expected to be high. Good generation/demand adequacy can be expected, even regardless imports from neighboring countries.

SWEDEN





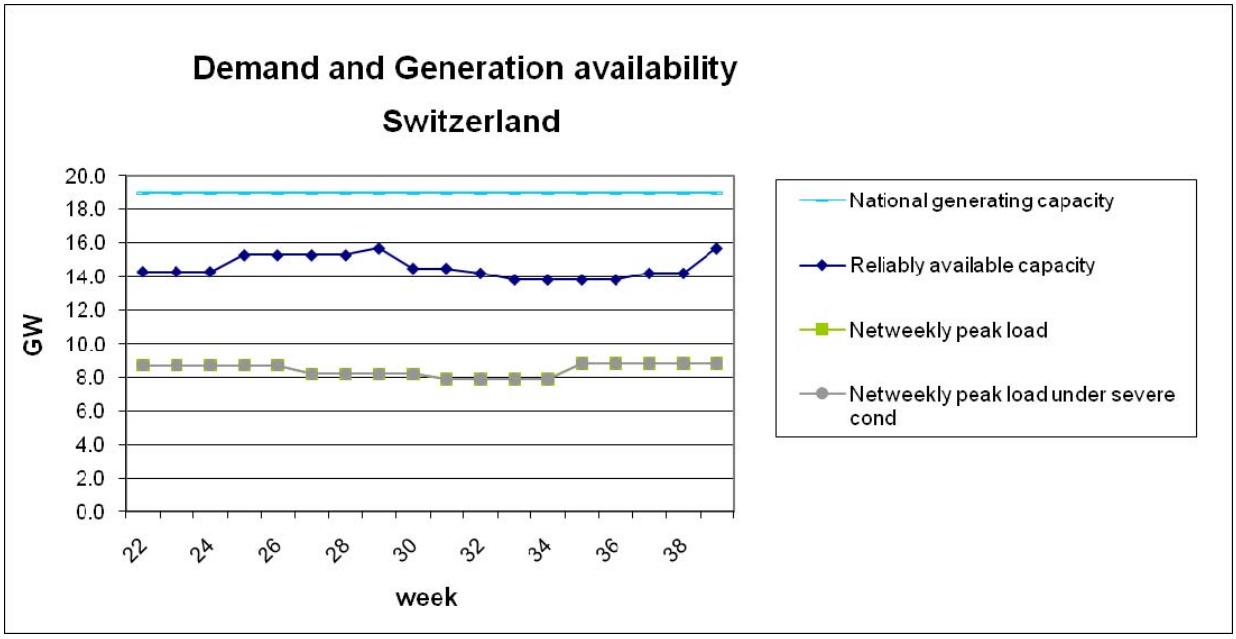
No specific problem is expected under normal conditions. The TSO reports about internal capacity limitation at the West Coast Corridor between Sweden and southern Norway especially under low demand conditions. With little import from DK1 there will probably be high voltage on the swedish side that will force SvK to regulate voltage. The TSOs also expect high voltages during the summer period due to low demand. This will be delt with normal voltage regulation.

