CZ-AT Bilateral Winter and Summer School
2006

A COMPARISON OF CZECH AND AUSTRIAN ELECTRICITY MARKETS

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Date of submission: 4.7.2006

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INTRODUCTION

This study focuses on the international comparison of organization the electricity market and mechanisms in it; specifically in Austria and the Czech Republic. The first question to ask is whether there are major differences in the electricity market organization and how is electricity traded in both countries. Second, why are these differences and common approaches at place? What are the main influents (e.g. resource mix and energy balance, etc.)? Third, to what extent and how is the EU directive 2003/54/EG implemented? Lastly, what can one country learn from the other?

The international comparison offers possibility to examine very similar processes in both the countries designed different way.

On one hand, Austria is largely hydropower based and has successfully opened its market; on the other hand, the Czech Republic is the typical example of the post-communistic transition economy, is an important exporter, is a "new" member of the EU and is significantly dependent on a coal burning-based and nuclear generation.

In the following sections the problem of electricity market mechanisms and organization are discussed in a greater detail, providing the description of the present state of the market organization in both countries, with a special focus on the specific local conditions in terms of resource mix, transmission grid function, and institutional setup. These are the key influents, which besides the EU directives contribute to the current situation. Finally, the conclusions are drawn in the end of the study based on previous comparison with a goal of assessment of the approaches and learning lessons for the future progress.

European Union

The energy market liberalization process in Europe is increasingly focused on electricity market integration and related cross border issues. This signals that the liberalization of national electricity markets is now closer to the long-term objective of a *single European energy market*. The interface between the national electricity markets requires physical interconnections and technical arrangements.

European reform was pursued at two parallel levels. First, under EU Electricity Market Directives, member countries were required to take at least a minimum set of steps by certain key dates toward the liberalization of their national markets (see Exhibit 10). Second, the European Commission promoted efforts to improve the interfaces between national markets by improving cross-border trading rules, and to expand cross-border transmission links. Trading rules are being developed with industry agreement and the EU has subsidized some cross border transmission link upgrades (such as between Ireland and Great Britain). The underlying aim of both of these policies was to extend the principles of the European Single Market to the energy market by: the Directives would enable companies from across the EU to compete with national incumbents, while improved interconnection would reduce cross-border transport costs and increase competition.

The first and second EU Electricity Market Directives of 1996 and 2003 (2003/54/EC*)* focused on unbundling the industry and on a gradual opening of national markets. The second directive further promotes competition by toughening regulation of access to networks and requiring independent regulators. Regulation of cross-border trade aims to facilitate market integration. The second directive aims to achieve, by July 2007 at the latest:

(i) unbundling of transmission system operators (TSOs) and distribution system operators (DSOs) from the rest of the industry,
(ii) free entry to generation,
(iii) monitoring of supply competition,
(iv) full market opening,
(v) promotion of renewable sources,
(vi) strengthening the role of the regulator,
(vii) a single European market. [13]

Source: Vasconcelos (2004)

	Most common Form pre-1996	1996 Directive	2003 Directive
Generation	Monopoly →	Authorisation → Tendering	Authorisation
Transmission Distribution	Monopoly →	Regulated TPA Negotiated TPA Single Buyer	Regulated TPA
Supply	Monopoly →	Accounting separation	Legal separation from transmission and distribution
Customers	No Choice →	Choice for Eligible Customers (=1/3)	All non-household (2004) All (2007)
Unbundling T/D	None →	Accounts	Legal
Cross-Border Trade[13]	Monopoly →	Negotiated	Regulated
Regulation	Government → Department	Not specified	Regulatory Authority

Exhibit A - EU Electricity Directives

Following Exhibit depicts current conformance of the countries with the EU directives.

Member State	Observations	Market
AUSTRIA Electricity+gas	1) Insufficient competences of the regulators in relation to the directives, in particular with respect to the possibilities to file complaints to the regulator	EL+GAS
	2) Preferential access for certain historical contracts in the market of electricity and gas	EL+GAS
	3) absence of some regional laws	EL
CZECH REPUBLIC Electricity+gas	1) Absence of, or insufficient legal unbundling of transmission and distribution system operators in order to guarantee their independence	EL+GAS
	2) Absence of the notification of the public service obligations	EL+GAS
	3) Preferential access for certain historical contracts in the market of electricity and gas	EL+GAS

Exhibit B - LETTERS OF FORMAL NOTICE
For Directives 2003/54/CE and 2003/55/CE [15]

The Czech Republic

General

The Czech Republic is a typical post-communist transition economy with all common attributes – in a generation mix, grid and privatization. Nowadays, it is a member of EU, OPEC, UCTE, Association of Power system Operators in Central Europe (CENTREL); thus the deregulation process has to comply with the directives of the EU. The location in the very heart of the European continent results in typical flows across the country, especially from Poland to Austria.

The annual gross production was in 2003 at the level of 83 TWh. Both electricity generation and consumption have been rising in recent years. Between 1993 and 2002, electricity production in the country rose 29%, to 71.8 Bkwh from 55.6 Bkwh, while electricity consumption increased 10.3%, to 55.33 Bkwh from 49.61 Bkwh. In 2003, the country's net power exports were an estimated 16 Bkwh, primarily to Germany, Austria and Slovakia (see Exhibit C,). Electricity exports are becoming increasingly important for the Czech Republic, particularly after the commissioning of the Temelín nuclear power plant. The Czech government also aims to increase the contribution of renewable sources to the total consumption of primary energy sources to about 5%-6% as of the year 2010 and about 8%-10% as of the year 2020 following the directives of the EU again. [2, 8]

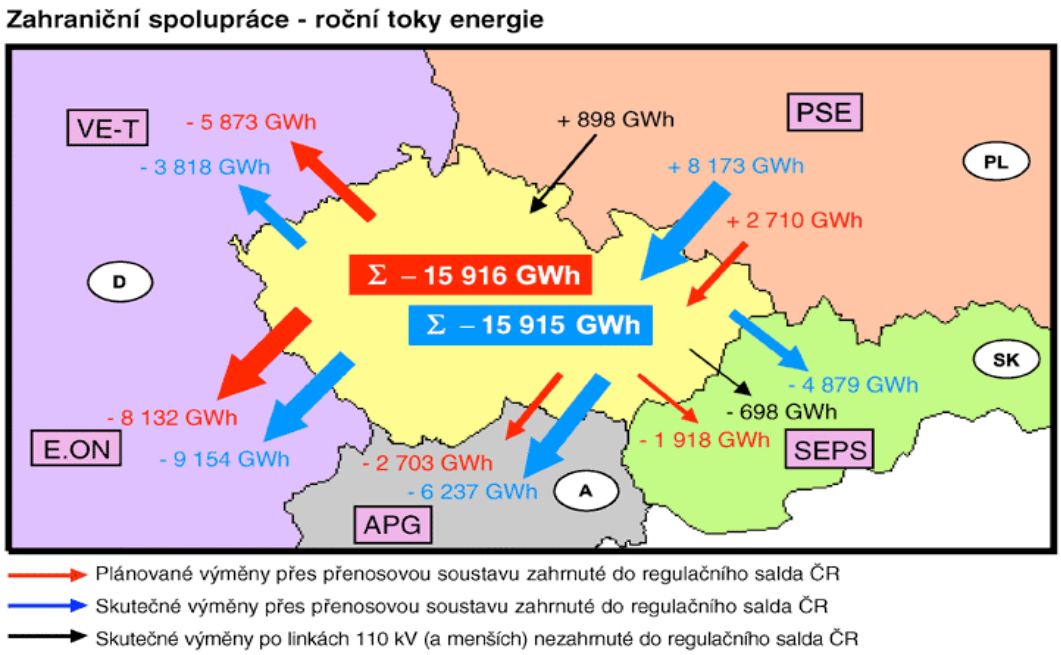


Exhibit C – cross border cooperation in 2004 [9] Red – planned exchanges, blue-real, black – real on 110kV lines

