European Network of
Transmission System Operators
for Electricity

An Overview of System Adequacy:

Winter Outlook Report 2011/2012 and Summer Review 2011

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1 INTRODUCTION

ENTSO-E adopts and publishes on an annual basis the "**Summer Review and Winter Outlook Report**" which assesses the adequacy of the power system for the winter period and provides an overview of the main events occurred during the previous summer.

The report is adopted as required by art. 8 of the EC Regulation n. 714/2009 and it is drawn up by the ENTSO-E "WG System Adequacy and Market Modelling" under the System Development Committee with the contributions of all TSOs belonging to ENTSO-E. Further, starting from July 2011, an additional cooperation between TSOs started within ENTSO-E via an ad hoc coordination team between System Development Committee and System Operation Committee in order to develop a consolidated methodology for the ENTSO-E short term system adequacy reports. Based on that, the preparation of the current Winter Outlook 2011-2012 takes also into account the application of a new methodology which is reflected in the questionnaire and excel sheet used for the preparation of the report.

For the winter period 2011-2012, an early Winter Outlook report, the "ENTSO-E Preliminary report for the winter" was also prepared by ENTSO-E and presented to the EC Cross Border Committee meeting held on the 3rd November, in order to provide EC and EU Member States representatives with a preliminary overview of the adequacy of the power system in Europe for the upcoming winter and possible risks taking into account the impact of the nuclear phase out in Germany started in March 2011.

The Summer Review report shows the main events occurred during the summer time, according to the TSOs, with reference to security of electricity supply (i.e. weather conditions, power system conditions, as well as availability of interconnections). The Summer Review covers the period 1st June – 30th September 2011. The objective is to present the main happenings during the summer 2011 in comparison to the forecasts presented in the ENTSO-E Summer Outlook report 2011, published on June 2011.

The Winter Outlook reports the outlook of the national and regional power balances between forecasted generation and peak demand on a weekly basis for the upcoming winter period, from 7th December 2011 (week 49) to 4th April 2012 (week 14).

The purpose is to present TSOs views on any matters concerning security of supply for the coming winter period, to identify risks and countermeasures planned by the TSOs and in cooperation with the neighbours and the possibility for neighbouring countries to contribute to the generation/demand balance in case of needs.

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2 EXECUTIVE SUMMARY

The ENTSO-E Winter Outlook Report 2011/ 2012, focusing on short-term adequacy, complements the ENTSO-E Preliminary report for the winter submitted to the EC and the Electricity Cross Border Committee in order to raise awareness with regard to system adequacy and security of supply issues.

The effect of the nuclear phase out in Germany on power system adequacy is not negligible for the winter period, not only on national, but also at the regional ENTSO-E level. Additional countermeasures have been planned in cooperation with neighbouring TSOs to manage the increased risks.

The ENTSO-E Winter Outlook report shows that on a whole under normal and severe conditions, the European power system as a whole has adequate power to meet demand.

The key factors which are likely to affect the balance between demand and supply include in particular the temperatures, which influence the level of the load directly and, on the generation side, specific attention is given to the effects of the nuclear power plants shutdown in Germany starting from March 2011 which decreased the generation and load balance and stressed the system operation raising operational risks which are considered not negligible by the TSOs.

The balance between generation and supply is generally expected to be maintained during the winter period in case of normal conditions. Germany, Serbia, Finland, Denmark and Latvia might need to rely on imports in order to meet demand and reserve requirements in some weeks for the winter period. It is in particular expected that Germany might depend upon imports, especially in case of high load conditions and low feed in from RES. The analysis shows that based on the data provided by TSOs, there are no issues under normal conditions because cross border transfer capacities are sufficient to provide imports to those countries and regions that require it.

In case of severe conditions, mainly due to extreme weather conditions like cold spells, reliability margins are reduced and imports are required in some countries and regions. This is particularly the case of Finland and Latvia, which will rely upon imports at any time in the Winter period if such a situation occurs.

Other countries, such as France and Germany will need to rely on imports to maintain the national balance between demand and supply for at least one week, whereas countries such as Belgium, Denmark or Great Britain may require imports to maintain reserves (i.e. demand would still be met in full without imports).

In case of severe conditions, risks have been identified at a national and regional level and close coordination between TSOs will be required to maximise cross border transfer capacities in order to minimise the mentioned risks.

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The analysis of such severe conditions shows that the first two weeks of December are the most critical, when cross-border flows necessary to maintain system security are liable to reach their maximum values; France, in particular, would require a significant level of imports from all neighbouring countries including Germany. However, across January into February, there are weeks when significant cross border interconnector flows may still be required (albeit at lower levels than the first 2 weeks in December).

The Summer Review outlines what happened in Europe in comparison to the forecasts presented in the summer outlook report 2011; it shows that no major severe weather conditions affecting the balance between generation and supply took place causing risks for security of electricity supply in the different ENTSO-E regions, even though a more stressed situation occurred in comparison to the past and some significant events were experienced. It shows that several additional countermeasures were taken in comparison to the past.

Temperatures were quite stable all over Europe except for some isolated cases (this is particularly the case for Italy where a slight increase of average temperatures was recorded in comparison to the past, Slovenia and Albania in some periods of the summer, Austria and Slovakia where a dry summer took place, Estonia where the summer was characterised by hot weather conditions etc). An increase of imports flows was experienced in the Baltic countries causing some stressed situations on the interconnections between Latvia and Estonia.

During the summer 2011 the impact of the decision to shut down nuclear plants was observed in Europe with effects on the increase of power flows and use of interconnection capacity and additional countermeasures applied.

In particular a more stressed situation in comparison to the past was faced in Germany, where due to the phase out of 8 nuclear power plants the generation and load balances were more stressed in comparison to the past. Reduced margins were experienced in particular in the South of Tennet's German control area (TTG) where at local level shortages of active power were noticed. Problems to meet n-1 security criteria were also experienced as well as voltage regulating problems due to the shutdown of nuclear.

Also in Slovakia a more stressed situation was recorded between August 29 and the middle of September, when high unexpected power flows occurred through the Slovak transmission system (probably due to the increased production of wind power plants located in north-west Europe and consumption located in the south). The awareness and alarming system was applied informing the TSOs about the warning state in the transmission system of Slovakia in the above mentioned period when the reliability criterion n-1 was not fulfilled during the whole period. The loading of some most affected lines was above 80% quite often and in some hours also above 90%.

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3 METHODOLOGY

3.1 SOURCE OF INFORMATION AND METHODOLOGY

The Summer Review Report is compiled using information provided by ENTSO-E members, through a questionnaire, in order to present the most important events that occurred during the summer period in comparison to the forecasts and risks reported in the last Summer Outlook. The TSOs mainly report any important or unusual events or conditions experienced by their power system during the summer time as well as the causes and the remedial actions taken.

The Winter Outlook Report is based on information provided by ENTSO-E members on a qualitative and quantitative basis. The information provided in the Winter Outlook Report refers to the answers submitted by every TSO until the beginning of October in response to a questionnaire. The Questionnaire has been modified in order to increase the level of detail in the analysis performed, respecting the questionnaire from previous years. The Questionnaire allows TSOs' to present views regarding any national or regional matters of concern, security of supply for the coming winter and the possibility of neighbouring countries to support the generation / demand balance of each respective ENTSO-E member in critical situations. The questions mainly refer to practices as well as qualitative data sent by TSOs in order to allow the country forecasts to be presented consistently and on a common basis.

For the Winter Outlook 2011-2012 an extensive regional analysis was added to the well known per-country analysis that has been performed in previous years. The goal of this investigation is to check whether the country based adequacy remains fulfilled when the larger, European scale is taken into account. In other words, it assesses whether the electrical energy will be available at certain points in time to allow the countries with a generation deficit to import the electric power needed from neighbouring countries.

In comparison with previous Winter Outlooks, the methodology for the quantitative analysis for this Winter Outlook has been significantly enhanced to provide a European overview of adequacy. Additional data was requested from all member TSOs. Some basic principles were also adapted to allow the regional analysis to yield representative results.

To carry out a regional analysis, a synchronous point in time is used for all countries. This is why the data collection requested load and production values for Wednesdays at 19:00. This point in time should be close to the winter daily peak load for most participating countries. It should however be kept in mind that a certain margin to peak load will apply for all countries, decreasing their remaining capacity and aggravating the situation.

For the regional analysis, the only values that are actually used from the data collection spreadsheet are:

- The Remaining Capacity for **normal** and **severe** conditions.
- Simultaneous importing and exporting capacity.
- NTC values towards individual neighbouring countries.

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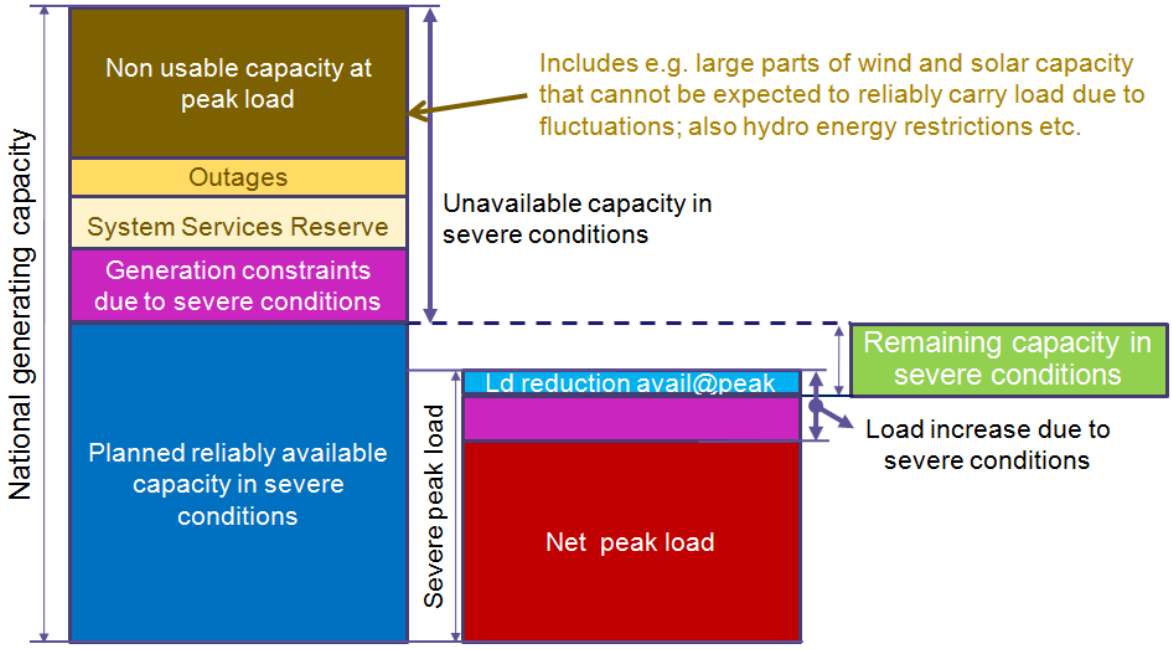
3.2 AIMS AND METHODOLOGY

The methodology consists of identifying the ability of generation to meet demand by calculating the so-called “remaining capacity” for both normal and severe conditions.

The methodology is shown in the figure below:



The basis of the analysis is the situation called “normal conditions”. Normal conditions are defined as conditions that correspond to normal demand on the system (i.e. normal weather conditions resulting in normal wind or hydro output and normal outages). A severe scenario was also built showing the sensitivity of the generation-load balance to low temperature and extreme weather conditions. The severe conditions relate to what each TSO would expect in terms of demand; which will be higher than in normal conditions and in terms of generation output which is reduced (i.e. severe conditions resulting in lower wind or restrictions in generation power plants).

The figures of the individual country responses 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 the Regional analysis, the choice can be made to use the Remaining Capacity before or after inclusion of firm contracts. The right method to use depends on how the Net Transfer Capacity (NTC) values are defined. When the maximal total for commercial exchange between two countries equals the NTC + firm contracts, the Remaining Capacity after inclusion of firm contracts should be used. If the maximal total commercial exchange is limited to the NTC value, the Remaining Capacity before inclusion of firm contracts should be used.
There were various countries that gave data on firm contracts. NTC values are used to

identify the limitations of commercial exchanges between neighbouring countries. All participants were asked to provide minimum NTC values in order to allow conduction of a worst-case analysis. When two participants provided different NTC values on the same border, the minimum value was taken.

The basis of the regional analysis is a constrained linear optimization problem. The target is to detect whether problems can arise on a pan-European scale due to a lack of available power. No market simulation or grid model simulation whatsoever is taken into account. The goal is to provide a level of confidence that countries requiring imports are able to source these across neighbouring regions under normal and severe conditions.

The first element that is checked is whether in a “copperplate” (unlimited exchange capacity between countries) scenario there is enough power that can be produced to meet the demand. Here, all individual remaining capacities are simply added, and when the result is greater than zero, theoretically enough power is available in Europe to cover country needs. Therefore the analysis shows whether there is a risk of shortage on the European level, it will not show which countries will have a generation deficit as this depends on the actual market price in all connected countries. No problems were detected using this approach. As this method does not take into account the limited exchange capacity between countries, it is too optimistic to draw final conclusions based on it.

Consequently, a second, more precise approach was taken. The problem was modelled as a linear optimization with the following constraints:

- Bilateral exchanges between countries should be lower or equal to the given NTC values
- Total simultaneous import and export should be lower or equal to the given limits

Based on this methodology, it was calculated which countries would have a generation deficit for a certain week due to saturated cross-border exchanges.

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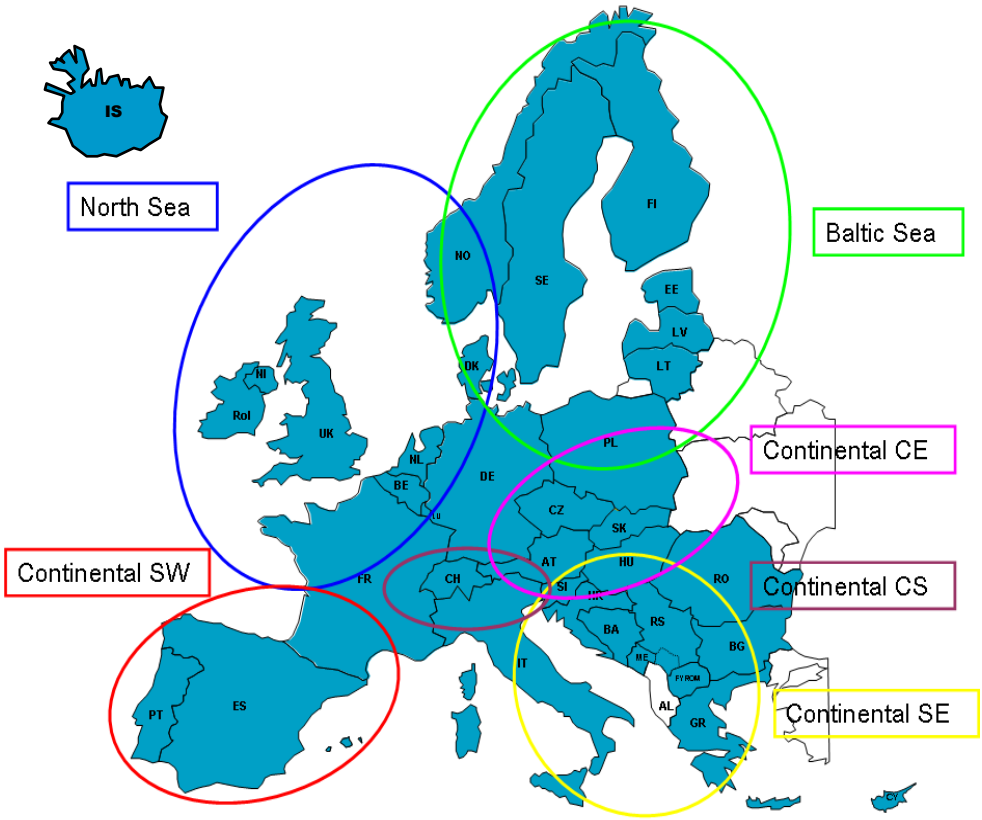
4 SUMMER REVIEW

The blocks identified in the summer outlook report 2011 relates to the regions under the ENTSO-E System Development Committee, as it is shown below:



The above mentioned regions are taken into consideration in referring to the Summer Review 2011. In comparison to the forecasts made by TSOs for the last summer 2011, the following outcomes are reported by region.

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NORTH SEA REGION

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

The North Sea region was affected during the summer by the phase-out of 8 nuclear power plants in Germany. Since Germany decided to shut down 8 nuclear power plants in March 2011, Elia, the Belgian TSO, has observed an increase in south-to-north flows through the Belgian system and surrounding grids. This trend required an increased need for coordinated actions on the Belgian Phase Shifters.

The grid situation in Germany in summer 2011 was stressed but system security was maintained at all time by the German TSOs. Nevertheless it has to be mentioned, that the grid situation was positively influenced by external conditions. The weather situation was quite stable for long periods with only moderate wind generation infeed and high photovoltaic generation.

The German TSOs were faced with problems to meet (n-1) security rules caused by high north-south power flows. These problems occurred not only inside the individual control areas but also on the tie-lines, e.g. tie-lines between 50Hertz Transmission (50HzT) and TTG. German TSO's were able to manage the mentioned grid security problems by extensive use of grid and market related measures. Due to the high feed-in of wind energy and high export from 50HzT to TTG, network and market-related measures had to be carried out several times. Apart from network-related measures, day-ahead security interference and counter-trading measures were carried out in particular during the summer months.

The unpredicted shutdown of the nuclear power plants also caused a shortage of available reactive power. As a result, strong North-South load flows especially during high load and high wind feed-in led to under voltage problems in Baden-Württemberg, Hessen and Rheinland-Pfalz. Whereas in the Hamburg area overvoltage problems occurred during low load conditions. Because of the shortage of available reactive power the voltage control became more difficult. Exceeding voltage limits was mostly avoided by special topological measures, by the disconnection of low loaded lines, special redispatching of power plants and by the support of neighbouring grids and subordinated DSOs. However, there were also events, when the upper voltage limits were temporarily violated.

The so called "DC-Loopflow-Procedure" was applied several times, especially in August and September, as a result of congestions on the tie-line Vierraden and Krajnik between 50HzT and PSE Operator or internal congestions in the Swedish grids of Svenska Kraftnät (SvK), Polish grid of the PSE Operator and 50HzT.

France did not experience specific problems during the previous summer. As no heat wave occurred, no significant environmental constraints to the generation arose during this period.

In Scotland, some problems associated with high wind output were experienced, during both early and late summer, when a small number of wind farms were constrained off due to local transmission constraints.

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An undersea cable fault resulted in the loss of one pole of the Moyle interconnector between Northern Ireland and Great Britain from 26 June. This reduced the amount of import/ export capacity between Great Britain and Northern Ireland and in turn reduced the overall generation adequacy for Northern Ireland. On 25 August, a further undersea cable fault occurred on the second pole of the Moyle Interconnector. This resulted in a complete loss of import / export capacity between Northern Ireland and Great Britain and significantly reduced the generation adequacy in Northern Ireland. Even with these faults on the Moyle interconnector, the Northern Ireland generation adequacy standard was still met at all times during the summer period.

No unusual weather conditions during the summer period occurred.

BALTIC SEA REGION

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

System operation and system adequacy have functioned without any significant problems for both the Nordic and the Baltic countries in the summer of 2011.

Denmark had a normal summer without any major problems. The Danish power balance was good with virtually no situations resulting in a poor power balance.

In Finland the summer was remarkably warmer than the long term average. Specifically, the monthly average temperature was one to four degrees higher than the long term average. Although no significant events in generation, demand or transmission occurred; storms caused local damage to the distribution systems.

In Norway the system operation and system adequacy also functioned without any major problems in the summer of 2011. Due to heavy rain, Norway went from having a negative hydrological balance of 30 TWh in the early Spring, to a surplus of about 5 TWh before entering the winter of 2011/12.

In Sweden no severe problems occurred during the summer period, although there was a low availability of the Swedish nuclear power plants. 6 out of the 10 nuclear power plant units were out of service. This limited the transfer capacities as well as causing some local voltage problems.

Due to the hot weather conditions in the Baltic countries during the summer there was a large electricity deficit in Latvia and high import flows to the Lithuanian power system (due to market conditions). The summer was a rather stressed period for the interconnection between Latvia and Estonia. The transmission capacity on the cross-border Estonia, Russia – Latvia was reduced due to the hot weather, and the interconnection was congested. In addition, the Estonian and Latvian TSOs made counter trades in order to avoid overloading the cross border interconnections.

An update on Germany is covered in the North Sea region.

An update on Poland is covered in the Continental Central East region.

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CONTINENTAL SOUTH WEST REGION

France, Portugal, Spain

This summer the Continental South West region remained calm. No events with negative impact on system adequacy occurred during the season.

In Portugal, an atypical weather scenario, with mild temperatures and rainfall, in conjunction with the economic crisis, resulted in lower demand figures than forecasted in the Portuguese Summer Outlook Report 2011.

In Spain, system operation and system adequacy functioned without any significant problems. No demand peak summer records were achieved, and expected peak load for severe conditions was not reached in Spain. Consumption has slightly dropped after the recovery of last summer, due to the economic and financial crisis.

CONTINENTAL SOUTH EAST REGION

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

The countries in the Continental South East region did not experience any adequacy problems during the summer period. Weather conditions were close to normal conditions. There were only several moderate heat waves which did not result in a significant increase to the demand.

Most countries in the region reported poor hydro conditions, including an extremely low amount of rainfall, especially in the second half of the summer period. Failure rates of generating units and transmission lines were near long term mean statistical values. Only one significant event was reported concerning the security of the parallel operation with Turkey. The event occurred on 18 July 2011, when the two tie lines between Bulgaria and Turkey tripped due to overloading. This also caused tripping of the tie line between Greece and Turkey, resulting in separation of the Turkish system from the ENTSO-E system.

The planned maintenance schedules of all countries in the region were strictly fulfilled. Every country reported different rates of change in the overall electricity demand during the summer period, compared with the same period of 2010.

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CONTINENTAL CENTRAL SOUTH REGION

Austria, France, Germany, Italy, Slovenia, Switzerland

No critical events concerning the grid of the Continental Central South region occurred in the summer period. Regarding capacity adequacy and load covering, there was no evidence of any particular risk, despite a decrease in the safe reserve between power generation and peak load in Germany, due to the shutdown of the 8 nuclear power plants.

The temperature was quite stable, with the exception of Italy, where an increase in the average temperatures was recorded. An increase in the long term average temperature of about 2°C was also recorded in Slovenia. Austria and Slovenia remained mainly dry in the last part of summer.

Concerning the generation sector the summer period was characterized by the Nuclear phase out in Germany, and the relative voltage problem in the German grid. In Italy there was a sensible increase of solar production of about 400%.Two unplanned outages of generation's units in Slovenia were without effect on security of supply. There were no unplanned outages of interconnection lines in the Continental Central South region.

CONTINENTAL CENTRAL EAST REGION

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

This summer the Continental Central East region was affected by the shutdown of 8 nuclear power plants in Germany. Due to the phase-out the generation and load balance has become more stressed than in the past. The peak load in Germany was covered largely by the photovoltaic (PV) installations. The unpredicted shutdown of nuclear power plants also resulted in a shortage of reactive power and led to under voltage problems in certain regions of Germany.

Due to high unplanned flows from the German 50Hertz network to the Polish network, the "DC-Loop Flow-procedure" was applied several times during August and September.

High unexpected power flows through the Slovak transmission system (probably due to the increased production of wind power plants located in north-west Europe and consumption located in south) occurred between the end of August and the middle of September. The other TSOs in the region were informed about the warning state (yellow light) in the transmission system of Slovakia in that period by the awareness and alarming system, as the reliability criterion n-1 was not fulfilled during the whole mentioned period. The loading of most affected lines was quite often above the 80% and in some hours also above 90%. Weather conditions in the region were quite stable and corresponded with the average conditions for this time period of the year.

A dry period was observed in Slovenia, Croatia and in the Slovak Republic especially during August and September.

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ISOLATED SYSTEMS

Cyprus, Iceland

In Cyprus a significant event was experienced during the summer period due to the large explosion that occurred on 11 July within a Naval Base nearby to the whole “Vasilikos” Power Station resulting in the death of 13 people and injury of many personnel. Vasilikos is the largest Power Station in Cyprus, the explosion resulted in a major loss in generation capacity of 868MW (60% of the National Generation Capacity) leaving the country in a state of Energy Crisis.

Due to the shortage of significant generation, following the explosion, the “Under Frequency Load Shedding Scheme” operated successfully avoiding whole system blackout.

In **Iceland** no unusual or significant system events occurred during the Summer period.

ADDITIONAL CONTRIBUTING COUNTRIES

Albania

During the summer period, the Albanian Power System did not encounter any unexpected or unusual events or conditions.

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5 WINTER OUTLOOK

5.1 GENERAL OVERVIEW

Starting from the data submitted by TSOs on a country basis, the focus of the assessments is on the regions where major critical issues are identified.

It should be stressed that the analysis is based on data submitted by each individual TSO. Therefore, differences in the assumptions made by TSOs could be expected depending on the specifics of each country. For example, there are material differences in generation unit outage rates assumed by various TSOs. Some TSOs report a 3% generation unit average outage rate while other TSOs report over 10%.

The analysis based on the data submitted by each TSO, assuming an unrestricted capacity of the interconnections, shows that Europe as a whole has over 22 GW of spare capacity to meet demand and reserve capacity under severe conditions.

However, the limited cross border capacity between countries prevents capability to take full advantage of this excess capacity. The analysis highlights which weeks and which border interconnections are likely to be heavily used under severe conditions.

5.2 INDIVIDUAL COUNTRY PERSPECTIVE ANALYSIS

Based on normal conditions for load and demand, the majority of countries do not require imports as shown pictorially in Figure 1. Where a country is coloured green, it always has excess capacity to meet demand and reserve. Countries which are orange have at least one period where imports are required to meet their demand and reserve requirements.

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FIGURE 1: COUNTRY ANALYSIS UNDER NORMAL CONDITIONS

While the majority of regions do not require imports for security, markets will determine the economic energy transfer based on the respective price differentials between regions and hence various borders will be transmitting power at their maximum capacity. As indicated in the description of the methodology, this analysis is not a market simulation and hence flows are not indicated.

Although some regions do require imports, there is ample interconnector capacity from neighbouring regions and a subjective weekly assessment has determined a green status for all weeks as shown below in Figure 2

Date	07-Dec-11	14-Dec-11	21-Dec-11	28-Dec-11	04-Jan-12	11-Jan-12	18-Jan-12	25-Jan-12	01-Feb-12	08-Feb-12	15-Feb-12	22-Feb-12	29-Feb-12	07-Mar-12
Week	49	50	51	52	1	2	3	4	5	6	7	8	9	10
Time	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**
Weekly Status														

FIGURE 2: WEEKLY STRESS ASSESSMENT UNDER NORMAL CONDITIONS

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Under severe conditions (defined as 1 in every 10 years), the picture is significantly different, as shown in Figure 3. Where a country is coloured green, it always has excess capacity to meet demand and reserve. Countries which are orange have at least one period where imports are required to meet their demand and reserve requirements and countries which are red require imports across all periods when severe conditions materialise.

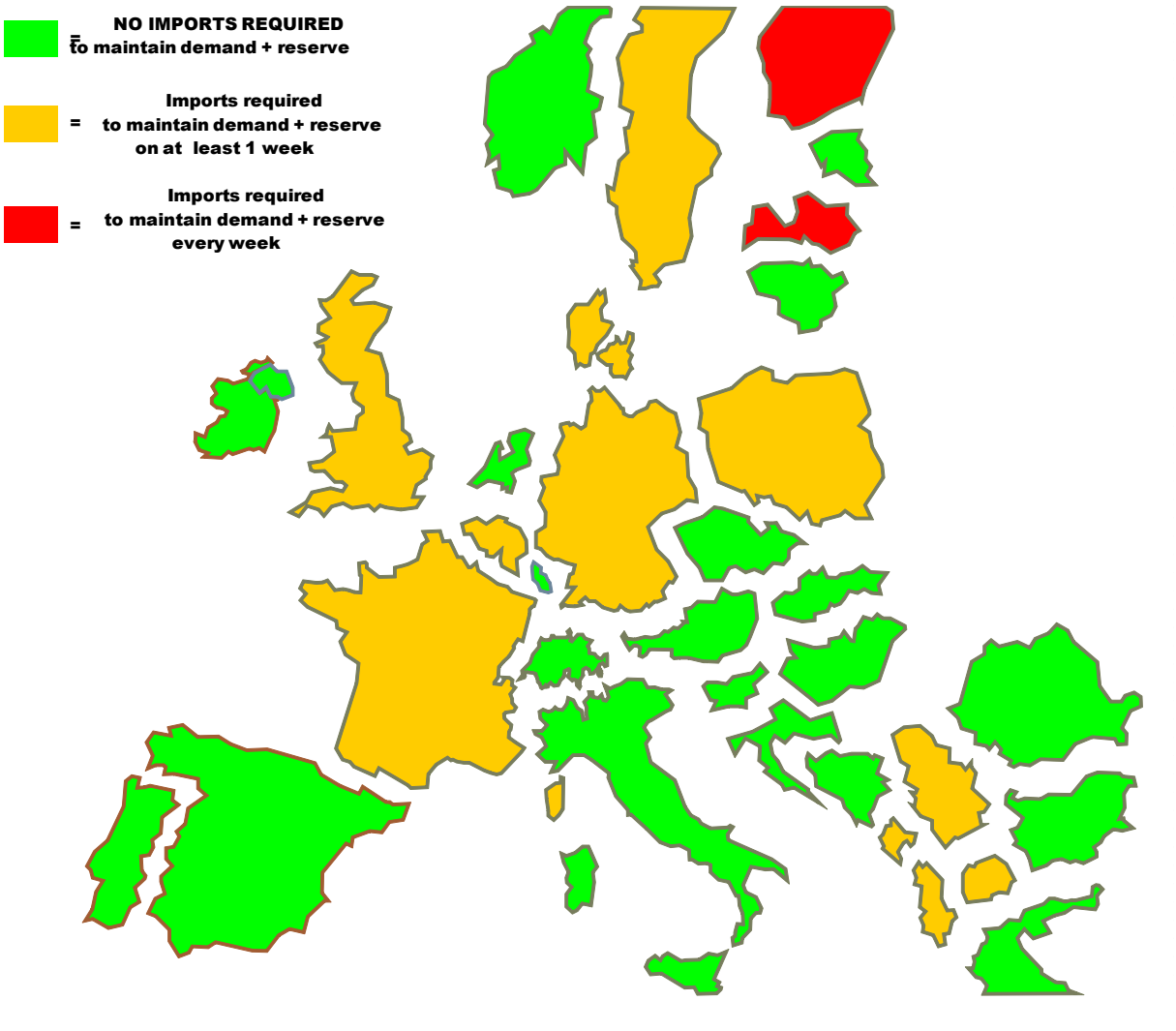

FIGURE 3: COUNTRY ANALYSIS UNDER SEVERE CONDITIONS

Under severe weather conditions, each individual countries demand increases and for certain countries, which have predominantly electric heating, the increase can be significant. This is particularly noticeable in France.

The analysis indicates that even under severe conditions across all of Europe, demand is met and reserves are maintained.

However, the transmission of power through the cross border Interconnectors becomes more vital for system security. A subjective assessment by the experts of the most stressed weeks for Europe is as indicated below in Figure 4.

Date	07-Dec-11	14-Dec-11	21-Dec-11	28-Dec-11	04-Jan-12	11-Jan-12	18-Jan-12	25-Jan-12	01-Feb-12	08-Feb-12	15-Feb-12	22-Feb-12	29-Feb-12	07-Mar-12	14-Mar-12	21-Mar-12	28-Mar-12	04-Apr-12
Week	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Time	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**	**19:00**
Weekly Status																		

FIGURE 4: WEEKLY STRESS ASSESSMENT UNDER SEVERE CONDITIONS

A key period identified by the analysis is made of the first 2 weeks of December when generator maintenance in certain countries are still being undertaken. Across these 2 weeks, the analysis suggests that imports into France could be up to around 80% of the submitted NTC values (~7GW required). A significant change from previous years is that Germany, which will also require imports across both these weeks while maintaining exports to France.

The key week for Europe is probably week 50 where both France and Germany simultaneously require peak imports for the winter period under severe conditions.

Other weeks identified by orange are driven by high demands under severe conditions and not by generator maintenance schedules. For these weeks, France could require imports up to around 50% of the NTC values.

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5.3 IMPORT/EXPORT CONTRIBUTION AND REGIONAL OVERVIEW

The analysis in the previous section highlights the first 2 weeks in December as a key period for Europe. The assessment focused on these weeks to highlight the main risks for the incoming winter period under severe conditions. It should be stressed that, for these scenarios to materialise severe weather conditions will be required, otherwise under normal conditions the situation is very comfortable as highlighted previously in Figure 1.

While the analysis is not a market simulation, it does highlight which border interconnections would be used in order to maintain system security. For week 49 (Wednesday 7 December), the analysis is as shown below in Figure 5; when looking at the various shades of orange, countries expected to import more than 3% of demand are highlighted in dark orange.

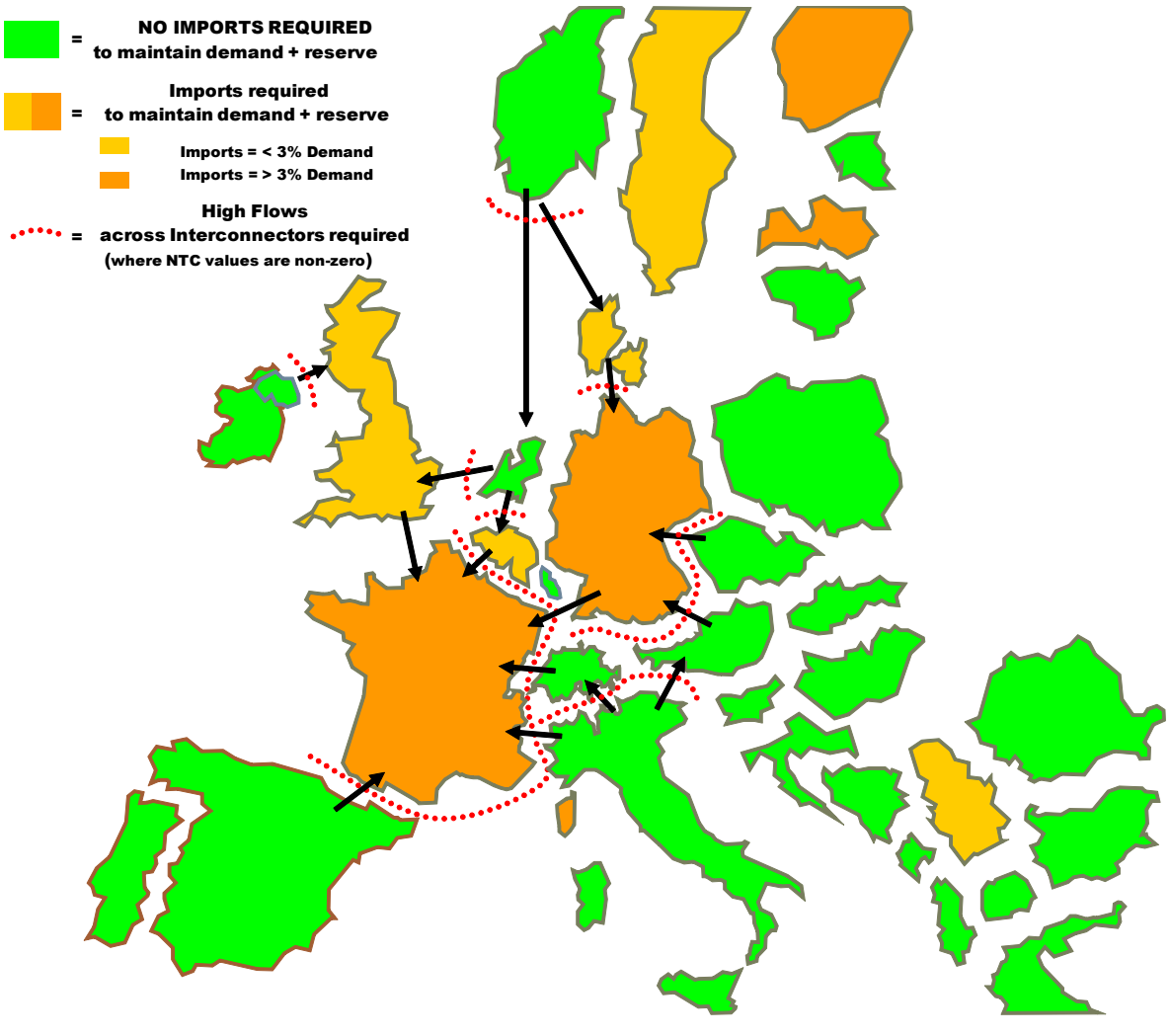

FIGURE 5: WEEK 49 UNDER SEVERE CONDITIONS

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The main points to highlight for this week are:

- With Germany, France and Great Britain requiring imports under severe conditions, there is a high power transference through the interconnectors from the neighbouring regions to support these countries.
- It should be noted that Germany could still be required to export up to nearly 3GW of power to France (via flows from Austria and Czech Republic possibly). This analysis does not include a grid model but it is believed that reactive voltage support in southern Germany will be key to ensuring that this amount of transfers can be managed in operation.
- Various countries act as transit systems to ensure power gets to France and Germany. Great Britain and Belgium would be required to transit power via their interconnectors to France across this week.
- Italy and Spain have a significant excess of capacity across this period and maximising exports from these countries is important. However the transfer capacity from Spain to France is limited to 800 MW.
- It should be noted that Poland has declared a zero NTC for this week but capacity may be available on the actual day dependent on detailed grid analysis.
- Various countries act as transit systems to ensure power gets to France and Germany. Great Britain and Belgium would be required to “wheel” power via their interconnectors to France this week.
- Power coming from Norway via the Netherlands and Denmark is required.

There are other countries that require imports, but there is ample interconnector capacity and margin in neighbouring countries and hence no indication of flows is shown.

Coordination across all TSOs neighbouring France and Germany will be vital across this week, if severe conditions materialise, in order to maximise cross border transfer capabilities i.e. redispatch of plant, optimising of Transmission system configuration etc.

As highlighted previously, the analysis is not a market simulation and hence the flows shown on this map may not reflect what would be delivered by the markets. However, it is clear that under severe conditions the general case of high flows into Germany and France is still valid.

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Based on the data submitted, week 50 (14 December) is also a key week, when the analysis indicates that both Germany and France simultaneously require maximum imports (France requires ~7.0GW and Germany requires ~1.6GW + firm contracts of 3.8GW) under severe conditions).

The results of the analysis are shown pictorially below in

Figure 6; when looking at the various shades of orange, countries expected to import more than 3% of demand are highlighted in dark orange.

