

# OVERVIEW OF ELECTRICAL ENERGY

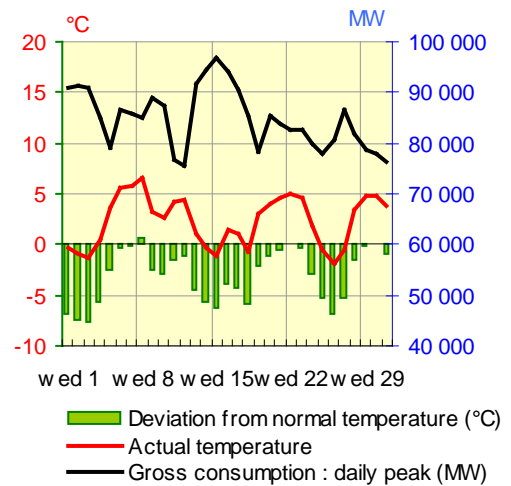
## DECEMBER 2010

The purpose of this document is to provide information on the results of operation of the French public transmission network and power system during the past month. Information sources: ERDF, METEOFRANCE, electricity generators, RTE. The data published are correct as of **5 January 2011**, unless indicated otherwise.

### INTERNAL ELECTRICITY CONSUMPTION - perimeter France

#### Results at end of past month

	December 2010	Trend compared with December 2009	Cumulative trend since 1st January
National consumption	57.7 TWh	+13.4%	+5.5%
Adjusted consumption *	52.0 TWh	+4.0%	+1.9%



Temperature		
Monthly average	2.3	°C
Deviation from norm	-3.1	°C/norm
Deviation from December 2009	-2.7	°C

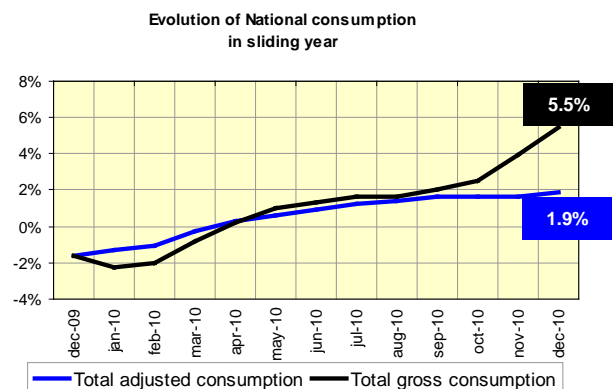
RTE-in house reference drawn up on basis of METEOFRANCE data

The month of December was marked by a long and intense spell of cold weather, with temperatures remaining below the norm on 29 days (with the maximum deviation from the norm being -7.5°C, on the 3rd). These meteorological conditions led to additional electricity consumption of around 5.7 TWh (+10.9%). A new absolute consumption record of 96 710 MW was reached on Wednesday 15 December at 7pm, when the temperature was 6.3°C below the norm. With an average temperature 2.7°C lower in December 2010 as compared with December 2009, gross consumption was 13.4% higher. Adjusted for meteorological contingencies, monthly consumption was up by 4.0%. Three national peak day load reduction orders (EJPs) and two orders for the West region were issued in December 2010, compared with four national orders and two regional orders in December 2009.

#### Cumulative trend over last 12 months

Gross consumption rose by 5.5% in 2010, following a drop of 1.6% in 2009.

The rate of growth in adjusted consumption\*, which returned to a positive value in April, increased by 1.9% in 2010, having fallen by 1.6% in 2009.



\* adjusted for the impact of meteorological contingencies in winter and summer

# BALANCE OF ELECTRICAL ENERGY IN FRANCE

## Results at end of past month

	December 2010 (GWh)	Deviation from December 2009 (GWh)	Change since December 2009	Cumulative trend since 1st January
<b>NET GENERATION</b>				
Nuclear	41 889	+4042	+10.7%	+4.6%
Fossil-fuel thermal generation	8 566	+852	+11.1%	+8.3%
Hydro-electric	7 133	+1864	+35.4%	+9.9%
Wind	986	-1	-0.2%	+22.2%
Other renewable sources *	484	+60	+14.1%	+19.9%
<b>Total net generation</b>	<b>59 058</b>	<b>+6817</b>	<b>+13.0%</b>	<b>+6.0%</b>
<b>GROSS INTERNAL CONSUMPTION</b>				
Consumers directly connected to the RTE grid **	6 377	+972	+18.0%	+3.7%
Other consumers and losses on all networks ***	51 311	+5866	+12.9%	+5.8%
<b>Total gross internal consumption</b>	<b>57 688</b>	<b>+6838</b>	<b>+13.4%</b>	<b>+5.5%</b>
<b>Energy extracted for pumping</b>	<b>578</b>	<b>-43</b>	<b>-6.9%</b>	<b>-3.3%</b>
<b>Balance of physical exchanges ****</b>	<b>792</b>	<b>+22</b>	<b>+2.9%</b>	<b>+18.6%</b>

