

News at SEVEN

VOLUME 7

NUMBER 1

MARCH 1999

ENERGY EFFICIENCY NEWS FROM THE CZECH REPUBLIC

Implementation of Competitive Model in Czech Power Supply System

In connection with the Target Model of the Czech Power Supply System (see News at SEVEN No. 1/98) SEVEN has prepared a study for the Czech Association of Energy Distribution Companies (ČSRES) titled "The Implementation of a Competitive Model in the Czech Power Supply System." The study proposes how to proceed concretely under Czech conditions when introducing a model of regulated third-party access to the networks and license system for the construction of new sources.

In the study, SEVEN proposes to introduce competition even prior to accession into the European Union so domestic companies can obtain a certain amount of time to adapt to the competitive environment and thus strengthen their competitive edge in the common European market. The entire implementation process is divided into several phases:

Preparation Phase - This includes preparing new energy legislation, reorganizing the power companies (both the national supplier CEZ and the regional distributors), preparing the full privatization of the power companies, creating an institutional framework for a competitive electricity market (the founding of a functional regulatory body and an electricity exchange), as well as setting and publishing rates for the use of the networks and system services.

Phase 0 - After passage of a new energy law, competition will be introduced in this phase in the "wholesale" market, i.e. for all producers, importers/exporters and regional energy distribution companies, but not for the final consumer. The newly created electricity exchange will allow not only the purchase and sale of electricity outside of conventional bilateral contracts, but primarily it will be a source of reserve capacity for individual producers and traders.

Phase 1 - After the removal of price distortions and cross subsidies the market will be made accessible to the first group of final consumers as well. In this phase the final consumers to obtain access to the competitive market will be those with an annual consumption above a determined threshold, smaller consumers who have suitable metering equipment and those who purchase "green electricity."

Phase 2 - Accession into the European Union will be followed by the opening of the market in full compliance with the current version of the EU Directive, i.e. while ensuring full international reciprocity in electricity trading, fulfilling the minimum requirement for the percentage of the market that is to be open, and so forth.

Phase 3 - In the final phase the market will be opened to all consumers. In other words: 100% of the electricity market will be open for competition.

A necessary condition for the successful introduction of competition in the Czech power supply system is the reorganization of the monopolies that have dominated to date. The first steps in the break-up of the CEZ transmission network system into daughter companies have already been taken. Further, a workable solution, though not necessarily the definitive one, has been proposed for the reorganization of CEZ into a holding arrangement with the creation of three daughter production companies. This will strengthen internal competition on the domestic electricity market and ensure greater effectiveness of the new arrangement. Similarly the proposal contains the reorganization of the distributors into divisions separating the competitive activities from the monopoly ones (trade or production division and a network division).

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The critical moment for the effective introduction of the model is the creation of a functional electricity exchange. The risk here lies not only in the short time frame to create such an institution but also in acceptance of the new method of trading on the exchange by existing companies.

In order to ensure a strategic competitive advantage for existing electricity traders during the gradual opening of the market, it would be useful to aim at marketing "green electricity" to mid-sized and small commercial consumers and in the residential sector and for companies to include this fully in their business strategies.

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Regional Development Strategies in the Czech Republic

Regional development strategies in European Union member countries play an important role in the implementation of development projects in the EU - their existence is a necessary condition for drawing on EU Structural Funds. This is why, on April 8, 1998, the government of the Czech Republic passed Decree No. 235 on the Principles of Government Regional Policy that gave the minister for local development until June 30, 1999, to draw up and submit to the cabinet the following proposals:

- regional development strategies for the

Czech Republic and

- regional development programs for selected regions

Pursuant to this decree, from September 1998 to March 1999 what are called Regional Development Strategies (hereafter RDS) were prepared in all regions of the Czech Republic. These documents were based on situational analyses of regions in the following areas:

- raw material and energy sources (including extraction of mineral raw materials)

- development of transportation infrastructure and tourism
- agriculture, waste management
- support of small and mid-sized business

Contribution of Small Municipalities to Drafting Regional Development Strategies

Regional development strategies in general predetermine the types of major development programs that will be prospectively co-funded within the framework

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Regional Development Strategies in the Czech Republic (continued from page 1)

of the pre-entry aid from the European Union. A closer analysis of RDS in the Czech Republic shows that most regional strategies make it their goal to increase the effectiveness of a region's energy source use and outline regional programs to support energy conservation and alternative energy sources.