Deregulation

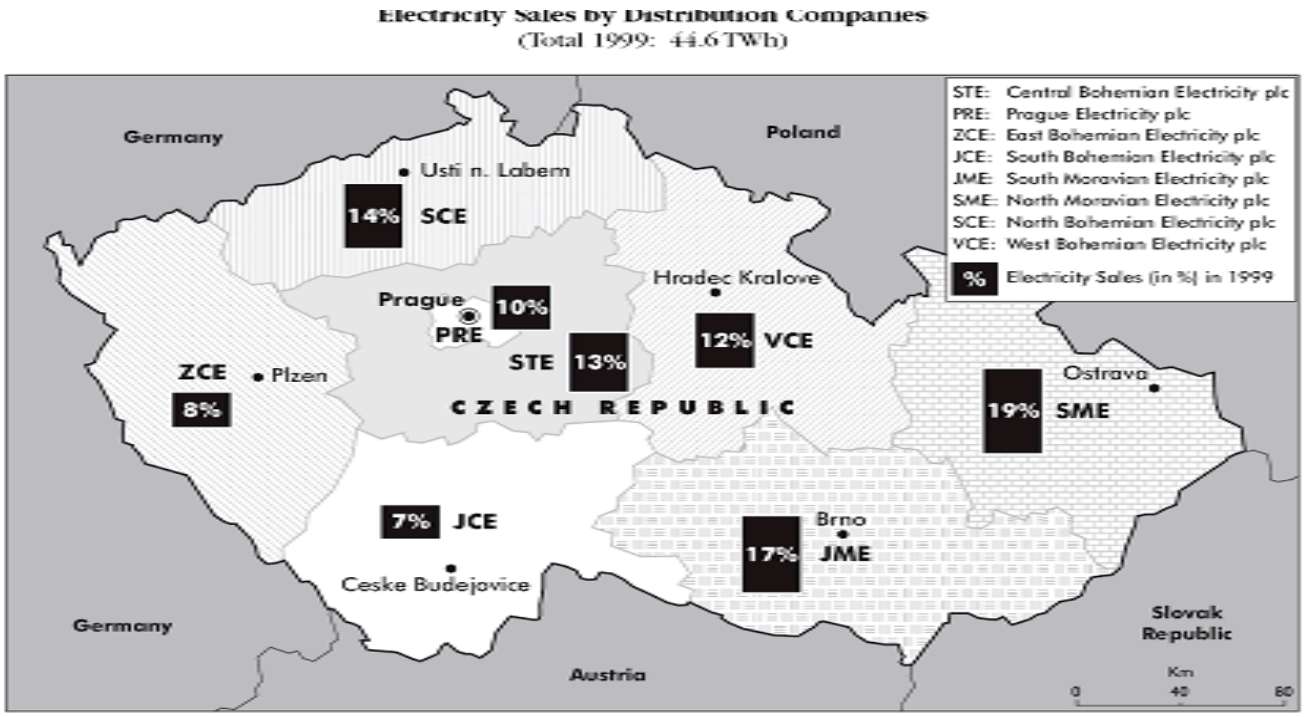
In its transition from a centrally planned economy to a market economy, the Czech Republic has thoroughly reformed its energy policies and regulatory framework. The energy sector has been largely restructured and partially privatized. Major efforts have been made to adapt integrated state-owned monopolies to the new economic environment by separation of the generation from distribution and transmission. Some groups of the electricity customers can now choose their electricity company. As a result, many new subjects entered the market or were separated from old existing entities. However, the leading energy companies remain predominantly state-owned. According to the National Energy Strategy (NES), the state will keep its dominant position until the end of the price deregulation.

Before the start of the privatization process, the state-owned energy utilities were transformed into the joint stock companies. In 1992 the state electric utility was unbundled to create *Ceske Energeticke Zavody* (CEZ). Consequently, 32% of CEZ's capital was floated on the Prague stock exchange. The remaining 68% is still state owned and its privatization failed. Transmission of electricity and system services for the Czech Power System are provided by a single entity a TSO – *CEPS*. In 1990, eight *Regional distribution companies* were established (see Exhibit D), and they were partially opened to foreign investors in 1994. [1], [3], [4]

The Energy Act, designed in view of accession to the European Union, was passed in 2001. It includes provisions to:

- Create a transparent business environment for the energy sector.
- Define the functions, rights and obligations of the independent regulator.

Develop competition in the generation and retail-supply segments of the electricity and natural gas markets.[1]



Source: ZCE

Exhibit D

The country established a new independent energy regulator, the *Energy Regulatory Office* (ERO) in 2001 and adopted a schedule for opening its electricity and gas markets to competition in both eligible and captive customer sectors. The government made ERO an independent body, which enhances the transparency of energy markets and supports competition. Its responsibilities include determining rates that customers will pay for energy and setting up the framework for third party access to the electrical grid. In addition, the ERO arbitrates in conflicts between companies active on Czech energy markets. It also licenses enterprises active on the Czech energy market.

Another institution, the *State Energy Inspectorate* (SEI), whose task is to enforce provisions of the Energy Act and Act on Energy Management, including prices, executes the inspections.

The schedule for phasing in third party access to electricity starts with the largest users and will eventually cover all customers by the end of 2006. The timetable goes as follows:

- With the beginning of the electricity market liberalization, the *Electricity Market Operator* (EMO), a joint-stock company founded by a state, with inscribed shares, became operational in January 2002. Since then, third party access is possible; the largest customers (constituting about 40 gigawatt-hours [GWh], or roughly two-thirds of total consumption), are able to choose who their electricity supplier will be. This led to a reduction in electricity prices by approximately 5% during the first quarter of 2002 for this market segment, which has 65 eligible customers representing approximately 30% of the Czech market. At the same time, the

Czech ERO eliminated subsidies for household electricity prices as electricity prices for households were raised by 9.9% on average on January 1 2002, thereby broadly reaching cost recovery levels.

- In 2003 another 9 GWh were opened, followed by another 100 megawatt-hours [MWh] in 2005 allowing an additional 500 Czech companies to choose freely their supplier.
- By 2006, all customers are able to choose their suppliers.[6], [7], [8], [3]

The Czech government is focusing on harmonizing Czech energy sector standards with those in the EU. Practically speaking, this means decreasing Czech dependence on solid fuels (e.g., coal, wood, etc.) as a primary energy source. The government aims to increase the share of renewable energy in total primary energy supply to 5-6 per cent by 2010 and to 8-10 per cent in 2020.