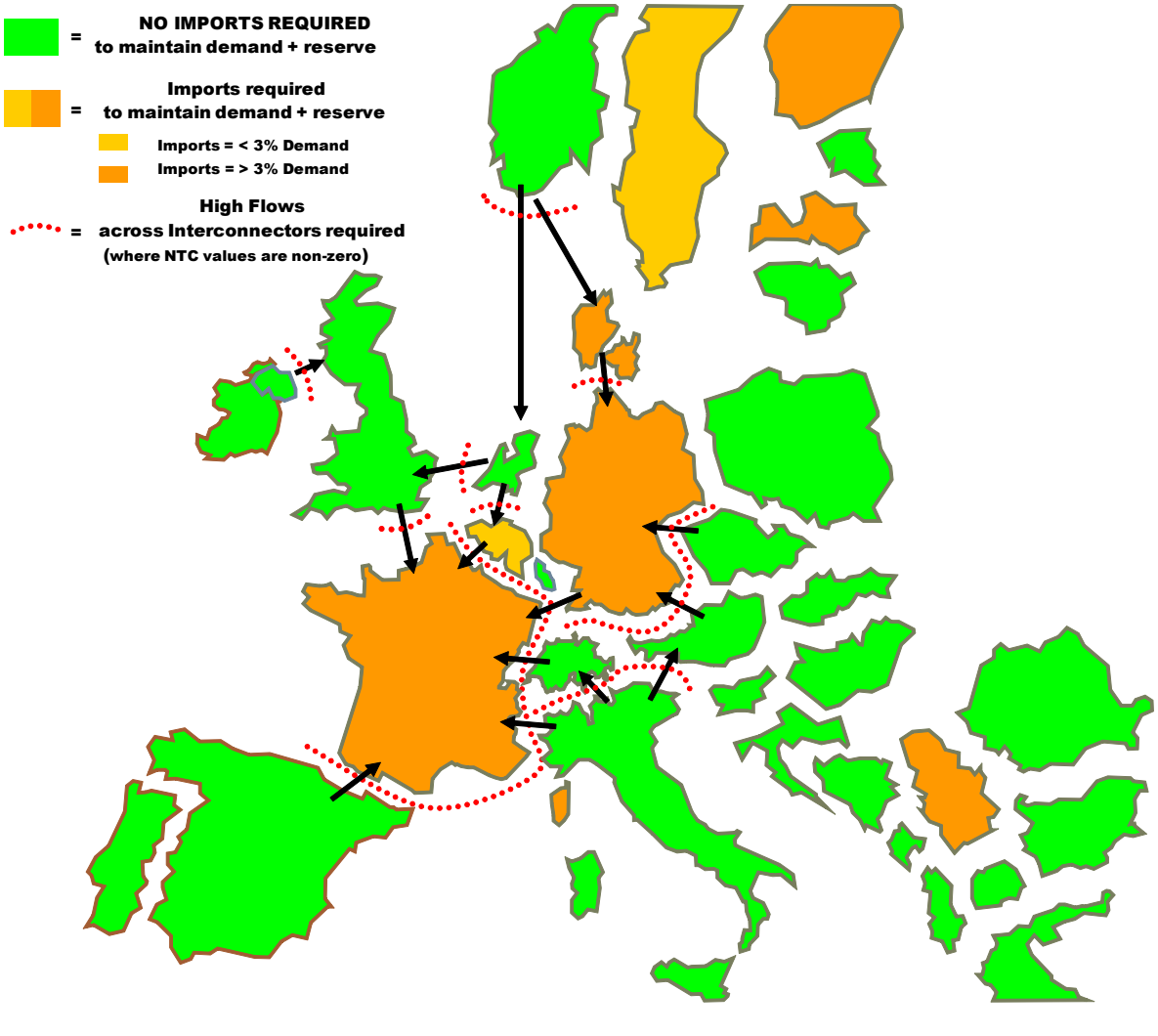

FIGURE 6: WEEK 50 UNDER SEVERE CONDITIONS

The main points to highlight for this week are quite similar to the previous ones:

- Germany and France require peak imports simultaneously across this week under severe conditions.

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- All interconnectors to France (apart from Germany) could be virtually at the full NTC values.
- Various countries act as transit systems to ensure power gets to France and Germany.
- Italy and Spain have significant excess of capacity across this period and maximising exports from these countries is important.
- It should be noted that Poland has declared a zero NTC for this week but capacity may be available on the actual day dependent on detailed grid analysis.
- Power coming from Norway via the Netherlands and Denmark is required.

There are other countries that require imports, but there is ample interconnector capacity and margin in neighbouring countries and hence no indication of power flows is shown.

As highlighted previously, the analysis is not a market simulation and hence the flows shown on this map may not reflect what would be delivered by the markets. However, it is clear that under severe conditions the general case of high imports into Germany and France is still valid.

Coordination across all TSOs neighbouring France and Germany will be vital across during this week, if severe conditions materialise in order to maximise interconnector capacities i.e. optimising of transmission system configuration, redispatch of generation, etc.

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6 COUNTRY LEVEL

6.1 INDIVIDUAL COUNTRY RESPONSES TO THE WINTER OUTLOOK

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

Lithuania

Luxembourg

Montenegro

Netherlands

Northern Ireland

Norway

Poland

Portugal

Serbia

Romania

Slovak Republic

Slovenia

Spain

Sweden

Switzerland

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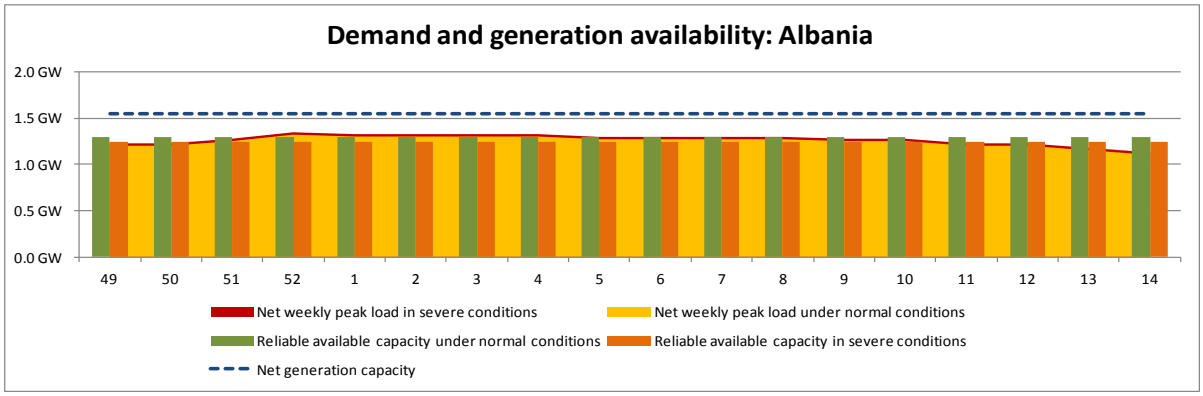
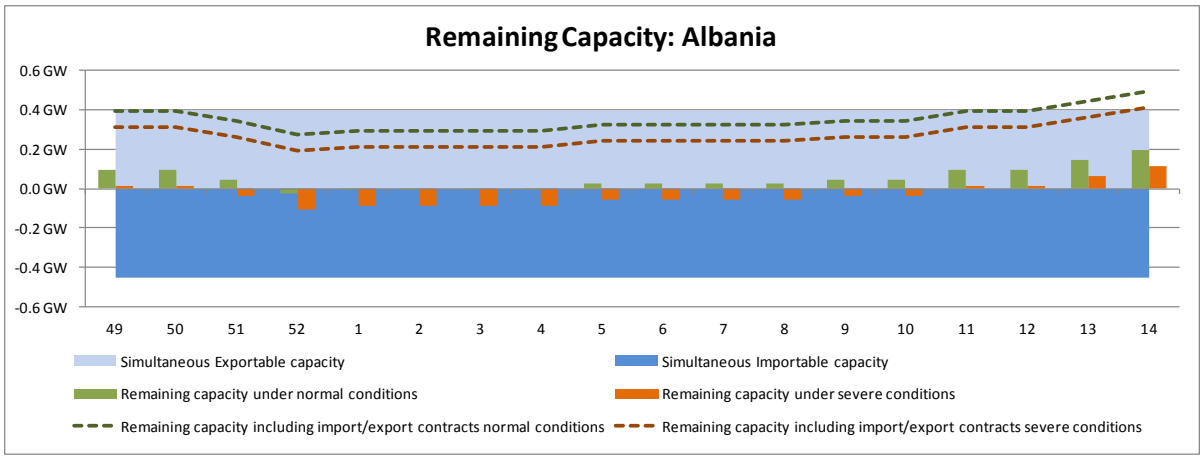
Albania





The Albanian Power System, due to the significant share of hydro power plants, mainly depends on the regional hydrological conditions. We do not expect any significant change in the generation capacity for the next winter 2011/2012, in respect to the previous winter period. Thus, for the upcoming winter period, it is considered that the adequacy and security of the Albanian power system is not threatened under normal weather conditions. This is taking into account the state of hydro power plants reservoir basins levels of Drini Cascade, at the beginning of the considered period, planned availability of production and transmission facilities, and the availability of importable capacity of interconnections.

The most critical period remains during the second part of December and January, depending on weather conditions and temperature.

In general the interconnections are sufficient for import/export of electricity, considering the positive effect of the new tie-line 400 kV Montenegro – Albania, already in operation.

In case of any problems arising over the coming winter, it is planned to manage the risk as much as possible by using market mechanisms etc. Also load reduction is available upon decision of the Ministry of Energy and the Regulatory Authority for Energy.

Though addition of new generation capacity is not expected for the coming winter, OST does not anticipate significant balance problems in the Albanian Power System during the upcoming winter period. The most critical period remains during the second part of December and January.

The level of remaining capacity considered necessary to ensure a secure operation for the next winter is 120 MW. In Albania there are not yet intermittent energy sources like wind or solar, to be taken into account in our assessment.

The maintenance schedule of the generating units is set to minimum. No problems in the transmission network are expected because most maintenance work has been accomplished during the summer period of the year.

Import Contracts until the end of this year are concluded already by market participants, and the remaining, cover the first quarter of next year, are under the process.
In case of severe conditions it will be requested to increase the import by 100 MW.

Under these conditions all criteria for the system adequacy will be met.

According to the Grid Code, OST's regular operation planning horizons are: year (Annual Operation Study, AOS), month, week and day. The AOS is based on a model combining stochastic and deterministic approach, and make use of information provided by grid users. In the medium and short term, OST conducts studies concerning the Generation Adequacy Assessment. The studies include load forecasts and multiple scenarios on energy management using probabilistic and deterministic methods. The energy management studies aims to check the actual energy situation and the level of hydro reserves. These studies are regularly revised to include mainly variations in the load and/or the availability of the power plants.

Albania will continue to be dependent on imports also for the next winter period. It is estimated that for several weeks mostly during January, the remaining capacity for normal conditions will be about -40 MW, and -100 MW for severe conditions. In case of deficiency of generation (low hydrology, loss of major units) or unavailability of imports from neighbouring countries, and if the system reserves could not cover the lack of energy, last measure load reduction is possible according to national defence scheme. We do not expect any problems related with shortages of transmission capacity or low generation availability, all maintenance works will be performed within October of this year.

The monthly peak load is calculated both for normal and severe conditions. The severe load scenario is built considering a temperature lower than 5°C of the season normal temperature.

The Albanian Power System, due to significant share of hydro power plants, mainly depends on hydrological circumstances of the region. The differences between the productions of the hydro power plants during extremely dry or extremely wet period, fluctuate for approximately 30% of the average production with hydro power plants.

In this winter outlook assessment, the thermal power of 90 MW, is put at non-usable capacity due to information provided by generation company KESH-Gen, who intend to use it only in case of a very dry period. No addition of new generation capacity is expected for the coming winter.

We do not expect any significant change in the generation capacity for the next winter 2011/2012, in respect to the previous winter period.
The firm maintenance program of the generation units for next year, normally is issued in October, nevertheless, the maintenance schedule of the generating units is set to minimum because the most maintenance work has been accomplished during the summer period of the year.

We already have a plan for the maintenances and overhauls, outages, and valuable info about the treatment and amount of mothballed power plant. In this assessment, the TPP Vlora with 90 MW, is put at non-usable capacity due to information from generation company KESH-Gen, that intend to use it only in case of a very dry period.

We have not any concerns regarding the amount of generation capacity required by us (TSO) to provide operating response/reserves. It is made available by public generation company KESH-Gen in accordance with terms of our Grid Code.

Our system is usually dependent upon imports of electricity from neighbouring countries, and it will be dependent upon imports also for the coming winter period 2011/2012. Physical imports are expected on the Greece and Montenegrin border and exports on the Kosovo border. Due to high transfer capacities (two interconnectors 400 kV and two 220 kV), no problems with congestions due to transit flows or security of supply are expected. In general the interconnections are sufficient for import/export of electricity.

The average simultaneous import capacity for the coming winter is approximately 450 MW, whereas the average simultaneous export capacity is approximately 400 MW. The simultaneous import and export capacity was obtained by adding the average NTC-values of all borders and multiplying this sum with a simultaneous coefficient of 0.7.
Available cross border capacity allows compensation of eventual energy deficit and transit of energy for successfully functioning of electrical market.

We rely upon imports due to both security of electricity supply reasons and also market conditions between our system and the neighbouring countries.

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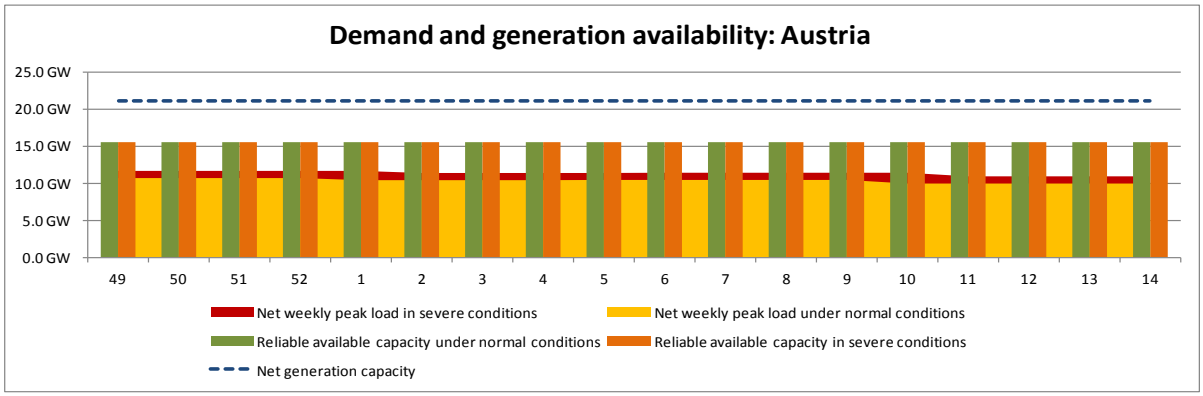
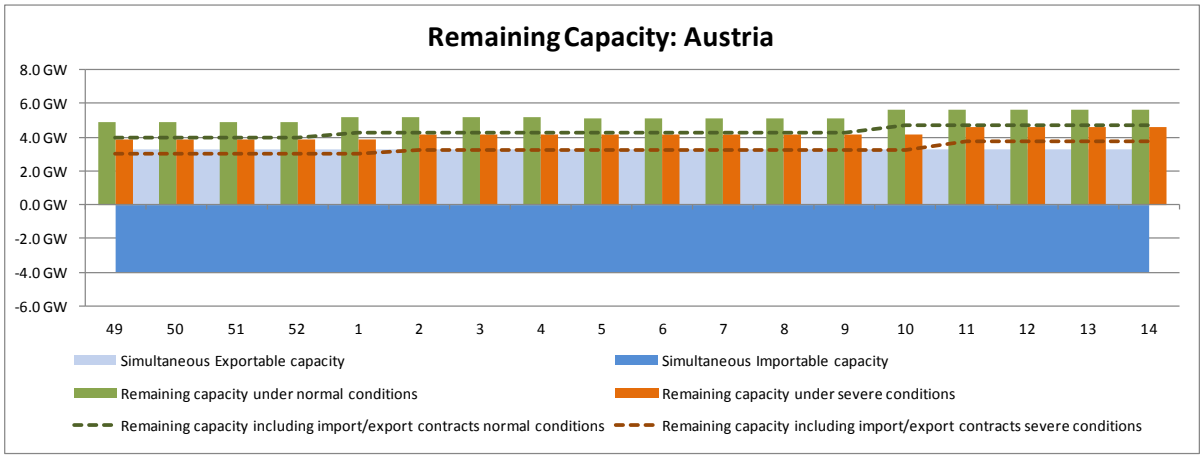
AUSTRIA





General Comments

Due to the temperature forecast for October to December 2011 (ZAMG Data) warm temperatures can be expected in Austria. This would lead to a lower demand compared to an average winter season.

Under normal conditions no problems are expected in Austria for the Winter 2011/2012. There is only a very low risk of very high load which would be the result of a long lasting period of extreme low temperatures in combination with reduced generation because of dryness and lack of primary energy sources (especially natural gas).

As a result of the nuclear shutdown in Germany, higher exports from Austria to Germany can occur. Therefore, in addition to the regular load flow analysis APG has established a monthly reporting about the actual situation and the results of grid analysis (scenarios). APG is also involved in international activities concerning this topic.

In addition to the regular load flow analysis and due to the nuclear shutdown in Germany, APG has established a monthly monitoring and reporting about the actual situation and the results of grid analysis (scenarios). APG also is involved in international activities concerning this topic.

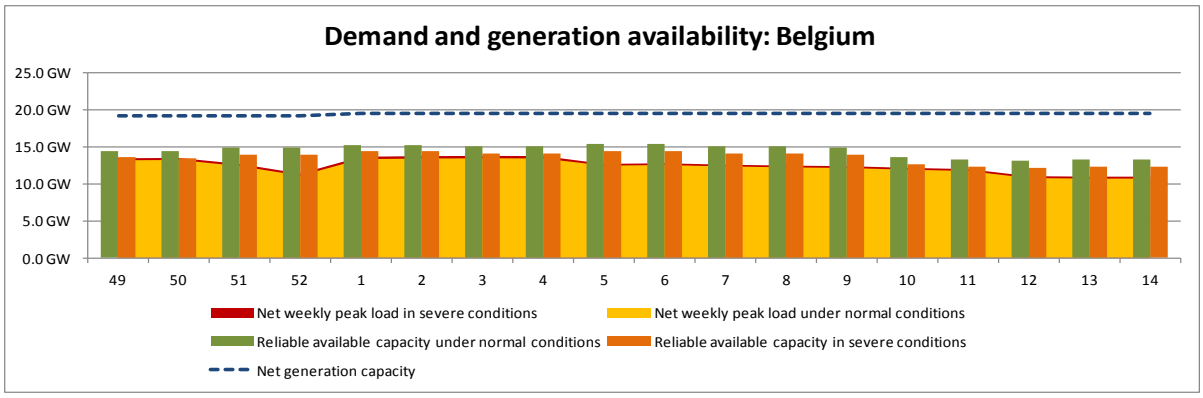
Generation- Demand Balance

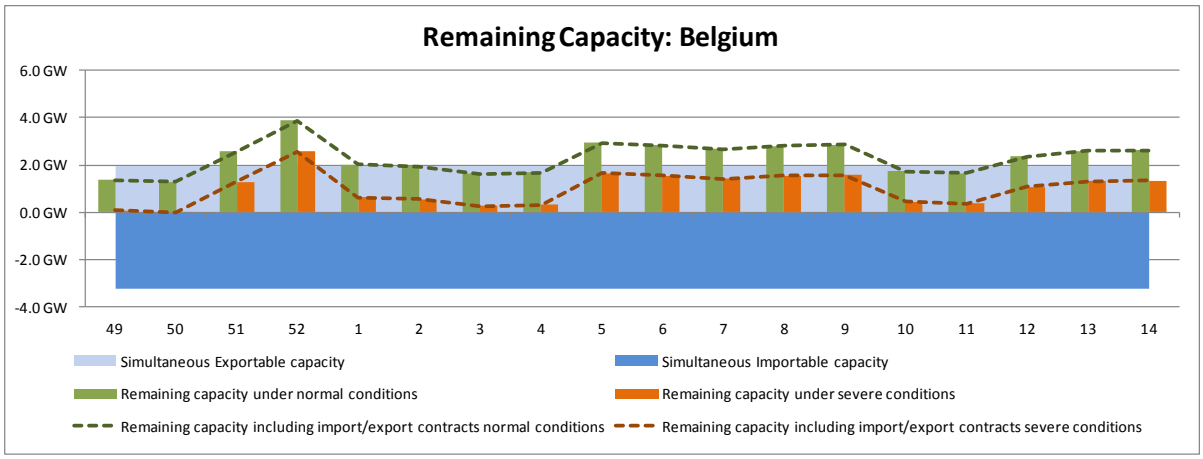
The lowest remaining capacity is expected in December. However, even under severe load conditions a remaining capacity of 3.5 GW is still available.

Role of Interconnections

A potential risk can be higher load flows from Austria (APG) to Germany (TENNET) on the 220kV tie line between St. Peter (APG) and Germany. However under normal conditions these situations can be handled with countermeasures. A cross border redispatch contract between APG and TENNET was signed in September 2011.

Belgium





General Comments

For the coming winter, no large issues are expected concerning the generation-load balance in Belgium under normal conditions. However, at certain periods (possibly different from the synchronous time of analysis used in de common Winter Outlook) under severe conditions regarding load (temperature) and generation availability, combined with the physical fluxes to the SOTEL area, the limited availability of load management and the margin to peak load,

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Belgium might have to rely on structural imports from neighbouring countries between weeks 47 and 50 of 2011 and weeks 3, 4 and 11 of 2012.

Taking into account the limited planned interventions on the 380 kV grid and the minimal expected NTC's for the coming winter, it should be no problem importing from neighbouring countries, provided that there is no lack of energy on the European scale, and that programmed extensive exchanges between other countries do not impose constraints on physical flows through the Elia grid, thereby congesting the network. In the aftermath of the German nuclear moratorium, it is however possible that the necessary energy is not available in extreme winter conditions (low temperature, high load, no wind and cloudy) in Europe.

Background*:*

Up to last summer, the adequacy forecast study was carried out each year for the Elia control area, which includes Belgium and the SOTEL area (a part of the G-D Luxembourg). According to the guidelines determined by ENTSO-E, this Winter Outlook assessment was made for the Belgium area, excluding the SOTEL area. To present a realistic view on the Elia generation-load balance, we included transfers to this SOTEL area in the remaining capacity for the graphs shown below; whereas in the data collection spreadsheet these transfers are not included due to our inability to model them realistically within the given framework.

To allow for regional analyses to be made, a synchronous time was used for the data collection (19:00). This however has a positive influence of about 285 MW on average on the obtained margins. The impact of this margin to peak load is shown on the graphs below.
The desired safety level under standard conditions for the generation-load balance is reached during the whole winter period, for the 19:00h time of week 44 of 2011 to week 14 of 2012. The lowest remaining capacity in normal conditions is foreseen for March 15 2012, namely a remaining capacity of 875 MW. This assessment takes into account the actual, announced overhaul and an estimation of the average outages and non-usability factors of the generator units connected to the Elia and the DSO grids. The average outage rates of generation units were estimated based on historical data for the Belgian production park. Load management under the form of interruptible clients accounts for 412 MW of this margin, but it should be mentioned that they only have an availability of 80% year-round. Regarding the forecasted load, a structural increase of 0.09% with respect to previous winters' load is assumed.

If an additional variation of 5% of the net generation capacity is taken into account to cope with severe variations of load and generation, margins will decrease significantly, however without showing significant issues. Nevertheless, when considering not only Wednesdays, and taking the margin to peak load under extreme conditions, the exports to the SOTEL area, and the limited availability of interruptible clients into account, net imports may be needed in weeks 47 to 50 of 2011 and weeks 3, 4 and 11 of 2012. This observation corresponds to the conclusions that were drawn from the preliminary qualitative Winter Outlook. When also accounting for the possibility of importing from neighbouring countries,

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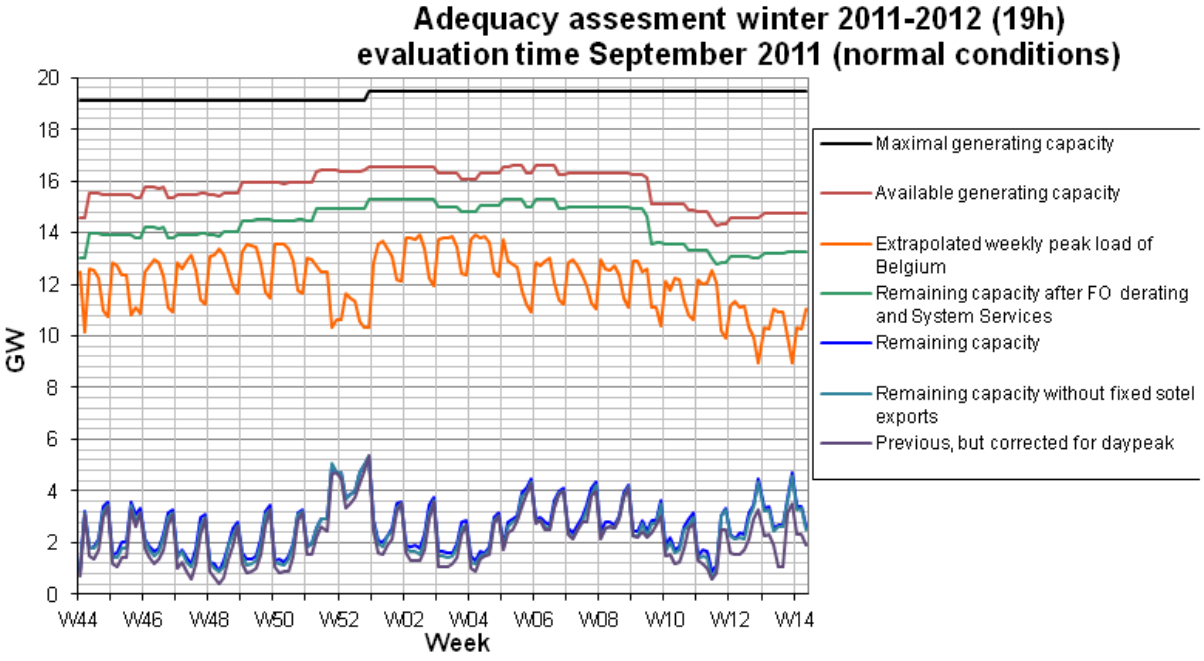
no issues are to be expected as long as there is no lack of energy on a European scale, which could be too optimistic in extreme winter conditions (low temperature, low wind and cloudy) in Europe.

The analysis for the Winter Outlook 2011-2012 is in line with the SO&AF analysis for January 2012. Some minor deviations are due to the fact that actual maintenance is taken into account in this Winter Outlook while in SAF 2012-2025 statistical averages are used. Also the non-usable value is different due to the fact that in the Winter Outlook the actual maintenance of CHPs connected to the Elia grid is taken into account. Finally, the peak loads and loads at specific times in SAF 2012-2025 are normalized loads and do not represent extreme conditions.

No reduction of the installed generation capacity was taken into account for the upcoming nuclear stress tests since the impact, the duration and the timing is not yet known. It should however be mentioned that a decision towards closing even some of the nuclear units will gear the conclusions of this assessments towards structural imports being needed for Belgium during the entire winter period.



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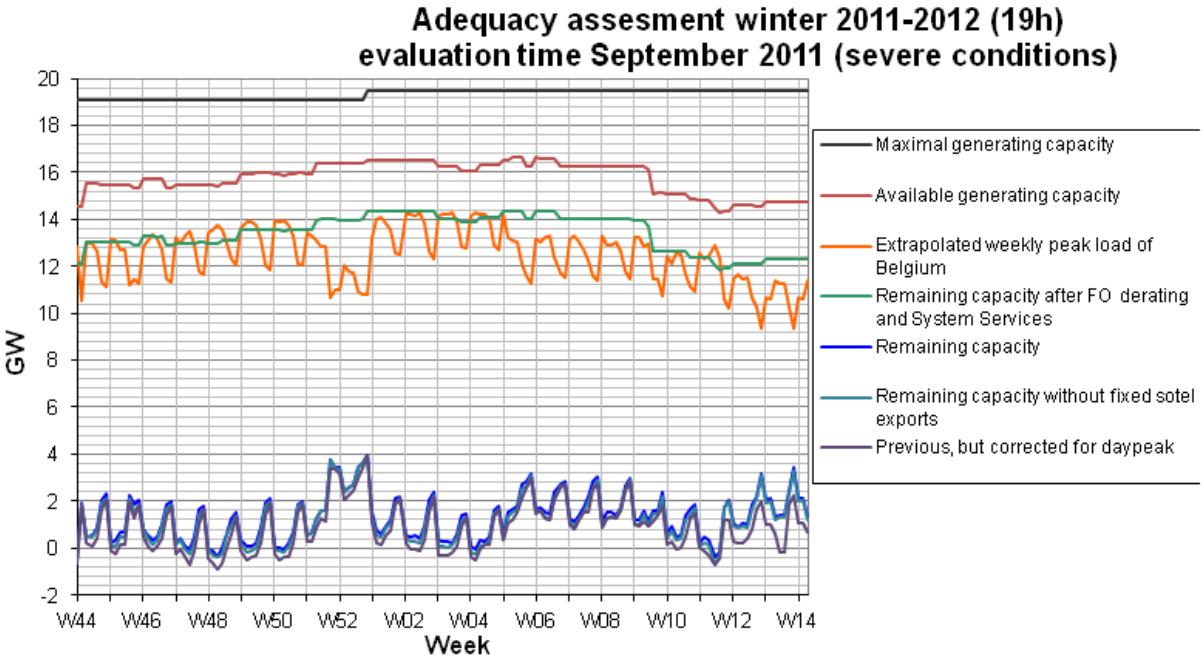
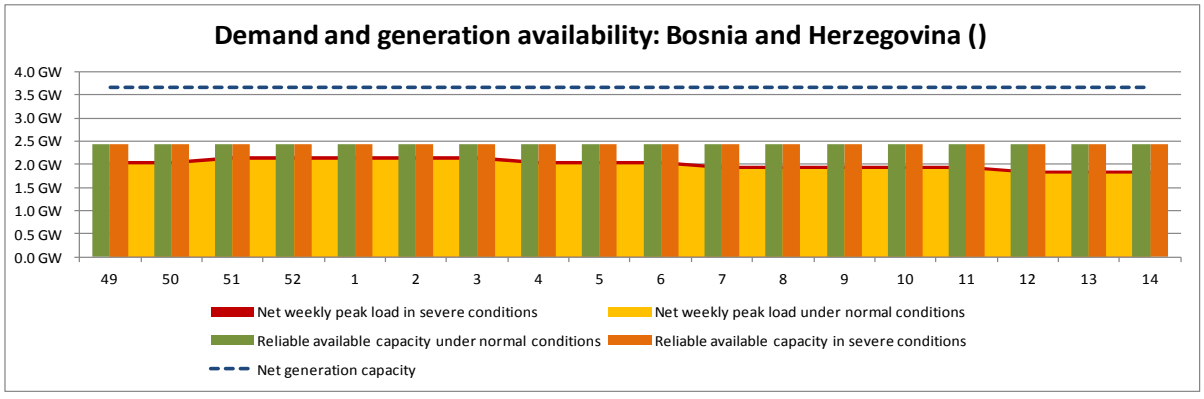
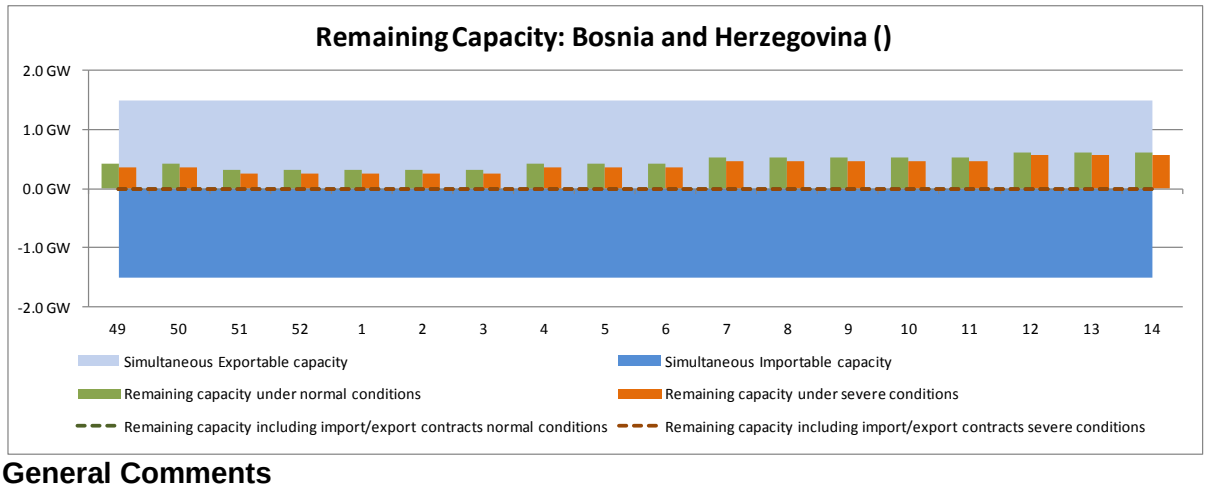


Bosnia & Herzegovina





General Comments

Under normal conditions no supply / demand balance problems are expected in Bosnia and Herzegovina for the Winter 2011/2012. A positive balance for this period is estimated, Bosnia & Herzegovina is not dependent on imports from other countries. No event is expected that would affect a secure operation for the next winter.

According to the power balance over the last few years, a constant increase of electricity generation is generally observed as a result of good hydrological conditions, and stagnation of electricity consumption, which is a likely result of economic recession.

On the generation, Bosnia & Herzegovina not have any wind or solar energy sources, with the main energy sources being hydro and thermal power plants. We have no planned outages of significant production units for this winter, so there are no significant changes in Net Generating Capacity for the next winter.

We expected the maximum peak load of 2200 MW for the period from December 4, 2011, to April 10, 2012. The maximum peak load in 2010 was 2173 MW on December 31, while in January 2010 maximum peak load was 1954 MW, registered on January 28. Maximum load in 2009 was 2033 MW, in 2008 was 2117 MW, and in 2007, it was 2078 MW.

In the case of an eventual gas crisis, a remarkable increase in maximum daily load is not expected, because there are only few regions supplied by gas in Bosnia and Herzegovina (Sarajevo, Zvornik).

Also, no load reductions are planned for next winter in our country.

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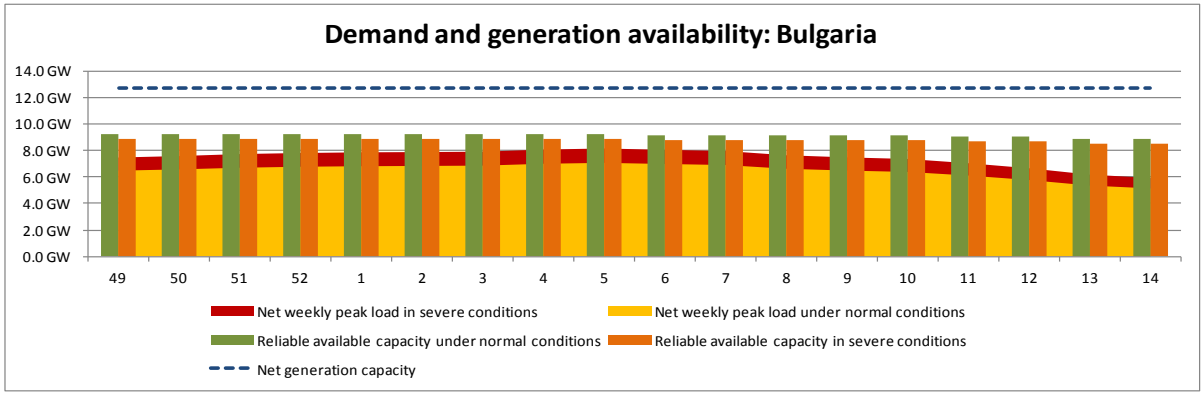
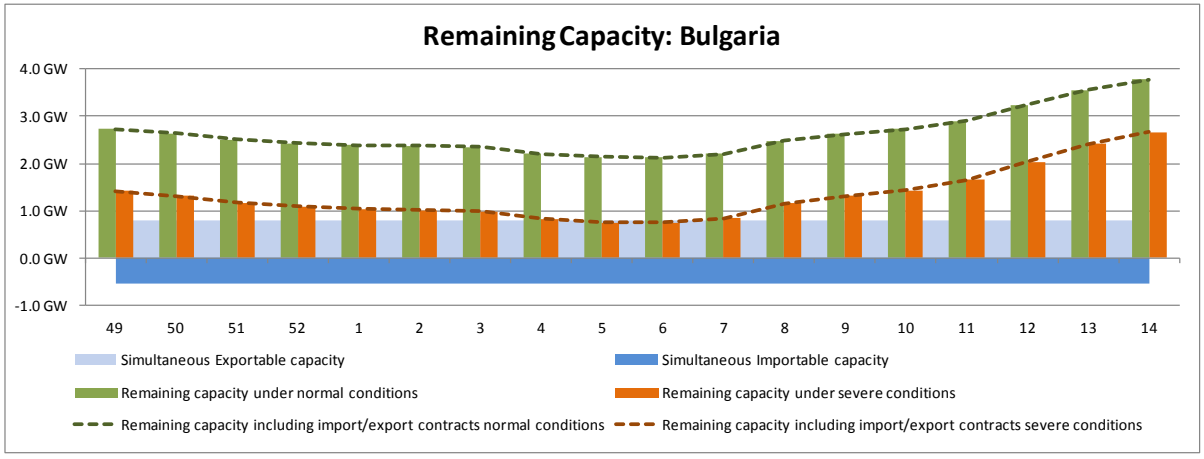
Bulgaria





The planned maintenance of all major generating units was finished by the end of September as scheduled. Accompanying measures for keeping the forced outage rates at the lowest possible levels will be taken as well.

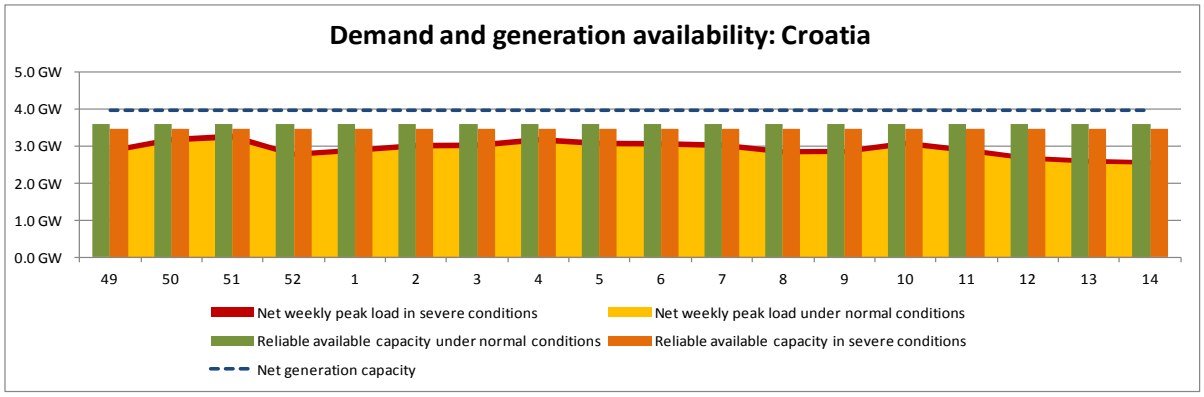
The current levels of the big reservoirs are slightly below target levels due to very low natural inflows. The reason for this is the lack of serious rainfall during August and September. Nevertheless we expect reliable operation and predictable contribution of all storage and pump storage hydro plants. No problems in the transmission network are expected because of major maintenance works over the summer period.