Many municipalities have not yet learned of these and other interesting RDS recommendations since RDS, in most cases, have not been publicly discussed. The instructions issued for drafting RDS unfortunately do not clearly require that strategies be discussed with the affected municipalities and with the public. Owing to the absence of requirements for public discussion of RDS and to time constraints during strategy preparation, public discussion was dispensed with in many regions. Small municipalities that did not participate directly in the work of Regional Coordination Groups set up ad hoc to draft RDS therefore had little opportunity to acquaint themselves with the materials under discussion and to submit their comments.

Possibility for Public Discussion of Regional Development Strategies

Due to the lack of time for discussion, the drafting of regional development strategies in the Czech Republic has, in many cases, differed from the preparation of similar documents in EU countries. For example, in Ireland the preparation of regional development plans is based on detailed consultation with all interested parties in a given region - namely with the municipalities, businesspeople and non-profit non-governmental organizations (NGOs).

At present RDS have been completed in every region and the possibility exists for the strategies to be discussed with municipalities and the public. This discussion may be very important if we realize that RDS should be "living" documents that are developed on the basis of initiative from the bottom up - the initiative from municipalities and the citizens who live in them. Non-profit organizations, small municipalities and business associations thus have an ideal opportunity to contribute to the amendment and development of RDS in two simple steps - by obtaining the RDS from Regional Bureaus and by taking part in the public discussion of them.

The discussion of RDS can be conducted with the participation of delegated members of the regional coordination groups that can present the strategies at public sessions of municipal councils, at working meetings of business associations and at annual general meetings of non-profit NGOs. The goal of these discussions is simple: to acquaint the largest number of active citizens and legal entities possible with the existence of the strategies and to motivate them to submit practical proposals for their development and practical implementation.

The public discussion of RDS can be run using the simple guidelines that were prepared by the Center for Community Work (Centrum pro komunitní práci). These guidelines can be obtained from:

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PHARE in North Bohemia

Information about the projects carried out under the aegis of the PHARE program in the "Black Triangle" region was published in News at Seven (No. 2, 1998). Since the three projects in Liberec, Horní Podluží and Velký Šenov have now been completed, we can now present some more details.

The projects were financed in part by the PHARE Fund. Two cogeneration units were installed in the Liberec swimming pool (all auxiliary equipment with the exception of the cogeneration units being covered by PHARE). In Horní Podluží, changes were made to an apartment building, which included fuel switching to natural gas and insulation, the roof was altered and insulated, and the inner windows were replaced (the fuel switching was paid for by the local authorities). In Velký Šenov, natural gas was introduced and insulation was installed in a primary school (the local authorities financed the work related to insulating the building).

The time allotted for the projects to be carried out was very short - less than half a year, including the selection process. In view of this, an informal procedure was approved by representatives of the European Commission that allowed the contractor selection process to be cut to a minimum. This involved sending questionnaires to selected companies to obtain a binding expression of interest and subsequently narrowing down the field of bidders. Two companies made the short list for the Liberec project, four for the project in Horní Podluží, while only one was selected for the work in Velký Šenov. All were sent detailed tendering documentation for the preparation of the bid. The received bids were judged objectively, expertly and qualitatively, with financial requirements being considered as well.

The commission was made up of representatives of the Romanian Ministry of Industry and Trade (the principal contractor for the project), the PHARE Project Coordination Unit in Bucharest, the PHARE PCU in the city of Ustí nad Labem, Czech Republic, the t.r.b. company from Vienna, and representatives of the Ještědská sportovní company (for the Liberec project), and the mayors of Velký Šenov and Horní Podluží.