The current energy strategy includes the following: energy prices should be fully decontrolled; state-owned energy enterprises should be restructured and privatized; safer, more efficient, and less polluting forms of energy should be produced; energy conservation should be strongly encouraged; the country should increase and diversify connections to international electricity networks; and the public energy sector should be better structured to implement long-term policies and provide oversight and coordination. [8]

Grid

As mentioned above, the Czech grid is very dense (see Exhibit F). The Czech Republic has gradually reformed its energy markets and opened them to international trade and competition without experiencing supply disruptions. The electricity transmission system is interconnected with the transmission systems of all neighboring countries. The reliability is, though, a major issue for the future. It is possible that some country would become heavily dependent on the imports from abroad and thus very vulnerable to any grid failure. This may not be the case for the Czech Republic but incorporation of high standards, especially in control systems and operators' training, is essential. Integration of the grids brings one more danger – failure in one country can, without properly working detection mechanisms, may cause severe damage also in connected countries. This danger is much higher in a highly interconnected European grid. [5], [9]

Most important tasks of CEPS follow:

- ensuring electricity transmission
- ensuring balance between electricity generation and consumption at any moment
- maintenance, modernization and development of TS equipment

CEPS' major processes are focused on:

- Provision of transmission and system services at the level of leading European transmission companies
- Effective organization and development of the ancillary services market

- Enhancement of the Company's performance and financial health
- Development of the Company's new business activities
- Offering transparent and reliable information to the Company and its partners
- Setting, monitoring and managing the trends of the Company's development with the aim of minimizing risks related to the opening-up of the electricity market
- Further development of a high-standard corporate culture [9]

Suppliers often sell the excess of production abroad – the Czech Republic is a traditional exporter of electricity. An imported energy is another potential source for distributors but is rarely used because of higher prices. There are bottlenecks arising on cross-border transmission profiles of CEPS by surplus of demand over real transmission possibilities. The process of allocating cross-border transmission capacities of these bottlenecks is being carried out by means of auctions. An auction is objective, non-discriminatory and market-based process of transmission capacities allocation, eliminating speculative behavior. All auctions by CEPS are internet based.

CEPS organizes the above-mentioned auctions, as well as the auctions for ancillary services on the principle of the marginal prices. It means that the highest priced accepted offer sets the price for all even cheaper offers. Often the small suppliers of ancillary services offer lower price to be sure they get accepted and CEZ's price is close to the marginal one. Major volume of ancillary services is contracted in the long-term contracts, though.

These companies offer the ancillary services:

- ČEZ, a.s.
- Dalkia ČR, a.s.
- ECK Generating, s.r.o.
- Elektrárny Opatovice, a.s.
- Energotrans, a.s.
- Plzeňská energetika, a.s.
- Plzeňská teplárenská, a.s.
- PPC Trmice, a.s.
- Sokolovská uhelná, a.s.
- Teplárny Brno, a.s.
- Norske Skog Štětí, a.s.
- Teplárny Kyjov, a.s.

The Czech Republic is a member of CENTREL association (see Exhibit E) which was incorporated into UCTE. The main objectives and tasks of CENTREL were:

- The efficient use of transmission capacity through the establishment of economic, business, technical and organizational conditions and the provision of mutual assistance which facilitates electricity trading;
- Enhancing regional cooperation of CENTREL members;
- Promoting regional interests in the European electricity sector;

- Developing transmission systems in CENTREL area;
- Reliable operation of a common system block;
- Exchange of experience and improvement of operational conditions of the CENTREL Members' transmission systems, including system services;
- Exchange of information. [7]

Exhibit E [21]

Reliability

The overall reliability planning and coordination of the interconnected power systems are the responsibility of the Energy Regulatory Office (ERO) in the Czech Republic (in details discussed below). It is also a member of the European institutions like Energy Charter Treaty, European Regulators Group for electricity and gas (ERGEG), Energy Regulators Regional Association (ERRA) and Council of European Energy Regulators (CEER).

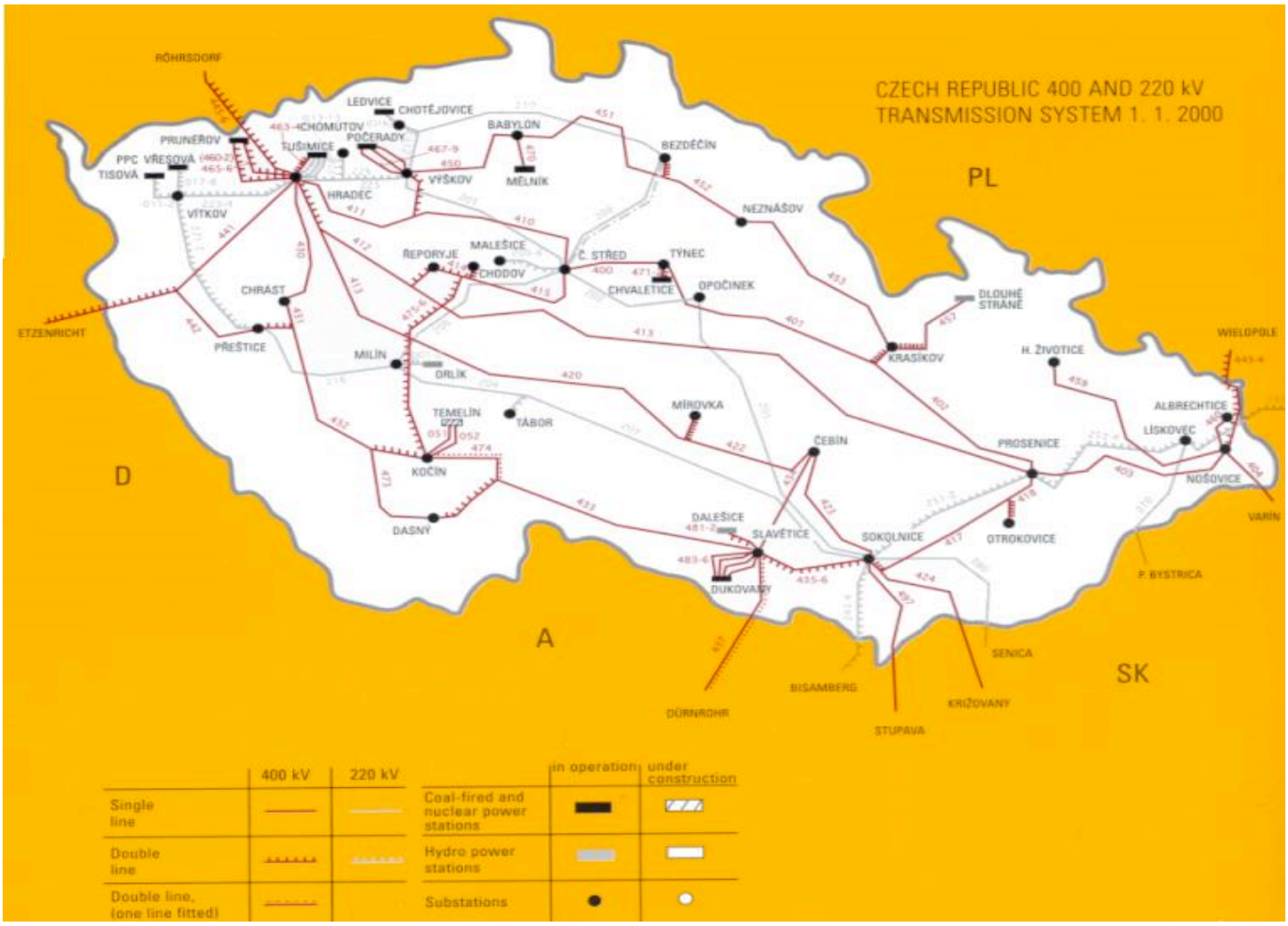


Exhibit F [10]

Present State

Presently, the Czech Power System consists of CEZ, which nowadays accounts for 70% of energy generation and over 120 independent power producers (IPP) with installed capacity over 1MW. The group of IPPs mainly includes district heat utilities, industrial power plants and small hydro power plants. CEZ presently owns five distributors. They were acquired from the state in exchange for the only national high voltage power transmission company, CEPS. The remaining distributors, except for one, are owned by German giant EON. The Czech energy legislation allows the existence of independent traders with electricity outside of the Czech Power System.