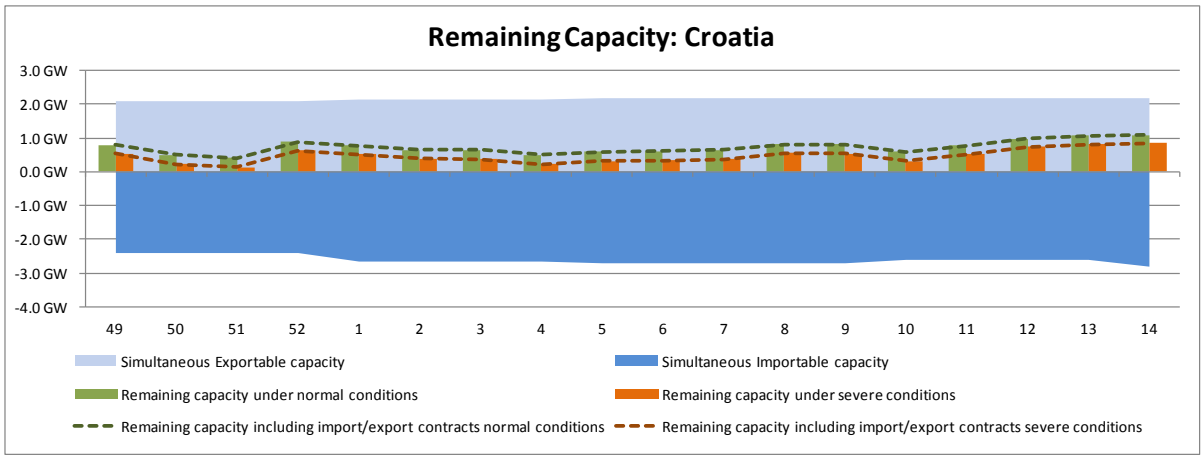
The wind generation penetration is still not critical for the system and that is why we do not expect any problems concerning combinations of high wind and high level of must run generation during night hours of low demand.

Under these conditions we expect no problems with the system adequacy in normal and severe winter conditions for the upcoming winter season. For our power system severe winter conditions are considered periods during which the average daily temperature is more than 10 degrees lower than the normal value for the same period. The load sensitivity to

temperature for the assessed period is as follows: December and January -95 MW/C', February and March -90 MW/C' and April -70 MW/C'. This results in an increase of the load on average basis of 1000 MW during severe cold waves.

Croatia





The present year is characterized by dry weather so it is possible that the electricity generation from hydro power plants will be lower than normal.

As usual, the Croatian power system will be dependent upon imports. The highest loads should be reached at very low air temperatures, but there are also some other factors (e.g. public holidays in December and January) that could affect the load due to load structure where the household consumption is dominant. The domestic electricity generation depends on supply of fuels, situation in hydro accumulations and market conditions. These factors affect the cross border exchange also.

The electricity generation from domestic hydro and thermal power plants together with imports should be sufficient to meet the demand. The transmission grid is able to supply the consumers and to realize agreed transits through Croatia.

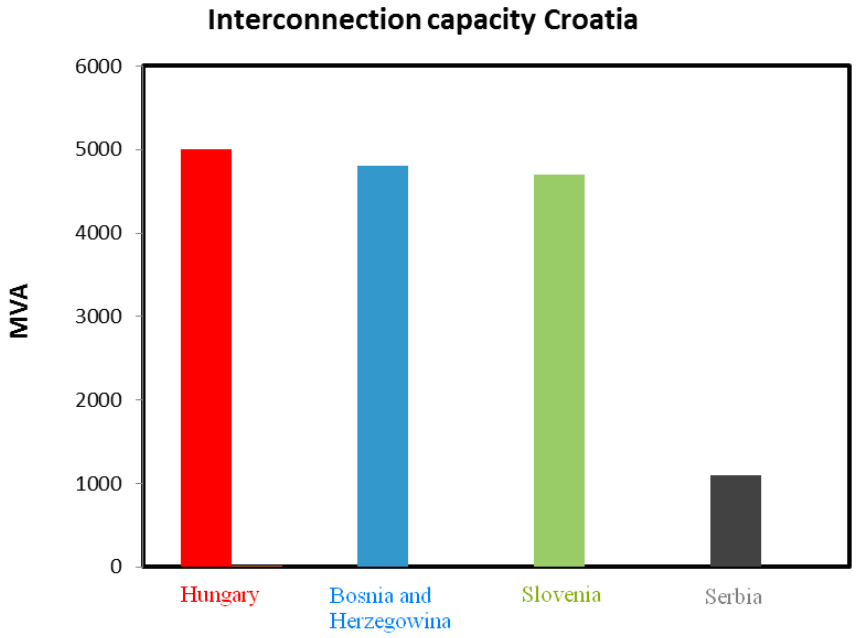
Intermittent energy sources will not cause problems during the winter period due to the fact that the installed capacity of wind farms is 81.6 MW and solar is under 1 MW. The total

installed capacity of Croatian power plants is 4216.7 MW, so the intermittent energy sources are well balanced at the moment.

The main measures to manage the risk are arranged contracts with neighbouring TSOs about mutual help in emergency and avoidance of maintenance during the periods of very high loads.

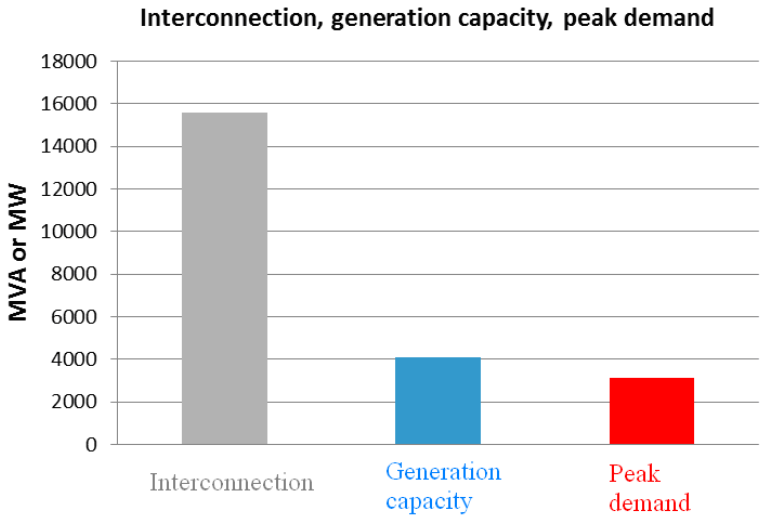
The unrestricted maximum load for normal conditions is expected to be 3170 MW and for severe conditions is expected to be 3330 MW. These values are higher than the highest peak load ever recorded in Croatia (3121 MW). Although the expected peak values are lower than the total installed capacity of Croatian power plants, it is usually more economical to import electricity.

The capacity of interconnections of Croatian electricity system is approximately 15600 MVA. The Croatian electricity system is well connected with neighbouring electricity systems (Hungary, Bosnia and Herzegovina, Slovenia and Serbia). A breakdown of Croatian cross-border transmission capacities with neighbouring countries is on Picture 1 included below.



Picture 1

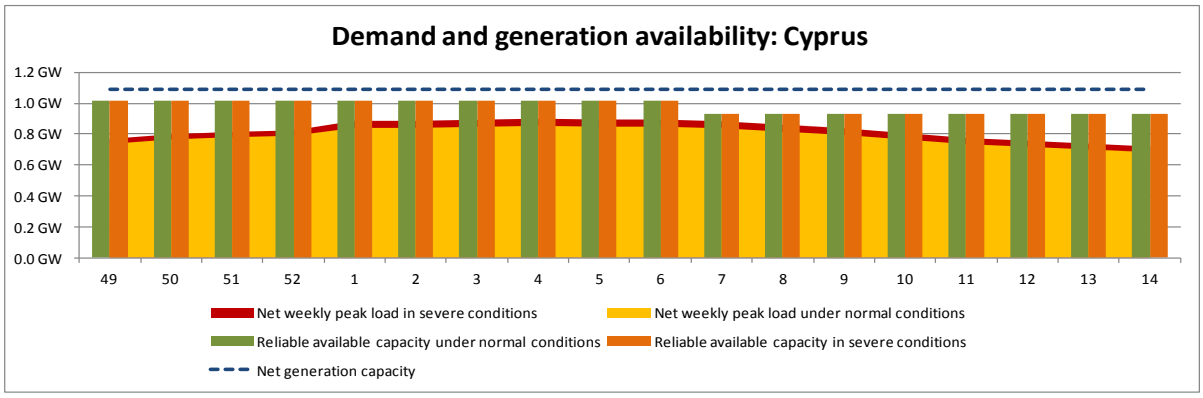
In the comparison seen in the picture below (Picture 2), the existing total interconnections capacities, often called thermal capacities of interconnections, is approximately 15600 MVA, while the total constructed generation capacity of power plants is approximately 4200 MW, and the peak load of the Croatian electricity system is approximately 3100 MW. This clearly shows a high connection level with neighbouring electricity systems and high capability of electricity exchange with the neighbouring regional markets.



Picture 2

The system adequacy assessments are determined using data from HEP-OPS's data base. The NTC values are obtained according to the standard ENTSO_E procedure.

Cyprus



The Cyprus electricity system is in a state of emergency. After the explosion that occurred on 11 July 2011 and the loss of the whole Vasilikos power station, the largest on the island, the countries generation plan is temporarily redesigned. A total of 165 MW Portable Internal Combustion Engines have been temporarily installed on the island. All load predictions, plant scheduling and maintenance programs have been re-evaluated so as to meet winter peak.

To manage the state of emergency the following short term actions have been implemented:

a) Load prediction takes into consideration the fact that additional generation is injected from the distribution system (resulting to reduction of power flow in the transmission system) and the fact that consumers make energy savings.

b) Additional internal combustion engine generator units with a total of 165MW installed capacity have been installed to meet winter peak demand.

c) The maintenance program has been readjusted so as to keep maximum generation adequacy.

d) In the case of demand being higher than predicted due to severe weather conditions, a program of cyclic load interruption of 11kV feeders, supplying domestic & commercial load, will be implemented. An information system has been set up to send sms messages to enrolled customers to inform them about the time that the exact disconnection may occur.

e) The damaged generators in Vasilikos Power Station are under repair. The target is for the generators to be brought back into operation by in the beginning of July 2012 so that the system to be able to meet the summer peak.

f) The TSO operating network has been synchronised with the Turkish Cypriot Community network to secure additional generation of up to 120MW.

The above actions have resulted in a temporary increase in the price of electricity by 6.96%.

In predicting the load an assumption has been made that a 10% reduction due to energy savings from the consumers due to the energy crisis. The temporary generators installed into the system are just enough to help meet the peak demand of the winter period. In order to meet the summer peak demand of 2012, under normal weather conditions, repairs of the two 220 MW CCGT's at Vasilikos Power Plant are under way.

In the case of severe weather conditions and winter peak demand is above the generation capacity, then a Cyclic Interruption Load Schedule Program will be implemented. This scheme is already prepared and is controlled by the SCADA system.

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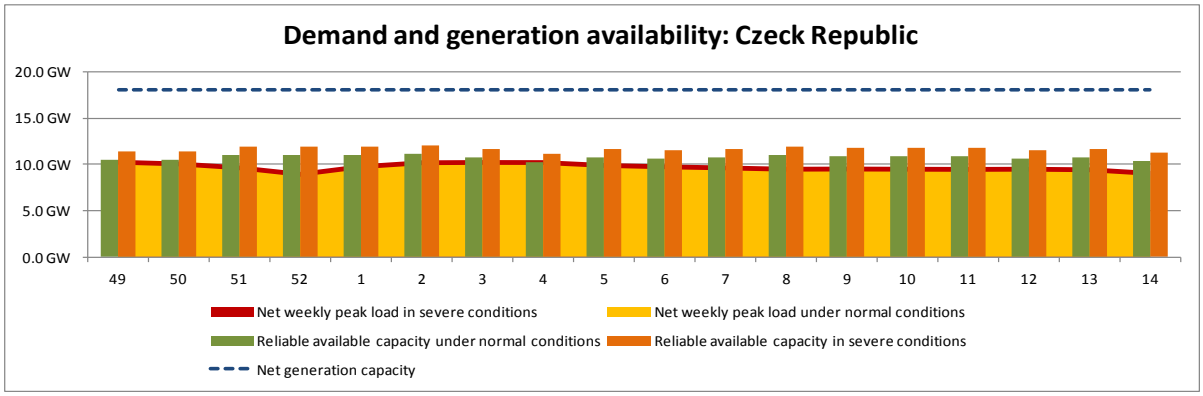
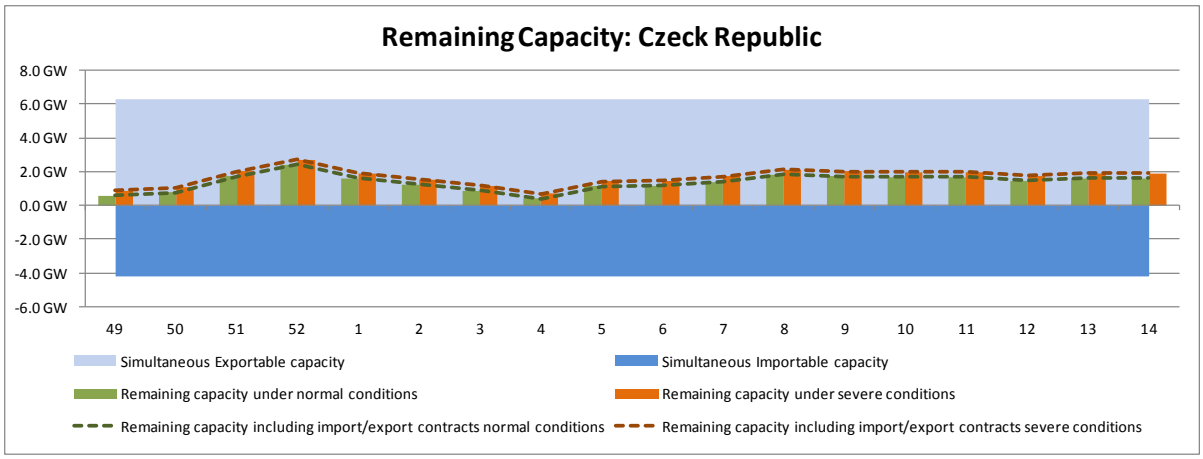
Czech Republic



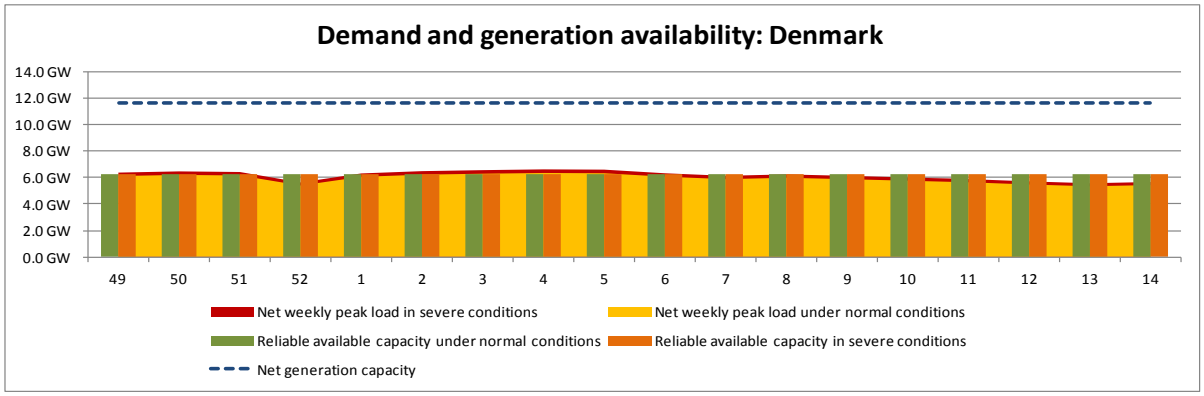


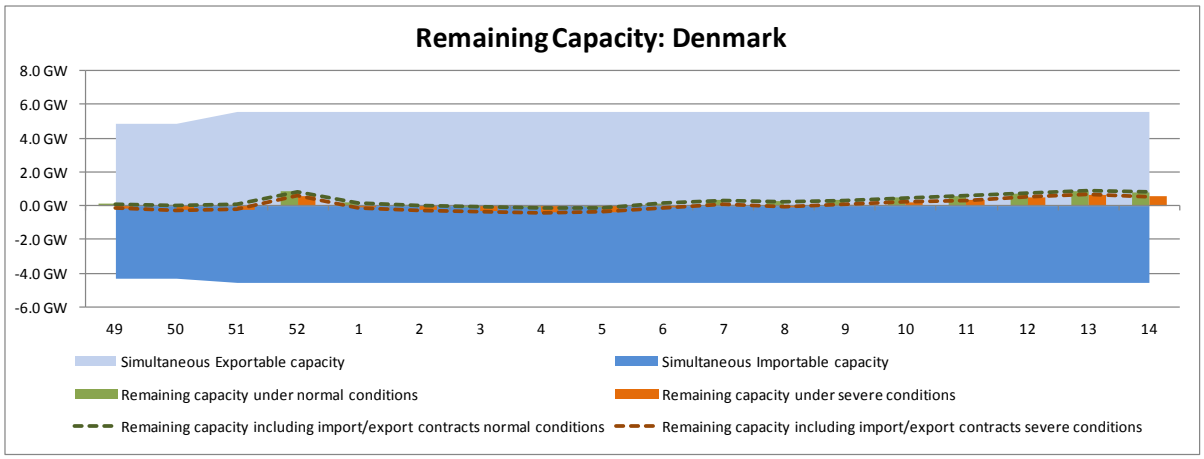
CEPS does not calculate outage rates by fuel category, rather reliability studies are performed concerning outage model based on power levels therefore only aggregated values are provided. There is only one value for each period since historical data about outages is very sparse hence data indication for the moments could be misleading.

NTC figures are assumed the same as on ENTSO-E website.

Neither grid nor balance issues are expected for the upcoming winter.

Denmark





General Comments

The winter 2011/2012 is expected to be normal without any particular problems.

In general the Danish generation-load balance for the coming winter is fine. In an extreme case of no wind and no import from neighbouring countries, the Danish system would however lack some 100 MW of generation for some weeks. This situation would be slightly worse if the winter is extreme as well (10-years winter). In this case the Danish deficit could be up to 410MW in week four.

Generation – Demand balance

All Danish wind power is assumed to be non-usable capacity. Severe winter conditions are often high pressure weather, where wind power is not present.

Energinet.dk's calculations show that there will be a power deficit in the weeks 49-8. The average deficit for these weeks is 0,23GW and the biggest deficit during peak load hour is in week 4 of 2012 with 0.41GW. Under normal conditions, the biggest deficit during peak load hour is about 0.13GW - also in week 4 of 2012.

The expected Danish peak load under normal conditions is 6.35GW in week 4 of 2012. The Danish peak load is above 6GW until week 6, with one exception being week 52 of 2011. In

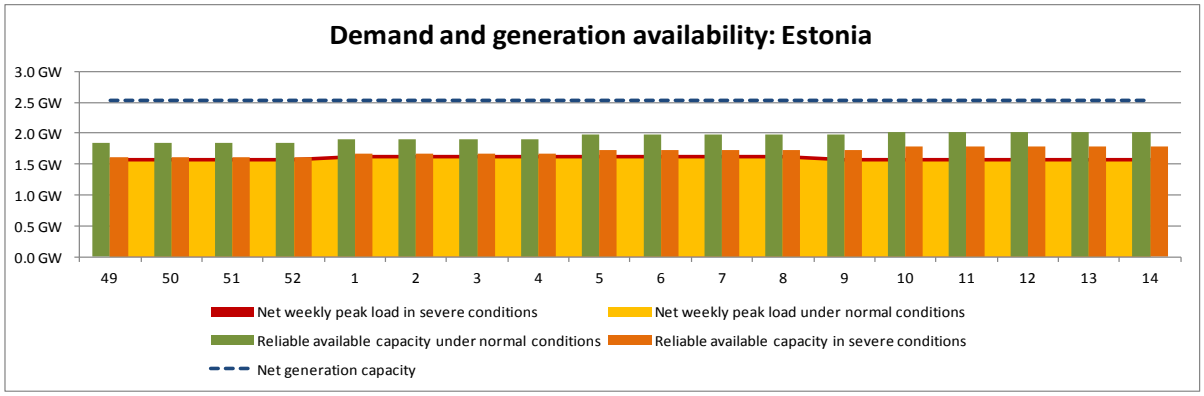
this week, the peak load is only 5,4GW. The reason for this is the Christmas holidays where schools, factories and offices are closed.

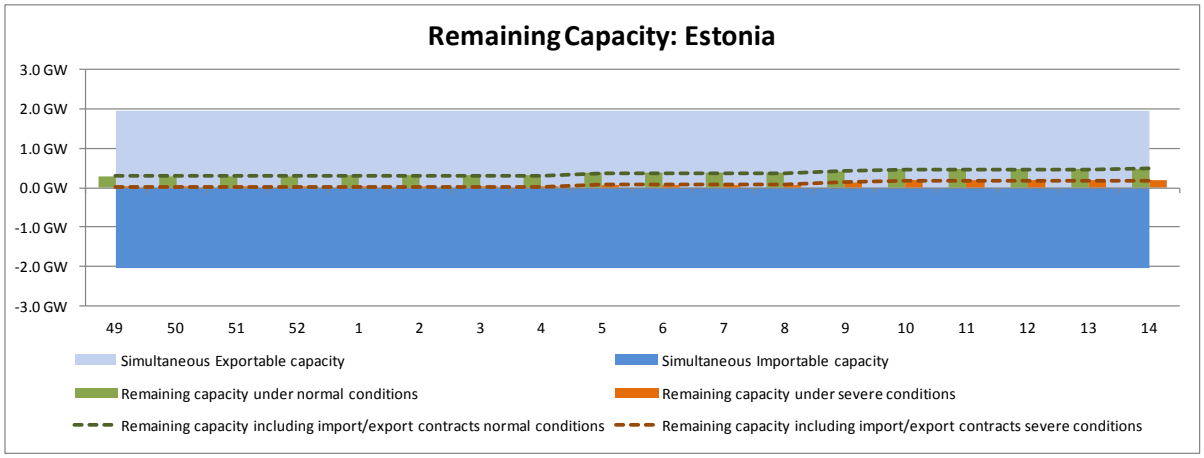
The demand under severe conditions raises above the demand under normal conditions with a maximum of 6,63GW in week four. The demand values are taken directly from simulations done with the Danish unit commitment simulation tool Sivael.

Role of interconnection

The Danish system connects the hydro-based system in the north with the thermal based system in the south and this makes the interconnections to and from Denmark very important. There are no planned reductions on the capacities of the Danish interconnections during the winter period.

Estonia





General Comments

In the upcoming 2011-2012 winter season the Estonian power system is expected to be in balance. The upcoming winter is expected to be normal with no extraordinary circumstances.

Generation capacity in Estonia is considered sufficient to cover peak loads during the winter season and the power balance is expected to be positive even during severe conditions. Elering AS expects that the generation capacity will be sufficient to meet the expected peak demand even in severe conditions.

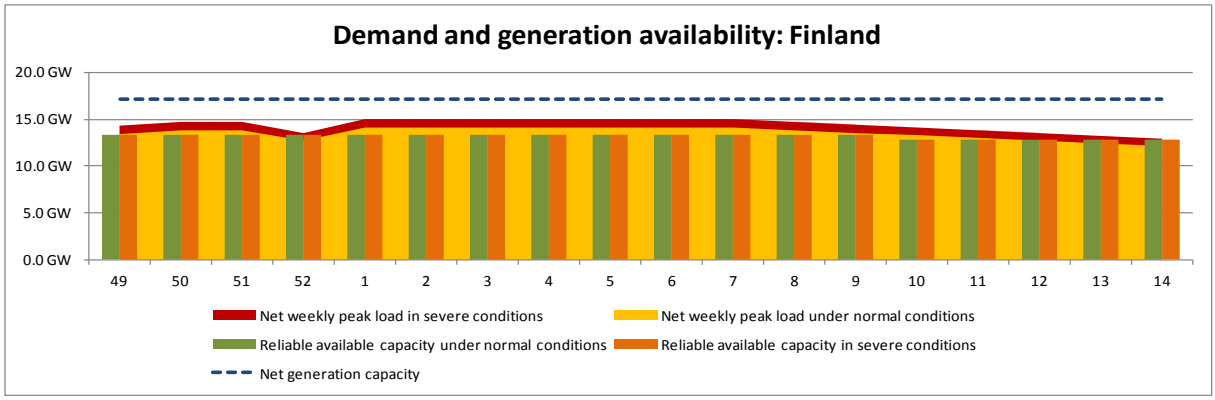
Generation – Demand balance

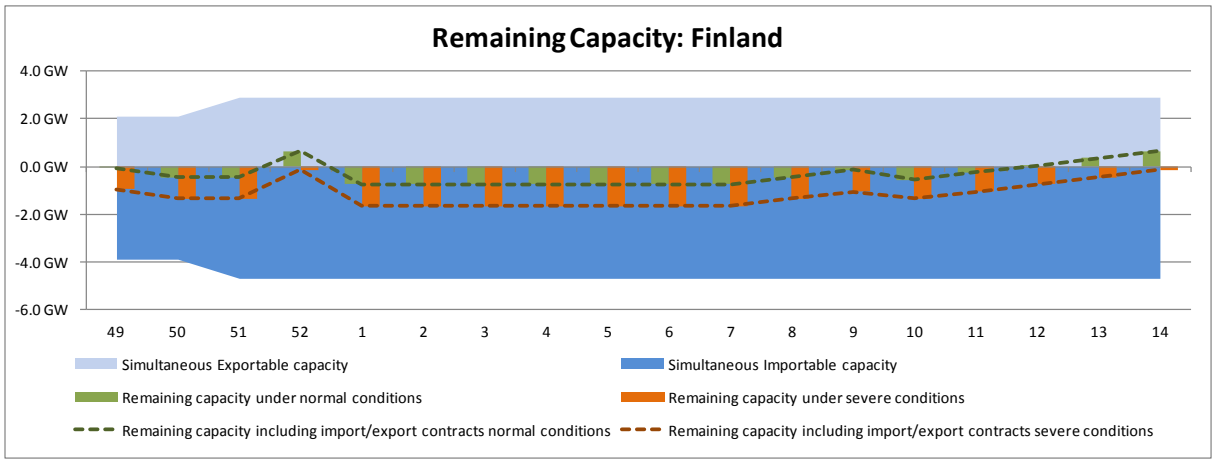
The highest peak load is commonly expected in the second half of January or in the first half of February. Considering the peak load of last winter and the statistics, the expected peak load for the approaching winter season is around 1600 MW.

Role of interconnection

All the existing transmission capacity between Estonia and neighbouring systems will be available during the upcoming winter season, since no significant maintenance works in the network are planned for period from December until April.

Finland





General Comments

During peak hours, Finland is a deficit area in the power balance. The balance is expected to be met with import from neighbouring systems with no major difficulty.

Year 2011 has so far been very similar to year 2010, with the demand remaining at the same level as the year before. There are no remarkable changes in the generation capacity, either. Fenno-Skan 2, another DC-interconnection between Southern Finland and Sweden, will be commissioned by the end of the year increasing export/import capacity and system security.

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The situation during the coming winter is expected to be very similar to the previous winter. Despite an exceptional cold spell and poor hydro conditions both in Finland and the neighbouring areas the system adequacy during winter 2010-2011 was maintained without any difficulties. In 2011 there are no remarkable changes to either demand or generation capacity.

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

Generation – Demand balance

Generation Available:

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

Estimate on non-usable capacity is based on public information from producers and on the TSO's own experience. Same data is used both for normal and severe conditions. Outage rates are not known by the TSO. The amount of mothballed units is however known. The availability of wind power during peak is assumed to be 6 per cent of the installed capacity. Otherwise the non-usable capacity is estimated based on the TSO's experience. The non-usable capacity includes estimated reductions due to very different reasons; hydraulic and icing conditions in hydro power, the electrical output of CHP plants is reduced in cold conditions as more heat is needed, outages, etc.

Special peak load reserve-management includes 600 MW of generation capacity. This capacity is reserved to be activated in case balance is not achieved between electricity bids and offers on the market. According to the management this capacity is available from the beginning of December to the end of February. After this period this capacity is included in non-usable capacity. Yearly overhauls are carried out outside the winter season.

In summary, available capacity is the TSO's estimate on the capacity which is available to the market during peak demand. Outages are not estimated separately but included in the overall non-usable capacity. System service reserves consists of frequency controlled reserves which are mainly kept in hydro power and, gas turbines for fast disturbance reserves.

Demand:

The peak load in the northern conditions may take place during any working day usually in January or February, sometimes even in December or the beginning of March. Hence the peak load estimate is kept the same for weeks 1 to 7. The estimation for the 18 weeks period is based on analysing corresponding weekly peak loads during the recent years.

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Remaining capacity in normal conditions:

Remaining capacity is negative in normal conditions except in the last weeks at the end of the winter period. During the period which is most likely for winter peak load to occur, the deficit is about 800 MW.

Severe load conditions:

Severe load conditions are assumed to correspond to cold conditions with a probability of occurring once in about ten years. Some 500 MW of demand response is assumed to exist in severe load conditions. It is clear that this is only applied in case the market price rises high enough. In severe peak load conditions the power deficit is some 900 MW greater than in normal conditions, i.e. it is about 1700 MW at the most.

Role of interconnection

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

All the existing transmission capacity between Finland and Sweden is foreseen to be available during the coming winter season. The new Fenno-Skan 2 DC-interconnection is expected to be commercially available starting from December 15, 2011. Export from Sweden to Finland could be reduced because of faults in the internal transmission connections or in the interconnections.

No reductions are expected in the import from Russia, either. In addition to faults to the interconnection itself, as well as severe faults in the generation or transmission connections in North-Western Russia, could however cause some restrictions in import.

The HVDC-link between Finland and Estonia, Estlink, is used for power exchange between the Baltic and the Nordic regions. No reductions are expected in the capacity. However, faults both in the link itself and in the transmission system could limit the transmission.

The market, i.e. the price, defines the import/export between the neighbouring systems.

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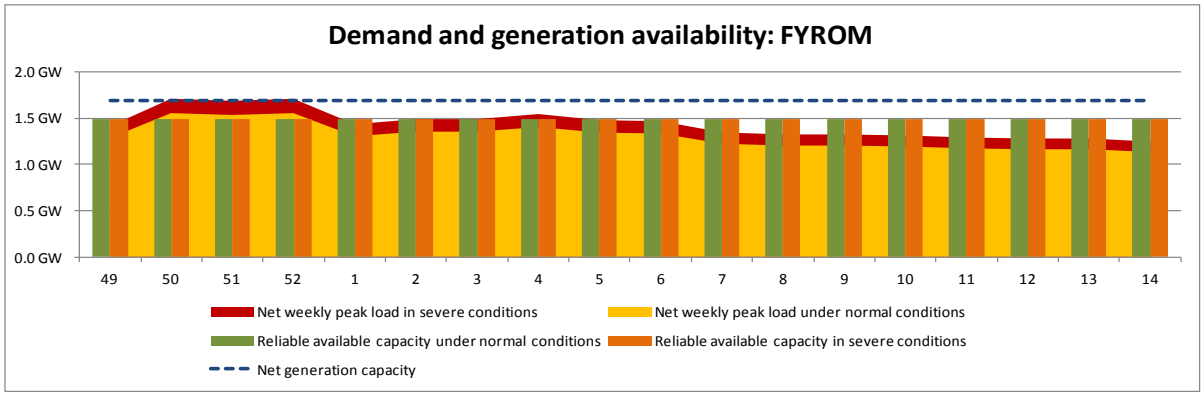
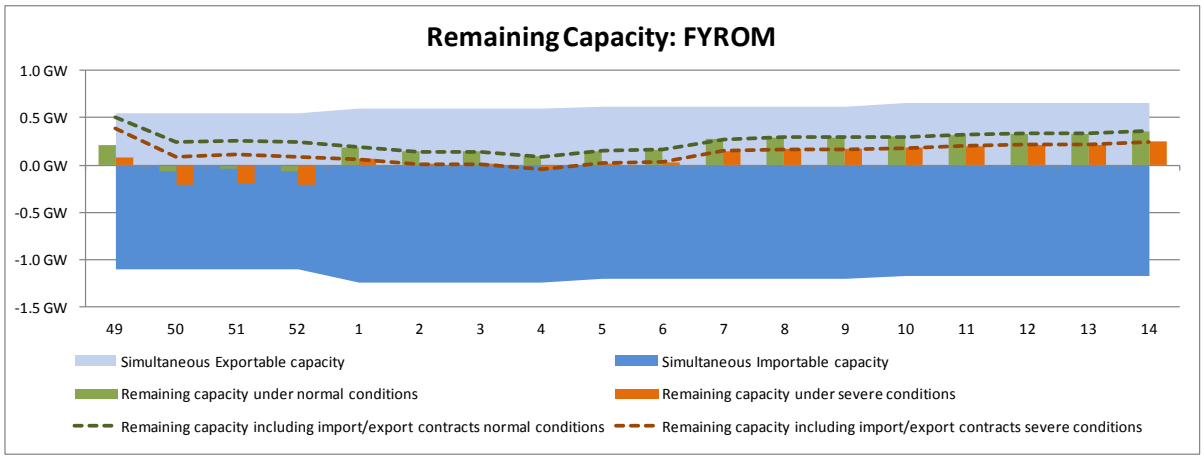
Former Yugoslav Republic Of Macedonia (FYROM)





The operation of the power system is expected to be secure and reliable over all winter period. A new Gas Power plant – COGEL (30 MW) was put in operation this month.

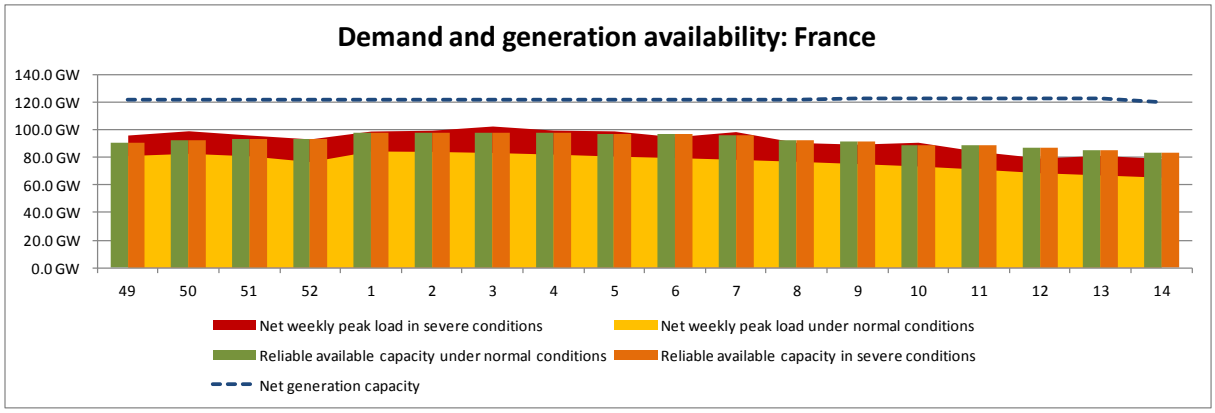
The data provided by eligible customers and traders for imports during December 2011 have been included in the tables.

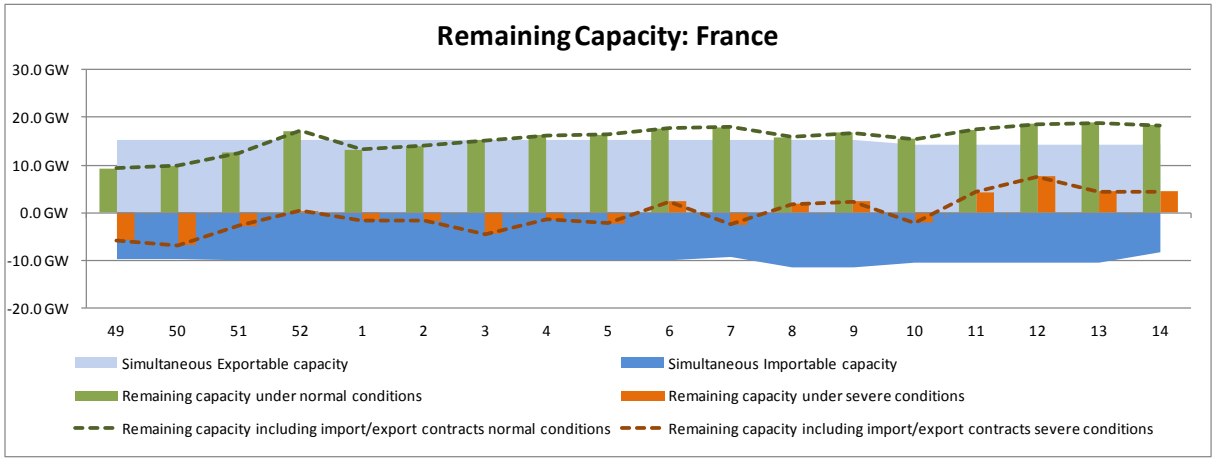
From the point of view of system adequacy, the load – generation balance will not be at risk during the next period of winter 2011/2012 in the Macedonian System. Macedonian transmission network has well developed interconnections with neighbours: two 400 kV tie-lines with Greece, one 400 kV tie-line to Serbia, and one 400 kV interconnection to Bulgaria. Therefore it is anticipate that the operation of power system will be secure. The overhauls of the interconnections and power plants were finished during the summer, and they were according to the plans which were coordinated with the other countries in the South East Europe region.

The first part of the summer was very rainy and because of that, the levels of the reservoirs are at the expected level, which is a positive for the high load winter period. In that way, hydro power plants will also contribute to the security of the system.

According to the reasons mentioned above, the generation-load balance on the Macedonian system will not be considered at risk, during the winter 2011/2012.

France





Synopsis

Under normal conditions, with temperatures close to seasonal norms, the generation – load balance on the French power system is not considered at risk for the coming winter.

Under severe conditions however e.g. in the event of an intense and sustained cold snap, margins would be tighter during quite all winter period. Therefore for this period, imports would be needed to a value lower than the acceptable French network limits.

Comments

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

In concrete terms, the study considers the weekly peak loads, for normal and severe conditions, and estimates the remaining generation margin. The margin includes system services. The margin level is calculated for each week.

Demand:

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

Demand under normal conditions:

1. Demand forecast takes into account consumption trends (especially uranium enrichment in the energy sector), assuming temperatures are in line with seasonal norms.
2. Maximum demand forecast is estimated to be around 86 GW (unrestricted)

Demand under severe conditions:

1. A decrease in temperature of 1°C causes demand to rise by approximately 2300 MW
2. Maximum demand forecast is estimated around 105 GW (unrestricted)

Generation:

Overhauls are consistent with the last schedule given by the Generators to RTE (beginning of September). A sensitivity analysis can be carried out if needed.

Generation under normal and severe conditions:

1. The installed generating capacity should increase thanks to more fossil fuel power stations and more wind power plants
2. The overall availability of generating facilities is expected to be lower until the end of December in comparison with last winter
3. No reduction of generation in severe conditions is expected

RTE do not take into account solar generation for winter studies (peak load during winter occurred around 7p.m).

Wind generation is estimated:

1. based on the previous winters average generation observed
2. taking into account new wind generation units

Hydro level and inflows are based on their historical average value.

Outages capacity is calculated for each week considering the unavailability rates of thermal units. System services are composed of primary, secondary and 15 minutes reserve.

Generation – Demand balance

The generation – load balance on the French system should be maintained for the coming winter. The risk of an interruption in supply is moderate.
Under severe conditions some imports of up to 7000MW could be needed in mid-December.