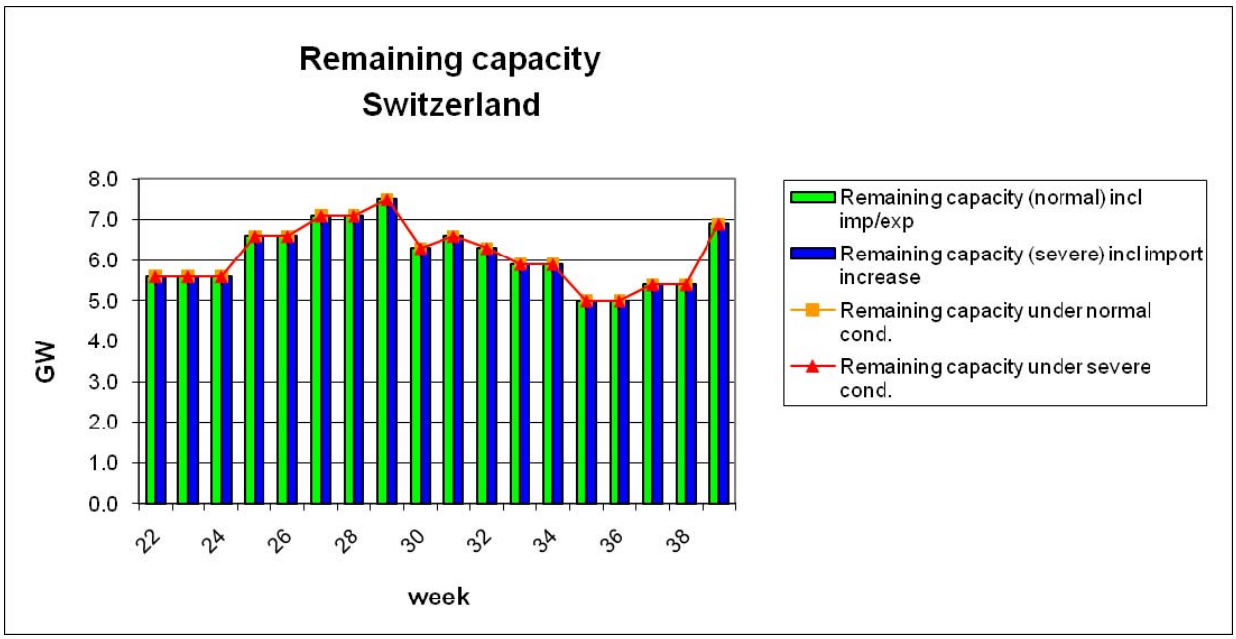
There will be a disconnection of a 400 kV line at the southernwestern part of the grid that will reduce export capacity. But Svk will deal with that according to the agreement with EU.

Svenska Kraftnät will deal with the operating issues the normal way and without help from our neighboring countries this summer.

SvK cannot specify any particular week with problems. What is described above concerns all summer.