IPPs, which are licensed, do bring following advantages to the customers:

- Take over the responsibility of the deviations, the customer becomes only a Registered Participant in the Market (RPM)

- Economies of scale and compensation of the deviations among the group of the customers themselves
- Ability to buy the power cheaper [5], [6], [4], [9]

Price design

There are two major components of the price for electricity nowadays – the regulated and non-regulated.

Non-regulated is for generated electricity, as everybody can choose among the licensed suppliers (not distributors). It consists of the price for the amount of consumed energy itself and a monthly fee for the consumption point.

Regulated component is paid to the distributor and is regulated by ERO. It consists of:

- Distribution fee – high or low tariff for the supplied amount, paid to the distributor
- Price for the input size (circuit breaker size)
- Costs of the system services – passed from a distributor to CEPS
- Support of the generation from RES
- Clearance by the EMO
- Value added tax – 19%

There are different tariffs offered to the households, small and middle sized firms and wholesale customers. The tariffs also vary according to the character of consumption (e.g. accumulation, lighting, etc.)

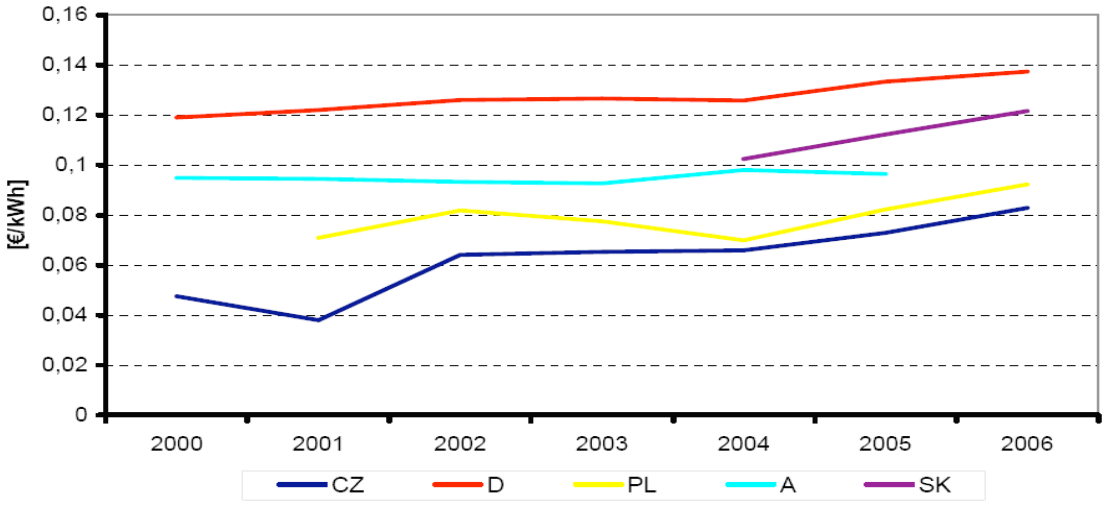


Exhibit G – average price of electricity for households, (Eurostat)

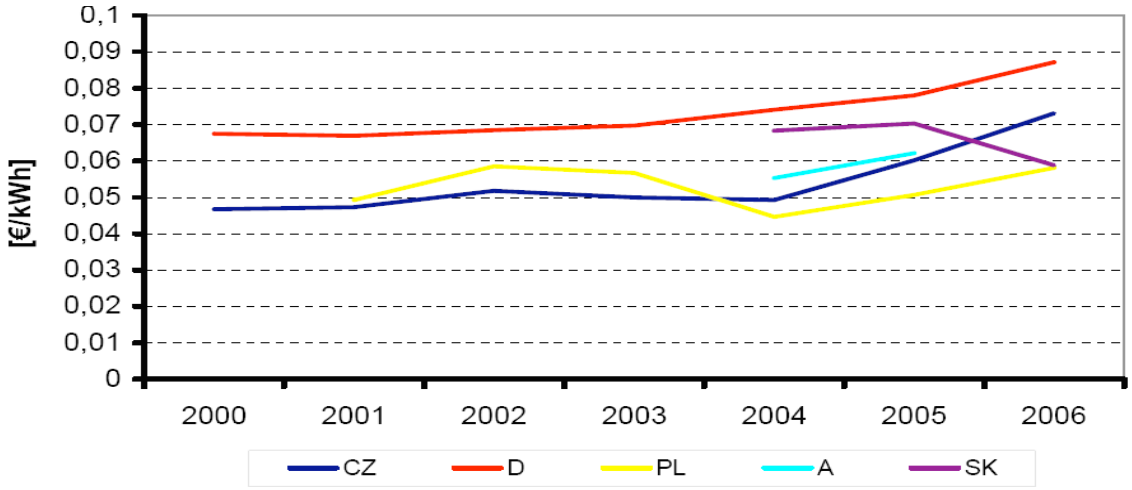


Exhibit H – average price of electricity for firms (Eurostat)

Market Mechanisms

How does the market work? Suppliers approach the generators and negotiate on the price. Most deals are longer-term horizon contracts, but power can be also purchased on the short-term market. Suppliers usually have also long-term individual contracts with all customers except for households who are offered various tariffs. CEPS then transmits the energy from the contracted generator to the customer of the supplier for a (by ERO given) fee. It reflects costs related to the service, some parts of maintenance costs of the grid and the allowed profit for CEPS. Maximal price is also given for emergency situations and green energy (subsidies). Part of the price paid by a customer to the supplier goes according to the previous paragraph "price design" to other subjects.