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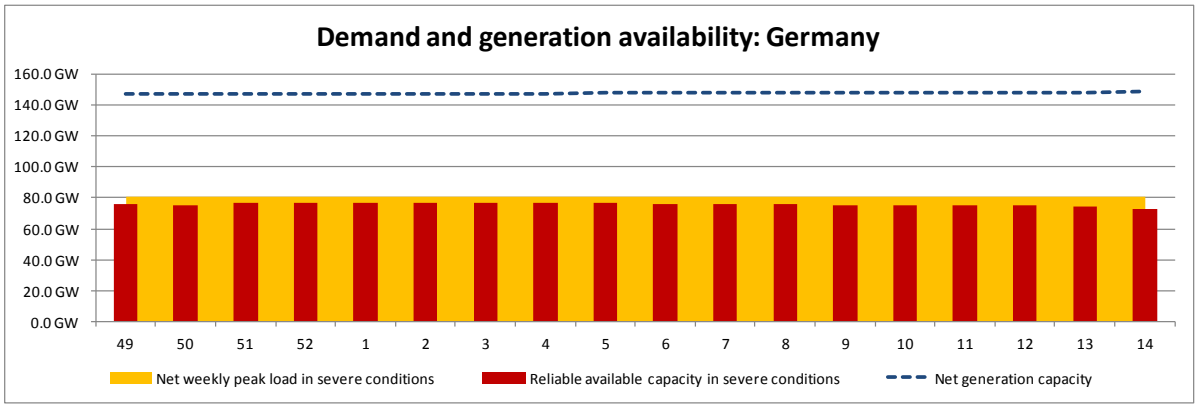
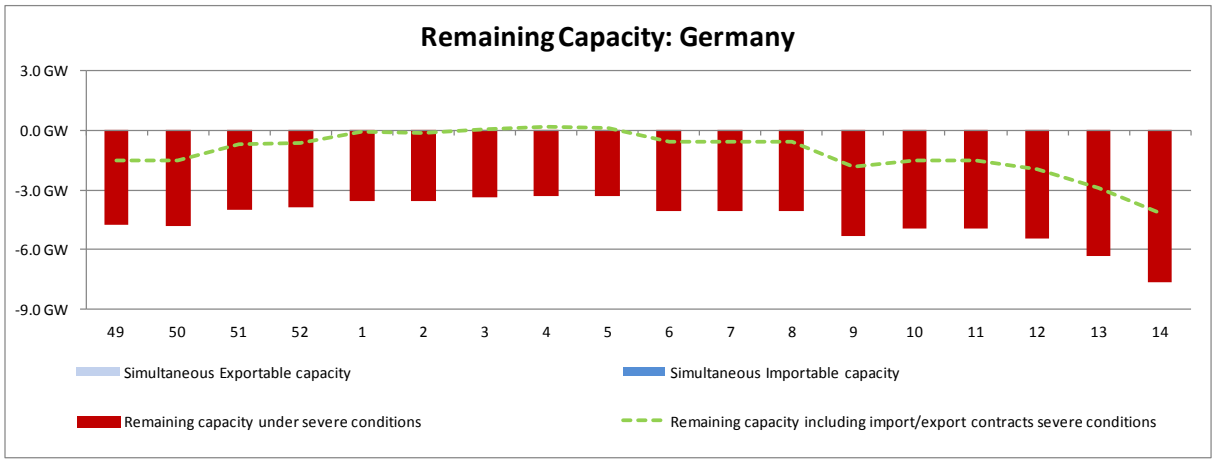
Role of interconnection

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

For this coming winter, the maximum import and export capacities are respectively around 9 GW and 15 GW. These values take into account the maintenance already planned on the network. Some additional operations on the network could also happen.

Germany





Comments

The common evaluation of the German TSOs gives an overview of the security of electricity supply in Germany for the coming winter 2011/12. Since the submission of the ENTSO-E Summer Outlook Report, the German TSOs have updated and improved their system adequacy methodology.

This process was triggered by two events:

1) The German nuclear power plant phase-out decreed in March, which triggered studies that have allowed more detailed insight into the German system adequacy situation.

2) A new German regulation stipulates that the German TSOs are obliged to provide a yearly system adequacy report. This year's first report is based on system adequacy data as currently and firmly available to the TSOs. The Report especially includes improved information from generation in the grids below 380/220 kV. The data basis will be expanded in the following years, based on deliveries of the respective distribution system operators and generation companies. This report and the Winter Outlook report have been harmonized.

The new methodology relies less on assumptions and estimations compared to the previous years, particularly with respect to the load data. The latter is based on generation feed-in data as currently available to the TSOs. Furthermore, based on the German TSOs experiences, more conservative approaches to non-availabilities of generation have been chosen. The resulting representativity of the German installed generation capacity has been estimated at around 93%.

Regarding new methodology the following issues are important when analysing the Winter Outlook data:

- 99% of the installed wind Power has been estimated as non-usable capacity based on an analysis of the data from previous years carried out by the German TSOs.
- 100% of the installed Solar Power has been estimated as non-usable capacity.
- 20% of the pumped-storage capacity has been estimated as non-usable capacity based on the operative experiences of the German TSOs.
- Due to the nuclear power phase-out 8.3 GW (net) of nuclear power capacity, still available last winter, are no longer included.
- The basic schedules for planned maintenance of power plants, which are connected directly to the transmission system, are already known for the coming winter period. Where maintenance data is still unavailable estimations are included.

After the German Government decision in March to shut down 8 nuclear power plants, the German TSOs immediately started an investigation of the new grid situation to assess the risks in the power system and to prepare for the summer and winter period. The TSOs identified some risks for the coming winter period which are to be expected. Concerning the generation and load balance the situation becomes more stressed compared to the past. Due to the reduced capacity of nuclear power plants the safe reserve between the power generation and the peak load substantially decreases by several GW. It is expected that Germany could depend on imports, especially in case of high load conditions and low feed-in from renewable energy sources (RES). The availability of such imports will depend crucially on the situation in neighbouring countries. The possible deficit is mainly located in the South of Germany. For this reason additional generation capacity will be contracted in the South of Germany as well as in Austria and will be activated if needed (see below).

The second aspect to be pointed out is an increased power transport from the northern to the southern part of the Country where most of nuclear power plants were located. In order to meet (n-1) security rules inside control areas as well as on the internal German interconnectors, this intensive north-south power flow requires high amount of redispatching of generation units. If available generation units for this purpose are exhausted, further measures could be necessary, such as reducing the wind infeed in the North or manual load shedding (as a final resort), see below.

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The shutdown of the nuclear power plants also causes a shortage of available reactive power. As a result, strong North-South load flows especially during high load and high wind feed-in lead to under-voltage problems in Baden-Württemberg, Hessen and Rheinland-Pfalz. In the Hamburg area under-voltage problems are expected during high load conditions without wind feed-in.

Being faced with these risks for security of supply the German TSOs are preparing a high amount of grid- and market related measures such as redispatching with an increasing amount of power to be shifted between control areas. These measures are necessary to meet (n-1) security rules especially for a scenario with strong wind in the North and high load in the South. These problems are expected to occur especially on the interconnectors between the grids of TenneT D and 50HzT and also on the Amprion-internal North-South corridor.

Furthermore measures like feed-in management (also of RES), demand-site management and load shedding are in preparation or discussion.

Due to the nuclear phase-out in Germany the installed capacity was reduced by ca. 8,3 GW. On the other hand the installed capacity of RES (mainly solar power) has increased, but due to their high non-availability they do not significantly contribute to system adequacy in the coming winter. The in feed from photovoltaic generation especially has no contribution at all for covering peak load in the evening. For expected generation – demand balance problems TSOs are in close cooperation with generation companies. Following this, the German TSOs will contract an additional reserve generation capacity of about 1.000 MW in the South of Germany and an additional 900 MW in Austria for the coming winter.

The market of system services also becomes shorter due to the reduction of nuclear power plants. However, there are no serious concerns at the moment as balancing power could always be procured in full amount up to now.

The role of international interconnectors in the upcoming winter could be very important. Imports from adjacent TSOs (west and south) could be necessary under high load conditions in Germany.

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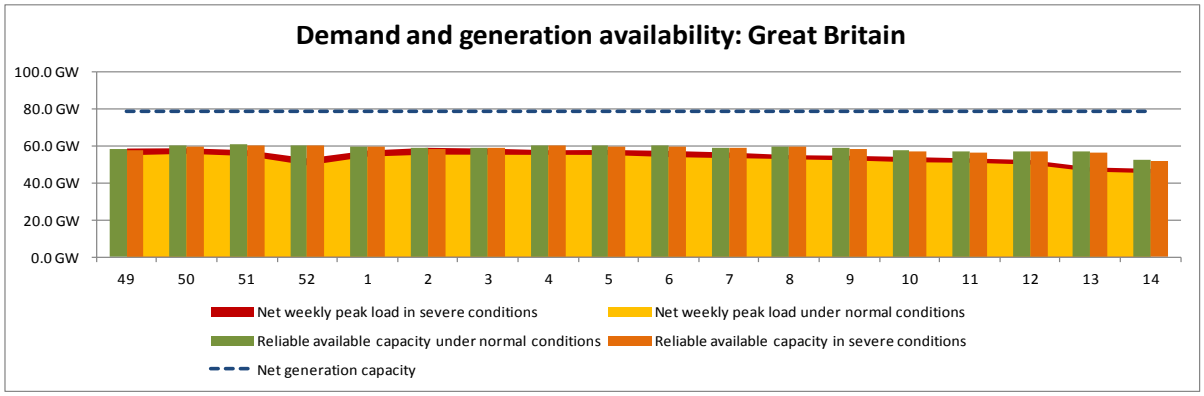
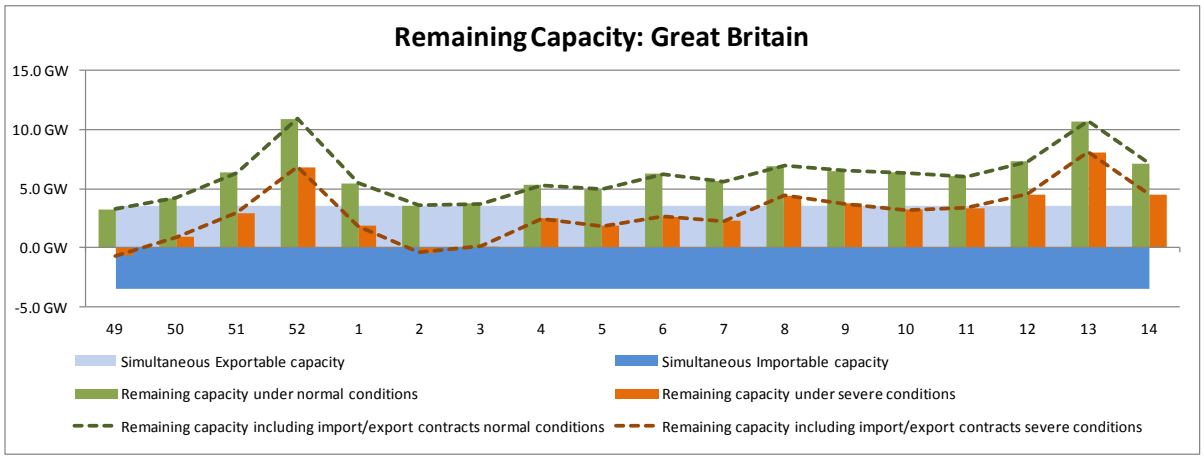
Great Britain





Synopsis

Sufficient capacity will be available to meet forecast demand if 1 in 20 cold weather conditions occurred at any time over the winter as long as high interconnector exports are not required. The weeks with the lowest margins are the first week in December and the second week in January. System adequacy relies on only a small contribution from renewable generation.

Comments

A conservative view of available generation has been adopted by excluding two new gas fired power stations that are due to be commissioned over the winter. This means plant availability could be up to 1 GW higher than assumed. Outage rates are based on historic averages for winter weekday peaks and the same rates have been used for both normal and severe conditions as there is nothing to suggest any deterioration under severe conditions. The outage rates for wind and run of river hydro have been left at zero as reductions for lack of water and wind are more significant and these have been shown as non-usable capacity. Mothballed plant has not been shown as these units have already been accounted for in the net generating capacity figures.

The capacities of the interconnectors are the forecasts submitted by the operators. Power taken by the Northern Ireland interconnector from Scotland has no effect on the generation – demand balance as any export merely reduces the amount of generation sterilised behind a transmission constraint between Scotland and England. Imports from Northern Ireland may be limited due to a local transmission constraint depending on the volume of wind powered

generation. Power flows on the interconnectors with France and the Netherlands are in accordance with the energy traded by market participants and the net flow can be in either direction at up to a total of 3000 MW. There is a likelihood of exports to mainland Europe over the peaks due to the reduced nuclear capacity in Germany. This is manageable in all scenarios except the 1 in 20 or worse cold weather conditions when exports could erode some of the reserve requirements unless other actions were taken.

The contribution from wind powered generation under severe conditions has been assumed to be 8% of the currently installed capacity for on-shore and 12% for off-shore based on historic levels of wind generation at the time of previous winter peaks. This amounts to only 0.35 GW and is therefore not significant. Generation from run of river hydro plant is also uncertain as it is dependent on levels of rainfall. A conservative assumption of 60%, which amounts to 0.6 GW, has been made for both normal and severe conditions in line with the average from previous winters. Due to a transmission capacity limit between Scotland and England, there is a risk that some generation in Scotland may be sterilised as mentioned above, particularly during periods of high wind generation but this has been accounted for in the reserve requirements. A gas supply shortage is not envisaged this winter but in this event, the generators would normally be expected to respond to increasing gas prices by reducing load on gas fired plant through switching to distillate and pulling back overnight. This reduces gas consumption without affecting generation availability for the daily demand peaks.

In the very low risk probability of demand exceeding the 1 in 20 cold weather level and none of the commissioning plants being available, the system would be managed by encouraging generators to improve plant availability by issuing forecast margin information sufficiently far in advance.

No problems are envisaged with inflexible plant across minimum demand periods as minimum demand in the winter is in excess of high wind output plus the must run generators.

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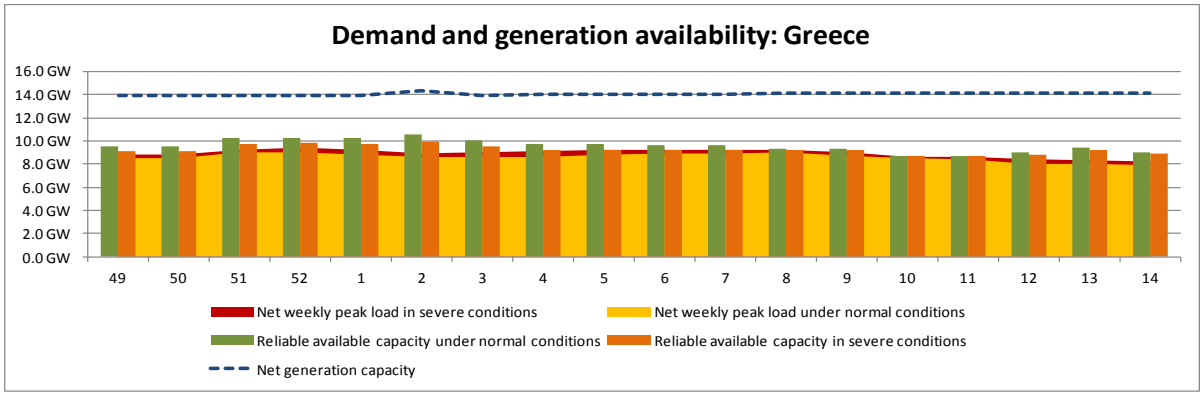
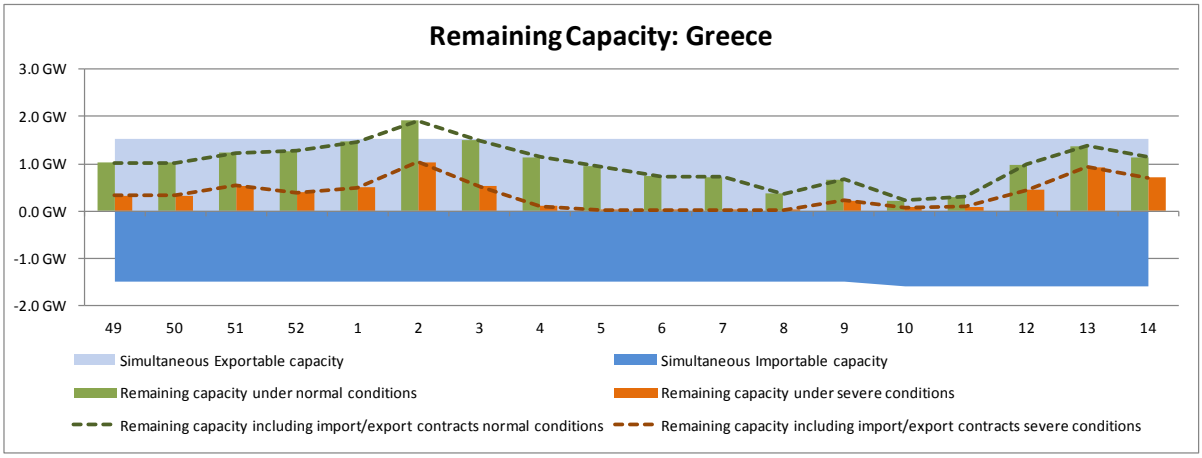
Greece





For the upcoming winter season 2011 - 2012, it is considered that the adequacy and security of the Greek interconnected system is not threatened under normal weather conditions, taking into account the available importable capacity of interconnections. The hydro conditions were very good this year so the water reserves are at the sufficient level.

The northern interconnections have been strengthened with the new 400KV connection between the neighbouring systems of Greece and Turkey (Phase C of Trial Parallel Operation CESA and TEIAS systems) and have increased the capacity from the northern neighbouring systems. This had a positive effect on the facilitation of energy exchanges in the region.

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

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

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

The Greek system is expected to be in balance in the upcoming winter period (2011-2012). The expected commissioning of a new unit in the system, the good hydraulic storage of hydropower stations and the strengthening of the northern interconnections ensure the adequacy and security of the Greek interconnected System, which is not threatened under normal and severe weather conditions.

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

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

HTSO performs studies for the assessment of midterm generation adequacy on a regular basis, usually focusing on a five year period, taking into account the most recent information available to HTSO regarding the foreseen evolution of loads and expansion of the generation system. The main purpose of these studies is to evaluate the possible risk concerning the ability of the generation system to cover the future demand, as well as determining necessary enhancements of the generation system, thus providing signals to the market. Based on the adequacy assessment, HTSO may take emergency measures, such as call for tenders for new generating or reserve capacity.

Due to the random nature of parameters involved in the operation of a generation system (evolution of loads, unit availability, hydraulic conditions, etc), adequacy is assessed through the commonly used reliability indices LOLP (Loss of Load Probability) and EUE (Expected Unserved Energy).

Annual production simulation is performed, for every year of the period under consideration, in order to calculate the above-mentioned reliability indices. Furthermore, the additional capacity, if any, required for meeting the forecasted demand with the desired level of reliability is determined. Simulation is performed by the probabilistic production costing model which simulates the operation of a power system for a given time horizon and computes the energy balance, the cost of operation, the polluting emissions and finally the generation reliability indices.

A large number of scenarios are examined in order to evaluate the impact of parameters with significant uncertainties, such as hydraulic conditions, RES generation, and availability of imports through interconnections with neighbouring counties.

To underline the most critical periods of next winter, this report focuses on the monthly peak demand. The power balance is based on the results of the UCTE System Adequacy Report –

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Forecast 2008-2020 and on the HTSO energy management studies for the generation adequacy report, in addition to the experience of HTSO's personnel responsible for the System Operation.

Concerning the national generating capacity, the total net output thermal capacity will be increased by one unit of 430 MW, in relation to the previous year. This new thermal unit in combination with good hydraulic storage of hydropower stations and strengthening of the northern interconnection lines ensure the balance of Greek system.

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

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

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

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

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

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

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In recent years, the use of gas as the fuel of production units has continuously increased. For the coming winter there are no estimated problems concerning gas, because the import of the gas in the country has two different paths. One through the north borders of the country and the other one with the type of LNG stored and converted to gas in the relevant installations and after that, it supplies the main transmission grid of the gas.

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

The NTC values were submitted by making estimations according to:

- The total NTC values (yearly + monthly + daily) of the last 3 months, both for imports and for exports, per direction and per border
- The total NTC values (yearly + monthly + daily) of the same period (winter months) of the last year, winter 2011, both for imports and for exports, per direction and per border

In the HTSO control area there are no installed nuclear power plants. The neighbouring country, Bulgaria, has some nuclear power units; the operation of which is very crucial for the balance of energy generally in the Balkan area and their non-operation means Bulgaria may change from an export country to an import country.

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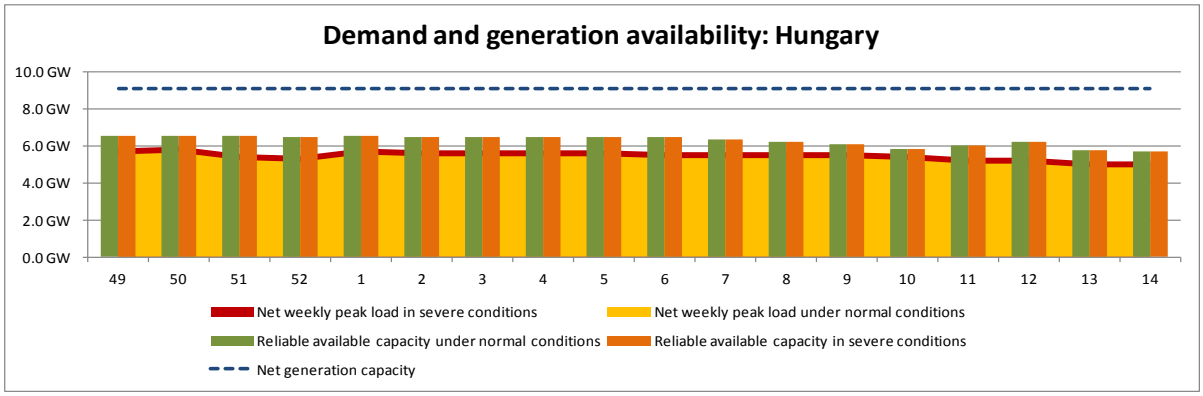
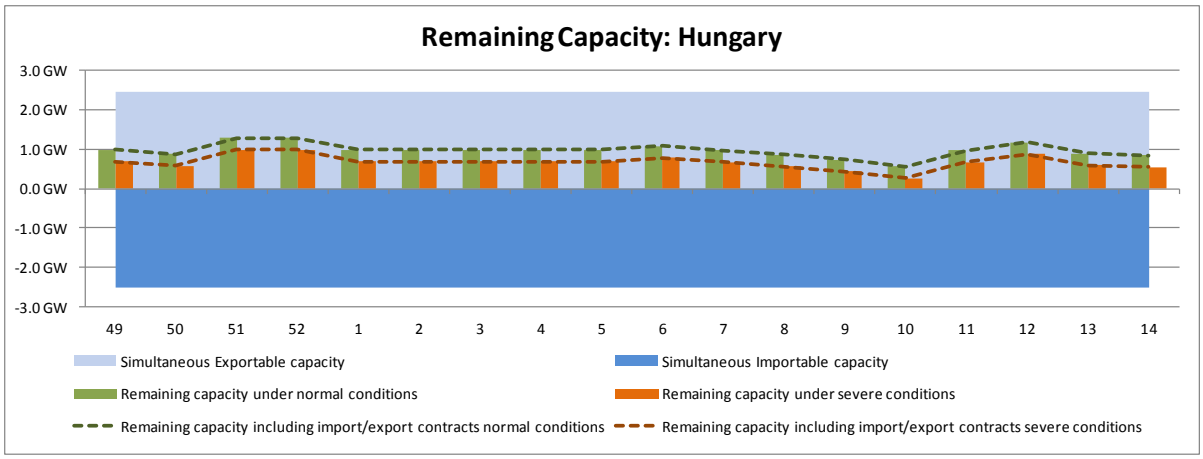
Hungary





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

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

- Availability of fuel, first of all that of natural gas. During long-lasting cold winter periods, demand for natural gas becomes very high at households and at power plants at the same time. Therefore, a well-functioning gas market, as well as a satisfactory replacement of fuel reserves at generators is essential to keep the lights on. Recently high capacity gas storage has been built so that the security of the gas supply has been increased.

- Sometimes the required level of remaining capacity can only be guaranteed by a certain amount of import, mainly under severe conditions. Cross-border exchange is a matter of economy for market players. Their decision-making can be influenced by contractual conditions, e.g. on reserves.

- Overall cross-border capacity is satisfactory; however, allocation of cross-border capacity rights on the respective border sections may be an issue.

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

The Hungarian TSO (MAVIR Hungarian Transmission System Operator Co.) maintains a deterministic yearly rolling capacity plan.

For this purpose; load forecast, generation outage schedules, required international exchange of electricity and forecasted production of intermittent generators are determined on a daily basis. The necessary data and information comes from the statistical database of the TSO itself, or from the generating companies and other market participants.

There are three scenarios for average, severe minimum and severe maximum loads.

The necessary reserve level is determined in accordance with the procedure described in the ENTSO-E Operation Handbook, taking into consideration the specialties of the Hungarian power system.

The plan is updated and published monthly on the MAVIR web-site, combined with actual data.

Generation capacity

Hydro generation is considered as non-usable unfortunately. Mothballed capacities are practically not available under any circumstances. Renewable energy sources (mainly biomass, but lately increasing amount of wind, too) and co-generation have a growing portion in the generation mix (over 19 %), and their operation is very much legislation-sensitive, i.e. difficult to predict – take-off is obligatory, on regulated prices. Wind generation is growing (0.33 GW at the moment), but due to its low availability, it is not taken into account in the balance (i.e. calculated as non-usable capacity at peak load.)

In 2011, new units came into operation: a CCGT unit with a nominal capacity of 430 MW, two GT units with a total nominal capacity of 120 MW and one more CCGT unit with a nominal capacity of 407 MW. These improve the system stability due to their higher response rate.

Demand

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

System services, reserves

Requirements for primary, secondary and tertiary reserves are calculated with respect to the ENTSO-E OH Policy 1, taking into consideration the Hungarian specialties such as weather dependent wind power production or the previously mentioned demand side management.

Remaining capacity

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

Interconnection capacity

Since the Hungarian Power System is part of the highly meshed Central-European network, volatile loop-flows are comparable to the NTC values. Therefore cross-border trade is considerably limited by those loop-flows. However, cross-border capacity is available most of the time for the necessary amount of import.

International exchange

The Hungarian electricity market is traditionally import-oriented, with a high rate of import. After liberalisation was completed, international exchange became much more sensitive to market conditions, even in the short-term. The Hungarian TSO strives to stimulate, or even oblige market players through market rules (pricing of balancing energy) and contracts (on provision of reserve power) to ensure the required level of import, in order to guarantee reliability of the power system. For the time being, a high amount of import energy is available on the market, which increases our security.

Iceland

The generation capacity in Iceland is expected to be sufficient to meet peak demand this winter 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. No new generating capacity is planned this winter.

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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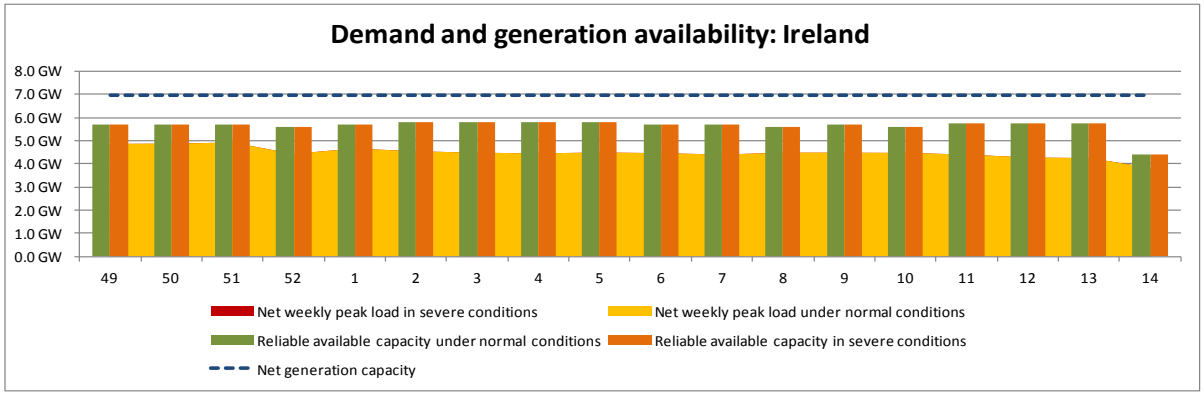
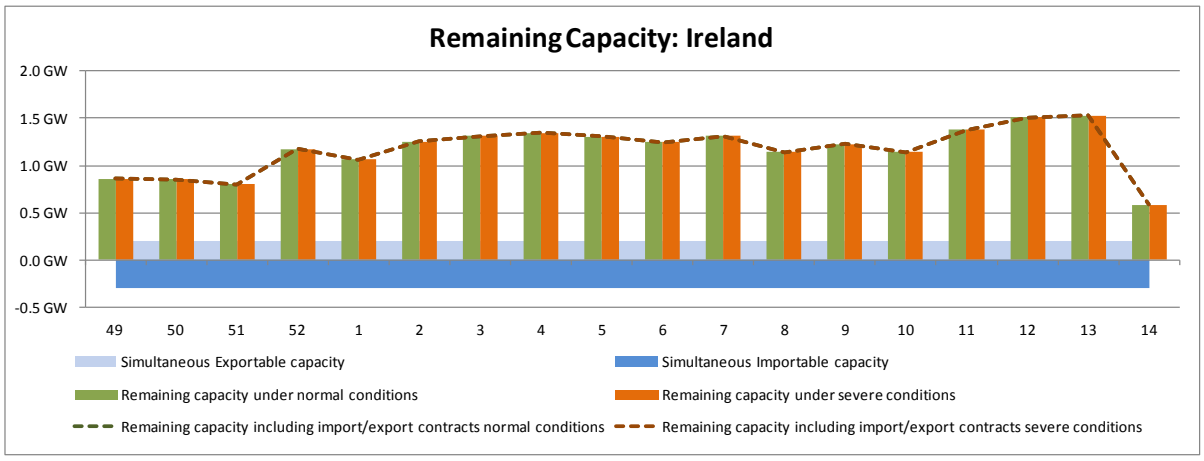
Ireland

REPUBLIC OF IRELAND





Synopsis

EirGrid expects that the generation capacity will be sufficient to meet the expected peak demands this winter and to ensure that the appropriate level of security of supply is maintained. Both deterministic and probabilistic analyses were carried out in examining the capability of the generation portfolio available to EirGrid to meet peak demands during the coming winter period. The adequacy margin used to determine secure operation is 8 hours LOLE per annum. Based on historical data, the peak demand is expected to occur in the week before Christmas. Areas of growth in demand, the capacity and performance of generation (both conventional and wind) and available import capacity were all considered.

Comments

EirGrid carry out a Winter Outlook analysis every year in July and publish a Winter Outlook Report. Deterministic and probabilistic analyses are carried out. In examining capacity adequacy, EirGrid met all the generators and discussed the performance of the units and the expected availability of the units for the winter period. This year the report looks at the period from November 2011 to March 2012, with the following key assumptions:

- The installed conventional generation capacity will be 6,792 MW of dispatchable plant. The capacity figure also does not allow for any forced outages which could be expected in the winter period. Generation unit performances, specifically Forced

Outage Probabilities, are based on past performance and EirGrid's discussions with the generators. The system average Forced Outage Rate for the analysis is 8%.

- The installed capacity of wind generation is expected to increase to between 2,000 and 2,200 MW over the coming winter, giving an average capacity credit of 256 MW.

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

- While the economic climate has had a negative effect on electricity demand growth, the second extreme cold weather in succession ensured another unusually high peak of 5,090 MW (3% higher than previous year). All factors considered, it is anticipated that the peak demand for winter 2011/ 2012 will be approximately 5,164 MW (1.5% higher than last year's peak).

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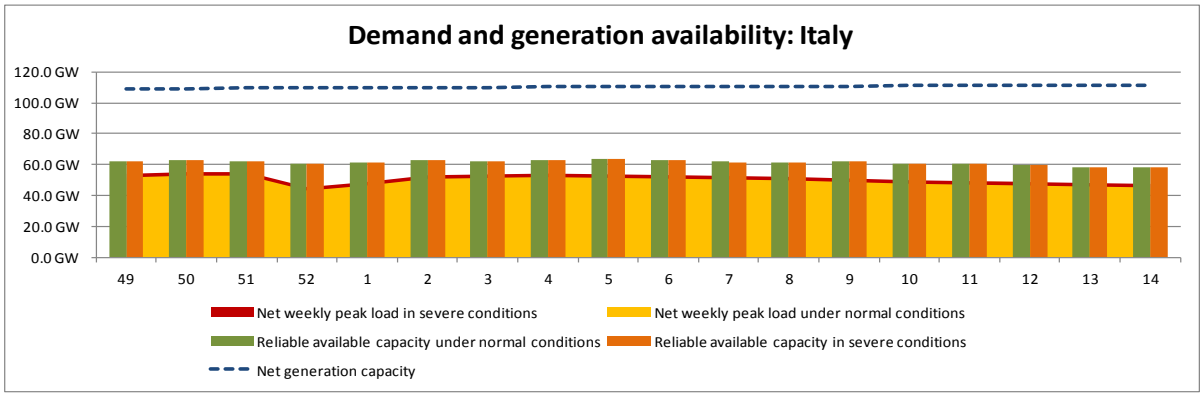
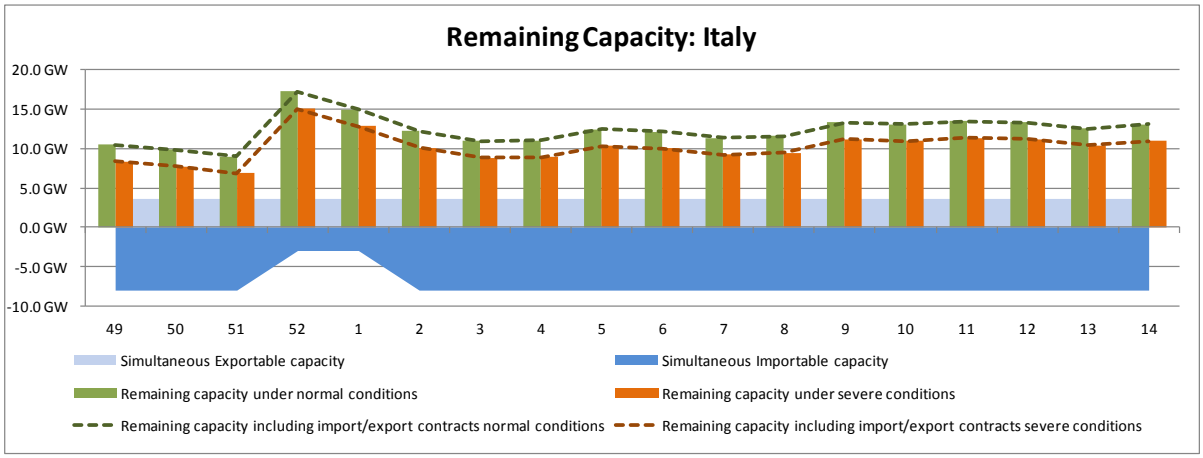
Italy





General Comments

Under normal conditions the general situation for the winter 2011-12 is not expected to be critical. No problems regarding system adequacy are foreseen in the Italian system, the reliable, available capacity is expected to be widely higher than the peak load and, as a consequence, the adequacy margins in Italy are expected to be comfortable for the whole of the next winter period.

Also in the severe scenario Italy will be able to export up to 3 GW to the northern neighbouring countries.

In Sardinia a comfortable adequacy level has been reached with the full availability of the new undersea links with the peninsula.

It should be noticed that extreme and unexpected events (i.e. reduced gas imports, very long and deep cold spell, or unforeseen outages of fundamental grid elements) may lead to possible critical periods. Nevertheless proper countermeasures are already foreseen.

Short explanation of the frame work

Terna performs deterministic adequacy studies on a weekly basis, with a yearly horizon considering both all the available information (i.e. planned outages and new capacity

scheduling) and our better estimates based on historical data (i.e. load, non thermal production, forced outages rate).

Generation- Demand Balance

The second and the third week of December and the third week of January could be identified as the most stressful weeks of the winter period.

The main issues which could affect the generation capacity and the related countermeasures are the following:

- Shortage of gas supply

  In order to monitor the availability of gas supply for the CCGT power plants, a special Working Group in charge of monitoring the security of gas supply, held by the Italian Government in collaboration with Italian gas and electricity TSOs, has been established since 2006.

- Grid constraints

  The limitations applied to the generation plants due to grid constraints are minimized through the planning of the outages of the relevant grid elements during appropriate periods.

  - Energy constraints issues

  The managing of the hydro plants are charged to the owners of the power plants. However Terna monitors the availability of the hydro generation capacity.

  - Expected forced outages

  Forced outages are taken into account in the adequacy evaluations.

  - Expected congestion in the internal grid, including local voltage regulation problems

  The expected congestions and voltage problems will be solved through predetermined actions (e.g. redispatching) or special actions (i.e. not flexible generation curtailment).

Role of Interconnections

The Italian system is not dependent upon imports of electricity from neighbouring countries to meet the balance between generation and demand.

All the interconnection lines will be in operation during the periods of peak load. Only during October are some outages planned on the Italian boarder.

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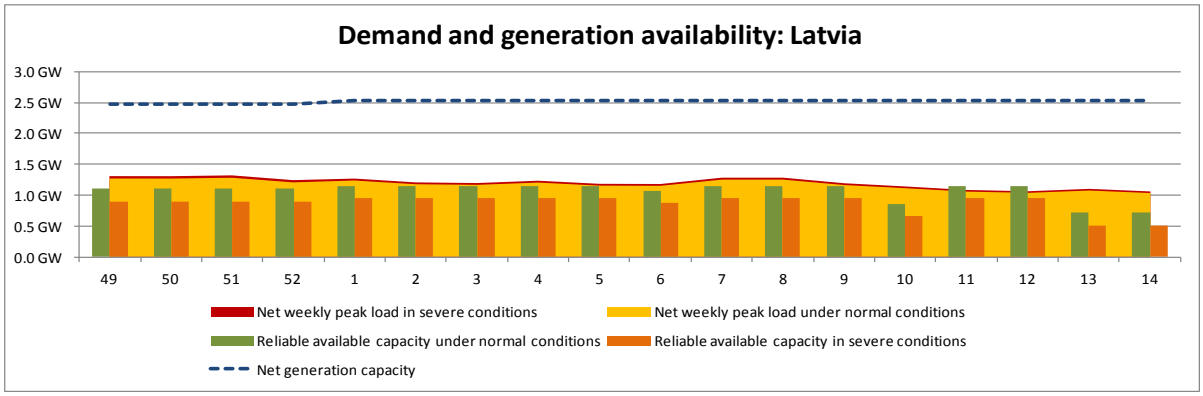
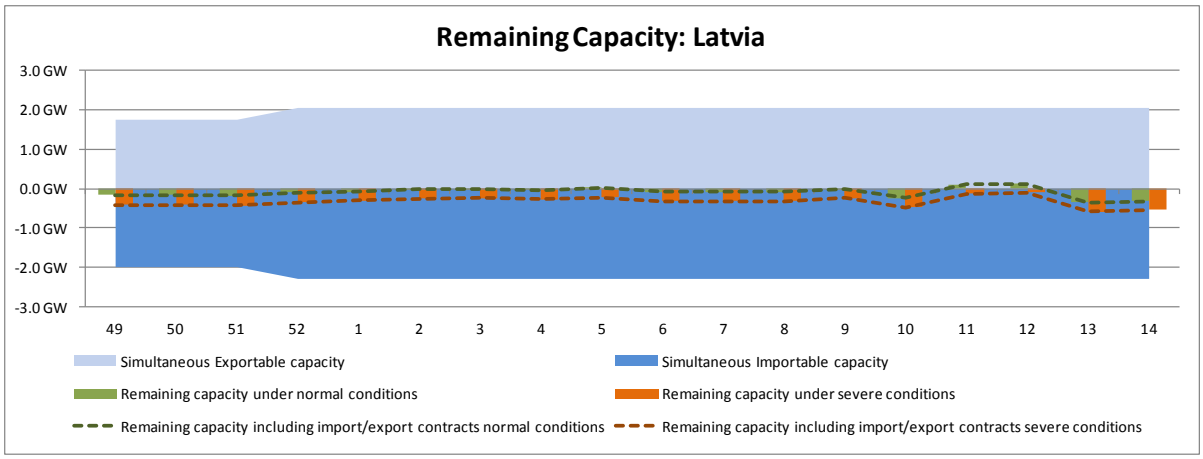
Latvia





Synopsis

Looking to the next winter overview the Latvian TSO did not perform any specific studies or assessments for the upcoming winter period 2011-2012. The load prognosis was prepared based on last winter (2010-2011) weather conditions, water inflow and existing gas prices. The Latvian TSO expect that no stress periods for system adequacy during winter 2011/ 2012 will take place, but looking at security and reliability of power supply some electricity delivery restrictions are possible in the Latvian area.