Work commenced in July of 1998. In the course of the work on the individual sites, no unforeseen circumstances arose. Problems were created for those implementing the project by the summer rains and by some contractors. The work was completed with a minor delay and a special timeline was drawn up for the final work on the primary school in Velký Šenov in view of the fact that instruction was already underway. The completion date for the work was set as November 30, 1998.

The above mentioned projects successfully completed under the auspices of the PHARE Program are the result of practical cooperation between the future proprietors of the work, the contractors who carried it out, and the employees of SEVEN. The latter, representing the Czech side of the consortium carrying out the program, played a major role throughout the process: from finding potential projects, to assessing them from the technical and financial standpoint, to cooperating in compiling documentation, right through to project completion.



The projects have been very well received locally not only because they were completed rapidly, but also because they serve as examples of projects that lead to energy conservation, and particularly that reduce emissions of pollutants. The total contribution of the PHARE Fund to the project amounted to 251,371 ECU, while the expected reduction of SO₂ emissions is 46,000 kg per year.

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Low-energy, Low-cost Building

An attractive and high quality building with low energy consumption for heating and at the standard purchase costs comparable to a customary construction - sounds like a utopia, even though several such buildings have already been built in the world. But why haven't they yet become commonplace in the Czech Republic? SEVEN has planned a project funded by the Global Environment Facility/UNDP that is aimed at removing barriers which have prevented the expansion of such low-energy low-cost buildings in the Czech Republic. From the Czech side the project is being overseen by the Ministry of the Environment and the Center for Environmental Issues of the Charles University. SEVEN has been assigned the task of implementing the project.

The essence of the project is not merely the construction of a single demonstration building but first and foremost the creation of an environment that will enable similar low-energy and low-cost buildings to be erected in the future without the need for any special subsidies. The actual planning and design of a similar, specific residential building will be preceded by working discussions with wide participation of interested experts. The purpose of the project will be to define the principles of low-energy, low-cost

buildings feasible under domestic conditions, to develop and construct a specific design for such a building and at the same time to publicize the practical experience thus gained among as many professionals and investors as possible so that such buildings could become a part of regular municipal constructions in the future.

So that the construction of the mentioned building can be replicated under domestic conditions, no capital costs will be covered from the project budget, and neither will the project include securing funds for the construction. The investor of the residential building with roughly 22 apartments will be the city that will fund the construction with its own as well as external resources including subsidies. The capital costs of the building, however, will be fully comparable with a standard construction.

In the second phase of the project, a mechanism will be proposed for the widespread replication of low-energy and low-cost building construction in the municipal sphere based on the practical experience from the construction of the demonstration building under domestic conditions. It will not involve replicating one specific type of building, but rather disseminating the principles of low-energy and low-cost building construction so that they

become common practice. This may be aided by such things as the creation of special heating equipment standards corresponding to such buildings and making use of existing government subsidies and grants to meet the standards, etc.

If you are interested in participating in the described project please contact the SEVEN office. Several forms of cooperation are being considered from work in the project team in individual phases of the project, to participation in seminars, to being regularly updated on the progress of the work. Not only residential building investors from the municipal sphere are welcome to cooperate, but also architects, urban planners, designers, construction engineers, experts in the technical side of buildings and other professionals from both the field and academia. Lay people and representatives of the future tenants of the low-energy and low-cost buildings are also free to cooperate.

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More on EEBW '98

Let us return briefly to the most significant ideas that were heard in the individual sections of the EEBW '98 conference in October of last year. There were some very stimulating viewpoints that moved the area of energy demand reduction in the right direction.