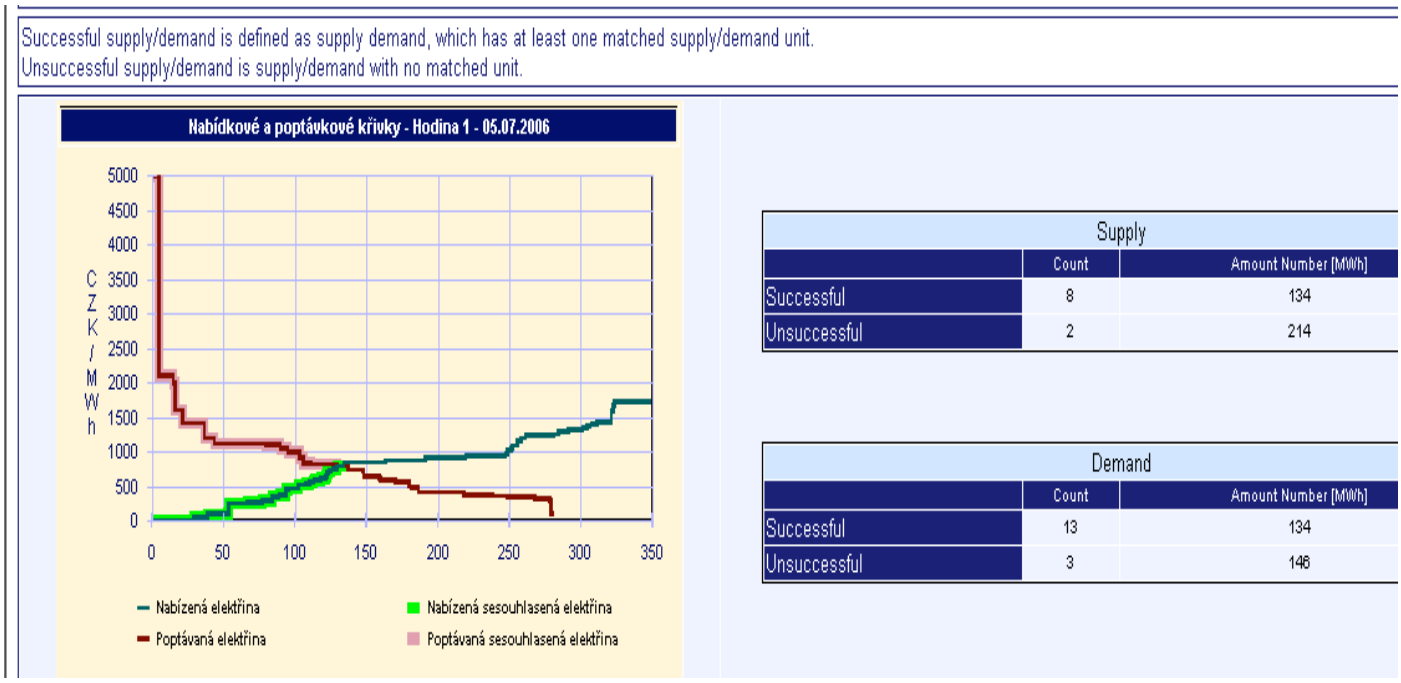
The major functions of the EMO:

- Processing the electricity trading balances
- Organizing the short-term electricity market and the regulation energy market - in cooperation with TSO
- Evaluation of deviations (imbalances) of individual settlement entities i.e. differences between actual (metered) and contracted electricity volumes
- Settlement of deviations (imbalances) of individual settlement entities
- Processing and releasing monthly and annual assessment reports on the electricity market of the Czech Republic
- Processing long-term electricity balance

- Processing the background information for draft of electricity trading rules and submitting it to the Energy Regulatory Office
- Providing actual volumes of electricity supplies and consumptions for competent market participants
- Processing the trading conditions of the electricity market operator and their releasing after approval by the Energy Regulatory Office
- Providing load profiles with DSO cooperation
- Settlement of regulation energy based on the data submitted by TSO
- Administration of the Czech registry for greenhouse gas allowances trading [16]

The short-term market can be divided to day-ahead market, Intraday and Balancing markets. All subjects on the market have to be registered by EMO.

The day-ahead market is a voluntary market with contracts concerning supply and purchases of the electricity for certain trading day. The results are firmly contracted supply volumes and prices for every single hour of that day. The deals are closed at 12 o'clock on the D-1 day for the D day purchases. EMO sorts the demand (purchase) offers downwards and supply offers upwards. The market is anonymous and based on the marginal price mechanism (refer to Grid section). Thus, supply and demand curves are constructed and the cross-section shows the price and quantity contracted that hour (see Exhibit I). All offers and purchases to the left of the cross-section point will be contracted.



Supply

	Count	Amount Number [MWh]
Successful	8	134
Unsuccessful	2	214

Demand

	Count	Amount Number [MWh]
Successful	13	134
Unsuccessful	3	146

Exhibit I – Reconciliation curves [16]

The Intraday and Balancing markets are based on demand, supply notice board, not on the marginal prices. The intraday market allows for corrections due to weather

or power failures and the balancing market enables the TS to regulate the grid. Both are open 24 hours a day continuously for whole year. They start after the international market is closed. Offers of supply and purchase are open for the first hour on the D day from 16 to 21 o'clock on D-1 day. Contracts are financially settled on the D+1 day. On the balancing market, the positive or negative regulation energy offers are placed for the first D day hour from 21 to 22.30. Unaccepted offers from the intraday market are automatically transferred to the balancing market. Result of this trading are bilateral contracts with the EMO.[16]

Since 1 January 2002 market balancing and imbalance settlement have been undertaken by the EMO. Since that date CEPS transfers to EMO, on a daily basis, data on electricity produced by each generator to be provided as ancillary services (regulation power) and metered data on electricity actually supplied and consumed during each hour of the previous day. The contract price for 1 MWh (as fixed in ancillary services contracts) is added to the data on balancing power. The costs of balancing the system for each hour are obtained by multiplying the contract unit price by the volume of balancing power procured from each provider of ancillary services and then summarizing these results. The EMO executes imbalance settlement on a daily basis, allocates the balancing power to individual providers and makes the relevant payments to their accounts.

[1], [3], [6], [7], [9]

ERO has based its price control in the electricity industry on the principle of incentive regulation. Incentive regulation motivates companies to improve their capital expenditure and operating efficiency, and is intended to make sure that consumers benefit from this efficiency too. The revenue cap regulatory method has been selected for electricity transmission and distribution activities. When applying the revenue cap method, the regulator sets for the company an upper limit (cap) on the revenues that may be achieved independently of costs. By separating revenues from costs, companies are incentivised to reduce their costs and improve their efficiency. [8]

Austria

General

The Austrian electricity generation is mainly based on hydroelectric power. According to IEA Statistics [1], Austria has a total maximum electricity-generating capacity of 17.500 MW, of which 11.500 MW (64%) is hydropower, 6.535 MW (36%)is thermal power and around 40 MW is wind and PV power. This provides enough capacity to cover the national maximum power demand of around 10.000 MW, even in winter, when hydropower is often unavailable.

As a result of seasonal patterns, hydropower generation in the summer is higher than in winter. This affects Austria's pattern of electricity imports and exports and the use of thermal power plants.

The fuel mix has changed in the last decades, oil accounts for only around 3% of total generation, gas and coal contribute each around for 12% and hydropower for around 70% of total generation.
However, fluctuations, as depicted in the graph below, have more to do with the availability of hydropower due to different precipitation levels than with structural changes in the fuel mix.