Generation – load balance for the coming winter

Due to the current economic situation in Latvia, the Latvian TSO forecasted weekly peak load is expected to be 2% higher than that of last year (under normal load conditions), and 5% higher in severe load conditions. Every winter, load sensitivity is dependent on air temperature and low air temperatures can increase electricity consumption in Latvia by up to approximately 3% of forecasted load in normal conditions.

The base power of the Latvian power system is generated by CHP plants and they cover about 40% of peak demand. 60% of installed generation capacity in the Latvian power system is run-of-the-river hydro power installed on the Daugava river. Despite sufficient installed capacity on the hydro power plants, a shortage of inflow water is the main limiting

factor for generation availability. In Latvia, Daugava hydro power plants are designed for “peak”, “half-peak” and emergency modes of operation. On the normal and high in-flow period Daugava hydro power plants are working on the base power mode. In these hydro power plants, it is possible to increase or decrease the load comparatively quickly as the need arises. In the beginning of the spring flood period (from weeks 10-12 and usually lasts for 6 weeks) more generation capacity will be available from hydro power plants. During this period the Latvian power system should become self sufficient and even capable of exporting up to 700-800 MW of power to the neighbouring power systems and to the Scandinavian system through the power exchange. In that period all interconnection lines are planned to be in operation and the target is maximizing interconnection transfer capacities to electricity deficit areas.

Under normal conditions and under severe conditions all CHP power plants will be in operation and the hydro power plants will also be usable (considering water inflow of Daugava river) to cover peak load in Latvian electricity system. In normal conditions, the Latvian TSO is planning for 400 MW of installed capacity to cover peak load, but in severe load conditions (small water inflow in Daugava river) the TSO is planning only 200 MW of installed capacity to cover peak load. In Latvia no changes are planned regarding generation capacity for the next winter and the TSO is expecting that all hydro power plants and CHP units will be in operation. There are no additional plans for construction of new power plants this year or start-up of new generation units, therefore installed net power capacity will be approximately 2461 MW. The main Latvian CHP units are fuelled by gas. The fossil fuel for CHP units in Latvia are imported from Russia and gas prices are one of the most significant indicators which could affect CHP units generation availability in the Latvia area. This winter, it is expected, that gas import will be according to the CHP units generation plans and will be sufficient for the CHP units requirements.

Interconnections

Interconnection capacity in the winter period is greater than during the summer period in normal load and severe load conditions, however in December, the Latvian TSO is planning to repair the interconnection line with Estonia and therefore is expecting some restrictions for transfer capacity between Latvia and Estonia. In the winter period, some repairs on the Latvian internal transmission network are also planned, which is also unlikely to cause no significant decrease in transfer capacities between neighbouring countries.

Considering to the Lithuanian electricity deficit which is ongoing throughout the year and the large amount of electricity from 3rd countries, the Latvian TSO is expecting high loop flows and transit flows in the Latvian area and therefore the congestion possibilities on cross-border Latvia-Estonia could exist. Interconnection lines transfer capacities in winter are dependent on weather conditions, Latvian generation volumes and maintenances of interconnection lines.

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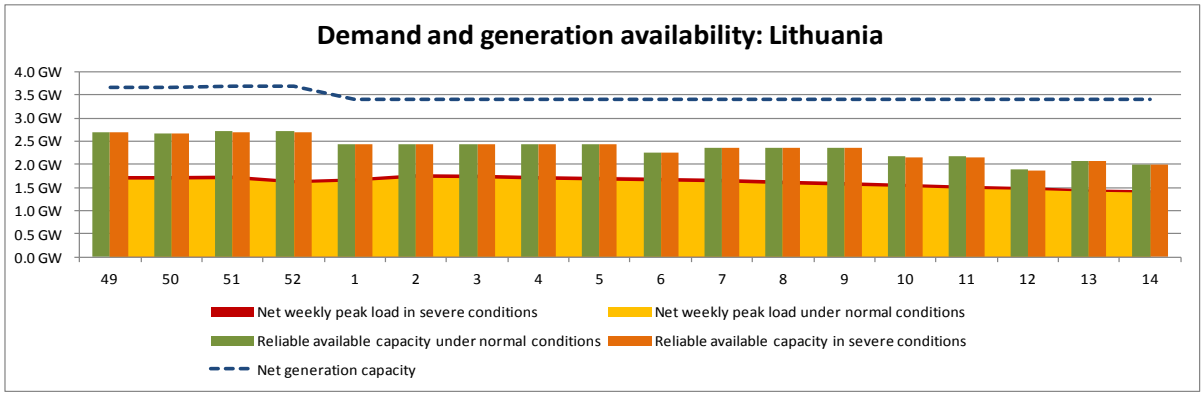
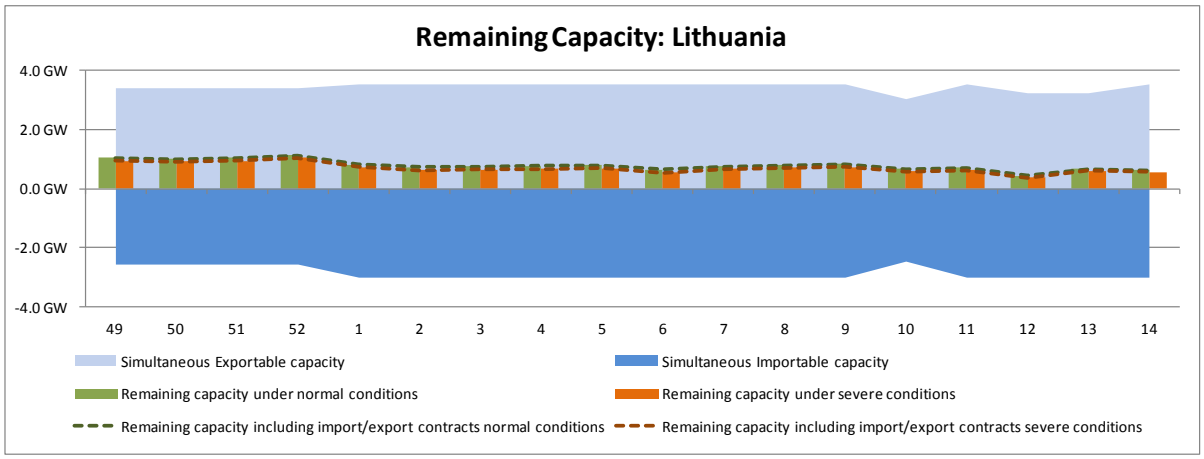
Lithuania





General comments

The winter 2011/ 12 is expected to be normal with no particular problems.

The Lithuanian Power System still does not have any direct connections to the Continental European network, the local available generation capacity, mainly gas-fuel based, will be sufficient to cover the expected peak demand and ancillary services during the winter. The total consumption during the upcoming winter is forecasted to be 1.2-1.8% higher than for the previous winter, because of the steady growth of the demand.

Despite this, Lithuania will depend on gas and electricity imports from neighbouring countries (mainly from Russia) due to electricity price differences.

Generation – Demand balance

Although the Lithuanian Power system is able to produce the required amount of electricity to cover the peak demand, due to the market situation, the Lithuanian power balance is expected to be covered by imports.

The majority of the Lithuanian power plants are gas fired; therefore the gas supply is important to ensure the availability of the power plants. However, the gas supply to Lithuania is controlled by one monopoly provider from Russia.

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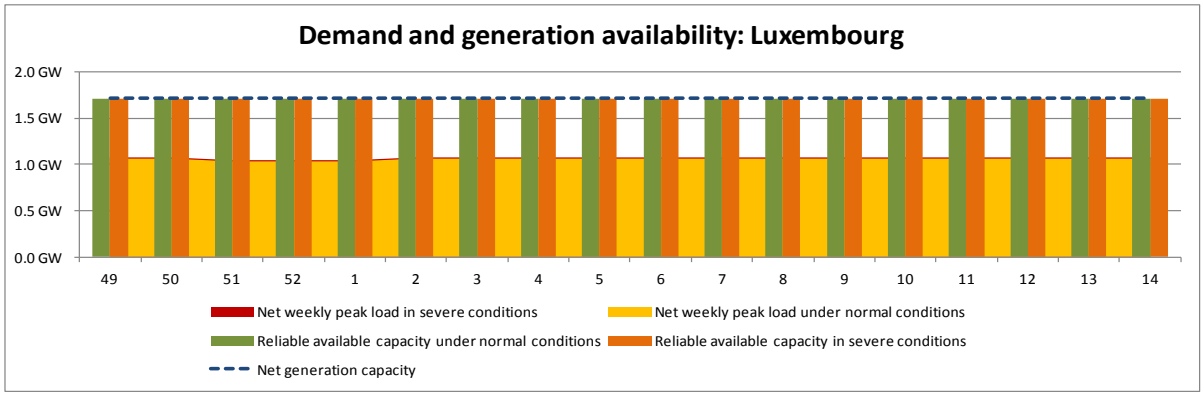
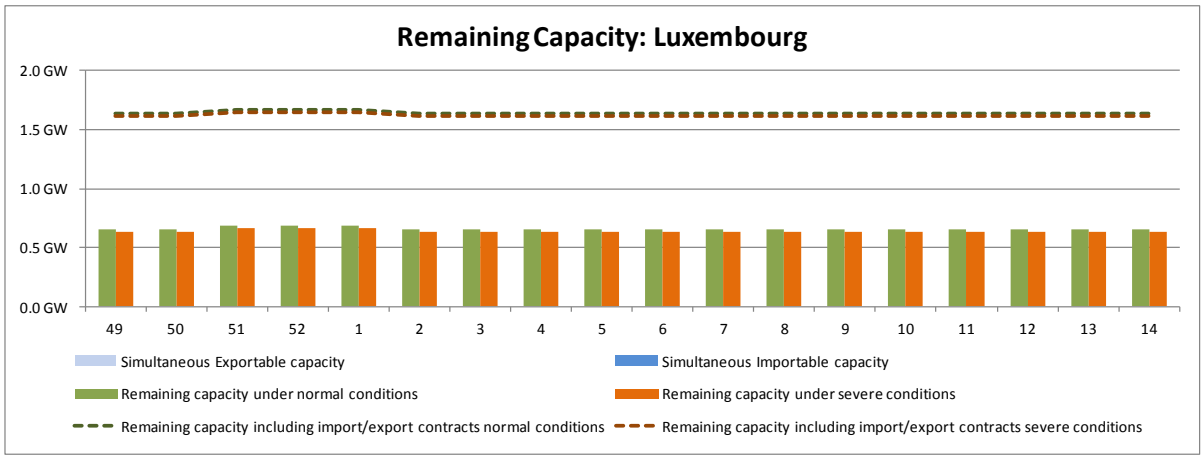
Luxembourg





Synopsis

A largest part of the public grid of Creos is in radial connection to the Amprion Grid in Germany. A 1.1 GW pump-storage power-plant located in Luxembourg is directly connected to the German grid without having connection to the public grid in Luxembourg. A smaller part of the public grid connecting a CCGT of 380 MW as well as the industrial grid infrastructure is connected to the ELIA grid in Belgium. To avoid overloading by possible loop flows and voltage disturbances from the industrial grid the connection between both grid parts is open rendering impossible transit flows between adjacent countries via the Creos grid. Due to this grid configuration, the largest part of energy produced in Luxemburg is first exported and then re-imported again to be used in the public grid asking for an extra regard on interconnection capacity on top of the adequacy assessment.

Comments

From a grid perspective Luxembourg has to import more than 90 % of the consumed energy. The cross border lines are rated accordingly and will resist to n-2 events also.
Due to a dry period last month, the hydro production in Luxembourg is very low. This will probably persist into the coming winter period, however will not influence the adequacy as hydro production is lower than 2 % of total consumption. The Luxembourg TSO don't expect to have problems in supply due to extreme temperature conditions.
Conditioned by the strong interconnection of the public grid to Germany and the large imports from that part, Luxembourg are open to the same risk for lack of supply as Germany

as well as other parts of Europe due to the nuclear phase out decision in Germany. Creos launched discussions with ELIA about emergency in feed from their side trough the industrial grid but it remains questionable as to what amount of reserves can be activated and delivered to Creos in the case of a general/ regional problem in the German grid. Line capacity to the Elia grid could not be sufficient for supply of both the public grid and the industrial grid.

The Luxembourg TSO do not agree on NTC values given for the market as both parts of the grid in Luxembourg are operated in radial and by that no market flows between adjacent countries could occur.

Indicative NTC value towards Germany will be adequate:

- to evacuate the energy flow for the PSP as the lines are rated accordingly (Pinst = 1,1 GW)
- for supply of the public grid also for a n-2 event on the interconnection infrastructure. (980MVA fixed by contract)

Indicative NTC towards Belgium are adequate to:

- supply of the industrial consumer (Line capacity about 120% of industrial peak load)
- evacuate the CCGT production towards Belgium (Pinst = 380 MW)

Indicative NTC towards Belgium (line capacity = 800 MVA) will not be adequate to supply the public and the industrial grid together.

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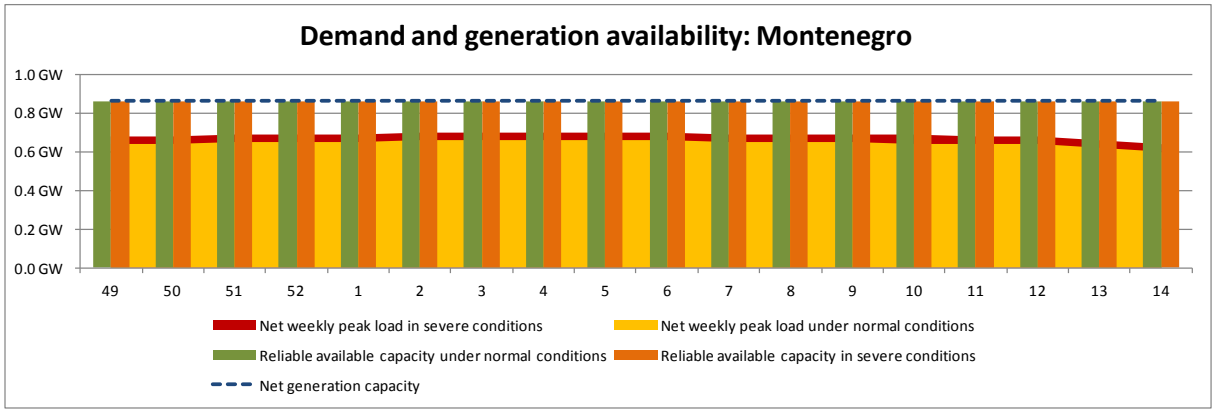
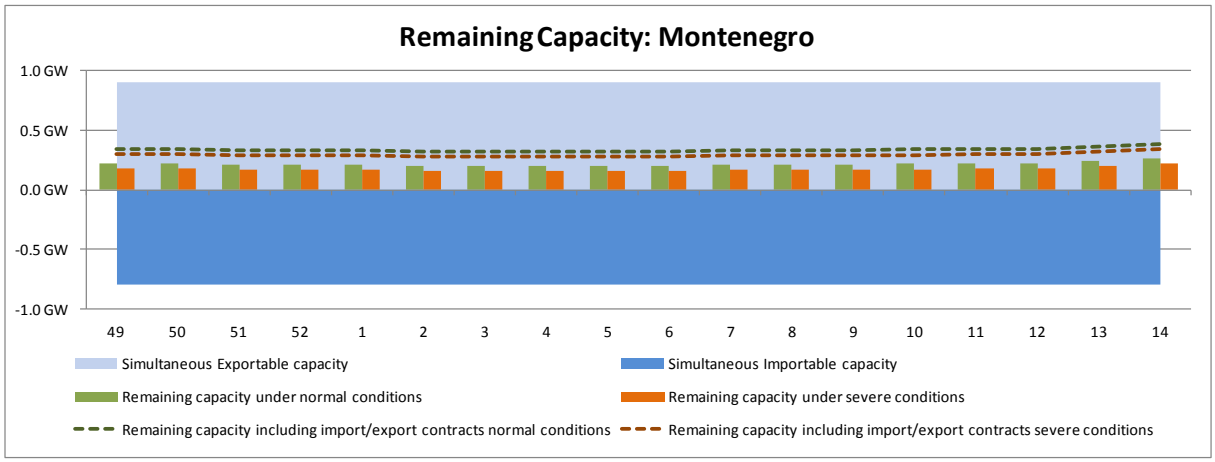
Montenegro





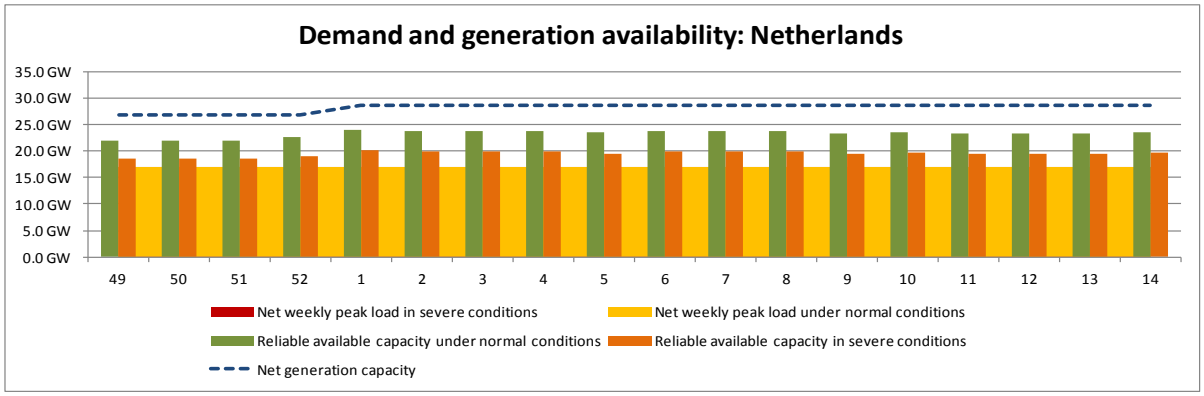
The operation of power system of Montenegro is expected to be secure and reliable for the entire winter period 2011/ 2012.

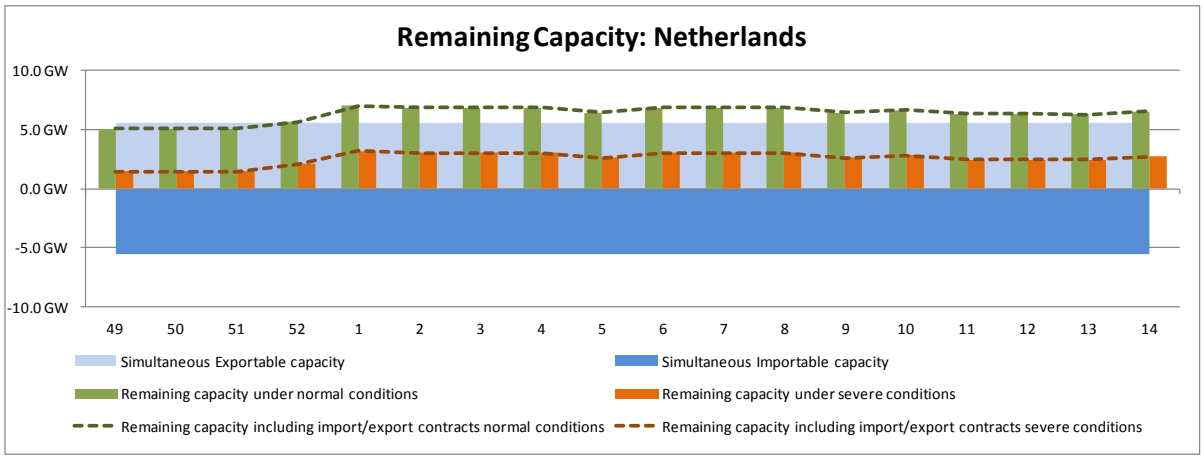
The Montenegrin power system depends on imports of energy to cover the difference between consumption and production. Due to the high influence of the aluminium and steel industry on the Montenegrin power demand, some mistakes in demand prediction can be expected. The Montenegrin TSO's (CGES AD) best expectations are that generation – load balance problems, under normal conditions, are not expected in Montenegro for the Winter 2011/ 2012.

The main period of stress will be from December 2011 until January 2012, when the load is max, and the temperatures are low. The main stress factor is likely to be high demand and bad hydrological conditions.

No major variations of the interconnection capacities are expected during the winter 2011/12.

The Netherlands





TenneT NL performs studies at national level and in cooperation with our neighbouring TSO's. Yearly plans for grid maintenance and capacity assessments are performed taking into account the Security of Supply of the Dutch and neighbouring TSO's.

The generation – load balance on the Dutch system should be maintained for the coming winter. The outage planning of grid elements for 2012 will be finalized in December 2011 and the outage planning for the generating units will be final in November 2011.

The wind generation is estimated on an average generation observed last winters. New wind parks/ generation are also taken into account.

Under normal conditions, temperatures close to seasonal norms, TenneT does not expect problems on our system. In case of extreme weather conditions, the margins can be reduced and cross border capacities can also be reduced.

The number of plans for new production of electricity in the Netherlands is high. In the coming months, 1.5 GW of new production will be taken into operation and in the coming years this will be increased gradually up to approximately 7 GW in 2014.

Due to the increase of production the overall availability of generation facilities is expected to be higher in comparison to the previous few winters. The generation will keep the balance with load, at most times.

The main period of stress is expected from the combination of large wind generation in Germany, a cold winter, higher demands and relatively higher prices in France. This could cause extra flows through the Dutch grid from the northern part towards the southern part in the Northwest European area which could possibly result in an import and export reduction of interconnector capacity with Germany.

Currently there is no plan to shut down the nuclear unit in the Dutch system.

The shutdown of the nuclear units in our neighbouring grid will most probably affect the European power system and thus the exchange of capacity between the countries.

Cross border capacities and grid availability is daily coordinated and assessed with the neighbouring TSO's (ATC based CWE Market Coupling).

In case of imbalance (demand ≠ supply) TenneT NL makes use of bids of regulation and reserve capacity which have been made available to TenneT NL by market parties. The balance between demand and supply for electricity can be maintained at all times.

BritNed was launched 12 May 2011 with a total import/ export capacity of 1000 MW.

Due to the Dutch grid connection policy, introduced by the Ministry of Economic Affairs, generators can be connected to the grid directly without having to wait for transmission capacity expansion that could be required. Planned electricity production capacity has increased rapidly in the Maasvlakte area. Due to the necessary transmission reinforcements, planned production capacity and BritNed the production capacity will exceed the transmission capacities in this area, resulting in congestion.

To guarantee security of supply, Congestion Management (internal redispatch) will be applied if needed.

In case of a high level of wind generation in Germany, a cold winter, higher demands and relatively higher prices in France, this could cause extra flows through the Dutch grid from the northern part towards the southern part in the Northwest European area, which could possibly result in an import and export reduction of interconnector capacity with Germany.

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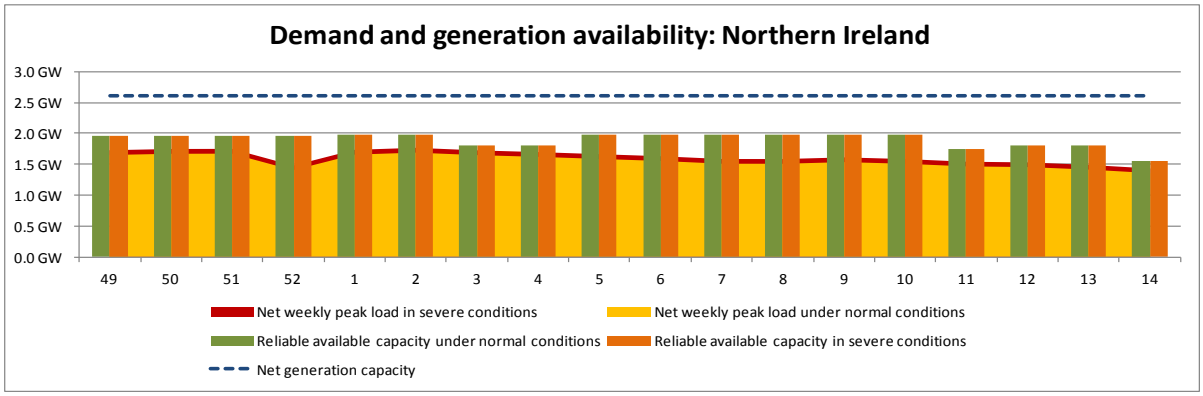
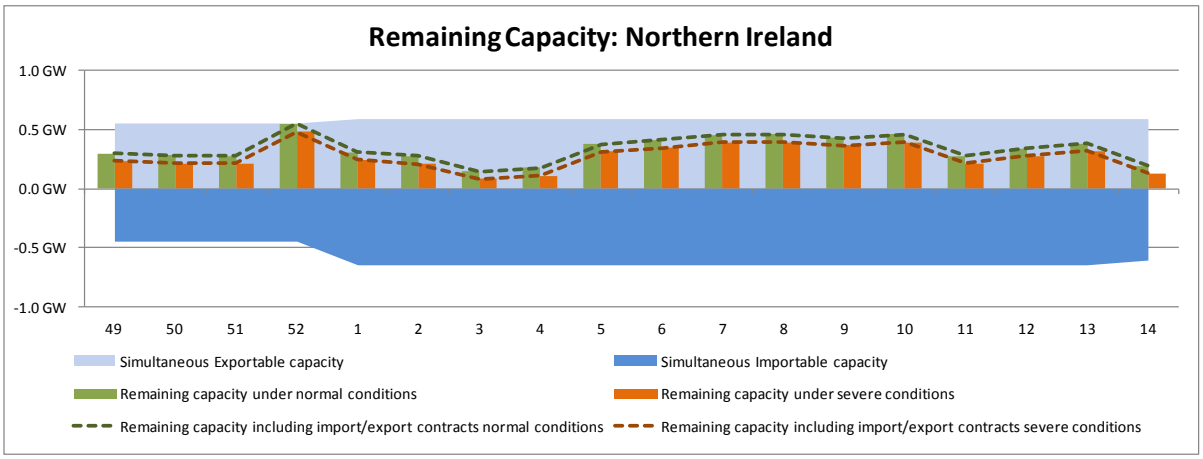
Northern Ireland





Synopsis

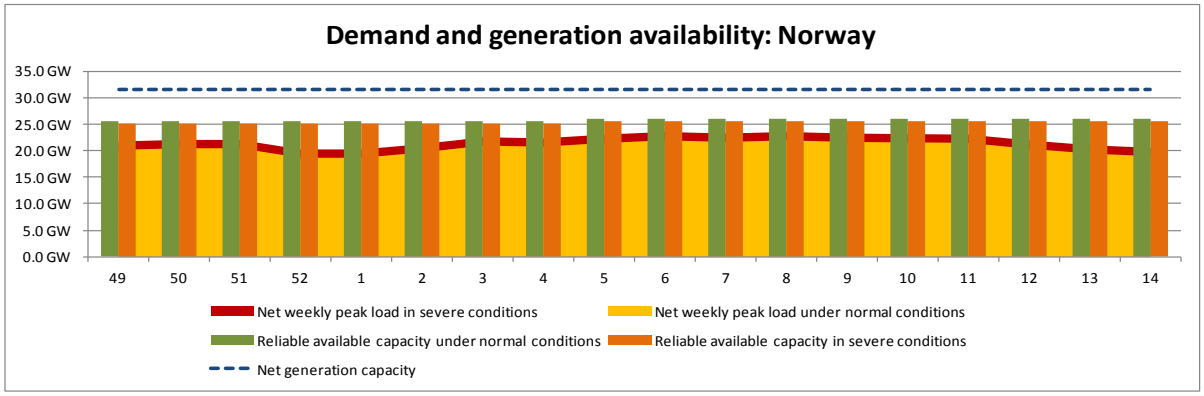
SONI expects that the generation capacity will be sufficient to meet the expected peak demands this winter and the Northern Ireland Security of Supply Standard of 4.9 hours per year Loss of Load Expectation (LOLE) will be maintained throughout the winter period, even with the reduced import capability due to ongoing faults on the Moyle Interconnector. Both deterministic and probabilistic analyses were carried out to determine that the capability of the generation portfolio available to SONI is sufficient to meet peak demands during the coming winter period. In Northern Ireland the main period of stress is normally from mid December to mid January. The latest SONI demand forecast indicates that the peak demand is expected to occur in week 51.

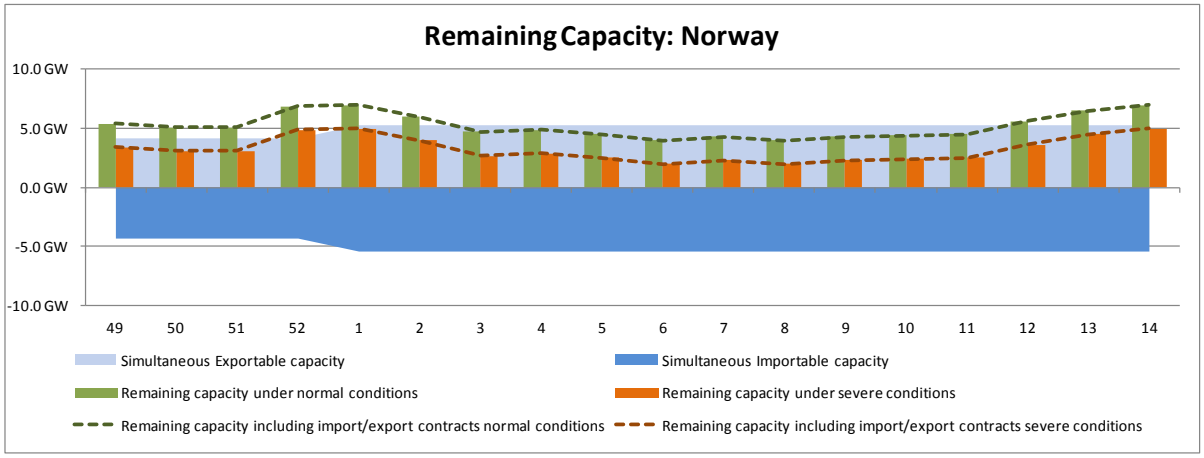
Comments

The Moyle DC Interconnector links the electricity grids of Northern Ireland and Great Britain. Under normal circumstances the available Net Transfer Capacity (NTC) from Great Britain to Northern Ireland is 450 MW during the winter (410MW during summer period beginning on 1st April). The NTC from Northern Ireland to Scotland is 287 MW. The availability level attributed to the Moyle interconnector also includes an assumption that there would be capacity available in the Great Britain system, which has approximately 78.5 GW of installed generation capacity.

Currently there are cable faults on both poles of the Moyle Interconnector. This continued loss presents a significant reduction in generation adequacy. However, it is not expected that this will result in the Northern Ireland generation security standard being breached. The generation capacity adequacy standard is based on a probabilistic analysis and is defined as a Loss of Load Expectation (LOLE) 4.9 hours per year for Northern Ireland.
It is expected that one cable will be restored to service at the beginning of December 2011 (250MW), with the second cable being restored at the beginning of January 2012 (450MW).

Norway





General Comments

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

Norway is entering the winter of 2011/ 12 with a higher hydrological balance than normal. This has resulted in low prices, especially in southern part and hence it is expected that production from thermal units is going to be low.

Statnett does not expect any critical situation during the winter 2011/12. The available generation capacity exceeds the expected peak load, even on a cold winter day. At peak

demand in a normal winter, Norway is thus able to offer power support to its neighbouring countries.

Framework and method

The winter outlook assessment is mainly based on historic data and Statnett's internal assessments. For instance each autumn Statnett creates an internal report on the Norwegian power balance and maximum load in the coming winter.

Generation – Demand balance

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

Generation availability

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

Demand

According to statistical data for Norway, peak time for demand is most likely from hours 20 to 21 in weekdays in January and February.

Remaining capacity in normal conditions

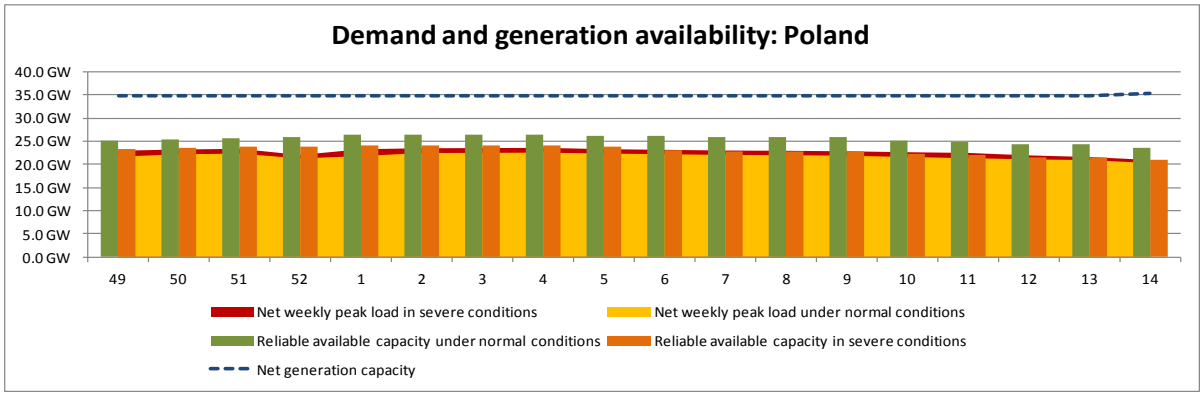
The remaining capacity will be sufficient during the winter 2011/12.

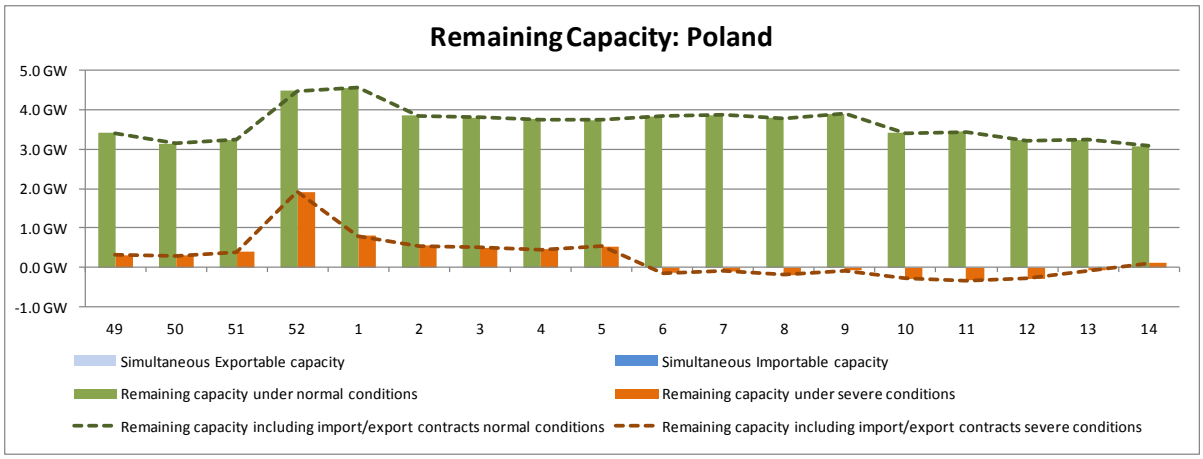
Role of interconnection

Norway will not be dependent on imports from its interconnection during the winter 2011/12 with regards to power balance. It is on the other hand expected that Norway will be able to export to the Netherlands, Sweden, Denmark and Finland even during cold days.

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

Poland





In Poland forecast plans (yearly coordination plans[1]) are done for the whole year on a monthly basis (average values from working days at peak time), until 30 November every year.

On 26 every month the PSE Operator publishes monthly coordination plans, which include the precise information on peak time for all days of the next month. Further specification is done within the operational planning (weekly and daily).

Due to unplanned circuit flows through the Polish system (from West to South), the PSE Operator provides aggregated NTC data for the whole 220/400 kV synchronous PL - DE/CZ/SK profile. Additional Polish connections in use are: the DC cable to Sweden and the 220kV line to Ukraine (radial connection). Below there are explanations concerning best estimate of the minimum NTC provided to the report:

For the Polish - Swedish profile, this is the single connection and taking into account N-1 criteria minimum NTC amounts to zero for both import and export directions.

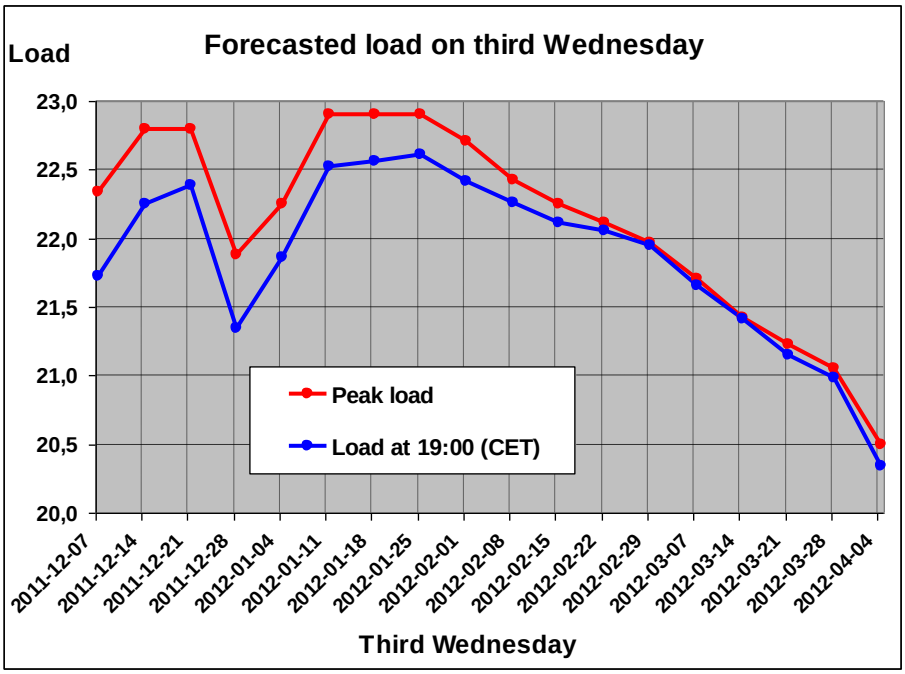
[1] System balance plans (published on PSE Operator S.A. web site)

For the Polish - Ukraine profile see above.

Regarding the Polish, German, Czech Republic and Slovak Republic profile, the maximum, forecasted seasonal NTC in imports amounts to zero. The maximum NTC calculated by the PSE Operator in exports amounts to 900 MW during the winter season, but the best estimate of the minimum NTC amounts to zero due to the possible, simultaneous occurrence of high unplanned flows from 50Hertz (mainly caused by high wind generation) and any planned/ unplanned switching off (N-1 criteria) of one of the 400kV double circuit lines to the Czech Republic/ SEPS (N-1 criteria).