SWITZERLAND

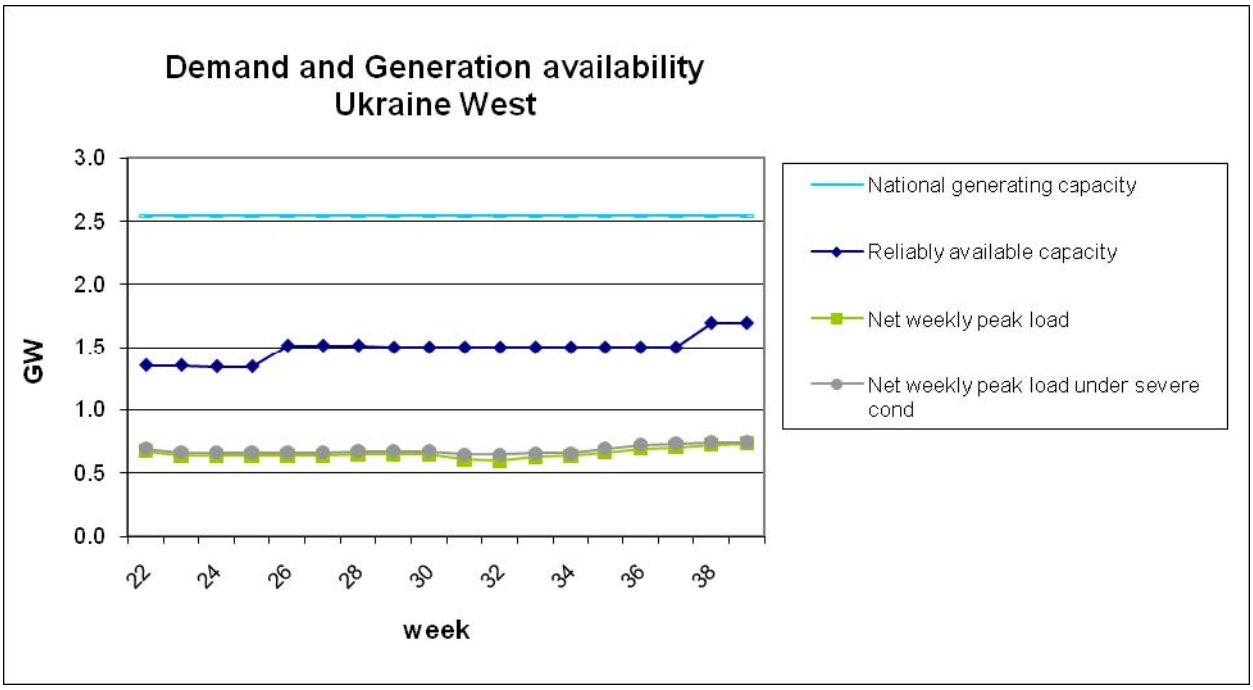


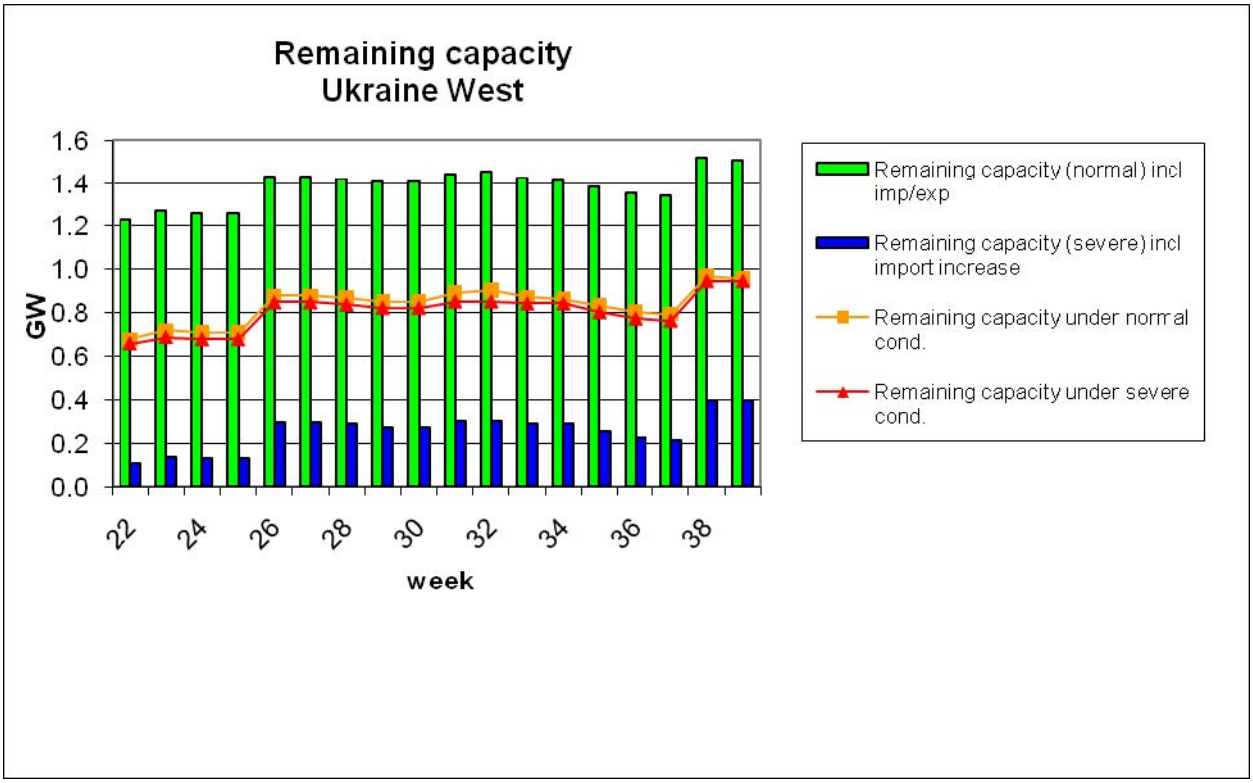


No problem concerning generation adequacy is expected for the coming summer by the Swiss TSO. In periods of high hydro generation with simultaneous maintenance of transmission lines some parts of the transmission grid will be operated at their operational limits. This may result in limitations and/or redispatch for generation and in limitation and/or short time modification of cross border exchange.

Switzerland will not be dependent on imports during the summer period.

UKRAINE WEST





No problems are expected in the system this summer.

There are adequate generation and demand balances without dependency upon imports of electricity from neighboring countries.

6.3 Appendix 3: Questionnaire and SOR 2010 Excel data Sheet

Each year ENTSO-E reports on any matters of concern in relation to security of the European electricity grids for the summer.

Therefore we would be grateful if you could answer the following questions regarding the summer (weeks 22 to 39). It would be much appreciated if you could provide this information by **Friday 9th April**.