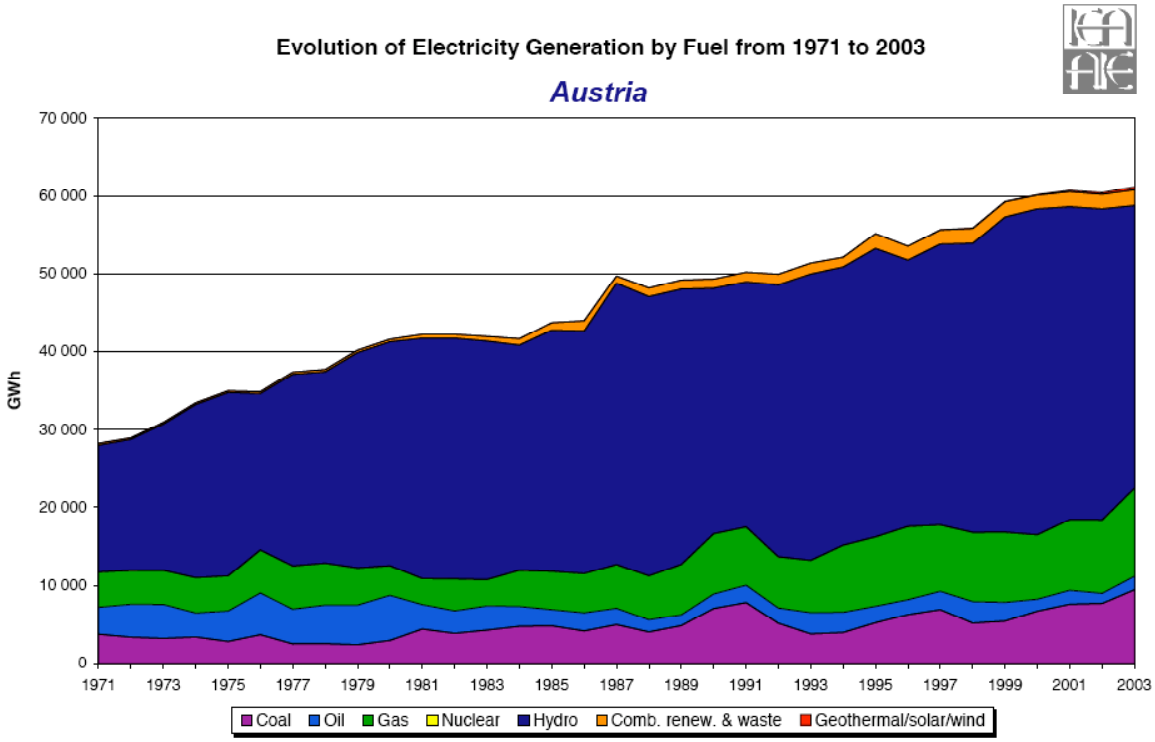


Exhibit J – Electricity generation by fuel (Source: IEA)

Nuclear power is prohibited in Austria by a constitutional law since 1978. Although one nuclear power plant has been constructed, it was never operated. In addition to the rejection of nuclear power as a domestic electricity source, there is public and political controversy about the import of electricity from foreign nuclear power plants and concerns about the safety of nuclear plants that lie within proximity to Austrian borders.

Unit: GWh	
Production from:	
- coal	9437
- oil	1752
- gas	11215
- biomass	1652
- waste	370
- nuclear	0
- hydro	38366
- geothermal	3
- solar PV	12
- solar thermal	0
- other sources	366
Total Electricity Production	**63173**
Imports	19003
Exports	-13389
Domestic Supply	**68787**
Statistical Differences	0
Total Transformation**	**1**
Heat Plants	1
Energy Sector*	**4968**
Distribution Losses	2970
Total Final Consumption	**60848**
Industry	24542
Transport	3289
Agriculture	1219
Commercial and Public Services	15226
Residential	16572
Other Non-Specified	0

Exhibit K - Electricity in Austria 2003 (Source: [1])

Deregulation

The first step towards the energy sector deregulation was the "Electricity Industry and Organization Act" (ElWOG) [17], which entered into force 1999. This did not provide full market liberalization but only offered choice to certain segments of large power consumers. ElWOG was subsequently amended (2001, 2004, 2005) to give supplier choice to all customers and to comply with EU regulations. Austria completely opened its electricity market in 2001 and was the fifth EU country to offer this level of market opening. Beginning of July 2006 a law on security of supply will be implemented (Energieversorgungssicherheitsgesetz 2006), which will affect also the ElWOG. The main issues are bottleneck management and system services, to increase the security of supply also in a liberalized market.
As a result of the liberalization process, the generation and purchase or trading of electricity is no longer regulated. Such activities can be done by any party at prices and terms that are subject to private negotiations. The transmission and distribution functions continue to be treated as a natural monopoly and remain under a regulatory structure. There is a regulated TPA to the grid and on the retail level consumers have free choice between any party to provide their electricity.

Market Participants

The Austrian electricity industry contains three categories of utilities [18]. There are utilities at the federal level, the provincial level and the municipal level. The largest electricity utility, the Verbundgesellschaft ("Verbund") and the "Energie Allianz Austria" ("EEA") are the only ones to operate at the federal level with assets spread across the entire country. These assets include the majority of the large hydropower plants and Verbund owns the majority of the high-voltage transmission grid.
At the provincial level, utilities exist in each of the nine provinces. These own the distribution lines and variable amounts of generating capacity. The provincial utilities also engage in other activities such as gas sales, district heating and transportation. Smaller utilities exist at the municipal level serving provincial capitals or smaller towns. Law requires that the government owns at least a 51% share of all electricity utilities with generating capacity above 200kW or with a total supply more than twice their self-generation.

Federal Level:

- Verbund
  - Austrian Hydro Power (AHP)
  - Austrian Thermal Power (ATP)
  - Austrian Power Grid (APG)
  - Austrian Power Trading (APT)
  - Austrian Power Sales (APS)
- Energie Allianz Austria (EEA): jointly owned by BEWAG (10%), EVN (45%) and Wien Energie (45%)

Provincial Level:

- Burgenländische Elektrizitätswirtschafts-AG (BEWAG)
- Energie AG Oberösterreich
- Energie-Versorgung Niederösterreich (EVN)
- Kärntner Elektrizitäts-AG (KELAG)
- Salzburg AG
- Energie Steiermark (former STEWAG-STEG)
- Tiroler Wasserkraft AG (TIWAG)
- Vorarlberger Kraftwerke AG (VKW)

Municipial Level:

- Wienstrom AG
- Smaller municipal utilities in other cities

The Federal Ministry of Economic Affairs ad Labor (BMWA)is the main body responsible for energy matters at the federal level. The ministry issues and administers the rules and laws and international agreements and supervises the activities of E-Control.

The E-Control Commission [19] is a three-member body that rules on issues relating to the electricity sector regulation. The commission is not bound by ministerial instructions. The primary function is to rule on general terms and conditions for the utilization of the electrical grids. The E-Control Commission sets the system access charges for the TPA at a fair rate.
The Commission also is responsible for settling disputes in the electricity sector.

The E-Control GmbH (limited liability company)[19] has the primary duty to monitor compliance with competition rules. It publishes comparison of electricity prices, monitors the unbundling and monitors imports of electricity. It also has a role in formulating proposals for market rules and to monitor compliance with the obligation to contract sufficient power from environment-friendly technologies.