This winter outlook report is the first report, which is prepared on a weekly basis. Previously the PSE Operator provided only monthly values (monthly values divided into four or five weeks), however now special assessment for Outlook reports will be made on a weekly basis. This assessment as well as coordination plans are coherent and based on information from producers (NGC, overhauls, non-usable capacity), and the Polish TSOs own analysis (load, outages, reserves, non-usable capacity, NTC).

Under normal conditions, the PSE Operator does not expect any problems regarding the operation and balance of the system this winter. For the whole analysed period, the balance of Polish power system is positive both at 19:00 (CET), as presented in the report and during peak hours. This is an important remark because in December and January the peak load in Poland takes place c.a. at 17:00 and the difference between the load at the peak time and load at 19:00 (CET) on working days could reach up to 900 MW. The picture below shows the forecasted peak load and load at 19:00 (CET) – both calculated using statistical data.



Under severe conditions, the PSE Operator observes a slightly negative balance for peak load, caused by both high demand and low generation availability. This is the result of an

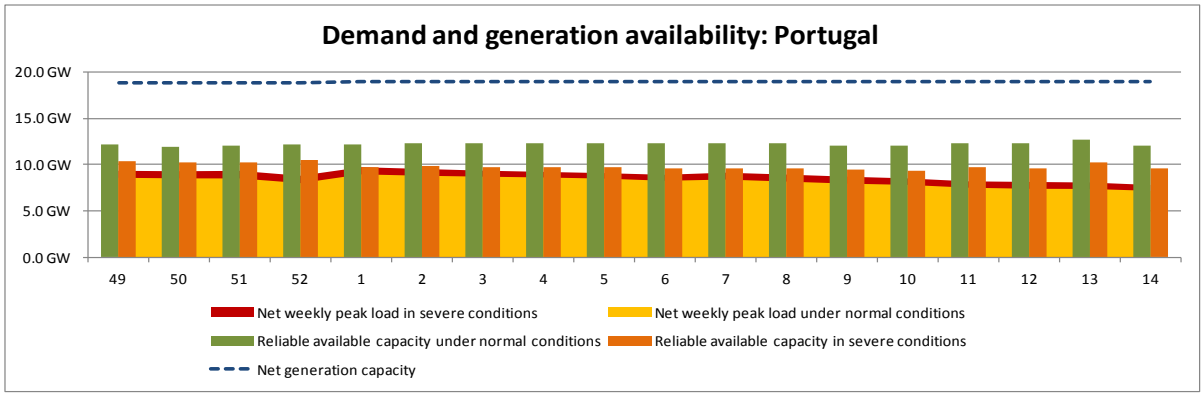
increase in non-usable capacity and outages that can take place simultaneously in the Polish power system. The most stressed days are Mondays, when the higher than usual level of forced outages is registered as the result of unexpected faults during the start of the units. The most critical periods during the winter are during the peak time in January and February. For some weeks the PSE Operator can expect power shortages during peak hours but such long horizon of planning and working on average values means that the power shortage can be covered by operational measures. There is no problem with balancing the system at 19:00 (CET), hence the level of negative balance in the report is negligible.

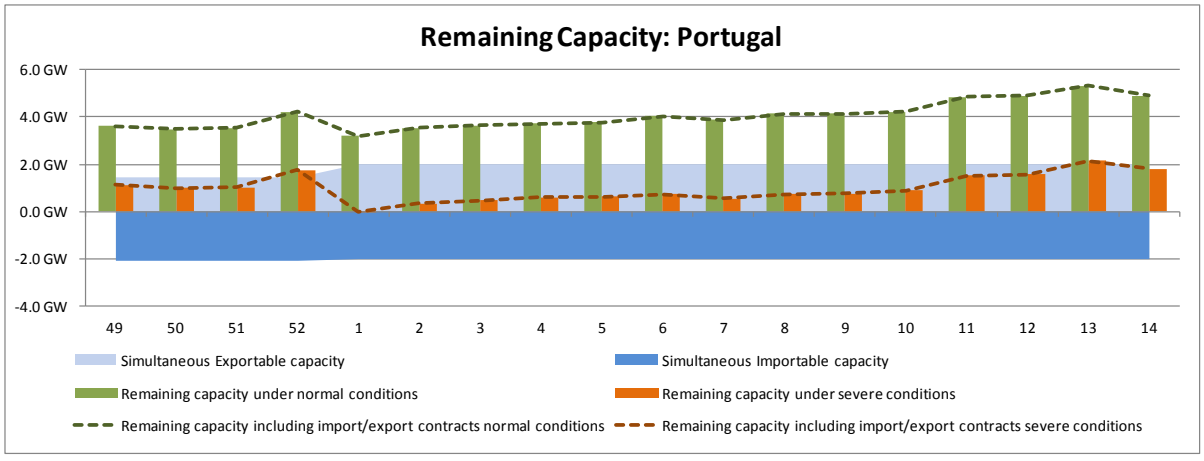
The Polish TSO does not expect that the nuclear shutdown in Germany will affect generation-demand balance for the coming winter in Poland.

Under normal conditions, the PSE Operator classifies 88% of wind NGC as non-usable capacity, for severe conditions it is 100%.

In case of an emergency situation, the Polish TSO has made agreements with neighbouring TSOs for emergency energy delivery.

Portugal





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Synopsis

Based on the simulations, generation/demand balance is not at risk. Under normal conditions, the remaining capacity margin is expected to stay above 16% of the installed capacity. Under extreme conditions, from both the supply and demand sides, the margin is about 5% of installed capacity, on average, even without resorting to imports. No potential threats or critical periods were identified.

Comments

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

The quantitative elements provided in this report were computed according to the following:

Normal conditions

- average hydro inflows (taking into account the actual levels of the reservoirs)
- average wind production based on historical data (32% of utilization)
- peak demand forecasts with a probability of 50%
- planned available capacity for largest hydro and thermal power stations

Severe conditions

- average of the 5 lowest hydro inflow scenarios on historical data (and taking into account the actual levels of the reservoirs)
- wind production reduced to 2% (with a probability of occurrence of 5%)
- peak demand forecasts with a probability of 1%
- planned available capacity for largest hydro and thermal power stations

The average outages are based on historical data (5% for thermal and 1.5% for hydro) and, for simplicity, were considered the same in both condition scenarios.

Even if interconnection capacity was not considered in any of the studies, the Portuguese TSO still has made available its best estimate of the NTC. The values presented were computed in the framework of the network planning.

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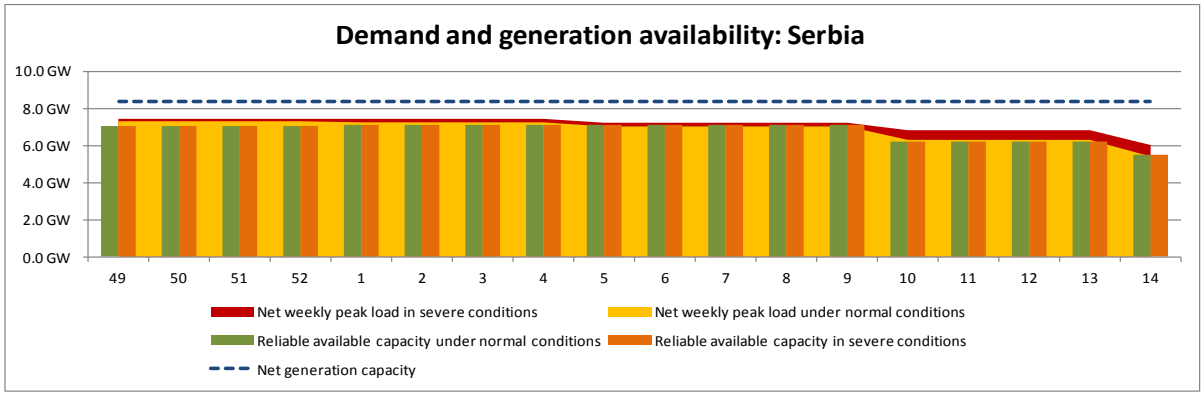
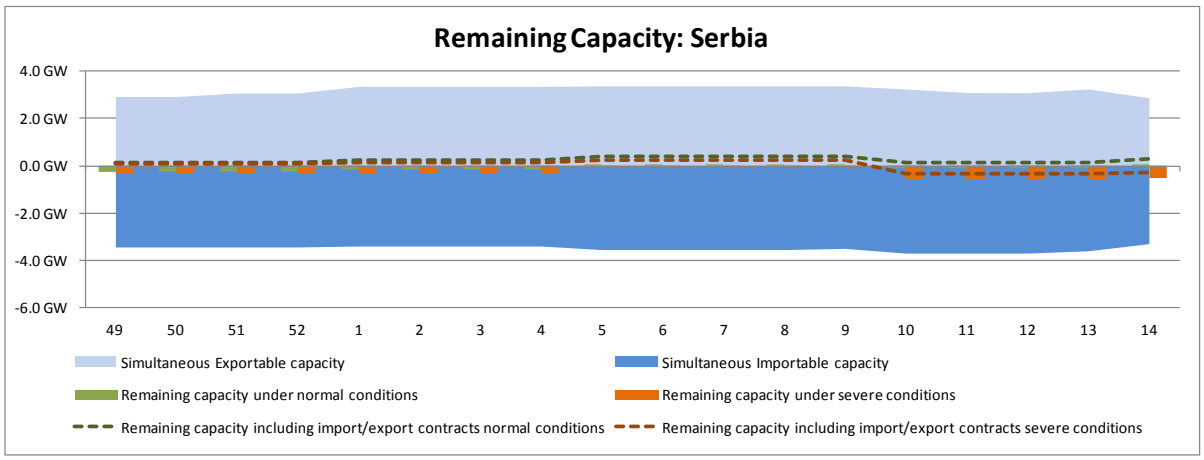
Serbia





The Serbian TSO doesn't expect any problem during the next winter under normal weather conditions. The adequacy analyses show that Serbia will likely have to import electricity for extreme weather conditions. Due to the dry autumn conditions, this is at the moment a very probable scenario.

It is expected that eastern and northern borders will be used for this import, especially the Hungarian and Romanian one.

In order to depict the situation more realistically in Serbia, EMS provided a value of 0 for expected outages, as it is considered that it is to be covered by the high system reserve (real value of average outages is 0.2 while system reserve is 0.6 GW, net capacity is 8.36 GW). In order to overcome this situation EMS has concluded six contracts for importing of emergency energy.

There are only two small units of 0.13 GW that EMS considers as mothballed. Being small and located in the Kosovo region, detailed information about their future availability is not known.

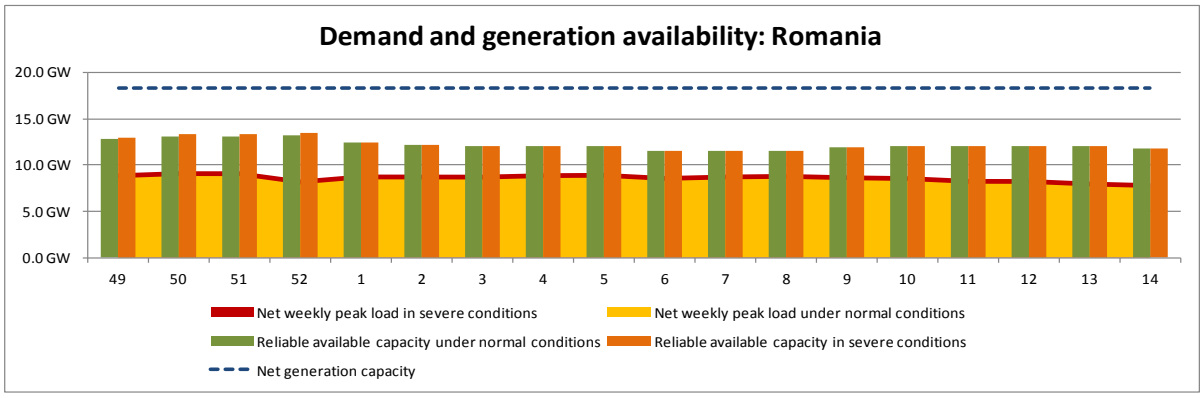
Regarding operational security, the Serbian TSO identified only one 220 kV internal line which is affected relating to one specific generation pattern (typical for the summer period),

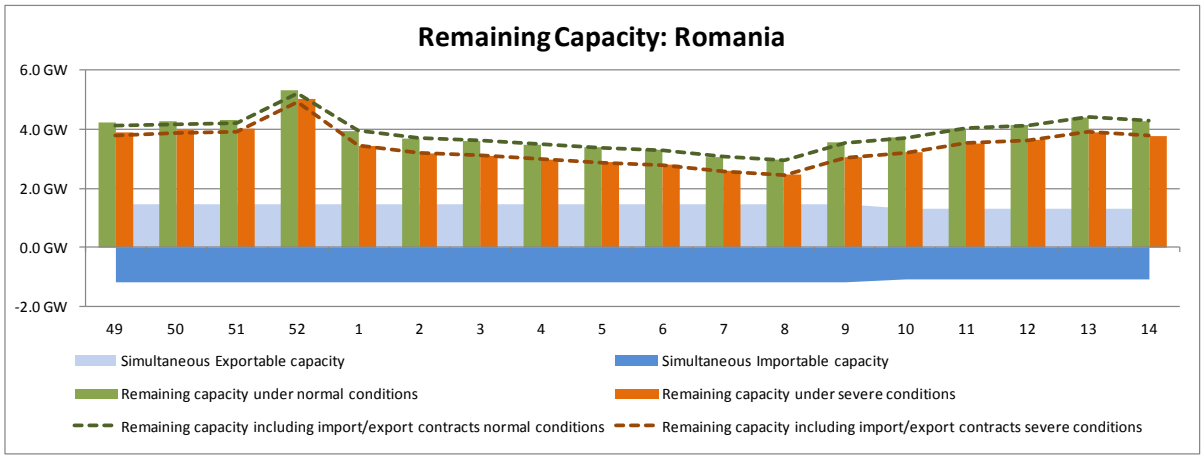
however this could be solved by topology measures and re-dispatching of available units until now.

A stoppage of the gas supply could cause cease of heating plant operation, which would stipulate an increase of electricity load. However this is an event that would unlikely affect the transmission system significantly (the bottleneck is on the distribution system according to previous experiences).

The German nuclear moratorium does not significantly affect the Serbian TSO.

Romania





The national generating capacity in the Romanian Power System will be able to ensure the coverage of the consumption and the eventual export requirements.

However the main risk is the decrease of the temperature when the gas pressure could be at low level or when the coal freezes.

For the coming winter the expected and the main role of the interconnectors between Romania and its neighbours is to facilitate the performing of the commercial exchange power.

In case of generation adequacy problems there are bilateral agreements with certain neighbours in order to provide emergency exchange power.

In case of a gas crisis certain thermal power plants can switch from gas fired to only oil fired.

The fast tertiary reserve (800 MW) which is sized to replace the tripping of the largest generation unit in Romania and an additional demand forecast error, it is sufficient so far to substitute the wind generation loss, as well.

Nowadays there are not significant changes in System adequacy assessment done on the 25th August 2011.

The method for adequacy assessment used by Transeletrica and described below is the same with the one included in the questionnaire sent on 25th August 2011.

At national level, Transelectrica performs studies twice a year: for summer and for winter time intervals. The types of analyses are the same: generation-demand forecast, load flows, steady state and dynamic stability, taking into account the following:

- harmonized producers schedules on yearly basis;
- approved yearly internal lines schedule, based on other network security analyses.;
- regional coordination of the tie-lines schedule with the neighbour power systems.

While the first chapter (generation-demand forecast) is dedicated to assess the generation adequacy in normal and severe conditions, the other chapters are performed to establish the safety network conditions for certain topologies and the generation constraints as well.

When there are some deviations from the input data, Transelectrica performs additional analysis on monthly basis.

However, Transelectrica performs daily operational programming with updated data:

- to fulfil all the requirements for generation / demand balance, exchange schedules and system reserves on the Balancing Market;

- to check N-1 criteria for internal and tie-lines as well.

The half a year and daily analyses include also the checking of N-2 criteria only for NPP area in order to detect the network congestions.

Concerning the new NTC analysis, the NTC on Romanian borders depend both on the internal situation (load, generation, network topology) and on regional significant maintenance plan.

Transelectrica provides its best estimation for the minimum NTC for the all interval requested in the spreadsheet, as follows:

- the calculated NTC values for December 2011;

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- the estimated NTC values for the interval from January 2012 till April 2012, take into account only internal maintenance network plan since the regional maintenance plan for the interval from January 2012 till April 2012 is not known yet.

The outage rates have been calculated on statistical bases and on the available power plants information.

Transelectrica has information concerning the cause for the mothballed power plants status and for certain cases, the necessary time to make them available. They become available under extreme unbalanced situation (e.g. very low temperature) after the usage of the slow tertiary reserve and the remaining system capacity, but in certain time intervals known by Transelectrica.

Based on the current information known by Transelectrica for the coming winter, there will be no relevant transmission constraints affecting the cross-border capacities.

In case of a gas crisis certain thermal power plants can switch from gas fired to only oil fired. In case of coal freezing the slow tertiary reserve and part of the remaining capacity will be activated.

During the minimum demand periods we do not expect any issue with inflexible plants, since the fast tertiary reserve is sufficient so far to be disabled when the wind plant are in operation.

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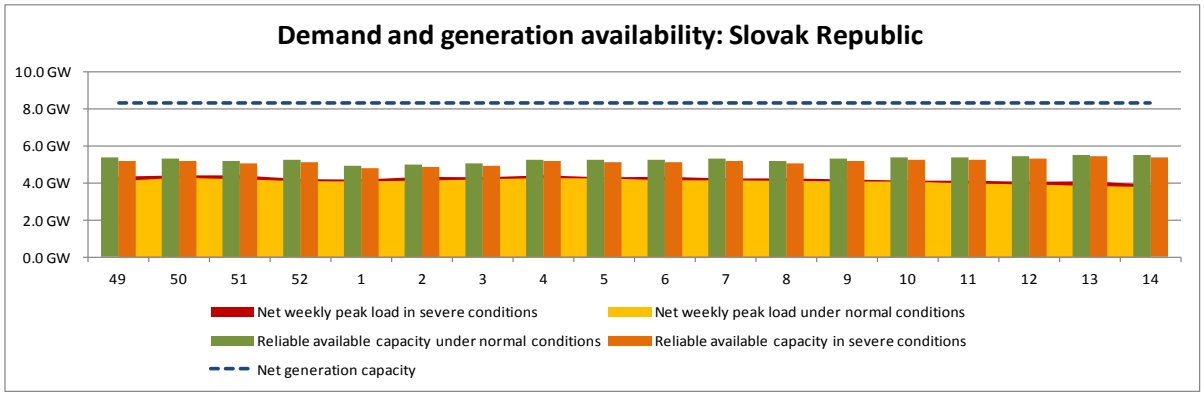
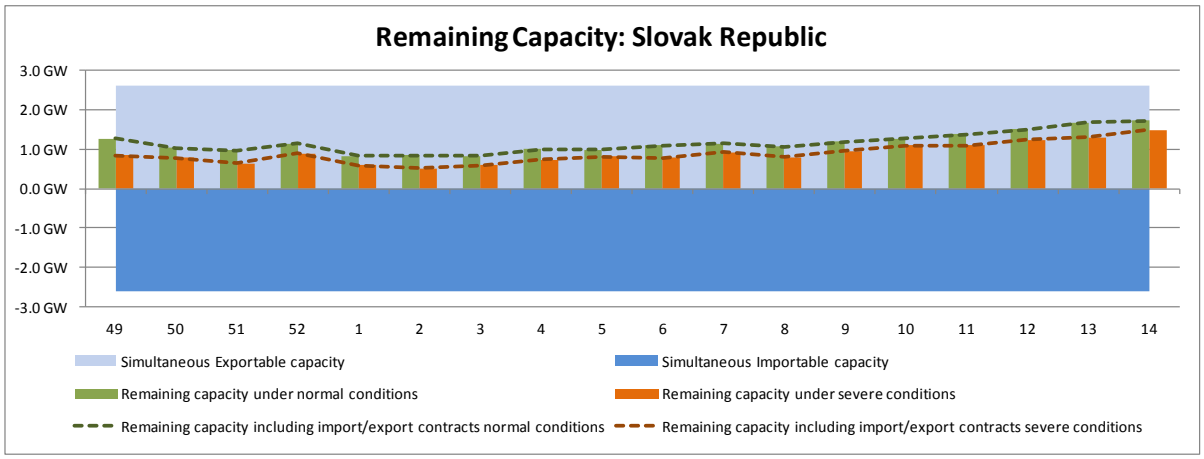
Slovak Republic



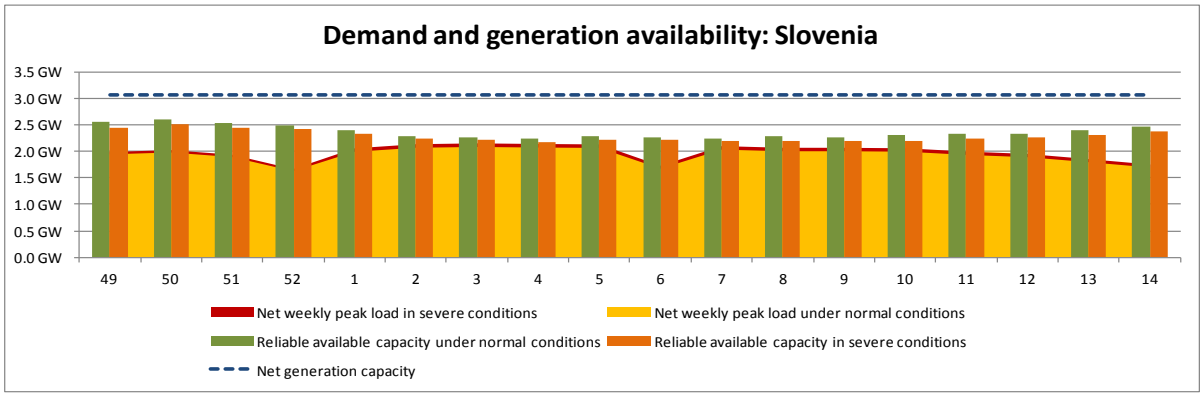


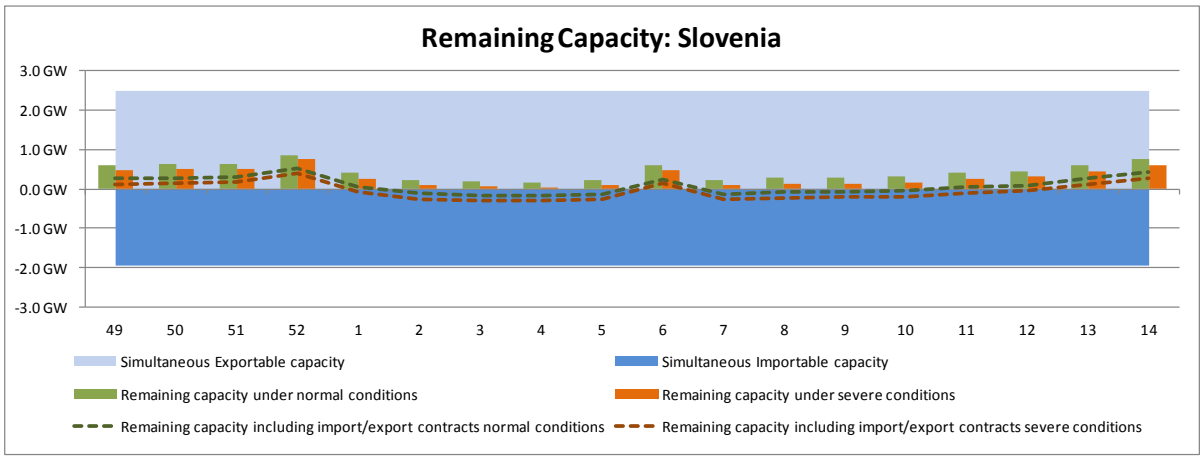
From the generation adequacy point of view, the situation in the Slovak power system is expected to be stable in the coming winter. No new generation capacity and no new transmission lines are going to be commissioned to the transmission grid. The expected peak load (max. 4.3 GW) is about 1.5 % higher than it was expected for winter 2010/2011. The generating capacity increased (17 %, total 8.3 GW) from the previous year mainly in fossil fuels power plants (400 MW in gas) and solar power plants (480 MW). Concerning normal conditions, remaining capacity will be in the range from 0.8 to 1.7 GW.

In the severe conditions the expected peak load is in average 3.6 % higher than in normal conditions. In this case the remaining capacity will be in the range from 0.5 GW to 1.5GW.

In the winter 2010/2011 Slovakia imported electricity only in December (3.5 % of monthly consumption) and in the next months there was small export from the power system. Taking into account increased generating capacity as stated above the power system probably will not be dependent on imports of electricity (not considering market strategies of the electricity traders in Slovakia).

Slovenia





General Comments

No problems are expected during the winter period. Without firm export contracts taken into account, Slovenia is mostly net balanced. In the period from week 2 to 10, imports of less than 500 MW are expected in severe conditions. Higher imports are expected in case of extreme low hydrology.

Short explanation of the framework

Assessments at national level are made on a yearly basis, additional studies for the summer and winter period were also conducted. ELES does not perform studies or assessments in cooperation with neighbouring TSOs for the upcoming winter. ELES participates in the international studies within ENTSO-E organisation.

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Generation- Demand Balance

No security of supply problems are expected in the Slovenian power system for the coming winter. However if such problems occur, the following countermeasures can be activated:

- Balancing of shortage via purchasing energy on a market.
- Activation of all available reserves in Slovenian power system.
- Activation of agreed emergency reserves from neighbouring systems.
- Load reduction in Slovenian power system is foreseen as a last measure.

The lowest Remaining Capacity is expected in the period from month 2 to 10 of the 2012. In this period, a lower hydro production is expected due to low hydrology. Peak load in the winter period is expected in the second half of the January. No problems due to load-generation balance are expected in system operation security and security of supply.

Role of Interconnections

In December 2010, PST in SS Divača on the 400 kV OHL Divača-Redipuglia started its operation. With PST in operation, ELES is able to manage high loop-flows towards Italy and the most common internal congestions on the Podlog-Beričevo corridor.

No critical situation is expected, however, if the import capacities are reduced during the coming winter for any reason, the security of supply is not expected to be jeopardized due to the relatively high number of gas power plants in reserve.

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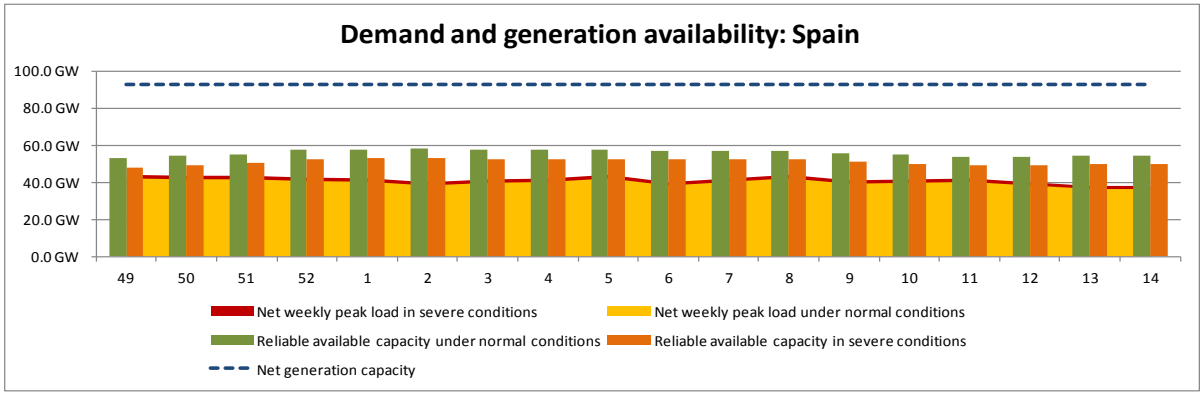
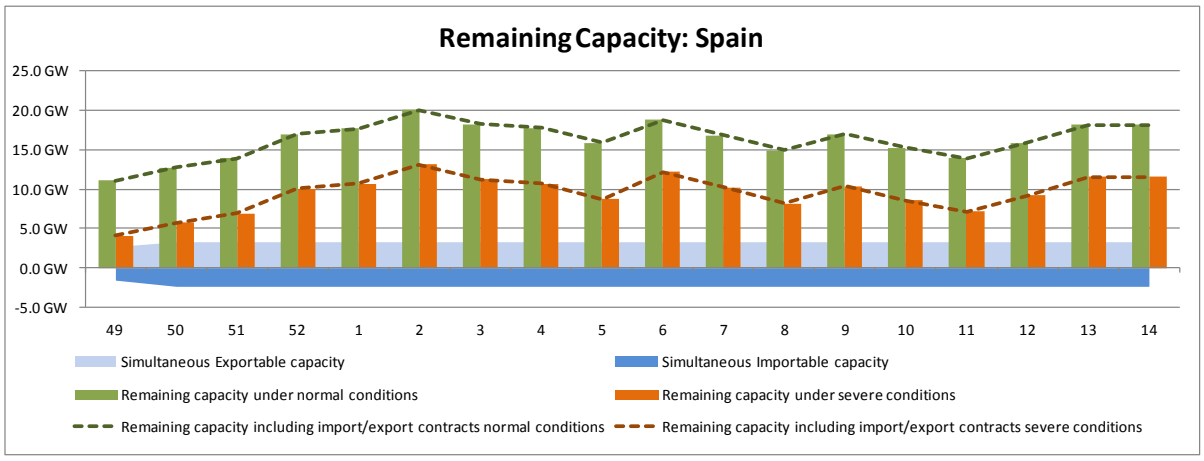
Spain





Synopsis

From the point of view of generation adequacy, the situation in the Spanish peninsular system is not critical for the upcoming winter. Good generation/demand adequacy can be expected regardless imports from neighbouring countries.

After the significant drop of demand values since 2008, and a slight recovery during 2010, a stabilization of the demand values is expected for the upcoming winter.

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

Generation - Demand Balance:

The expected generation/demand adequacy is enough for the upcoming winter, even under the assumption of very drought conditions, very low wind generation (less than 8% of wind installed capacity), and considering additional unexpected outages.

If average conditions are considered, remaining capacity will be around 16.290 MW. Minimum value will decrease to 11.070 MW.

A conservative estimation of available hydro power is advisable, given the characteristics of the Spanish hydro system, with a great inter-annual and monthly variability regarding hydro flows. The 90% percentile is considered an accurate estimation.

The wind power covers a high amount of Spanish generation, being the installed wind power capacity about the 20% of total generating capacity. For the estimation of the wind power capacity under extreme conditions, wind generation considered is around 7% of available capacity. Wind generation has been above this rate with a probability of 95%.

Solar energy is not taken into account when calculating generation capacity for winter peak demand, given that winter peak demand values take place after the sunset.

The generating capacity of several power stations could be reduced due to network capacity constraints. However, these constraints have been significantly reduced with installation of operational inter-tripping equipment.

Voltage issues due to surplus of reactive power at low demand hours may be mitigated with the commissioning of new reactances. On the long term, CHP and renewable power plants contribution to voltage control should be considered.

Demand:

After the significant drop of demand values since 2008, and a slight recovery during 2010, a stabilization of demand values is expected for upcoming winter.

Weather conditions play a very significant role in the demand behaviour, mainly temperature values. Other variables like cloudiness have also influence on demand behaviour.

The extreme peak demand, supposed that it's reached after several days of extremely cold weather, has a probability of occurrence of about 10%.

Only in case of simultaneous extreme peak demand, very low wind generation (less than 8% of wind installed capacity), very drought conditions and a very high thermal forced outage rate, we can find values of remaining capacity of 4.040 MW.

Among other reports, every month, a medium term system adequacy forecast report for the next 12 months is produced by REE (The Spanish TSO).

Medium term system adequacy forecast is carried out using a hydrothermal coordination model with stochastic dynamic programming that minimizes variable operation costs. The analysis is based on a probabilistic tool where hydro stochastic behaviour and non planned thermal outages are considered. In addition, regional studies are performed looking for congestions.

The medium term forecast considers several hydro conditions, available thermal capacity and wind production scenarios.

All scenarios are built under the following assumptions:

- Overhaul planning notified by generators for the incoming winter.
- Guaranteed fuel (gas) supply to combined cycle and gas thermal plants.
- Low wind conditions: wind generation considered is around 7% of available capacity. Wind generation has been above this rate with a probability of 95%.

Extremely severe conditions for the system are simulated as:

- Extreme demand due to severe weather conditions, typically very low temperatures

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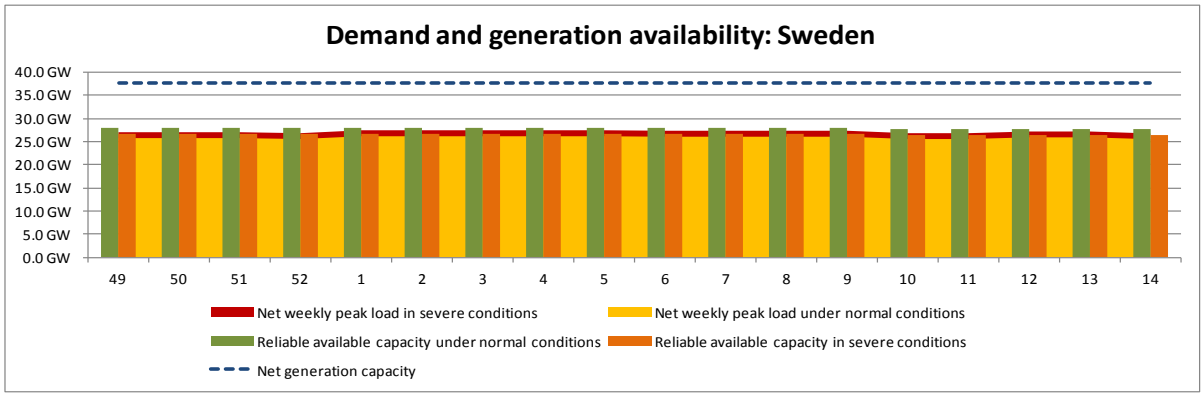
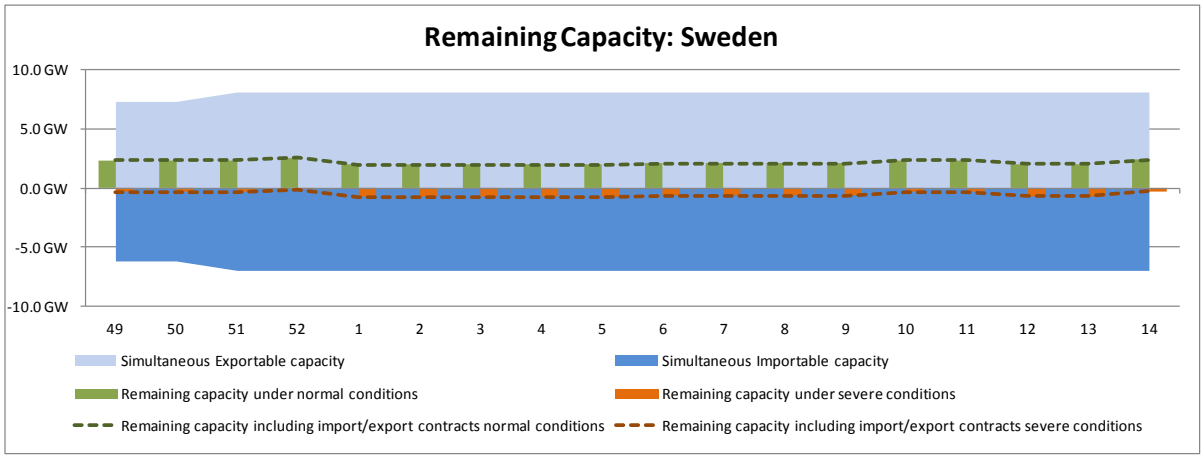
- Severe drought conditions. Significant non usable hydro capacity due to lack of water in the reservoirs.
- No import capacity is considered in the study in severe conditions. So, it is not taken into account in the load – generation balance.
- Unplanned average forced outage of thermal capacity with a 10% probability of being higher (around 3.800 MW).

During next winter, the commissioning of new DC interconnection between Spanish Peninsula an Balearic Islands of Majorca and Minorca will take place.

Sweden





General Comments

The most critical periods for Sweden are December to March due to cold weather and therefore high load (the load during these weeks is most frequently at its maximum during the weekday afternoons). But, in fact, during September to November there is also a risk, although this period is not covered in this report, because of the combination of a relatively high load and that a significant amount of maintenances are usually performed during this period (both in the network and on generation units). It is also worth mentioning that during the coldest months no maintenances that affect the power balance are usually planned to be performed, as long it is not imperative.

In Sweden there is a surplus of generation in the north and a deficit in the south, both under normal and severe conditions. Sweden, as a whole, has a positive power balance during normal conditions, but a negative during severe. The biggest risk for the upcoming winter would be if the nuclear power plants, which are located in the south, would not be available as planned. If this would be the case then this would affect both the transfer capacity from north to south negatively, as well as worsening the power balance in the south of Sweden even further.

Today the hydrological balance in Sweden for the upcoming winter 2011/2012 is better than before the previous winter 2010/2011, so if the nuclear power plants is working as planned and nothing extra ordinary happens the chance of a positive power balance in Sweden is good.

For the upcoming winter, 2011/2012, Svenska Kraftnät predicts that Sweden as a whole will have the possibility to meet the domestic consumption with the available production in case of a normal winter. In case of extreme cold, statistically occurring one out of ten winters, Sweden will have to rely on import. This is a consequence of that the consumption in Sweden is increases with decreasing temperature.

In both cases, normal and severe, there is a surplus of generation in the northern part of Sweden and a deficit in the south, where most of the consumption is located. Therefore Svenska Kraftnät avoids all planned maintenance works which reduces the north-south transfer capacity during the winter period not to increase the risk of power shortages. Furthermore, Svenska Kraftnät is also contracting producers as well as consumers for a Peak Load reserve during the winter period. This reserve gives the possibility to increase production and decrease consumption if needed during strained situations. The total amount for the winter 2011/2012 is approx. 1.36 GW of increased generation and 0.36 GW of load reduction.

