

Workshop on Demand Side Management in Energy Efficiency
(INFRA 25625) Ankara, Turkey, 22/11/2007 - 23/11/2007



Market Transformation for Energy Efficient Appliances

‘ENERGY EFFICIENCY’:

**A RATIO BETWEEN AN OUTPUT
OF PERFORMANCE, SERVICE,
GOODS OR ENERGY, AND AN
INPUT OF ENERGY**

Market approach

DIRECTIVE 2006/32/EC on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC, Directive 2003/54/EC concerning common rules for the **internal market in electricity** and Directive 2003/55/EC concerning common rules for the **internal market in natural gas**, which provide for the possibility of using energy efficiency and demand-side management as alternatives to new supply and for environmental protection, allowing Member State authorities, inter alia, to tender for new capacity or to opt for energy efficiency and **demand-side measures**, including systems for white certificates.

Financial instruments for energy savings

- funds,
- subsidies,
- loans,
- tax rebates,
- third-party financing,
- energy performance contracting (normally an ESCO),
- guarantee of energy savings contracts,
- energy outsourcing
- and other related contracts used in order to cover partly or totally the initial project cost for implementing energy efficiency improvement measures;

Market tools

Energy Efficiency – direct support

DIRECTIVE 2006/32/EC on energy **end-use** efficiency and energy services and repealing Council Directive 93/76/EEC

Voluntary agreements and/or other market oriented schemes

White certificates - confirming the energy savings claims of market actors as a consequence of energy efficiency improvement measures.

Red certificates – for CHP promotion (cogeneration based on an useful heat demand)