Grid

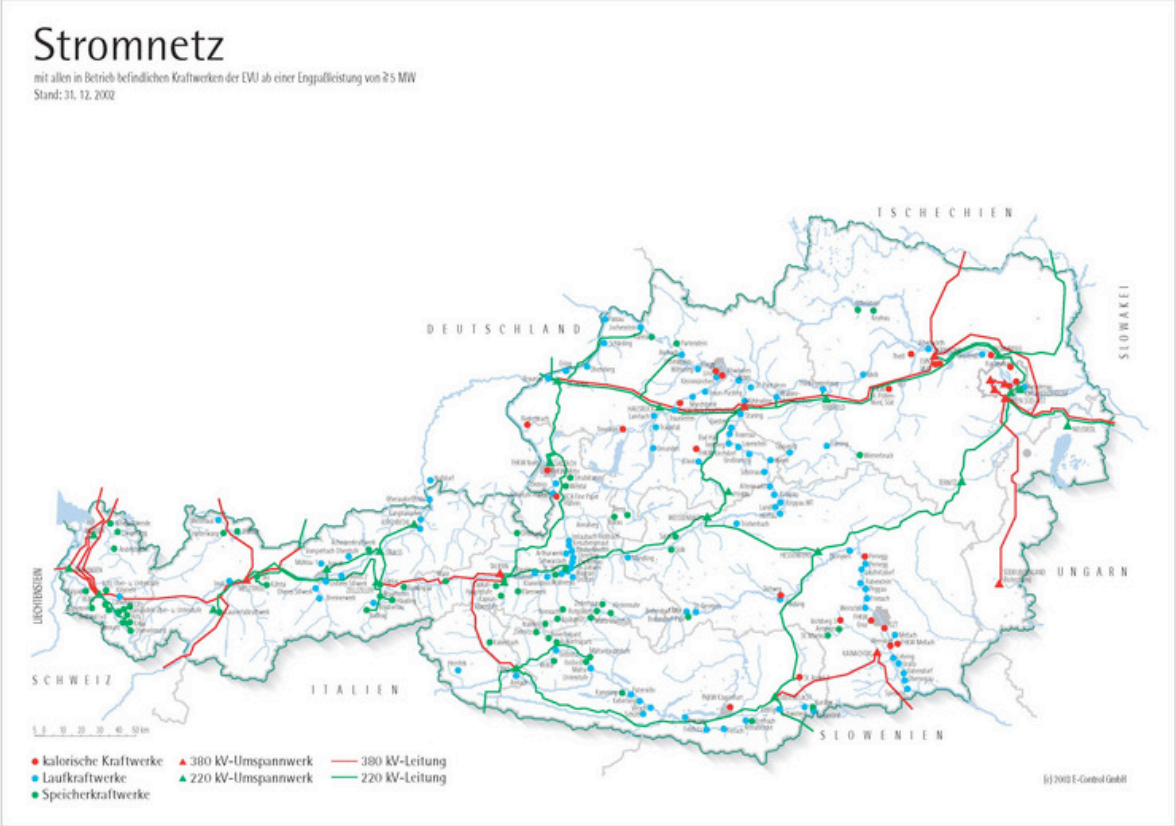


Exhibit L – Austrian Power Grid (Source: E-Control)

There are about 150 grid operators in Austria, but the ten largest operators (Verbund-owned APG and the 9 regional utilities) own 98,5% of the length of the transmission and distribution grid. APG owns some 92% of the 380 kV and 220 kV lines and the regional utilities own about 80% of the 110 kV lines. The length of these lines is approximately 9500 km.[The main bottlenecks are the remaining two gaps in the 380 kV ring, namely the gap in southeastern Styria (see above map) and the second one between Salzburg and Upper Austria. At least the second gap will most likely be closed in the near future.

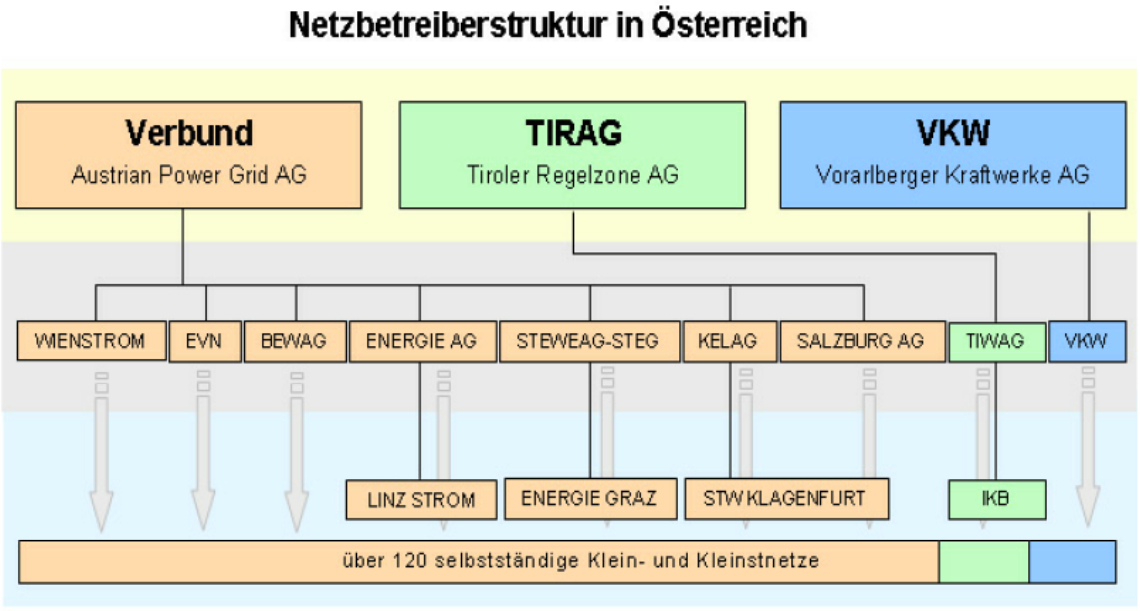


Exhibit M – Austrian Grid Operator Structures (Source: Wirtschaftsblatt)

The Austrian electricity system is divided into three Control areas (Regelzonen).[20] The Verbund-APG area covers the eastern part of Austria, the TIWAG control area encompasses the province of Tyrol and the VKW controls the province of Vorarlberg. The three control areas are divided this way due to historical reasons.

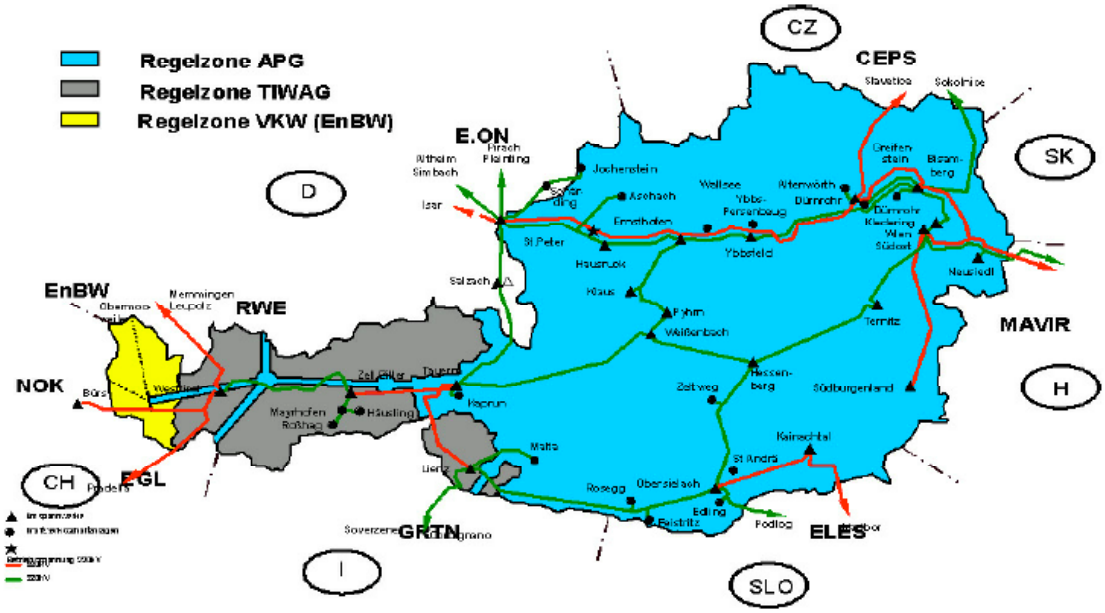


Exhibit N – Austrian Control Areas (Source: Wirtschaftsblatt)