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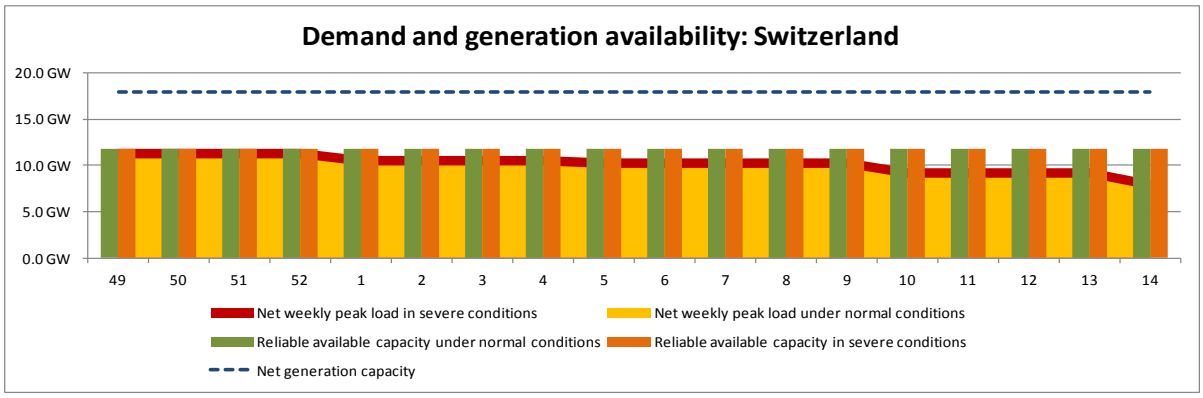
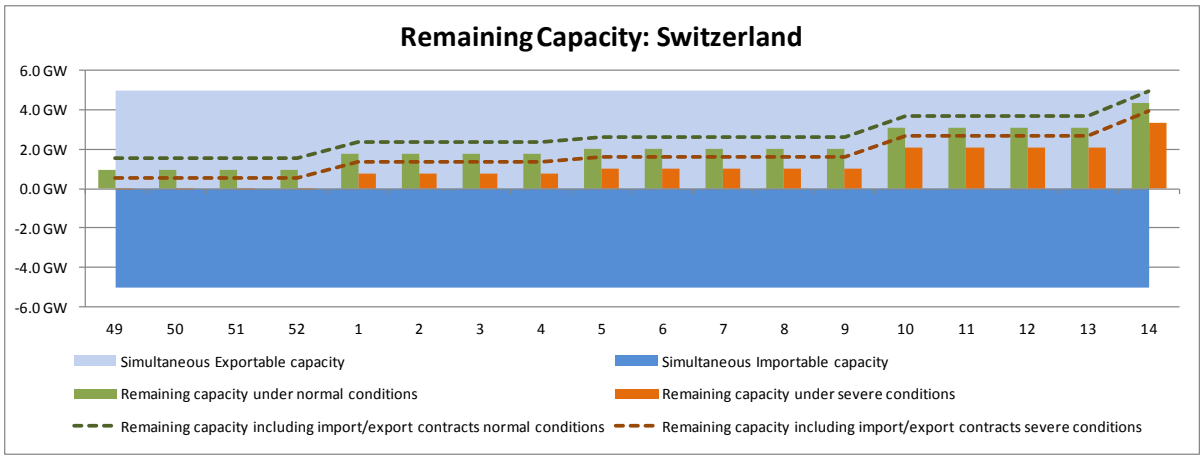
Switzerland





Short explanation of the frame work

Swissgrid performed a study assuming extreme winter scenarios considering load, production, import and export for the next winter.

Generation- Demand Balance

The power balance analysis shows sufficient generation capacities under both normal and severe conditions.

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

As the December 2011 weeks' weekly peak load are based on the December 2010 values (when the highest load ever took place), they are probably too high. Consequently, the remaining capacity under severe conditions should always be positive.

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6.2 INDIVIDUAL COUNTRY RESPONSES TO THE SUMMER REVIEW

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

Lithuania

Luxembourg

Montenegro

Netherlands

Northern Ireland

Norway

Poland

Portugal

Serbia

Romania

Slovak Republic

Slovenia

Spain

Sweden

Switzerland

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ALBANIA

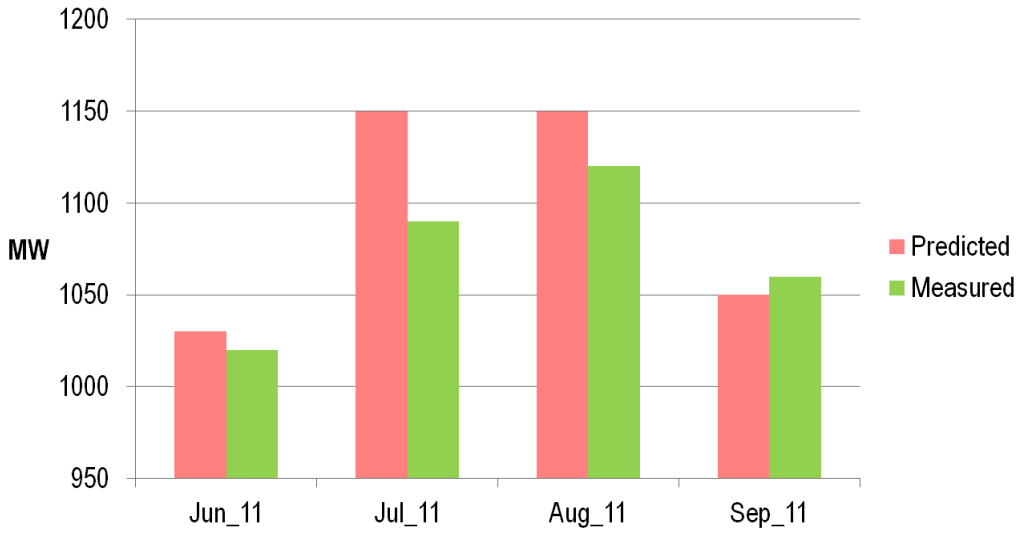
During the summer period of this year, the Albanian Power System did not encounter any unexpected or unusual events or conditions. The temperatures were slightly above the predicted ones especially during September, however they were not classified as severe conditions. Due to these temperatures, the Albanian TSO faced an increased consumption of electricity and a slight increase of peak loads, which anyway remained below the predicted values except of September.

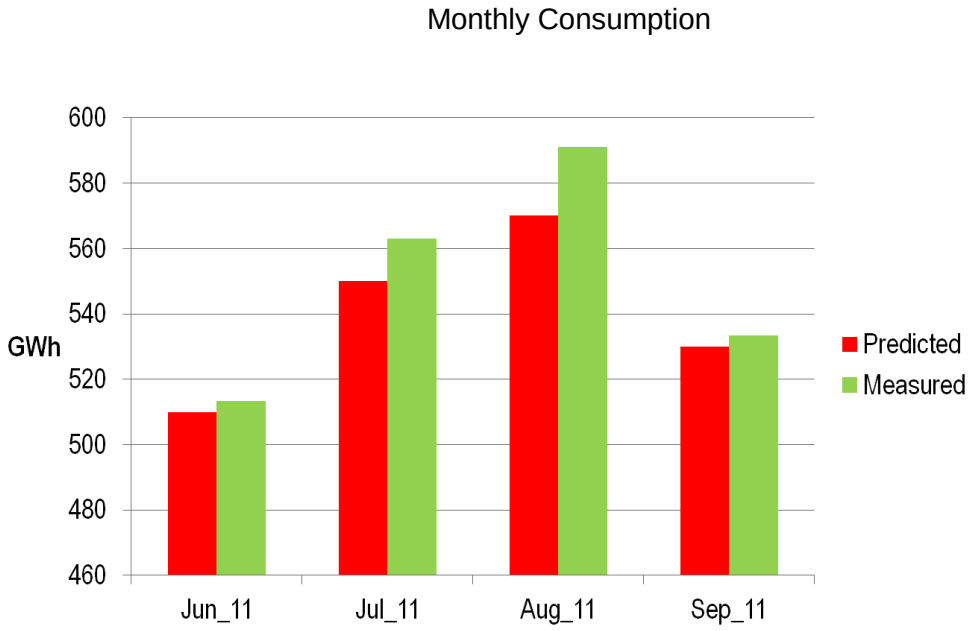
Water levels in reservoirs of Drini Cascade (the main source generation of the country) were somewhat below the target levels due to unsatisfactory inflows from the catchment. Due to this situation, though the hydro power plants operated normally, there was a slight reduction in power generation in order to safeguard the efficiency of power plants. This reduction in the generation and additional consumption of electricity was covered by import increase.

Majority of the planned repair works were completed in accordance to plan.

Interconnection was available during the entire period, without any outage, and the Albanian TSO did not face any difficulty with NTC quantity, cross-border allocation or relationship with market participants. The following diagrams present the comparison between forecasted data and realized ones.

Monthly peak load





AUSTRIA

No critical events concerning the Austrian power grid occurred in summer 2011.

Due to the high share of run of river and storage power plants the available capacity was far above demand.

Temperature and rainfall conditions corresponded with the average long term climate conditions in summer 2011. No extreme weather conditions occurred.

Power demand remained at the level of last year. The lower hydro generation - caused by dryness - was substituted accordingly by higher imports compared to the previous summer.

Concerning the commissioning of power plants, the pump storage power plant Limberg II (480MW) was put into operation in May 2011. Additionally “First Fire” of the new combined gas and steam power plant Mellach (830MW) was reported in July 2011.

The main event during the summer 2011 was the shutdown of the important 380kV line 477, 478 (Wien Suedost – Oststeiermark; Wien Suedost Suedburgenland) due to maintenance reasons for three months. In order to maintain security of supply at a high level, a substantial monitoring process was implemented. Furthermore the 220kV tie line 261 (Lienz (AT) – Soverzene (IT)) was switched off for one month for maintenance reasons.

BELGIUM

General comment on summer conditions

The adequacy forecast study “summer 2011” carried out in March 2011 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 summer period 2011.

Impact of the German Nuclear Moratorium

Since the shutdown of 8 German nuclear power plants in March 2011, Elia has observed an increase in south to north flows through the Elia and surrounding grids. This tendency required an increased need for coordinated actions on the Belgian Phase Shifters (PST), to alleviate constraints abroad. Elia has also observed increased loop flows well in excess of the loop flow range of 1000 MW – 1200 MW.

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

- 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.
- A generation- demand imbalance for the whole of ENTSO-E North Sea and Continental Centre South region.

In reality, the desired safety level of 1050 MW for the generation- load balance was attained for the assessed moments of weeks 22 until 39 of 2011. The assessment is based on the same timestamps analysed in March 2011.

Figure 1 gives an overview of the forecasted remaining capacity (evaluation time March 2011) and the observed remaining capacity for the summer 2011.

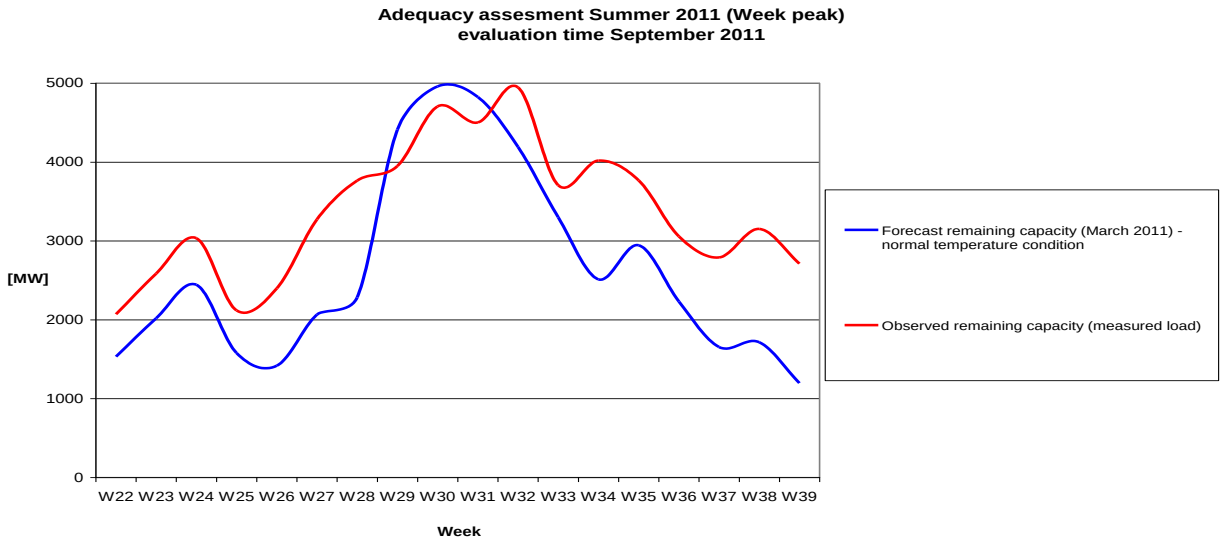


Figure 1: Adequacy assessment summer 2011

Elia did not expect any congestion problems on its grid for summer 2011. In case of extreme weather conditions, Elia has the option to reschedule planned outages of the 380 kV international lines. In case of shortages of reserves, Elia can also activate international emergency reserve contracts with TenneT and RTE and activate load shedding contracts with industrial customers. In general, the system adequacy for summer 2011 was positive even taking into account net import levels. This is illustrated by Figure 2.

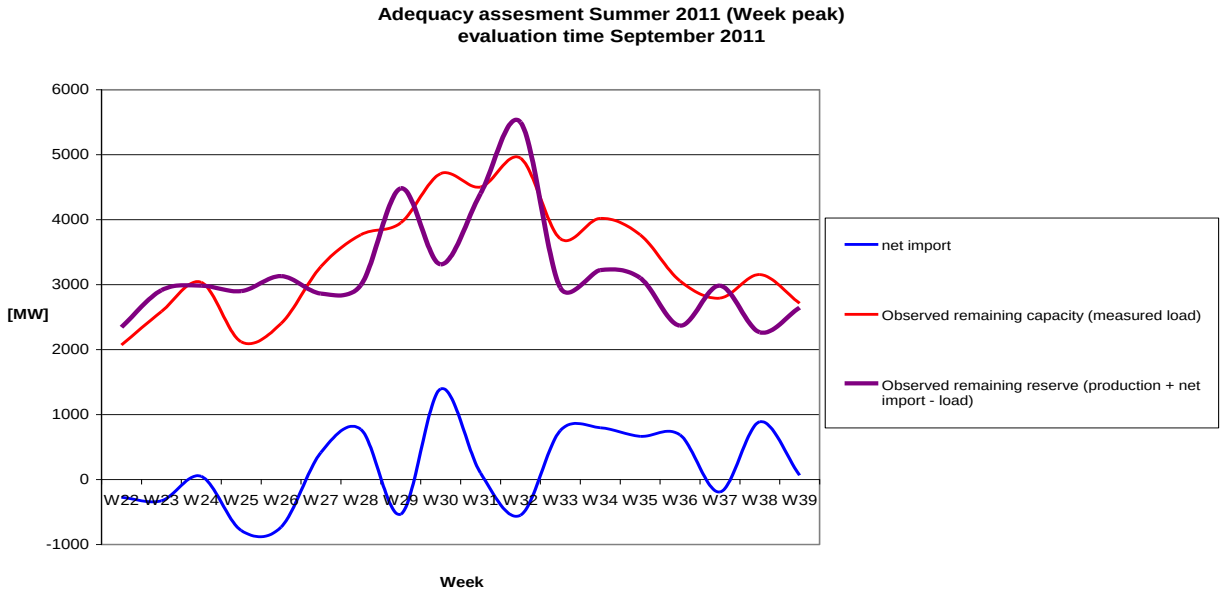
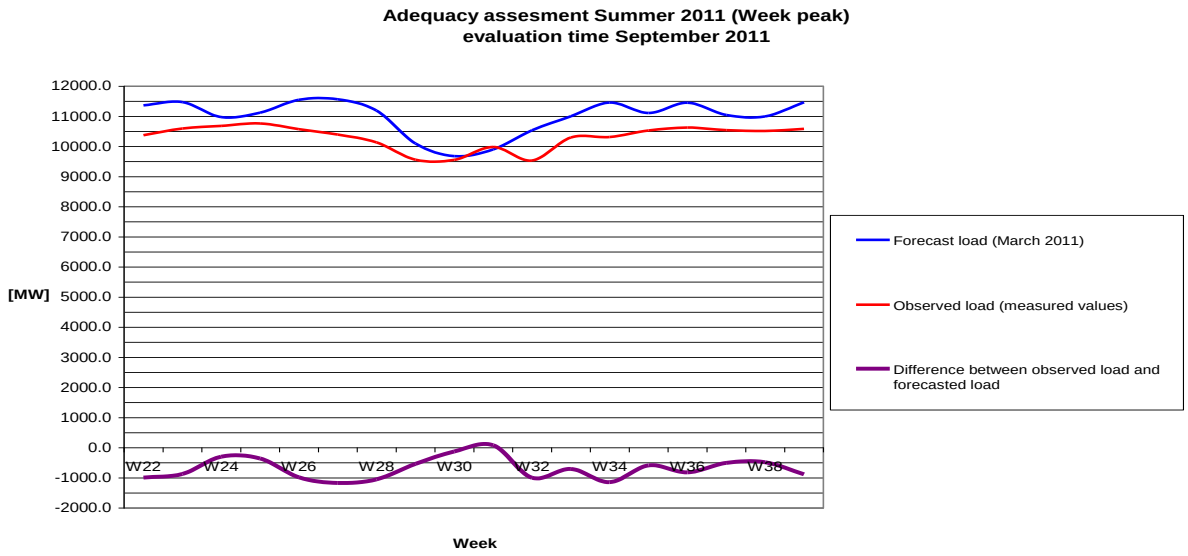


Figure 2 : Observed adequacy versus net import in Summer 2011

Demand :

In general, the observed demand level was lower than the forecasted demand level (see figure 3). On average, the observed demand level was 0.65GW lower than the forecasted demand level with a spread between -1.2GW and +0.1GW. The increase of embedded decentralized production may play an important role in this deviation, as for this summer outlook the embedded decentralized production was still comprised in the considered demand and seen as a negative load.



Unavailabilities:

The forecasted unavailabilities took into account only known unavailabilities (planned overhauls) at the time of this assessment. A deviation between the forecasted and observed unavailabilities between +1.6 GW and -0.3 GW was recorded. Taking into account the statistically forecasted forced outages, which has been done during the adequacy forecast study “summer 2011” carried out in March 2011, the deviation between the forecasted average forced outages and scheduled unavailability due to maintenance and the observed unavailability vary between +1.0 GW in week 29 (due to extended revision of a nuclear power plant) and -0.9GW in week 30 (due to postponed revision of a nuclear power plant) with an average of 0.03 GW (see Figure 4).

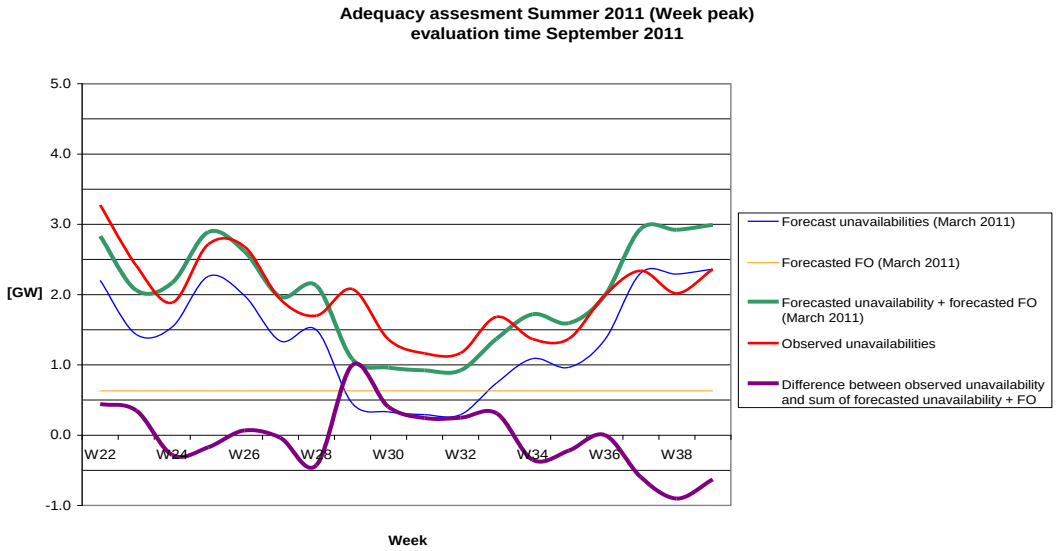
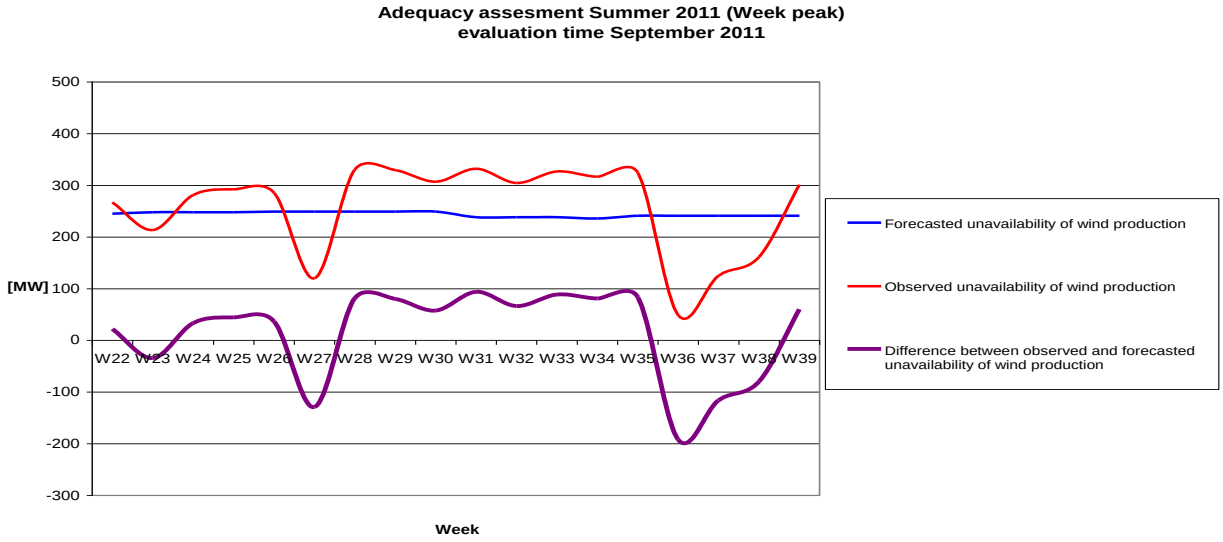


Figure 4 : Forecasted and observed unavailabilities

Non-usables:

A deviation between the forecasted unavailability of wind production (in the March 2011 summer outlook) and the observed unavailability of wind production, between +94MW and -192MW was recorded with an average deviation of 18MW (see Figure 5).



Transmission infrastructures

No reduction of the simultaneous import capacity occurred due to the unavailability of grid elements due to maintenance works or other projects.

Use of interconnections :

Figure 6 and Figure 7 give an indication of the utilisation of the capacity of the interconnection between France and Belgium and between the Netherlands and Belgium during summer 2011. In order to assess the utilisation of an interconnection the available interconnection capacity is compared to the nominated interconnection capacity. Figures 6 and 7 illustrate that during summer 2011, the interconnection between France and Belgium (Figure 6) was used much more in the direction of Belgium during the summer week peaks and that the interconnection between the Netherlands and Belgium (Figure 7) was used much more and almost solely in the direction of The Netherlands during the summer peaks.

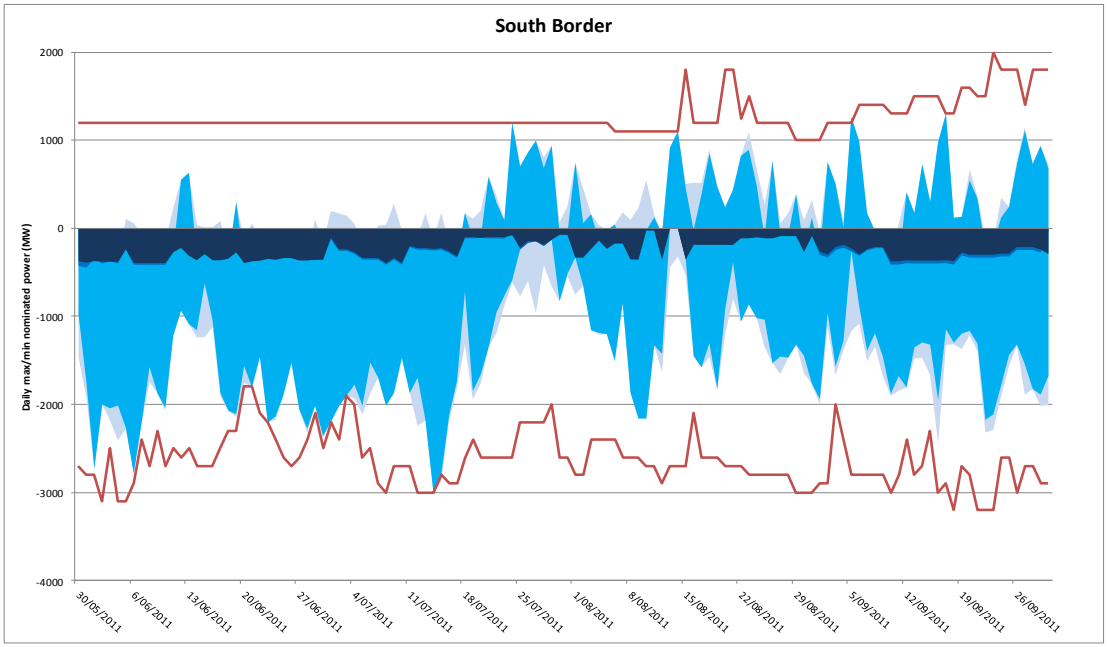
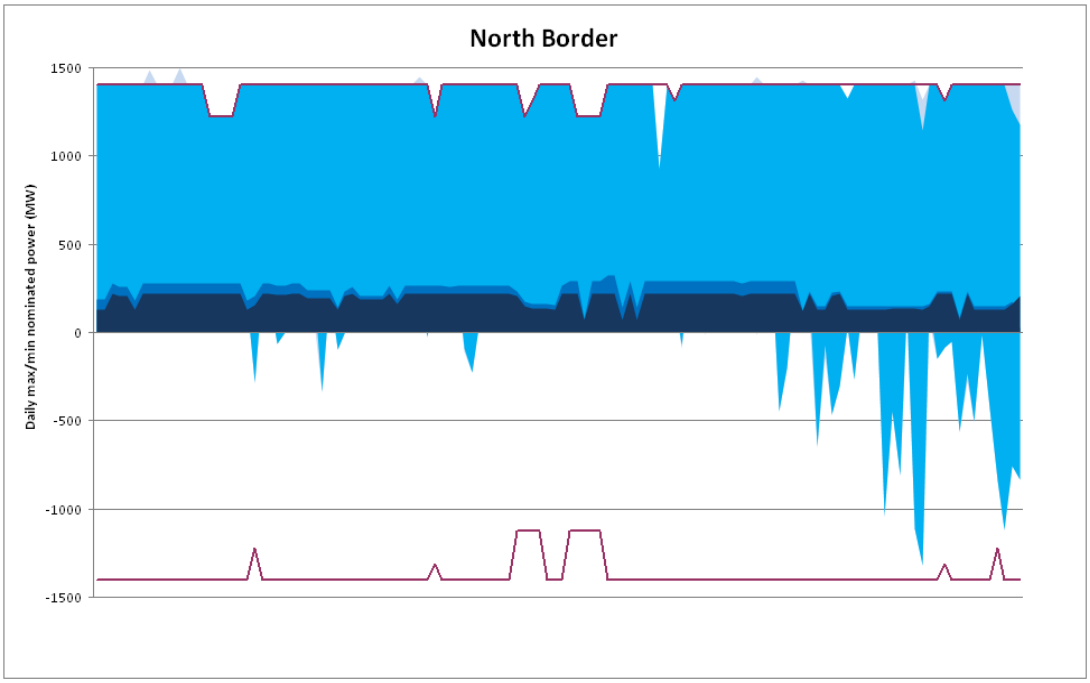


Figure 6 : Daily peak utilisation of the capacity on the interconnection between France and Belgium (positive value = export).



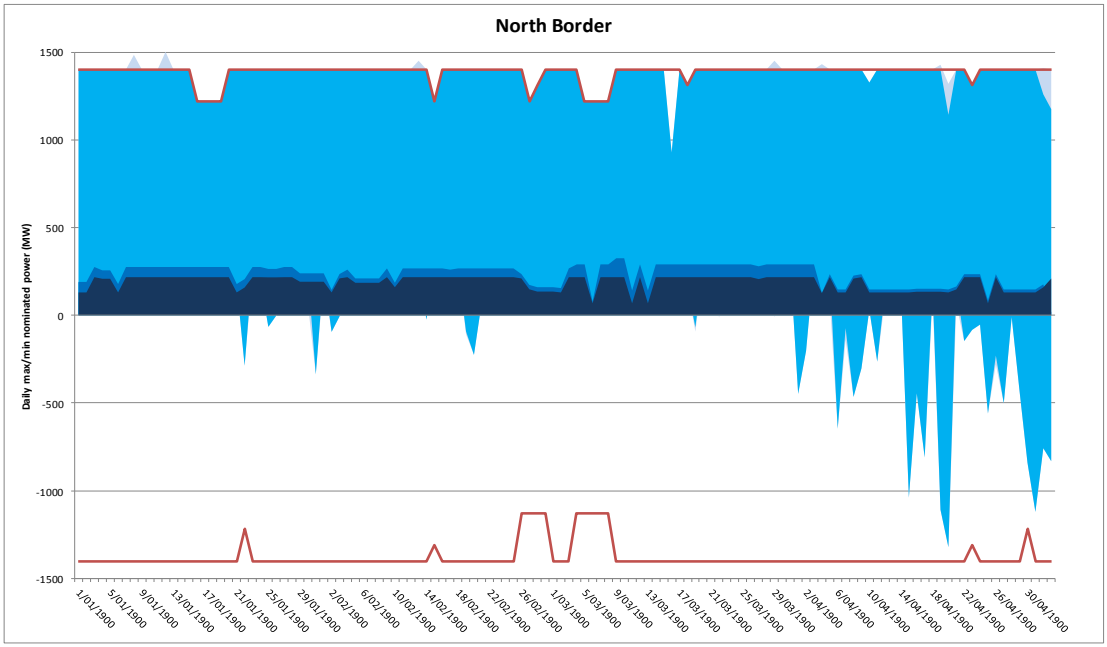


Figure 7 : Daily peak utilisation of the capacity on the interconnection between the Netherlands and Belgium (positive value = export).

	Year ahead nomination
	Month ahead nomination
	Day ahead nomination
	Intraday nomination
	Day ahead NTC

Lessons learned for summer 2011

The most significant variations between the forecasted remaining capacity (evaluation in March 2011) and the observed remaining capacity for the week peaks of summer 2011, were due to the lower observed demand level.

The first impact of the German Nuclear Moratorium was felt this summer, both in terms of the flow pattern, and in loop flows and requires close monitoring and coordination.

BOSNIA & HERZEGOVINA

During the summer period of 2011, there were no significant or unusual events in the power system of Bosnia and Herzegovina. Only in September was there a negative power balance because of maintenance of TPP Gacko.

Good hydrological conditions occurred in the first half of the year, whereas in August and September the situation was a bit worse. The lower generation of hydro power plants was covered by increased generation from thermal power plants.

Electricity consumption in the period 1 June to 30 September 2011 was a few percent higher than in the same period of 2010, while the maximum peak demand in the period from 1 June to 30 September 2011 was 1,730 MW, recorded on 29 August 2011. at 9pm.

BULGARIA

Following the winding road to recovery of the Bulgarian economy, the electricity demand for the summer period of June to September 2011, an increase of 2.9 % compared with the same period in 2010 (comparison based on normal temperature-adjusted monthly consumptions).

Temperature conditions were near normal and only one heat wave was observed during July. The hottest working day was 20 July (Wednesday) with temperatures: Tmin = 20.5 C', Tave=26.8 C', Tmax=33.5 C'. For this day, the peak load was 4,710 MW (observed at 02:00 p.m.) and the daily consumption: 100,528 MWh.

There were no adequacy problems during this period. Failure rates of units were as expected and maintenance schedules were strictly fulfilled. Water levels in the big reservoirs were slightly below target levels because of very low rainfall during the period. Nevertheless hydro plants operated normally in the peak zone of the daily load curve.

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

CROATIA

The Croatian power system did not experience any significant or unusual event during the summer period. There was no significant interruption to supply. Unplanned outages of generation and transformation units and high voltage lines lasted for only short periods and did not endanger the system. Temporary problems with over voltages in system caused that the tie-line Žerjavinec - Hévíz 1 between Croatia and Hungary had to be switched off in some periods.

In comparison with the last year the total monthly consumption was slightly higher in June, some lower in July, and much higher in August, mainly due to hotter weather.

Rainfalls were relatively weak so the special attention had to be given to the situation in the hydro accumulations. The lower generation of hydro power plants was replaced by increased electricity imports and generation of thermal power plants.

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CYPRUS

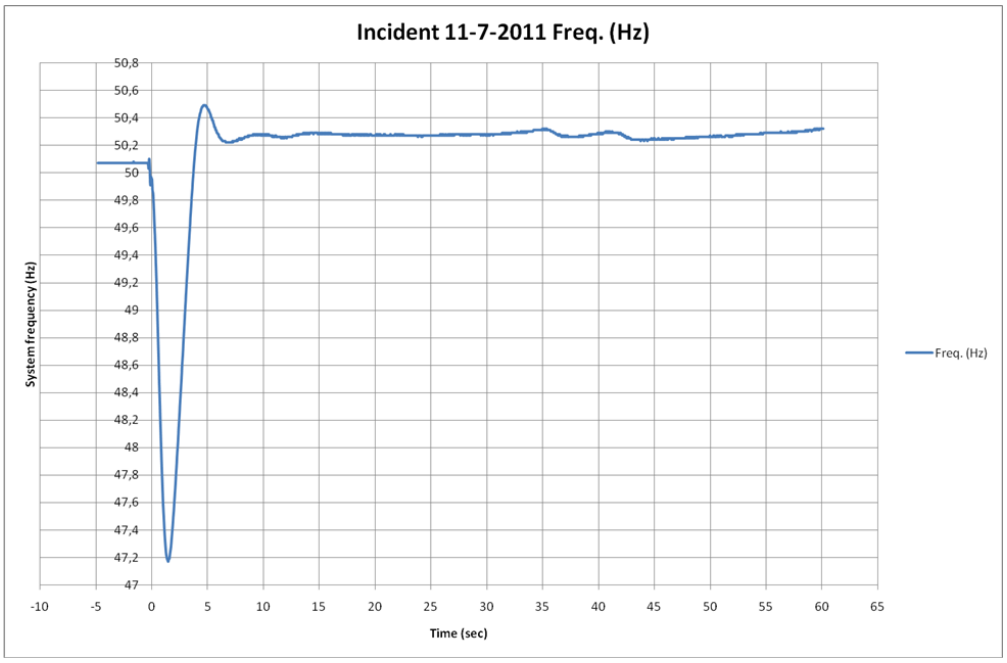
Due to a large explosion within a nearby Naval Base there was severe damage to the whole Vasilikos Power Station, the largest Power Station in Cyprus, with a major loss on the generation of a capacity of 868MW (60% of the National Generation Capacity) and leading the country in a state of Energy Crisis.

Causes:

The cause was an explosion that occurred on 11 July 2011 in a Naval Basis adjacent to the "Vasilikos" Power Station, which resulted to the death of 13 people and the injury of many, including Power Station Personnel.

Remedial actions in terms of electrical system were as follows:

a) Following the explosion and due to the shortage of significant generation, the "Under Frequency Load Shedding Scheme" operated successfully avoiding whole system blackout. The frequency dropped to 47,2Hz and was recovered within 7 seconds as seen in the figure below:



b) Peak demand in Cyprus occurs during July. Since the demand was greater than supply a cyclic load rejection program disconnecting 11kV feeders supplying domestic and commercial load (from 11 July until 11 August 2011) was set up. Prior to the disconnection, all customers were informed that the disconnection would occur. Special customers such as essential services, industry and touristic areas were excluded from this program.
c) The methodology for the preparation of the daily load forecast and dispatch was reviewed based on the new circumstances.
d) Immediate repairs of damaged essential transmission system equipment and SCADA telecommunications were held.

e) Appeals to consumers were made continually for energy saving.
f) Transmission network modifications were carried out in order to connect the TSO operating network with that of the Turkish Cypriot Community. Synchronization of the two networks was effected on 18/07/11 enabling the inflow of up to 120MW.
g) A decree issued by the Regulator obliged all stand-by consumer generators to operate and supply energy into the distribution grid.
h) Fast procedures were established that enabled contracts to rent internal combustion engine generators of a total of 165MW generation capacity in order to alleviate the loss of generation during the summer period and meet winter peak demand.
i) Actions started so as to repair the damaged generating units in Vasilikos Power Station. The units to be repaired during 2012 are two Combined-Cycle Gas Turbines (220 MW each) and three steam units of (130 MW each) to be repaired by 2013. The goal is that the system should be able to meet the summer peak demand of 2012.
j) A reassessment of the Ten Year Network Development Plan of the transmission system was carried out in order to delay capital expenditure.

Lessons learned for summer 2011

a) Promote distributed generation.
b) Critical Infrastructure Protection Schemes to be strictly followed.
c) To have in place a cyclic supply interruption scheme.
d) To set up a mechanism for informing consumers, details of the supply interruptions.

CZECH REPUBLIC

No unusual weather events were recorded. Nonetheless, due to the vast increment of photovoltaic plants of 1971MW capacity installed last year; the maximal production of photovoltaic exceeded 1,460MW level on 28 June and 20 August.

Unexpected high flows were observed on the Czech-polish border lines, due to the accumulation of high wind production in the Northern part of Germany and high production/export in Poland. Because of the non fulfilment of N-1 criteria and a danger of disturbance cascading, the yellow mark was turned on for days 6, 13 and 14 of September.

In the future, limitation of trades that could cause profile interconnector overloading with respect to N-1 criterion, will be taken into consideration especially in situations of high load or transit.

DENMARK

Denmark had a normal summer without any major problems. The Danish power balance was good this summer with virtually no situations that resulted in a poor power balance. There were, however, a few days when the power balance was somewhat strained due to restrictions in Sweden (on the Øresund Link).

Both 400 kV lines to Germany were out of operation for three weeks in May, but although the interruption was major, this did not cause any problems. Furthermore, some 400 kV facilities were subject to major overhaul, and this work also proceeded without major problems.

One 400 kV installation was disconnected, and was subsequently necessary to force the operation of a central power station.

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No operational disturbances affected security of supply or the exchange on international interconnectors.

In the period from May to August, there were some problems keeping down the voltage. Low-load periods combined with low load on international connectors resulted in high voltages at the 132 kV/150 kV and 400 kV levels.

ESTONIA

The warmer than normal weather conditions in 2011 summer and the large dependence of Latvian and Lithuanian power systems on electricity imports caused some operational problems in the Estonia and Latvia interconnection. Due to the warm weather conditions the transmission capacity between Estonia and Latvia was reduced and on several occasions; the Estonian and Latvian TSO-s activated countertrade measures to avoid the overloading of this cross-border. In order to ease the operational situation, only a limited amount of transmission lines influencing Estonian and Latvian interconnection planned outages were allowed. The interconnector between Estonia and Finland had some capacity reductions due to planned outages in the Estonian internal grid. The power flows of the interconnectors between Estonia and Russia were at normal levels. There were no critical situations in the Estonian internal grid or power plans that caused problems a reliable operation of the power system.

FINLAND

All the summer was remarkably warmer than the long term average. The monthly average temperature was from one to four degrees higher than long term average.

No significant events in generation, demand or transmission. Storms caused local damages in distribution systems.

FORMER YUGOSLAV REPUBLIC OF MACEDONIA (FYROM)

Generally, the 2011 summer conditions were very close to the forecast from the point of view of temperatures. The first part of the summer was very rainy and because of that, the levels of our reservoirs became very high. At this moment, the levels of reservoirs are on the expected level, which represent an advantage for covering the coming winter period high loads.

The new Gas Power Plant – COGEL (installed capacity 30 MW) was recently commissioned.

Planned maintenances of Thermal and Hydro Power Plants were finished. The overhauls of the interconnections and power plants were according to the plans which were coordinated with the other countries in the SEE region.

There was no unexpected situation during the Summer period.

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FRANCE

Contrary to the forecasts, this summer was pretty calm. No heat wave happened, except during a few days in the beginning and in the end of June. Consequently no significant losses of supply due to environmental constraints happened.