\* mainly: household waste, paper waste, biogas, solar

\*\*\* SMEs, professional and individual consumers served by the distribution networks, generation auto-consumed by industrials at their sites, losses on the transmission and distribution networks

\*\* extractions by these consumers on the RTE network

\*\*\*\* a negative value indicates a net import balance, a positive value indicates a net export balance

Nuclear generation showed a significant rise in December (+10.7%), following the increases recorded over the period June to September and in November (greater than +9.0%), and an increase of 4.6% over the year as a whole. The expansion of wind generation (+22%) and other renewable energy sources (+20%) continued in 2010.

### Development in the balance of physical exchanges

The export balance totalled 792 GWh in December 2010, close to the figure for December 2009 (770 GWh). The cold snap of December 2010, which saw very high levels of internal demand, served to restrict the possibilities for exporting power to neighbouring countries as compared with the previous month. The export balance rose by 18.6% in 2010, as compared with 2009 which saw an historically low level. Over the month of December 2010, the balance was negative in energy terms (i.e. France was importing energy) over eight days, and in power terms over a few hourly periods on ten other days.

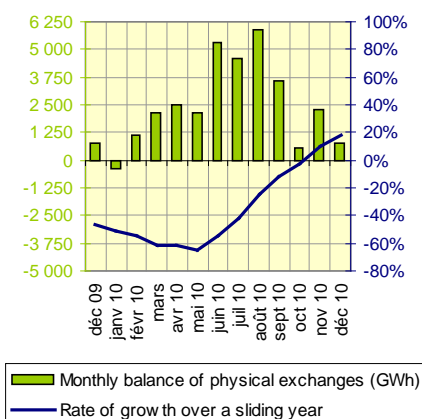
### Development of extractions by heavy industry

In December 2010, the rate of growth in monthly extractions by consumers connected directly to the RTE network was significantly higher than in December 2009 (+18.0%). It was the highest monthly value recorded in 2010, exceeding the figure recorded in November (15.3%). Extractions in December 2010 were 20.1% higher than in December 2008, but still down by 1.7% on December 2007.

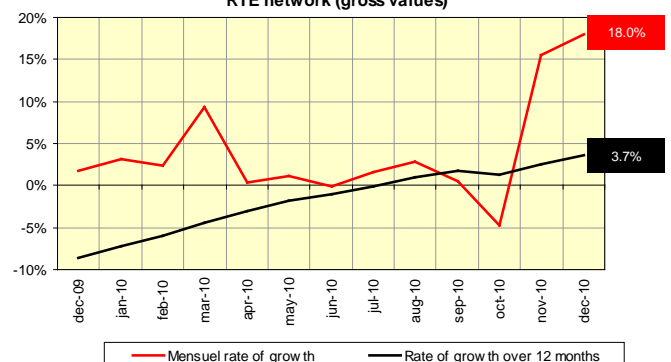
Excluding the energy sector, the monthly growth rate continued to rise in December (+12.5%), following the +7.7% recorded in November.

Over a sliding year, the rate of growth in extractions by consumers connected directly to the RTE network, which returned to a positive value in August (+1.0%), continued to rise and reached +3.7% in December. However, the volume of extractions over 2010 as a whole was down by 5% on the total for 2008 and by 6% on 2007.

Balance of physical exchanges

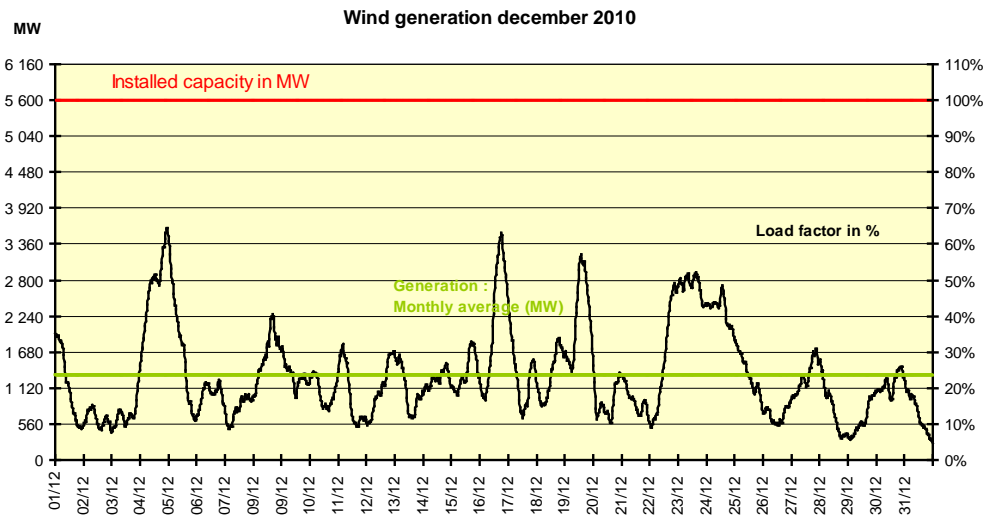


Evolution of extractions by end customers connected to the RTE network (gross values)