- The main tool of **area energy planning** in a market environment is becoming first and foremost communication between the city, energy suppliers and residents/consumers/investors in that place. This does not involve merely posting an energy plan on a public bulletin board, but also active discussions in the form of public hearings, determination of area environmental priorities, etc. On one hand there is a call in the municipal sphere of area planning for the strengthening of authority (legislative instruments), though on the other hand this approach clashes with the current legislation protecting market competition. Public discussion of an energy plan and emerging energy objectives is one way to overcome this conflict.

- **Liberalization in the energy sector** will bring new possibilities for the development of measures such as "green pricing" (customer-preferred electricity from alternative sources) and Energy Performance Contracting services as a part of the commercially oriented Demand-Side Management programs. On the other hand, traditional instruments used to support environmental policy become less effective in a competitive energy sector. Some countries leave traditional tools in place even after liberalization as part of a so-called commitment to public services. The European directive allows for such exceptions in the liberalized market but limits the extent of them. In each case attention needs to be paid to

the development of new instruments that are compatible with the competitive market.

- The problem of applying **energy conservation in industry** has often been the uncertainty of future product sales and the corresponding financial instability of the business. Another problem is that capital expenditures are primarily aimed at ensuring production and only after this at reducing costs. Company management usually does not begin thinking about energy conservation or the more effective organization of work until bills for energy reach a significant percentage of total costs. The ability to invest in energy conservation in industry is related to the completed restructuring and privatizing of the business and its ability to establish itself in the market.

- **The installation of cogeneration units**, whether for the purpose of heating in homes, the commercial sector or industrial companies, as well as the economic effectiveness of doing so, is a matter that is very dependent on the specific conditions of each case. Therefore it unconditionally requires that a thorough technical and economic analysis be done before construction work begins. The same technology installed in one instance may be very profitable while under other conditions it may be make no economic sense.

- In the field of **Energy Performance Contracting** service provision the conditions in the Czech Republic are not ideal, but the number of projects completed and planned shows that the way can be found to do it. There exists, however, little willingness on the part of banks to provide loans to organizations administering government property. This points to the fact that a lien, for example, cannot be applied to

government property. Another concern that can appear is that operation of a public facility by an ESCO constitutes "hidden privatization." Government officials and public administrators also often lack sufficient concrete experience with the given issue. For this reason there needs to be greater dissemination of detailed information and promotion of EPC services and experience with it to date, including how to make contractual arrangements for EPC services.

- The possibility for a more massive use of **non-traditional and renewable resources** is not tied to the rectification of energy prices but primarily to the inclusion of externalities in energy prices. The basic information provided by lectures on alternative energy sources was that biomass can compete with community-wide fuel switching to gas. In part this involves small wood burning boilers and in part large boiler systems for district heating. The biggest problem is the expenditure required for newly built district heating systems. There have, though, already been a number of projects carried out that use biomass.

- As for the **energy auditing of buildings**, it is true that the architect should take energy consumption into consideration during the architectural drafting of the designs of all building types. The basic method of energy evaluation is an energy audit. The Czech Energy Agency already strictly requires the performance of audits for projects applying for their support. Similarly, the Czechoslovak Trade Bank (ČSOB) requires the performance of an energy audit using the unified method drafted by SEVEN in 1996 for financing from the PHARE Energy Savings Fund.

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Households Not Doing Much to Conserve

The Energy Advisory Center of CEZ (the national power supplier) has carried out research with the aim of ascertaining the current structure of household consumption, predicting expected development and testing the methodology of data acquisition. This involved compiling data collected from an analysis of residential electricity consumption, from the regional power distribution companies, from a survey conducted by the company GfK and from the Czech Statistical Office (CSO). Most of the data relate to 1996 and 1997. In addition to other things, the research revealed a very low level of public awareness of energy conservation measures, as well as a lack of interest in professional advice. CSO's statistics concerning household bills show that, in comparison with European Union countries, energy costs in the Czech Republic are relatively low. Therefore, it follows that decreasing energy consumption in the residential sector is not on issue.