Due to maintenance on one line of the Interconnection France Angleterre (IFA), the 3 July RTE lacked margin to reduce generation when consumption was low (two hours ahead margin < 1750 MW which is the minimum required in this case). To overcome this problem, RTE stopped importing for a limited time from border countries.

On 19 July, a gale in south of France caused the tripping of the Pragnères 225kV substation, due to this situation, the interconnection capacity between France and Spain decreased 100 MW during 30 minutes.

Compared to summer 2010, no significant delay in the maintenance of power plants occurred in summer 2011.

GERMANY

The common evaluation of the German TSOs gives an overview of the security of electricity supply for the past summer 2011 based on the answers provided by the TSOs to the ENTSO-E Questionnaire “Summer Review 2011 – Questionnaire”.

The German Government’s decision in March 2011 to shut down 8 nuclear power plants (NPP) was turned into law in August 2011. Due to this phase-out the generation and load balance has become more stressed compared to the past. Due to the reduced capacity of nuclear power plants and due to planned overhauls, which were realized in summer, the safe reserve between the power generation and the peak load has decreased. This occurred especially in the South of TenneT Germany (TTG) where locally a shortage of active power was noticed. Major contributions to cover the noon peak load in the South were delivered by photovoltaic (PV). The peak infeed of PV occurred in May (about 13 GW). It was observed that German imports have increased after the nuclear phase-out.

In the summer period the German TSOs were faced with problems to meet (n-1)-security rules caused by high north-south power flows. These problems occurred not only inside the individual control areas but also on the tie-lines, e.g. tie-lines between 50Hertz Transmission (50HzT) and TTG. German TSO’s were able to manage the mentioned grid security problems by extensive use of grid and market related measures. Due to the high feed-in of wind energy and high export from 50HzT to TTG, network and market-related measures pursuant to Article 13(1) and 13(2) EnWG (German Energy Industry Act) had to be carried out several times. Apart from network-related measures, day-ahead security interference and counter-trading measures were carried out in particular during the summer months.

The unpredicted shutdown of the nuclear power plants also caused a shortage of available reactive power. As a result, strong North-South load flows, especially during high load and high wind feed-in, led to under voltage problems in Baden-Württemberg, Hessen and Rheinland-Pfalz. Whereas in the Hamburg area overvoltage problems occurred during low load conditions. Because of the shortage of available reactive power, the voltage control became more difficult. Exceeding voltage limits was mostly avoided by special topological measures, by the disconnection of low loaded lines, special redispatching of power plants

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and by the support of neighbouring grids and subordinated DSOs. However, there were also events, when the upper voltage limits were temporarily violated.
The so called “DC-Loop flow-Procedure” was applied several times, especially in August and September, as a result of congestions on the tie-line Vierraden and Krajnik between 50HzT and PSE Operator or internal congestions in the Swedish grids of Svenska Kraftnät (SvK), Polish grid of the PSE Operator and 50HzT.

Generally speaking, the grid situation in Germany in summer 2011 was stressed but system security was maintained at all time by the German TSOs. Nevertheless it has to be mentioned, that the grid situation was positively influenced by external conditions. The weather situation was quite stable for long periods with only moderate wind generation infeed and high photovoltaic generation.

Specific problems due to heat and dry spells did not arise during summer in Germany.

GREAT BRITAIN

This summer has seen reduced capacity on the interconnectors. The Northern Ireland interconnector developed a sub-sea cable fault on Pole 1 on 26th June and a second sub-sea fault occurred on Pole 2 on 24th August. The interconnector is expected to be back in service by early December. The French Interconnector has been at reduced capacity for most of the summer for planned valve replacement but is due to be fully available again by mid-November. These capacity reductions have not caused any problems for Great Britain.

There have been some problems associated with high wind output in Scotland during both early and late summer when a small number of wind farms have had to be constrained off due to local transmission constraints.

Apart from the above, there were no other significant or unusual events.

GREECE

During the summer of 2011 the peak demand was slightly higher than the summer of 2010, with a temperature of 38^{o}C but still lower than the 2007 peak load. There were no major events threatening critical transmission circuits in the internal grid. In contrast, two serious events took place on the interconnections between Bulgarian and Turkish systems which had an impact to the Greek system.

On the 18/07/2011 the two lines SS Maritza-East 3 (Bulgaria) – Hamitabat (Turkey) were tripped due to their overload and the tie line N.Santa (Greece) – Babaeski (Turkey) tripped again and the Turkish system was disconnected from the interconnected system.

On the 14/09/2011 the two lines SS Maritza-East 3 (Bulgaria) – Hamitabat (Turkey) were tripped, because there was a fire in the forest near to the line-1 Hamitabat-Maritsa East 3. During the period at which the two big systems CESA and TEIAS were connected and were operated only with one tie line 400KV N.Santa (Greece) – Babaeski (Turkey) we had observed an increase of power oscillations and under this situation it was difficult to control the flow on this tie – line.

We did not experience any significant issues in balancing generation and demand during summer 2011.

The lesson which we took is that the parallel operation of two systems CESA and TEIAS (TYRKEY) via one tie line in operation is very difficult and unstable.

HUNGARY

We did not experience any significant events during this summer. The generation outages were under 500 MW in the whole summer period, excluding only a few days, but there was no need to make extra precautions or real time measures on these days either. There was no need for any remedial action.

Summer of 2011 was calm for the Hungarian power system. There was no extremely high demand, the total demand was slightly higher than in the last year. Outages of generators were rather low. The grid was reliable and controllable.

MAVIR, the Hungarian TSO procured the necessary amount of reserve power by concluding market maker contracts, which put an obligation on the market participants to offer their capacities on the daily market of ancillary services. This solution was proved to be effective.

ICELAND

The installed generation capacity provided acceptable system adequacy during the winter period. In September a new geothermal power plant, rated 90 MW, was started. No new load has been connected corresponding to this, thus the generating capacity margin is increased.

No unusual or significant system events occurred during the Summer 2011. Prevailing bottlenecks in the transmission system limit transmission of power between areas, but without causing shortage of power.

The Icelandic TSO is working out plans for removing the bottlenecks by adding new connections between areas.

IRELAND

There were no events of significance in Ireland this summer.

ITALY

No significant or unusual events or conditions during the Summer period.

The adequacy evaluations for 2011 summer period has not evidenced a particular risk for the capacity adequacy and load covering as well as for the national supply system’s.

The summer season, except July, recorded an increase of the average temperatures, with a consequent growth of the expected demand with respect to the same period of previous years. In addition, the hydro monthly energy capacity factors were higher than the corresponding values recorded throughout the 2010, due to an unexpected high level of rainfall during the season.

Over this period, the total volume of demand increased of 2,9% compared to the same period of 2010. In particular, the month of July recorded an average temperature value below the normal, resulting in a sensible decrease of the monthly electricity demand on the national power grid. Anyway, the monthly volume of demand did not exceed 2008 levels. Particularly,

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over this period, the peak of consumption was reached on 13July with 53.668 MW (-4,9% 56.425 MW in 16 July 2010).

The solar production during this period increased significantly (+415,3%) thanks to the increase of the new power plants installation. In addition, favourable wind conditions increased sensibly the production of this renewable energy source (+10,0%). Regarding generation availability the generation overhauls (both planned/unplanned) were consistent with the figures in the forecast.

The northern Italian interconnection has been characterized by imports from the four neighbouring systems. In terms of physical flows, the interconnections recorded a variable performance, with the cross-border schedules always in import direction towards Italy.

Security violations, when occurring on the interconnected grid, avoided during the operation of the system by applying regional coordinated security procedures for cross-border exchanges. Curtailments were applied accordingly.

The HVDC cable interconnecting Italy with Greece has been basically characterized by prevalent import conditions towards the Italian system.

LATVIA

For the Summer Outlook 2011, an analysis was performed of normal conditions, severe conditions and severe load conditions. The average temperatures during the summer period was a little colder than the previous summer, however the temperatures were still very hot. The consumption in Latvia was similar to the previous year. Approximately half of the electricity consumption in the Latvian electricity power system was covered by imports from the neighbouring countries during the summer. As planned, base-load power plants (CHP) underwent maintenance during the summer and considering the low heat consumption, the CHPs operated at only a low level of the installed capacity and didn't work at full power.

Due to the high water inflow period in the Spring, the Latvian electricity power system was able to cover their consumption and the generation surplus was exported to neighbouring countries. The high water inflow period in Daugava river ended in May.

Due to very hot weather conditions during the summer period in 2011 and to the high electricity import level through the Latvian transmission network, the period was a very stressed.

The most critical situation for the Latvian power system was experienced from June to September due to its dependency on electricity imports from neighbouring countries in particular from Estonia and Russia.

The transmission capacity on the cross-border Estonia, Russia – Latvia was reduced during some periods of the summer, due to the negative balance of Latvian power system and uncoordinated operation between electricity markets in Lithuania and Estonia. The most critical periods of the summer were weeks 22, 23, 26, 27 and 28. During this time, the electricity supply in this cross-border was limited and counter-trade between the Latvian and Estonian TSOs was used.

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Accordingly, maintenance on the important Latvia-Estonia/Russia transmission lines was not planned during the entire summer period. Risks regarding transmission capacities in the Latvian-Lithuanian cross-border were also not experienced and all international offers and trades were carried out according to plan. All generation units worked according to schedule and no emergency situations happened in the Latvian power system during the summer period.

LITHUANIA

The system operation and system adequacy functioned without any major problems in the summer 2011. Although the Lithuanian Power system is able to produce the required amount of electricity to cover peak demand; Lithuania imported 72% of consumption from neighbouring Power systems during this period Due to the electricity price difference in neighbouring countries. No emergency events occurred on transmission cross-borders that could have an impact on security of system operation.

The average temperature during the summer decreased by 1°C, with an increase in the total consumption by 3% compared to the previous summer due to the low levels of economic growth.

LUXEMBOURG

As expected in the Summer-Outlook Report, Luxembourg experienced no unusual conditions during the summer period. No exceptional temperatures were measured and no special wind conditions occurred. Due to a rather dry period for the last month and even before summer 2011, the overall hydro production in Luxembourg was very low, however this did not harm the security of supply for the grid as this energy represents only about 2% of national consumption.

MONTENEGRO

There were no critical outages/ events in the Montenegrin transmission network during the summer period. Temperatures were above the average values, especially in August and this caused an increase in consumption. Most of the planned works were completed in accordance to the maintenance schedule for 2011. The new interconnection with Albania increased the security of supply as well as the capacity for cross border transits.

NETHERLANDS

During the summer the Dutch Transmission Grid did not experience any significant or unusual events. In the Netherlands we have a standard protocol for the role of TenneT within prolonged periods of warm weather:

(http://www.tennet.org/english/operational_management/coolingwater.aspx).

During the summer of 2011 this protocol was not activated.

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NORTHEN IRELAND

During the summer period SONI did not experience any generation shortfalls that resulted in demand not being met. The weather during the summer gave no cause for concern for the Transmission network as there were few thunder and lightning events and there were no major supply interruptions experienced due to problems with generation and/or the Transmission system.

An undersea cable fault resulted in the loss of one pole of the Moyle interconnector between Northern Ireland and Great Britain from 26th June. This reduced the amount of import/export capacity between Great Britain and Northern Ireland and in turn reduced the overall generation adequacy for Northern Ireland.

On the 25th August a further undersea cable fault occurred on the second pole of the Moyle Interconnector. This resulted in a complete loss of import/export capacity between Northern Ireland and Great Britain and significantly reduced the generation adequacy in Northern Ireland.

It is expected that one pole will be restored to service at the beginning of December 2011, with the second pole being restored at the beginning of January 2012.

However, even with these faults on the Moyle the Northern Ireland generation adequacy standard was still met at all times during the summer period.

NORWAY

In the summer of 2011 Norway went from having a negative hydrological balance of 30 TWh in the early spring, to a surplus of about 5 TWh before entering the winter of 2011/12. This was caused by a high level of rain during the whole summer period. As result of the change in the hydrological balance, Norway has experienced new all time high records in both import and export this year.

Svartisen hydro power plant (600 MW), located on the north of Norway, had a limited availability during the summer due to technical problems. This situation caused huge amounts of overflow due to the high inflow level during the summer.

The interconnection between The Netherlands and Norway was out of order from 18 April to 4 June due to a failure on the Dutch side of the cable.

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POLAND

PSE Operator did not experience any significant events during this summer, however, on 8 June at 13:15, the Polish historical maximum morning peak load for summer was registered, reaching 19455 MW. Moreover, due to high unplanned flows from 50Hertz, the DC Loop Flow (non-costly remedial action - forced flows using DC cables, loop clockwise PSE Operator → 50Hertz → Energinet.dk → Svenska Kraftnät → PSE Operator) was activated many times during the summer. Cross Border Redispatching was applied two times (June 18th, July 22nd) between PSE Operator and 50 Hertz (costly remedial action). In the future, in case of much higher unplanned flows from 50Hertz, this remedial action may be necessary to be used more frequently.

Since 10th June the test run of a new generation unit with about 790 MW capacity has been ongoing.

PORTUGAL

No events with negative impact on system adequacy occurred during the summer. An atypical weather scenario, with mild temperatures and rainfall, in conjunction with the economic crisis, resulted in lower demand figures than the in the SOR 2011 forecast. On the generation side, hydro and wind energy sources presented an availability higher than expected, which raised the available capacity to an even more comfortable level.

SERBIA

From 31 August to 7 September, due to unplanned unavailability on the interconnector between Croatia and Serbia, all transactions on that border were reduced to zero. The cause of this unavailability was a disturbance in a Croatian neighbouring substation, however with no significant influences on the Serbian power system.

ROMANIA

No significant or unusual events occurred during the summer period in the Romanian Power System

SLOVAK REPUBLIC

The summer 2011 was warm and dry in August and September and quite cold and rainy in July, the weather in June was normal. Generally speaking, no extreme weather conditions occurred (like extremely hot or rainy weather) during the summer period. The average temperature during summer months was 19.7°C, a bit higher than in 2010. September was also a very warm month; the average temperature was 19.5°C (5.2°C higher than in 2010).

Compared with the same period of the previous summer, a slight decrease (0.76 %) in consumption was observed during the period from June to September 2011. The production of electricity was 1.79 % lower than in the last summer. The biggest decrease (of about 54.7%) was observed from hydro electricity production (in regard to weather conditions in June, August and September). The summer peak demand occurred on Wednesday 24th August 2011 at 12 AM, the peak was 3,614MW The predicted value of the summer peak was 3,550MW.

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In the summer outlook report for 2011, the import of electricity was expected for the whole summer period of 2011. Imports´ increase in summer period was about 59% (index 2011/2010). In June, August and September the total amount of imports was about 264.4 GWh (export only in July of about 26 GWh). The imports of electricity shared about 2.7% of consumption in summer 2011 (1.7% in 2010). These imports were caused not by the lack of generation in Slovakia but by the electricity trades on the electricity markets.

From August 29 to middle of September, high power flows via the transmission system of Slovakia occurred. The transmission system was influenced by unexpected high power flows from north to south-east Europe. The increased production of wind power plants located in north-west Europe, the consumption located in south and the topology of transmission networks in Europe were probably the main reason of increased power flows. The neighbouring TSOs were informed by the awareness and alarming system about warning state (yellow light) in the transmission system of Slovakia in that period, because of the non fulfilment of the n-1 criterion during the whole mentioned period. The lines with the highest load at that time were the interconnections with Hungary (line Gabčíkovo (SK) – Gyor (HU)) and Ukraine (line V. Kapušany (SK) – Mukachevo (UA_W)) either together or separately. The loading rate was above 80% quite often and in some hours also above 90%.

Due to the advantageous legislation conditions for connecting of photovoltaic power plants which were valid until the end of June, the total amount of this kind of power plants in Slovakia reached the amount of about 480MW. However, the current legislation specifically restricted installation of these power plants (due to the un-expectable influence on the final electricity price) and not further rapid increase of photovoltaic power plants is expected. The influence of photovoltaic power plants operated in Slovakia on the Slovak transmission system operation is currently under the process of investigation.

To mention new transmission system assets, the new double circuit 400 kV line between substations Lemešany and Moldava was put into operation (east part of Slovakia) in September 2011. One circuit of the line is connected to the new 400 kV switching substation Košice. Furthermore, the 220 kV substation Medzibrod (middle part of Slovakia) was successfully reconstructed to 400 kV level in August 2011. However, the existing 400 kV line between the substations Liptovská Mara and Sučany will not be connected to the reconstructed Medzibrod substation, and the Medzibrod substation will be operated still on the 220 kV level. The final switching of operation of this substation to the 400 kV level is expected in 2013.

SLOVENIA

No significant or unusual events or conditions during the Summer period.

The demand during the summer was lower than expected. The consumption of the Industrial consumers was lower for 10.5 % (approx 67 GWh) and the consumption of the distribution consumers was lower for 1 % (approx 25 GWh). The total consumption of electrical energy on transmission network in Summer 2011 was 2.9 % (91 GWh) below the estimated forecast.

The average temperature in June was 20.0°C, in July 21.1°C and in August 22.8°C. The lowest temperature in this period was recorded in June (9.0°C) and the maximum temperature was registered in August (36.0°C). The average temperature was higher than the long term average in June by 0.8°C, in July by 0.1°C and in August by 1.8°C. The highest precipitation level was registered in July. The last period of Summer, was characterized by

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droughts, especially during September. The lower hydrology and droughts had no major effects on generation, except for a lower production of HPPs.

There were two unplanned outages of generation units in the Summer period. The outage of unit 5 in TPP Šoštanj with installed capacity of 305 MW was on August 15th with duration of 2 hours and 42 minutes. The outage of TPP Trbovlje with installed capacity of 110 MW was on September 2nd with duration of 1 hour and 33 minutes. None of these outages caused any problems on the security of supply or interferences on the operation of the rest of the transmission network.

Slovenia was net exporter in the summer period (week 22 to week 35, 2011), exporting 147 MWh on average per hour. There are two exceptions in 27th and 28th week when Slovenia was net importer. The energy balance of Slovenia varied from max 62.9 GWh (export of energy) to min -19.1 GWh (import of energy) on the weekly level. The balance is closely related to the energy situation in the South East Europe, which depends mainly on hydrology and, on the other side, on the situation on the Italian and German market. This is also the reason for changes in the Slovenian energy balance practically on the weekly level.

There were no major losses of interconnection availability/capacity and no emergency situations.

SPAIN

There were no problems regarding system operation or system adequacy during the summer of 2011. No summer peak demand records were achieved, and the expected peak load for severe conditions was not reached. The consumption has slightly dropped after the recovery of last summer, due to the economic and financial crisis.

SWEDEN

No severe problem is to be reported, although there has been a low availability of the Swedish nuclear power plants. For example during a part of September all 4 units in Ringhals have been out of service at the same time. At most, 6 out of 10 nuclear power plant units have been out of service. This has limited the transfer capacities as well as causing some local voltage problems.

There have also been some local disturbances during the summer as well as countertrades that have been made to ensuring a safe operation of the Swedish national grid.

SWITZERLAND

No significant or unusual events or conditions during the Summer period.

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7 APPENDIX: QUESTIONNAIRE FOR WO 2011 -2012 AND SR 2011

FOREWORD

The "Summer Review and Winter Outlook Report 2011-2012" will be published on ENTSO-E web-site and communicated to the Electricity Cross-Border Committee of the European Commission[2].

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

The proposed plan for the report is significantly different from previous reports. The spreadsheet for data collection has been changed to increase transparency and bring it more into line with the terminology as used in the long term adequacy reporting. Average generator outages rates for normal and severe conditions are requested to check consistency across regions and to provide a more robust analysis.

It is also intended to carry out a flow based analysis using submitted NTC values to give a level of confidence that countries that require imports are able to source these across neighbouring regions under both normal and severe conditions. Hence the requirement for TSOs to give an indication of their **best estimate of minimum NTC values** between countries is essential for this analysis. It is recognised that these NTC values may be different than previous submitted values by a TSO.

This is a significant change from previous reports in terms of analysis of the submitted returns and being the first year of attempting to do this analysis. It is envisaged that future improvements will be made for future summer and Winter Outlook reports.

The format of the final report "Summer Review and Winter Outlook Report 2011-2012" will be:

- **Main Report** (about 15 pages)
- Executive Summary
- Introduction and methodology
- Summer Review 2011
- Winter Outlook 2011-12 (including comments per Regions)
- Flow based NTC analysis across EU (including comments on areas of concern)
- Lessons learnt

[2] "The EC Cross Border Committee acts in accordance with Regulation (EC) No 1228/2008 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity (Article 13), replaced by Regulation EC n. 714/09 . It consists of Member States' representatives.

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- **Appendix** (about 3 pages per country and when available per Region) on a country by country basis with graphs illustrating the generation-load balance and comments provided by each country.

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

For your reference the ENTSO Winter Outlook 2010-2011 is available on:

https://www.entsoe.eu/index.php?id=50

Guidelines for data collection are indicated in this document. There is also a "Guidelines for System Adequacy forecast data collection" that is available on the ENTSO-E extranet site which gives definitions and explanations of terminology[3].

INPUT FROM EACH COUNTRY

The input expected from each country comprises 3 main parts:

One or two paragraphs emphasizing the TSO's appreciation of the generation – load balance for the coming winter; this synopsis will be included in the main report. No common form is suggested in order to fit with each country's specific case.

A table with quantitative elements with a common format; this table will not be published but sent only to those TSOs taking part in the exercise; the data will be used for building graphs attached in appendix to the report and illustrating the Winter Outlook for the country. In addition, the NTC data in this table will be analysed against all other regions to determine adequacy across the EU with a focus on those regions that require imports under normal or severe conditions.

A one-page or half-a-page synopsis and 1-2 pages comments on the generation-load adequacy for the coming winter that will be included in the Appendix of the report. In order to facilitate the production and use of these comments, common guidelines are provided hereafter, including a section for additional comments to highlight the issues that are particularly relevant for that country next winter.

[3] https://www.entsoe.eu/extranet/kt/view.php?fDocumentId=34997

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QUANTITATIVE ELEMENTS

See attached Excel spreadsheet.

If weekly data is not available for any TSO then the data for the third Wednesday of January should be the minimum that is available to countries of the Regional Groups “Continental Europe” (as provided in the framework of the system adequacy forecast). It is therefore requested that a TSO that is unable to provide weekly data provide the data for the third Wednesday of January with updates in order to take into account the increased knowledge of the situation since the last SAF (outages, status of hydro reserves, etc.).

For TSOs that are able to provide weekly data, the data is requested for synchronous time each Wednesday (19:00 CET) in order to allow meaningful analysis when determining cross border flows. It is recognised that this may not be the peak demand in every region in the winter but 19:00 is chosen to be consistent with other reports.

GUIDELINES FOR COMMENTS

Each TSO is requested to provide the following information:

Contribution to the main report

A few lines on the main results of the assessment including:

General situation highlighting specifics such as low hydro levels, low gas storage, sensitivity to commissioning generation etc.

Most critical periods for the TSO and in particular which weeks are considered as most critical.

Expected role of interconnectors in relation to maintaining adequacy and the ability to import or export.

Measures to be activated or foreseen in case of a gas crisis or low renewable output.

Synopsis

It is vital that TSOs express their opinion of the situation for the coming winter at least in a qualitative manner and it is recognised that this may already have been conveyed via the additional questionnaire that was returned by TSOs on the 25th August 2011. If this is the case and nothing has significantly changed, then please indicate.

This qualitative assessment should stress the main critical periods and the main factors of risk. It would be useful to indicate, if any, which level of remaining capacity they consider as necessary when making this forecast in order to ensure a secure operation for the next winter (i.e. what is the reference adequacy margin) and the role of renewables.

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

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The framework used is to determine adequacy under normal and severe conditions for each TSO. This is based on data that is submitted by each TSO. The analysis then checks that for countries that rely on imports, that they are available from neighbouring countries. To do this analysis, each TSO is requested to give its best estimate of the minimum NTC that it anticipates will be available.

This is a significant change from previous Winter Outlook reports and is driven by a desire to have a confidence check that adequacy can be maintained for each country under both normal and severe conditions.

The analysis is based on a spreadsheet that takes remaining capacity (under normal and severe conditions) from all the TSO submitted spreadsheets with all the submitted NTC values. If there are 2 countries that submit different NTC values on the same border, then the analysis will be completed taking the minimum submitted value. Based on the outcome of the analysis, additional questions may be asked from the relevant TSOs if particular country boundaries are considered critical.

This is the first year that the Winter Outlook report has attempted to do this sort of analysis and hence it is anticipated that lessons will be learnt that will be applied to future reports.

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GUIDELINES FOR COMPLETING THE SPREADSHEET

The analysis is country based and not control area nor bid area based. It is recognised that this does cause issues for completing the spreadsheet and the guidelines below have attempted to resolve these issues.

If this Generation – Demand balance is considered at risk for the system i.e. too low, then please provide an explanation of the main risk factors (e.g. availability of generation, load sensitivity to temperature, low hydro levels, low wind etc) and how this risk is to be managed by the TSO. This part will only be included in the appendix if the TSO wants it to be included.

According to the degree of available data please fill in the spreadsheets:

for each week of the considered period, namely Wednesday of each week at 19:00 CET

for each month of the considered period namely the third Wednesday of each week at 19:00 CET

for typical weeks or days (at least the third Wednesday of January) at 19:00 CET.

PART A: INDIGINEOUS NATIONAL GENERATION (Lines 1 to 7):

The total generation capacity notified to the TSO as being installed for each week for the same period. The requested data on fuel types has been modified to better reflect the long term adequacy reports and in order to increase transparency in reporting.

The available generation capacity should be calculated according to a methodology directly derived from the one used for the former ETSO system adequacy forecast report and within the former UCTE for generation adequacy assessment.

It is noted that certain countries may have generators that are located in neighbouring countries and consider them as part of their capacity due to firm contracts or grid topology. Where this exists, please highlight so as for regional analysis it is important not to double account generation.

The following specific data is requested:

Net generating capacity (lines 1 to 5): installed capacity by fuel type. The fuel types are similar as found in the long term adequacy reporting in order to increase consistency between long term and short term adequacy reporting.

Net generating capacity (line 6): corresponds to the generating capacity as calculated from data input in lines 1 to 5.

Please note that a change from previous year's submissions is that a "Normal Average Outage Rate" and a "Severe Average Outage Rate" is requested in order to increase transparency and allow comparisons across regions. This percentage outage rate can be used to automatically calculate the Outages in lines 10 and 19 (formulae are included in the

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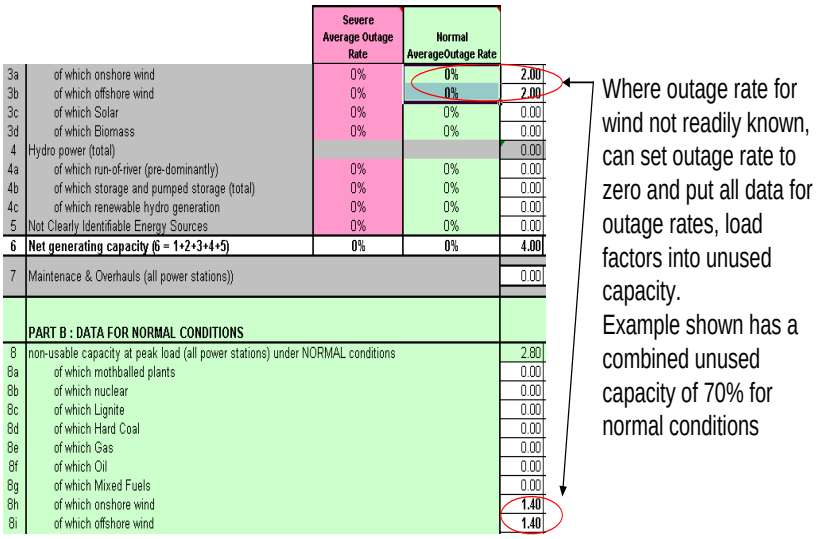
spreadsheet: for example if the outage rate is set at 10% and the capacity is 2GW, then the spreadsheet will automatically calculate an outage value of 200MW).

Alternatively, the user can overwrite the formula in lines 10 and 19 with more detailed weekly forecasted outage rates. For example, the user may wish to do this if they calculate outages rates at a weekly level. However, we do ask that you indicate a figure for the average outage rate percentage to allow comparison with other neighbouring regions.

It is recognised that some regions may not calculate percentage average outage rates for some plant types and may wish to bundle all the data into unused capacity. An example may be Wind where the outage rate is unknown across the fleet. An acceptable approach would be to set the average outage rate to zero but to combine outages and maintenances in unused capacity for Wind in PART B and C. In this way the remaining capacity is still calculated correctly which is inherently what the spreadsheet is forecasting. This is shown in the picture opposite.



		Severe Average Outage Rate	Normal AverageOutage Rate	
3a	of which onshore wind	0%	0%	2.00
3b	of which offshore wind	0%	0%	2.00
3c	of which Solar	0%	0%	0.00
3d	of which Biomass	0%	0%	0.00
4	Hydro power (total)			0.00
4a	of which run-of-river (pre-dominantly)	0%	0%	0.00
4b	of which storage and pumped storage (total)	0%	0%	0.00
4c	of which renewable hydro generation	0%	0%	0.00
5	Not Clearly Identifiable Energy Sources	0%	0%	0.00
6	**Net generating capacity (6 = 1+2+3+4+5)**	0%	0%	4.00
7	Maintenace & Overhauls (all power stations))			0.00
	PART B : DATA FOR NORMAL CONDITIONS			
8	non-usable capacity at peak load (all power stations) under NORMAL conditions			2.80
8a	of which mothballed plants			0.00
8b	of which nuclear			0.00
8c	of which Lignite			0.00
8d	of which Hard Coal			0.00
8e	of which Gas			0.00
8f	of which Oil			0.00
8g	of which Mixed Fuels			0.00
8h	of which onshore wind			1.40
8i	of which offshore wind			1.40

Where outage rate for wind not readily known, can set outage rate to zero and put all data for outage rates, load factors into unused capacity.
Example shown has a combined unused capacity of 70% for normal conditions

Maintenance & Overhauls (all power stations) (line 7): as notified by generators to TSOs at the time of completing the spreadsheet and hence the most up to date information is requested. In case of lack of information from generators, TSOs should include an estimate value based on historical data.

PART B: DATA FOR NORMAL CONDITIONS (Lines 8 to 16):

The following data is required for normal conditions which are defined as those conditions that correspond to normal demands on the system e.g. normal weather conditions resulting in normal wind, hydro output and normal outages:

Non-usable capacity at peak load under NORMAL conditions (line 8a to 8o): resulting from lack of primary sources (hydro, wind), insufficient fuel availability due to actual contracts, mothballed plants not in operation during the winter. This part has significantly changed from previous submissions in terms of being broken down by fuel type. The reasons for this change is to increase transparency and to bring reporting more into line with long term reporting and to allow TSOs to give a fuller picture of where the non-usable capacity is on their respective system.

Available capacity under NORMAL conditions (line 9): automatically calculated from data submitted above.

Outages (line 10): as discussed above (section 5.1), this will automatically be calculated based on the percentage outage rate in PART A but can also be overwritten if required. There are standard normal outage rates published for nuclear and fossil fuels which are based on the Data Collection Guidelines4 published by WG SAMM but it is anticipated that most TSOs will have actual outage rates for their system based on historical analysis.

System services reserves under NORMAL conditions (line 11): the amount of capacity required by the TSO to provide operating response/reserves. It corresponds to the level required one hour before real time (additional short notice breakdowns are already considered in the amount of outages). In some market structures, market participants may provide reserve however for the avoidance of doubt, the figure requested is the total amount of reserves that the country requires at 1 hour ahead.

Planned reliably available capacity under NORMAL conditions (line 12): is automatically calculated from the data given above.

Weekly peak load for NORMAL conditions (line 13): peak load excluding any demands on interconnectors and net of any demand management/demand price response in normal weather conditions for the period from December 7 to April 4. Possible load reductions in normal conditions should be mentioned (line 14). It results in the Net weekly peak load for NORMAL conditions (line 15).

Remaining capacity for NORMAL conditions (line 16) corresponds to the generating capacity available above net demand and is the basis of the TSO's appreciation of the generation adequacy for the current week. It is used for the flow based NTC analysis with data from PART D.

PART C: DATA FOR SEVERE CONDITIONS (Lines 17 to 25):

The data format for Severe conditions is the same format as PART B DATA FOR NORMAL CONDITIONS.

Severe conditions are related to what each TSO would expect under a 1 in 10 year scenario. For example the demand will be higher than normal conditions and in certain regions the output from certain generating units such as wind may be very low or there may be restrictions in gas plants that operate at a reduced output under cold temperatures.

In terms of average outage rate, regions may experience a higher outage rate than under normal conditions due to high generation running and it is intended that this is captured by a severe outage rate that is input in PART A and/or the non useable capacity in PART C.

It is difficult to be very specific and hence a description of the scenario being considered should be described by each TSO and if a TSO is not using a 1 in 10 year scenario e.g. only calculates at a 1 in 20 year demand level then this should be highlighted.

[4] https://www.entsoe.eu/extranet/kt/view.php?fDocumentId=37765

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Where users do not submit data for severe conditions, a percentage reduction may be applied to the normal conditions (figure as yet to be determined).

FIRM IMPORT AND EXPORT CONTRACTS (Lines 26 and 27)

For countries where firm import/export contracts are notified to the TSO, their influence on the remaining capacity should be mentioned. Information on the possibility of export reduction or import increases will give a more complete view of the situation. It is important that a country that has a firm import contract from a neighbouring country ensure that the neighbouring country has also included the contract as an export contract.

A change for the spreadsheet for this year is to highlight the country from which the firm contract exists. If there is more than one country then please highlight either via a comment in the spreadsheet or by return. It is also important that if a firm import contract is assumed from a country then the NTC value is reduced to reflect that some of the capacity is being used.

PART D: ADDITIONAL INFORMATION FOR INTERCONNECTORS (Lines 31 and 32).

A significant change in the spreadsheet for 2011/12 is the additional data on interconnector capacity between countries. The reason for requesting this data is to allow analysis to be completed across the EU in order to check that countries that are relying on imports (under severe conditions in particular) have neighbouring countries that are able to provide exports.

It is recognised that this data is available via NTC tables but TSOs are requested to submit the NTC data in this spreadsheet. The NTC data requested is the TSOs best estimate of the minimum NTC and may be different from what is publicly published. It is recognised that on the day the value may be higher or lower due to system conditions but this analysis is to get a confidence around the capability of interconnectors to contribute to maintaining generation balance.

It should be stressed that there is no Grid model being developed for the analysis and it is not a market simulation either. Rather, it is a confidence test on highlighting where the most important country boundaries exist based on the data submitted by TSOs.

For that purpose the following items should be covered:

Simultaneous importable capacity (line 31) and Simultaneous exportable capacity (line 32): Importable and Exportable capacity with other national systems expected to be available each week and a range of possible outcomes for Interconnection power flow. It is recognised that for many TSOs, it is not possible to calculate weekly values and hence a best estimate on the minimum value taking into account known variables (such as planned maintenances) is requested.

It is recognised that due to loop flows or transit flows, it may be difficult for TSOs to be specific as a high flow across one boundary results in a lower capacity across another etc. It

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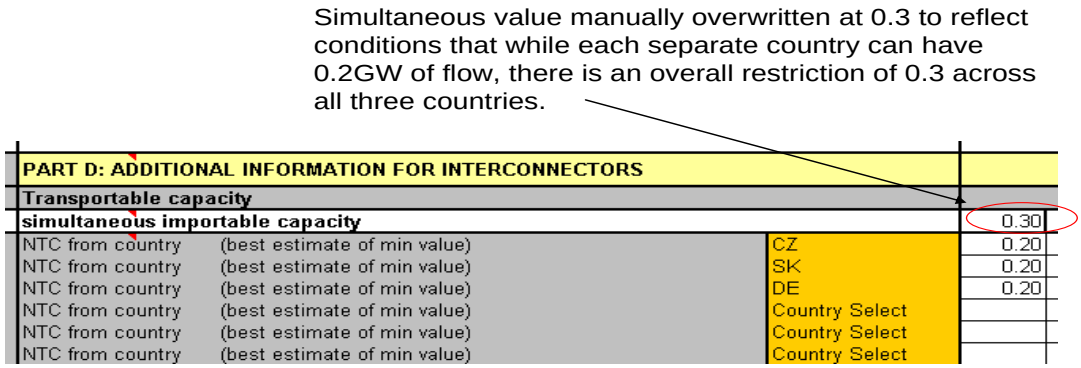
would be helpful if TSOs could provide a comment if this is the case in order to assist the analysis and to reflect the limitation via the simultaneous importable/exportable capacity (see below).

Transportable capacity is asked for as a per country value as well as a simultaneous value. The per country values are mandatory for the analysis. It is noticed that some countries may be divided into more than one Bid Area (Norway, Denmark …) then only the sum of the NTCs to/from these Bid Areas should be provided. The simultaneous value should always be smaller or equal to the sum of all per country values. When not completed, it is assumed to be equal to the sum of all per country values and the spreadsheet will automatically calculate the sum of all values unless it is manually overwritten in lines 31 and 32. The picture below gives an example where the simultaneous value is overwritten.



If the simultaneous capacity is manually overwritten, the analysis of flows will take this restriction into account.

Country codes are as found on the ENTSO-E website5. In cases where NTC codes do not exist, there is the ability to overwrite. A map of the ENTSO-E countries is included in the spreadsheet.

QUESTIONS AND COMMENTS

It is recognised by ENTSO-E that the additional questionnaire that was completed by TSOs for the 25th August 2011 already provides detailed qualitative analysis and hence may already cover the areas below. If this is the case, then please indicate that the previously submitted information remains valid. The main areas for comments that TSOs are asked to consider:

Please provide feedback on improvements that can be made to the spreadsheet and what difficulties the user had in completing the data.

Please indicate how the outage rates for both Normal and Severe have been calculated for the spreadsheet.

Please indicate how the submitted NTC values have been derived.

[5] https://www.entsoe.eu/fileadmin/template/other/images/map_entsoe.png

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Treatment and amount of mothballed plants. Under what circumstances (if any) could they be made available?

Issues, if any, associated with utilising interconnection capacity e.g. existence of transmission constraints affecting interconnectors for export or import at time of peak load (such as maintenance or foreseen transit or loop flows)

Are there any energy constraint issues particularly for hydro based systems?

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

Do you expect any event that may affect the adequacy during the winter? If yes, what actions do you plan to activate (i.e. in case of shortage of gas supply this winter)?

Please describe the effects of the German nuclear moratorium for your region and highlight if applicable any mitigation measure that has been undertaken in your country.

Please describe any other forecast issues (such as effects on wind generation)

While the analysis focuses on winter peak demand, do you foresee any issue with inflexible plant across minimum demand periods e.g. high level of wind and must run generation?

Any other issues of relevance that are not covered above?

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ENTSO-E

Summer Review 2011 – Questionnaire

Deadline for submitting answers to this questionnaire is 7th of October 2011

The Summer Review covers the period 31May – 30th September 2011

Summer Review 2011

Following the publication of the ENTSO-E Summer Outlook Report 2011, a Summer Review will be provided with the objective to present what happened during the summer as regards weather conditions, and other factors and their consequences on the power system (temperatures, hydro and wind conditions), availability of generating units, market conditions, use/availability of interconnections and imported energy, and to compare what happened in reality with the risks identified in the Summer outlook.

1. Did your system experience any significant/unusual events or conditions during the Summer period (e.g. major losses of supply, loss of interconnection availability/capacity, emergency situations etc.)?

2. What were the cause(s) and remedial action(s)?

3. What are lessons learned for future prevention/management?

For your reference the former ENTSO-E Winter Review and Summer Outlook Report 2011 is available on ENTSO-E webpage.

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