1. Do you expect any problems (inadequate generation/demand balances, shortages of transmission capacity, very high demands etc.) on your system this summer?
2. If you expect problems, what mechanisms are in place to manage the risk (e.g. arrangements with neighboring TSOs, market mechanisms etc.)?
3. If you expect problems, can you identify any specific weeks/time periods which are regarded as high risk?

   A spreadsheet is provided below and it would be helpful if you could use this to indicate forecast quantitative demand/generation capacities for these weeks/periods. For convenience, you may wish only to indicate TOTAL values of generating capacity instead of separating them into different forms.
4. If you will be, or may be, dependent upon imports of electricity from neighboring countries:
   a. Can you confirm which interconnector assets/circuits are going to be relied upon?
   b. Can you confirm which countries are being relied upon to provide exports?
   c. Can you confirm whether there are any issues likely to affect the availability of imports (asset reliability, thermal constraints, commercial or any other issues)?

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ENTSO-E WINTER REVIEW 2009-2010

Introduction and Questionnaire

Introduction

Following the publication of the ENTSO-E winter outlook report, it will be publishing a Winter Review Report.

The objective of the report is to present what happened during this Winter 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 Winter outlook.

The report will be based on narrative; however, quantitative data to illustrate how the Winter out-turned against what was forecast would be appreciated (e.g. actual peak load and difference compared with forecast in normal and extreme conditions, major disturbances and their effect on generation or transmission capability etc.). For a synchronized view of the European system any information on the critical periods would be appreciated.

Please indicate if any of your answers should be regarded as confidential and/or commercially sensitive so that this information can be aggregated or withheld from publication.

If you are unable to provide quantitative data, then it would be very helpful if you could still provide some commentary in answer to the questions. It is understood that not all TSOs will have access to all the requested information.

It is intended to publish the report in June 2010. The enquiry should be returned to the regional co-ordinators by **Thursday 9th April**.

The Winter Outlook Report (published on December 2009) is available to view at:

http://www.entsoe.eu/fileadmin/user_upload/_library/publications/entsoe/outlookreports/WOR-SOR2010-II_final.pdf

Questionnaire on Winter Review 2009-2010

Commentary on Winter Conditions

Recalling main features and risks factors of the Winter Outlook Report, please provide a brief overview of Winter 2009-2010:

- General comments (month-by-month if possible) on the main trends and climatic conditions (temperatures (average and lowest compared with forecast), precipitation, floods/snow/ice).
- Did the risks identified in the Winter Outlook Report actually occur?
- Did unexpected situations arise during the Winter which had an effect on the power system (generation/demand balance; transmission capacity; interconnection capacity; availability of imported energy etc.)?
- Is it possible to identify (and quantify) the effects of external factors on demand (e.g. demand reduction as a result of economic conditions; climate change; energy efficiency initiatives etc.)?
- An indication of the most stressed periods for system adequacy.

Specific Events Occurred during the Winter 2009/2010

Please report on specific events occurred during the last winter period (i.e experience on gas imports reductions, others).

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Detailed Review of the Most Stressed Periods

Describe the actual versus expected and average conditions for the most stressed periods of the Winter (November to March). For each statement please specify the period considered (Month(s), week(s) or even day(s) whichever is easiest – if possible, please use the spreadsheet provided to provide week-by-week quantitative details on generation conditions and demand at weekly peak):

- Description of remarkable event(s)/cause(s) of system stress (e.g. colder than expected weather conditions, low/high wind in-feed etc.) and the duration of the situation
- generation conditions: generation overhaul (planned, unplanned), gas/oil/availability, hydro output, wind conditions (above or below expectations, extended periods of calm weather), specific events or most remarkable conditions (please specify the dates)
- demand: actual versus expectations, peak periods, summary of any demand side response used, reduction/disconnections/other special measures e.g. use of emergency assistance, higher than expected imports from neighboring states
- Transmission infrastructure: outages (planned/unplanned), reinforcement realised, notable network conditions (local congestion, loop flows etc.)
- Use of interconnections: import/export level, reliance on imports from neighboring countries to meet demand (you can refer to ETSO Vista); commentary on interconnector availability and utilisation
- Summary of market conditions: low/high power market prices in specific periods in the context of the above conditions; summarise where there were tight margins in the context of what was forecast in the Winter Outlook Report ; any specific remarks on market prices.

Lessons Learned for Winter 2010-2011

- Relevant key points for the forthcoming Winter)
- Feedback on the use of the Winter Outlook Report
- Feedback on format and content of this report

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