Some results of the research:

- The biggest share of residential energy consumption is made up of heating, production of hot utility water and food preparation. However, more than half of households do not use electricity as the main energy source for heating, warming utility water and food preparation. The most common ways to heat are with district heating (32 %), natural gas (27 %) and solid fuels (22 %). Direct heating with electricity was the main source of heat for only one per cent of those asked, while 6.8% used some type of electric heating (which

equaled consumption amounting to 5.4 MWh in 1996).

- Purely electric heating comprises 29 % of hot utility water production, combined heat storage tanks are used by 5.7 % of those questioned. What is most common is to obtain hot utility water in combination with district heating (41%).
- Approximately one third of respondents expressed a willingness to change their means of heating or to take steps towards decreasing the energy required for heating (e.g. 20 to 30% of those questioned are considering individual or automatic regulation of heating). But only a negligible number of respondents are considering changing their means of heating in the near future (less than one per cent plan to replace their present means of heating with electricity). Insulating windows (the least costly measure) is the step which the greatest number of households are intending to take. A total of 17 % of households are considering reducing expenses by means of automatic regulation of heating, while 22% of respondents by means of individual regulation. Only a very small number of respondents favor insulation to lower thermal losses of peripheral constructions. Additional thermal isolation is being considering by 18 % of those questioned.
- Modernization of large household appliances over the past 10 to 15 years has reduced consumption of electricity by an average of 20 - 30 % (e.g. by decreasing the amount of water used in washing machines, using glass-ceramic

cooking plates without thermal inertia, and replacing traditional bulbs with modern energy-efficient fluorescent tubes etc.).

- In terms of electricity consumption, a significant appliance is the washing machine (the average age is between 3 and 9 years, depending on the brand). Cooking stoves in use are largely gas or combined (65%). The average age of cooking equipment is between 3 and 12 years. Almost all households (98%) have refrigerators (the average age is between 5 and 11 years), 38% of households own freezers. The results of the survey of home appliances were distorted because the choice of households was statistically not entirely ideal due to the rather large number of pensioners represented.
- According to the GfK survey, only 0.1% of respondents use solar energy for heating and only 0.1% of those questioned use thermal pumps as an additional source for warming hot utility water.
- In many cases, people did not know the answers to the questions (e.g. only 40% of respondents were able to answer the question about their power rates, and as for the question about the price of one kWh of electricity, 70% answered "Don't know").

Source: Zpravodaj ČEZ, Nr. 9/98

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Photovoltaics in 1998

In December 1998 the first Czech and Slovak conference and exhibition on photovoltaic transformation of solar radiation was held in the town of Rožnov pod Radhoštěm. The conference took place in the hall of the astronomical observatory in Valašské Meziříčí with the support of the Czech Energy Agency.

Over the two days of the conference, the following topics were discussed:

- The development of photovoltaics and current trends at home and abroad
- The properties and accessories of photovoltaic systems and their application
- Photovoltaics and architecture
- Design of photovoltaic systems
- Assembly of photovoltaic systems, implementation and operation
- Cost factors in applying photovoltaic systems
- Norms for photovoltaics
- Support programs for faster introduction of photovoltaics.

The presenters' speeches have been collected in the 150-paged conference proceedings costing 350 CZK + postage.

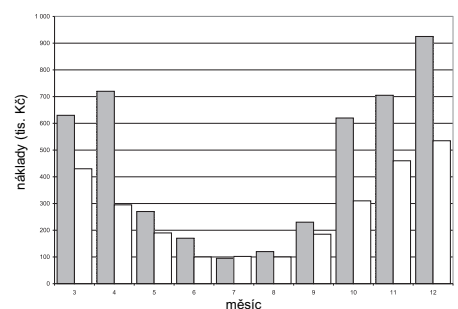
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Energy Conservation in Ivančice Hospital

The energy conservation project in the Ivančice Hospital definitely is not one of those that are launched with fanfare and then forgotten about later on. At the end of 1996 the hospital was faced with a problem that threatened its very existence - the disintegration of its central heating supply system from the heating plant in nearby Oslavany. The heating plant underwent a change in ownership and for a period disconnected its major heat customers. An unfeasible increase of heating prices was expected and in a worst case scenario even the stoppage of supplies.