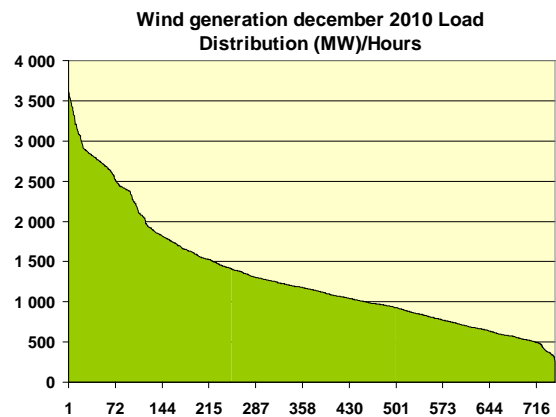
### Wind generation and installed capacity

As of the end of 2010, installed capacity was 5 600 MW. Average wind generation was 1 320 MW in December. December saw similar wind conditions to those observed in the months of February, March, October and November, with an average load factor equal to 24%, higher than the average value recorded for the year as a whole (22%). Monthly generation fluctuated between extremes of 265 MW (load factor: 5%) on Friday 31 December and 3 610 MW (load factor: 64%) on Saturday 4 December.

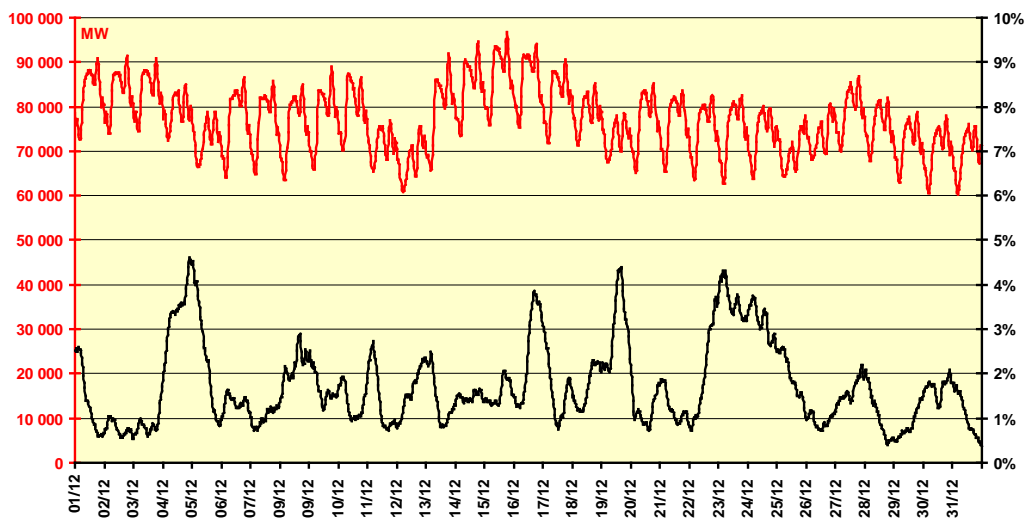


### Hourly coverage rate

The rate of coverage of demand by wind generation was 1.7% on average, with a peak of 4.6% reached on Saturday 4 December at 10pm (and then at 10.30pm), when wind output was 3 540 MW and consumption 76 963 MW. When the absolute consumption record was reached on 15 December, the coverage rate was 1.9%, with wind generation of 1 812 MW.



### Consumption december 2010 (MW) and rate of coverage by wind generation (%)



## EXTREME values for consumption, exchanges –perimeter France\*

		December		Last 12 months		Absolute **	
<b>Gross internal consumption</b>	Maximum	2 098 GWh	Wednesday 15th	2 098 GWh	15/12/2010	2 098 GWh	15/12/2010
		96 710 MW	Wednesday 15th	96 710 MW	15/12/2010	96 710 MW	15/12/2010
	Minimum	1 636 GWh	Sunday 12th	915 GWh	15/08/2010	856 GWh	06/08/2006
		60 423 MW	Friday 31st	31 858 MW	15/08/2010	29 816 MW	06/08/2006
<b>Balance of physical exchanges ***</b>	Maximum	140 GWh	Thursday 23rd	260 GWh	20/06/2010	298 GWh	08/05/2008
		8 679 MW	Thursday 23rd	12 451 MW	14/11/2010	13746 MW	11/11/2008
	Minimum	-94 GWh	Wednesday 1st	-117 GWh	21/10/2010	-140 GWh	16/12/2009
		-5 619 MW	Wednesday 1st	-7 794 MW	06/01/2010	-7 794 MW	06/01/2010

\* Excl. Corsica - \*\* The minimum values concern the last 30 years for the physical exchange balance, and the last 5 years for consumption.