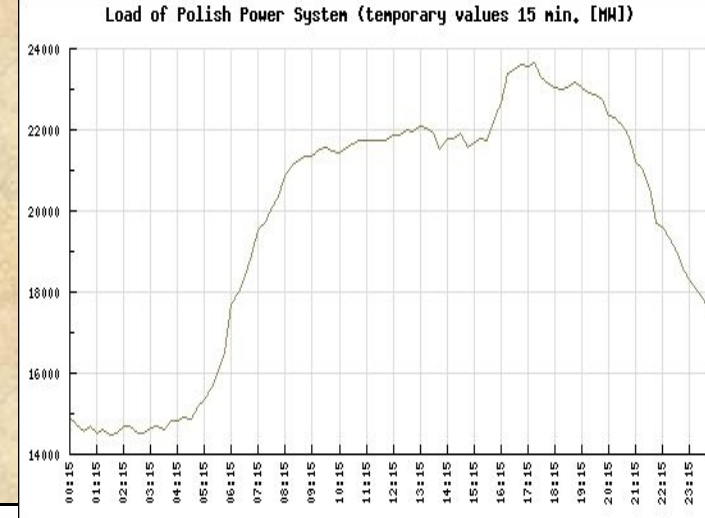
Other

Green Certificates – for renewable energy promotion

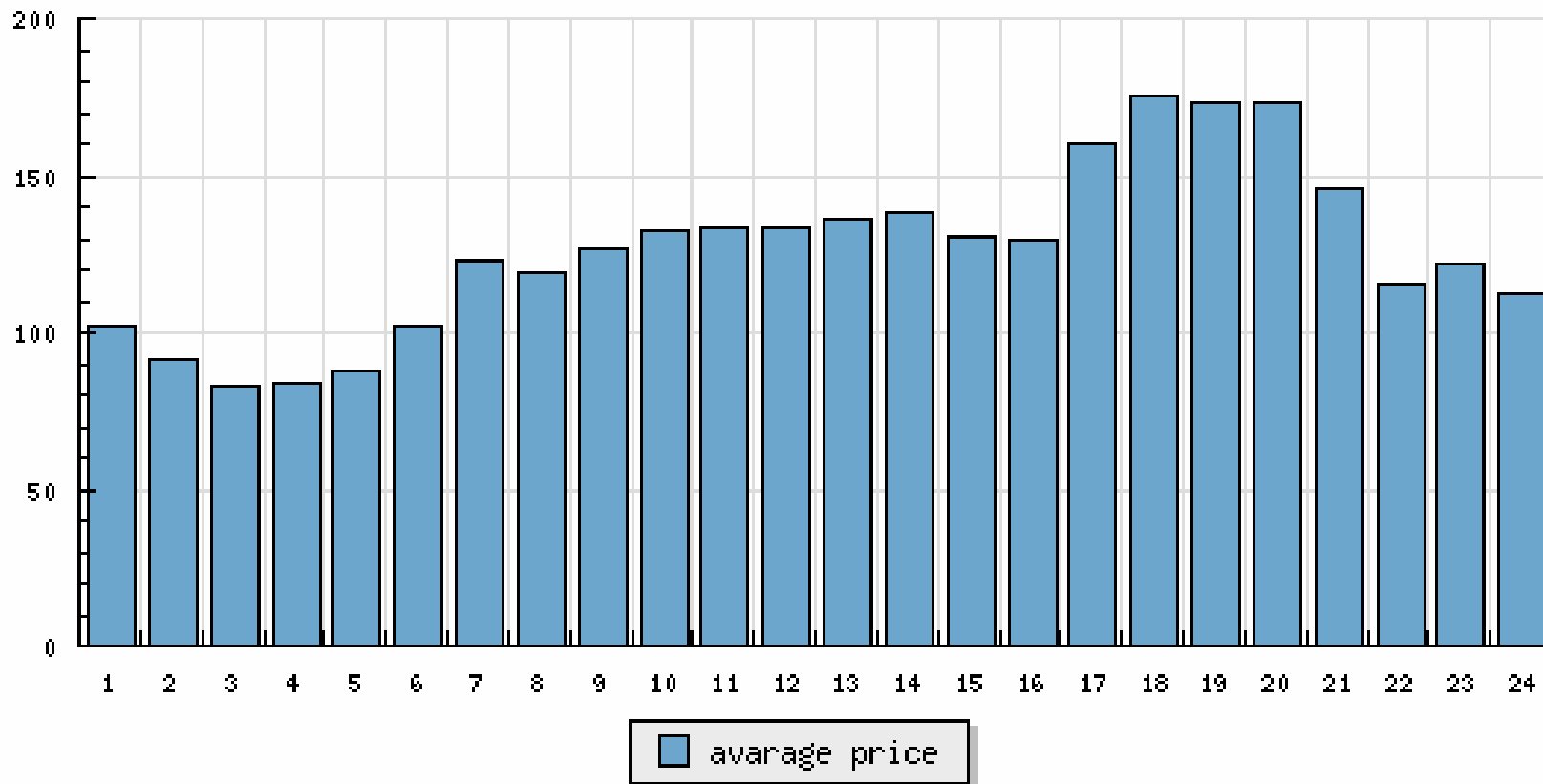
Polish Power Exchange

2007-11-13

Sources: www.cire.pl; PSE-Operator SA



Energy prices on Power Exchange - Total trade



End users tariff zones

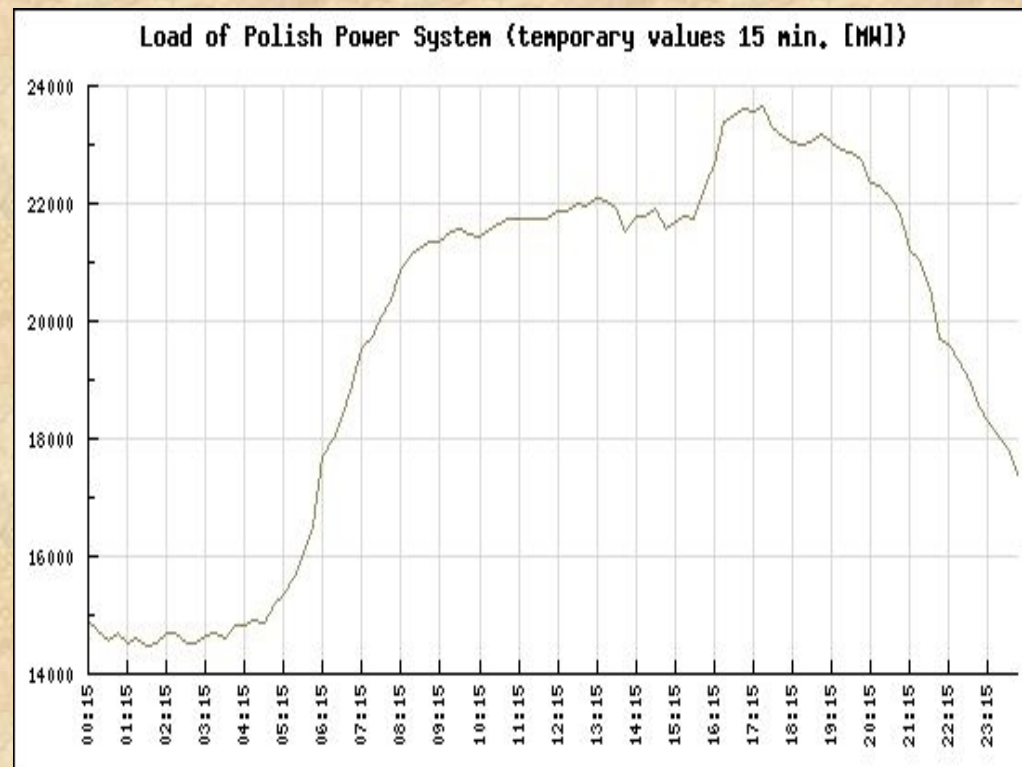
	Peak zone	Out of peak zone
1 April - 30 September	8.00 – 11.00, 20.00 – 21.00	11.00 – 20.00, 21.00 – 8.00
1 October - 31 March	8.00 – 11.00, 17.00 – 21.00	11.00 – 17.00, 21.00 – 8.00

Day zone

6.00 – 13.00 and 15.00 – 22.00

Night zone

22.00 – 6.00 and 13.00 – 15.00



Differentiation of electricity or gas prices in the time

	Tariff C12a	Tariff C12b
Day price PLN/kWh	X	0,2946
Night price PLN/kWh	X	0,1905
Peak price PLN/kWh	0,3070	X
Out of peak price zł/kWh	0,2254	X
Standing charge PLN/month	8,01	8,01
Grid standing charge PLN/kW/month	4,24	4,24

1 EUR \approx 3,65 PLN

Assessment of energy efficiency measures

Energy audit

a systematic procedure to obtain adequate knowledge of the existing energy consumption profile of a building or group of buildings, of an industrial operation and/or installation or of a private or public service, identify and quantify cost-effective energy savings opportunities, and report the findings

Energy efficiency profitability

Economic indicators

SPBT – Simple Pay-Back Time

NPV – Net Present Value

IRR – Internal Rate of Return



Simple Pay-Back Time

$$\text{Simple Payback Time (in years)} = \frac{\text{Initial Investment}}{\text{Annual Savings (Cash Flow)}}$$

Net Present Value

Present value of net cash flows used for long-term projects

$$NPV = \sum_{t=1}^T \frac{C_t}{(1+r)^t} - C_0$$

Where

t - the time of the cash flow

T - the total time of the project

r - the discount rate

C_t - the net cash flow (the amount of cash) at time t .

C_0 - the capital outlay at the beginning of the investment time

Internal Rate of Return

The IRR is the annualized effective compounded return rate which can be earned on the invested capital.

IRR > 0

IRR shall be at least equal bank interest rate

DSM measures

- **Improvement of the electric grid's reliability**
- **Better balancing the electric grid**
- **Energy efficiency growth**
- **Controlling of electricity costs**
- **Reduction of customer peak and overall energy demand**
- **Conservation through both behavioral and operational changes**
- **Load management**
- **Fuel switching**
- **Distributed energy (incl. RES – eg. PV)**
- **Cogeneration and heating-cooling, and**
- **Provide systems that encourage load shifting or load shedding during times when the electric grid is near its capacity or electric power prices are high**

Thank You for attention!

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