A hospital cannot exist without heat. The hospital administration at the time accepted the offer to take part in a US AID program. As part of the program SEVEN provided the hospital with consultation services. Together they determined a possible scenario of development and a strategy to solve the problem. The energy audit mapped out the energy consumption in the hospital complex and pinpointed the areas of potential savings. This was followed by a proposal for a new energy plan. Based on the audit and subsequent analyses, the hospital administration decided not to build its own boiler but to move to another provider of central heating - the company Teplo Ivančice. The supply of technological steam was resolved by constructing a steam generator paid for from a US government grant. The other capital costs, amounting to roughly 11 million CZK, were covered by contributions of the municipal government, the Czech Energy Agency, bank loans and the hospital's own resources.

Thirteen months after the SEVEN staff's first contact with the hospital administration the project



Ivančice Hospital: comparison of heating costs for 1997 and 1998 - before and after the demonstration project was carried out.

was completed. Now, another year later, there are no longer any traces of the trenches dug for the new distribution pipes and each building has its own heat exchanger station. The power engineer controls the monitoring and regulation of energy consumption from a computer. The energy effect of the project is evident in the reduction of consumption by more than a quarter. For the hospital budget, however, the financial effect is substantially more significant. In comparison with the previous manner of supplying heat, the decline in operating costs is nearing fifty percent.

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Complete Temelín Nuclear Power Plant? Results of Review

A government-selected team of experts whose task was to consider the completion of the Temelín Nuclear Power Plant (TNPP) concluded its work in March 1999 with a final report. In addition to the nine Czech experts who took part in the work of the team there were representatives from the neighboring countries of Poland, Austria, Slovakia and Germany and from the OECD Nuclear Energy Agency. The role of SEVEN, as a member of the Czech part of the team, was to address economic issues of the power plant's operation.

The nuclear power plant with a 1000 MW capacity is in the last phase of construction. Of the 98.5 billion CZK planned, 80 billion has already been spent building or is otherwise tied up in the construction and contracts.

The team failed to find serious shortcomings in how the construction is being carried out and managed and states that the first block can be commissioned as soon as the year 2001, if the legal preconditions are completely resolved (namely the EIA for the changes made to the project) and the comprehensive trial successfully passed. The schedule is admittedly realistic, but tight, so that further delays cannot be entirely ruled out. With respect to nuclear safety and power plant management, following the changes implemented in the project no serious problems were found or even significant differences when compared to the standards of developed countries.

The most serious problem is the risk related to the payback period on investment in TNPP. Given the high costs and long construction period, significant economic benefits have not been expected from this investment. The calculations clearly confirmed these expectations. Nevertheless, the decision was already made in the past on 80 billion CZK of this unprofitable investment and nothing can be done to change that. For that reason the economic analyses were focused on the part of the costs which can still be the subject of a decision, i.e. on the remainder of the costs being released now for completion.

The fact that the investment remaining until completion itself will not necessarily bring returns came as a surprise. The economic calculations admittedly showed that if the project is evaluated without including the so-called "sunken costs," i.e. without the already expended 80 billion CZK, this remaining investment has a high return. The condition, however, is for the operation of TNPP at full utilization throughout its service life to generate new revenues from the sale of electricity produced. This condition will evidently not be met.

In the Czech Republic today great reserves in production capacities exist which are caused by an unexpectedly low increase in domestic consumption of electric power at the beginning and end of this decade. This situation might not change in the next few years. Electricity from TNPP in the first years of operation may only

prove useful through exports or by replacing the production of other energy sources. Reduced production from the coal sources of ČEZ, the national power supplier, would mean an economic loss for the company which the TNPP project will bear for only a limited period. If ČEZ fails to sell its entire capacity, including the TNPP, over the next decade, the completion of the power plant itself will become a lost investment, even in the case that we assist the project considerably by not including the already expended (sunken) funds.