The leaders of the Control areas control the imports, exports and transits and the technical stability in their area.
The regulatory authority is the above-mentioned E-Control.
The technical and financial issues in the power trading are managed by two clearing and settlement companies, the "A&B Ausgleichsenergie & Bilanzgruppen-Management AG" for Tyrol and Vorarlberg and the "APCS Power Clearing and Settlement AG" for the remaining provinces.

Electricity Prices

The tariffs of retail electricity sales consist of three major components:

- Energy price: relates to the generation of electricity
- System access charge: covers grid utilization and transmission losses
- Taxes: includes taxes, stranded cost recovery, support for RES and CHP plants

Only the energy price component is set by competitive forces. This component accounts for between 25% and 30% of the bill. 30% can be calculated for the system charge.
It is notable, that both industrial and commercial customers pay much lower taxes and system access charges and as a result the energy supply percentage of their bill is much higher.
According to the EC, system access charges in Austria are among the highest in Europe. [21]

Cross border trade with the Czech Republic

The cross border trade with the Czech Republic falls into the APG-Control area. The Capacities are traded via an auctioning system [22] between CEPS and APG. Auctions are held for different time horizons: yearly, monthly and daily.

Herkunftsland/ Bestimmungsland	physikalische Stromimporte						physikalische Stromexporte						physikalischer Austauschsaldo*	
	Angaben in GWh		Anteile in %		Veränderung		Angaben in GWh		Anteile in %		Veränderung		Angaben in GWh	
	2002	2003	2002	2003	in GWh	in %	2002	2003	2002	2003	in GWh	in %	2002	2003
Deutschland	8.230,8	10.165,8	53,5%	53,5%	1.935,0	23,5%	4.901,3	4.116,7	33,4%	30,7%	-784,6	-16,0%	-3.329,5	-6.049,1
Tschechien	5.940,3	7.628,9	38,6%	40,1%	1.688,6	28,4%	3,8	1,3	0,0%	0,0%	-2,5	-65,8%	-5.936,5	-7.627,6
Ungarn	868,4	636,4	5,6%	3,3%	-232,0	-26,7%	490,6	467,1	3,3%	3,5%	-23,5	-4,8%	-377,8	-169,3
Schweiz	249,4	372,4	1,6%	2,0%	123,0	49,3%	4.215,6	4.061,0	28,7%	30,3%	-154,6	-3,7%	3.966,2	3.688,6
Slowenien	85,8	198,2	0,6%	1,0%	112,4	131,1%	3.276,8	3.083,4	22,3%	23,0%	-193,4	-5,9%	3.191,0	2.885,2
Italien	0,0	0,0	0,0%	0,0%	0,0	0,0%	1.788,0	1.659,2	12,2%	12,4%	-128,8	-7,2%	1.788,0	1.659,2
Summe	**15.374,7**	**19.001,7**	**100,0%**	**100,0%**	**3.627,0**	**23,6%**	**14.676,1**	**13.388,7**	**100,0%**	**100,0%**	**-1.287,4**	**-8,8%**	**-698,6**	**-5.613,0**

Exhibit O – Austrian Electricity Imports and Exports (Source: VOE)

Results yearly auctions Cz <-> A

Year	Auction	Type	Available Capacity MW	Allocated Capacity MW	Price €/MW
2006	**1a**	**Cz -> A BASELOAD**	**50**	**50**	**119.578,00**
2006	**1b**	**Cz -> A PEAKLOAD**	**150**	**150**	**53.628,00**
2006	**2**	**A -> Cz BASELOAD**	**600**	**550**	**0,00**
2005	1a	Cz -> A BASELOAD	50	50	50.632,80
2005	1b	Cz -> A PEAKLOAD	150	150	15.003,01
2005	2	A -> Cz BASELOAD	600	330	0,00
2004	1a	Cz -> A BASELOAD	50	50	36.234,00
2004	1b	Cz -> A PEAKLOAD	150	150	11.592,00
2004	2	A -> Cz BASELOAD	600	600	36,00
2003	1a	Cz -> A BASELOAD	200	200	12.000,00
2003	1b	Cz -> A PEAKLOAD	100	100	7.466,00
2003	2	A -> Cz BASELOAD	400	320	20,00

Exhibit P – Auction Results (Source: www.auction-office.at)

Conclusions

Finally, the Czech Republic is transition economy and as a member of the EU has implemented all required reforms. A special issue for the Czech Republic will be final privatization of remaining companies and further progress and possible choice of the generator for all end-users. The electricity sector is generally well-prepared for the competitive internal energy market through the privatization of a major player in the market, the restructuring of electricity utilities and broadly cost-reflective electricity prices. Transparency and openness must be ensured during the ongoing electricity utilities restructuring and privatization process.

There is a major question related to privatization: Will the Czech government deepen the deregulation and thus lower the dominant position of CEZ before successful privatization of this giant? This would significantly decrease possible positive outcomes from the privatization. But again EU will probably offer no choices there. Also, future resources and subsidy policies, refurbishing of all old coal fire power plants, which are the backbone of the generation and decreasing of GHG, will be challenging issues. Could any system similar to that of the U.S. be used in the future? Present level of deregulation still relies on the limits in terms of maximal prices set by ERO. Also, the role and influence of the full emergence of the trading on accessible European market on the Czech energy market is a very interesting issue. It is possible that all Czech power will be sold in the West and cheaper from the East used in the Czech Republic.

Austria's share of hydropower and its location in Central Europe both benefit its electricity sector. This indigenous RES provides an emissions-free power generation source, which enhances energy security for a country with limited fossil fuel resources. Austria's long border and geographic position allow for extensive electricity trading. The existing transmission grid allows export in the summer and imports during the winter.

Although Austria effectively opened its electricity market back in 2001, it should make a thorough examination of market power issues in the sector, since "Verbund" owns nearly 40% of the total national generating capacity.

The future will show, if the electricity markets of the Czech Republic and Austria will, amongst others, will form a common Central European Market. First the market opening in the Czech Republic has to be completely implemented. Since the building of new power plants and the economic calculation is extremely long-term oriented, there will be some years left before the old coal-fired plants in the Czech Republic will be decommissioned and substituted by state-of-the-art gas fired CHP plants. Maybe there could be a common planning for new capacities, incorporating the needs of both countries.

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