\*\*\* A positive value indicates a net export balance, a negative value indicates a net import balance.

## THE ELECTRICITY MARKET

### CONTRACTUAL CROSS-BORDER ELECTRICITY EXCHANGES

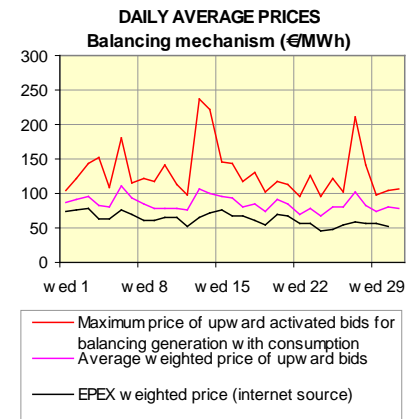
	EXPORTS			IMPORTS			CUMULATIVE VOLUME OF EXCHANGES			EXPORT BALANCE *		
	December 2010	Trend / December 2009	Cum. trend since 1st Jan	December 2010	Trend / December 2009	Cum. trend since 1st Jan	December 2010	Trend / December 2009	Cum. trend since 1st Jan	December 2010	Trend / December 2009	Cum. trend since 1st Jan
	(GWh)			(GWh)			(GWh)			(GWh)		
Belgium	548	n.s.**	31%	281	-53%	-18%	829	11%	-1%	267	n.s.**	69%
Germany	229	-55%	30%	1 818	-11%	-16%	2 047	-20%	-4%	-1 589	-4%	44%
Switzerland	2 350	7%	-1%	1 082	126%	-34%	3 432	28%	-10%	1 268	-26%	18%
Italy	1 108	-34%	-10%	361	56%	3%	1 469	-23%	-10%	747	-48%	-11%
Spain	71	-80%	-64%	466	-14%	-9%	537	-40%	-41%	-395	-105%	n.s.***
GB	907	97%	11%	520	-29%	29%	1 427	20%	17%	387	n.s.**	-11%
<b>TOTAL</b>	<b>5 213</b>	<b>-2%</b>	<b>-2%</b>	<b>4 528</b>	<b>-2%</b>	<b>-15%</b>	<b>9 741</b>	<b>-2%</b>	<b>-7%</b>	<b>685</b>	<b>-3%</b>	<b>+19%</b>

\* A negative value indicates a net import balance \*\* In December 2009, a net total of 147 GWh was exported to Belgium, while a net total of 454 GW was imported from Belgium, and 269 GW from Great Britain \*\*\* In 2010, France imported a net total of 1 625 GWh from Spain (having exported a net total of 1 452 GWh in 2009).

### BALANCING MECHANISM - BALANCE RESPONSIBLE ENTITIES

	December 2010	Deviation compared with December 2009	Trend compared with December 2009	Cum. trend since 1st January
<b>Balancing Mechanism</b>				
Total energy activated upward	677 GWh	+311 GWh	+85%	+28%
Total energy activated downward	270 GWh	-177 GWh	-40%	-9%
Number of parties	37	-2		
<b>Exchanges between Balance Responsible entities* via block exchange notifications (NEBs)</b>				
Energy exchanged between BRs via NEBs	30 450 GWh	-419 GWh	-1%	+5%
Number of BRs	160	+15		

\* Balance Responsible Entity: any legal entity who is committed to RTE, under a Balance Responsible contract, to settling the costs of the imbalances calculated retrospectively, on behalf of one or more network users attached to its scope. These imbalances result from the difference between all of the supplies and consumption for which it is responsible.



## NEW INSTALLATIONS

In December, the following RTE installations were electrified for the first time: the 400 kV Chaffard-Grande Ile n°2 overhead line in Isère and Savoie, following partial replacement of the conductors; an autotransformer (600 MVA) at the Sausset site in Seine-et-Marne; the 225 kV Revest-Seine n°1 underground cable in Seine-St-Denis, as part of work to rebuild the Ampère substation; a 225/63kV (170 MVA) transformer at the Livière in Aude, to replace the existing 100 MVA transformer; shunt capacitors (80 MVAR) at the 225 kV Belle-Epine substation in Ille-et-Vilaine; the 63 kV Beaumont Montoux-St Hilaire n°1 overhead line in the Drôme, following partial replacement of the conductors; the 63 kV Patras substation in Lot-et-Garonne, via an underground cable running from the Gupie substation to improve the security of supply to the town of Marmande; shunt capacitors (15.4 MVAR) at the 63 kV Auray substation in Morbihan.