The uncertainty in the estimate of future electricity sales is also compounded by the liberalization of the power supply market of the European Union, which the Czech Republic will be joining during the next decade. Within the framework of the EU it will no longer involve merely a balance between supply and demand in the Czech Republic, but the balance on the Europe-wide market, where today a surplus in production capacity is being estimated of 20% on average.

The Czech government, which in the past assumed part of the loan guarantees for the TNPP and is the majority owner of ČEZ, will decide on the question of completion in the near future. In the meantime it has reacted pragmatically: it has requested the EU for a delay in the obligatory introduction of a liberalized electricity market.

Contact: Jaroslav Maroušek, SEVEN

Funding Energy Saving Projects in Central and Eastern Europe

On January 28 - 29, 1999, an international conference was held in the Municipal House in Prague on the topic of funding energy conservation projects in Central and Eastern Europe. The conference was put on as part of the long-term project Energy Conservation 2000 of the UN's Economic Commission for Europe. The event took place under the auspices of the Czech Ministries of Industry and Trade, Foreign Affairs, and the Environment as well as the City of Prague.

Among other things, during the conference two very interesting documents were made available that had been drafted under the Energy Conservation 2000 project. These were entitled "Funding Sources for Energy Conservation Projects in

Central and Eastern Europe" and "Barriers to Funding Energy Conservation Projects in Central and Eastern Europe."

Lectures and discussion forums over the two days were attended by more than 150 experts from 29 countries representing a diversity of fields relating to energy conservation. There were lectures from high government officials as well as papers from domestic and foreign experts in the field of energy conservation, presentations by foreign investors and contractors that work in this area, plus the views of representatives of domestic and foreign banks on the funding situation for energy conservation projects. The event organizers will compile the thirty lectures into

conference proceedings that will be published in English only.

More information can be found at the web site <http://www.ee2000.net>.

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Government Support for Energy Conservation in 1999

A total of 700 million CZK has been earmarked in this year's government budget to promote energy conservation and the expansion of renewable energy resources program this year. From this amount 300 million will be given to the Czech Energy Agency (CEA), which comes to 25 million less than last year.

The break-down of the ČEA programs is similar to 1998. There are nine sub-programs embodying various fields including support for consultation, education and the drafting of area energy documents. Plus, one program has been added containing

support for the development of energy service companies, i.e. support for EPC services.

Government support continues to be provided in the form of financial grants and the provided resources must be used within the given year. Support is provided on the basis of a selection process. The realization period of the supported projects may not exceed 18 months. This year's deadline for submitting applications for government support is the March 31, 1999. One of the basic conditions for obtaining support is that an energy audit must be conducted which

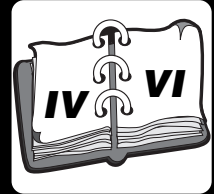
documents the energy conservation potential that can be achieved.

According to information from the Czech Ministry of Industry and Trade, total government support for energy conservation and renewable energy resources in the year 2000 should amount to 1.6 billion Crowns.

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ENERGY EFFICIENCY EVENTS IN AND ABOUT CENTRAL AND EASTERN EUROPE

April 99 - June 99



TEPELNÁ ČERPADLA A JEJICH VYUŽITÍ (HEAT PUMPS AND THEIR USE)

--seminar on the use of heat pumps
in practice
VUT Brno, Czech Republic, April 8, 1999
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Fax: +420-5-45213748

IZOLACE '99 (INSULATION '99)

- MAINTENANCE & OVERHAUL session
--conference and exhibition of maintenance
and overhaul technology
Prague - Pyramida Hotel, Czech Republic,
April 8, 1999
Contact: Kutnar - izolace staveb, Prague
Ph.: +420-2-3113134; Fax: +420-2-3113134

ENERGETICKÉ ROSTLINY A LIMITY KRAJINY (ENERGY CROPS: POTENTIAL AND LIMITATIONS)

--professional seminar concerning
the utilization of biomass for energy
Solární ekopavilon, Prague, Czech Republic,
April 13, 1999
Contact: Liga energetických alternativ, Prague
Ph.: +420-2-5814175, 22782315;
Fax: +420-2-22782315; E-mail: lea@ecn.cz

TEPLO OSTRAVA (OSTRAVA HEATING)

--seventh exhibition of heating, air conditioning
and ventilation technology
Palác kultury a sportu - Ostrava, Czech
Republic, April 20 - 22, 1999
Contact: Agentura 7 - výstavy a veletrhy,
Ostrava
Ph.: +420-69-6624008;
Fax: +420-69-6623050, 6623051

TEPLÁRENSKÉ DNY (HEATING DAYS)

--international conference and exhibition
of heating techniques and technologies
Hradec Králové, Czech Republic,
April 20 - 22, 1999
Contact: Parexpo s.r.o., Pardubice
Ph.: +420-40-46312, 47217;
Fax: +420-40-48056

KLIMAEXPO

--professional exhibition of ventilation,
air conditioning and environmentally-friendly
technology
Výstaviště - Prague, Czech Republic,
April 20 - 22, 1999
Contact: Arrow Trade s.r.o. Prague
Ph.: +420-2-66710069; Fax: +420-2-66710069

ZDRAVÁ MĚSTA ČR: Postup k evropské kvalitě v návaznosti na finanční zdroje (HEALTHY CITIES CZECH REPUBLIC: Progress towards European Quality and Linkage to Funding Sources)

--seminar as part of the URBIS trade fair
BVV exhibition grounds - Building E, Brno,
April 23, 1999
Contact: Ing. Petr Švec, Zdravá města ČR,
Prague
Ph.: +420-602-500639; E-mail: praha@nshzm.cz

AQUA-THERM NITRA

--international professional trade fair of heating,
ventilation, plumbing and
environmentally-friendly technology
Nitra, Slovakia, April 27 - 30, 1999
Contact: Progres Partners Advertising s.r.o.,
Prague Ph.: +420-2-24218403, 24213905;
Fax: +420-2-24218312;
E-mail: info@ppadvert.cz

ENVIRO

--international exhibition of environmental
protection and conservation techniques and
technologies
Nitra, Slovakia, April 27 - May 1, 1999
Contact: Agrokomplex - Výstavnictvo, Nitra
Ph.: +421-87-572121, 531138;
Fax: +421-89535330; <http://www.agrokomplex.sk>

DOBŘÉ ZKUŠENOSTI PRO PŘÍPRAVU EMISNÍCH INVENTUR (GOOD PRACTICE IN INVENTORY PREPARATION)

--seminar on energy, transportation and fugitive
emissions inventories
Prague, Czech Republic, April 28 - 30, 1999
Contact: SEVEN, Prague
Ph.: +420-2-24252115; Fax: +420-2-24247597;
E-mail: milos.tichy@ecn.cz; [Http://www.svn.cz](http://www.svn.cz)

CLEAN-UP TECHNOLOGIES

--Seminar on environmental clean-up
processes
Juniorcentrum, Seč u Chrudimy, Czech
Republic, May 11 - 13, 1999
Contact: Vodní zdroje EKOMONITOR s.r.o.,
Chrudim Ph.: +420-455-83303, 83304;
Fax: +420-455-83310;
E-mail: halouskova@ekomonitor.chrudim.cz;
[Http://www.ekomonitor.cz](http://www.ekomonitor.cz)

INVESTICE DO ENERGETICKÝCH ZAŘÍZENÍ (CAPITAL INVESTMENT IN ENERGY FACILI- TIES)

--seminar on the procedure from project
planning to construction and evaluation
Prague - Vodní stavby Building, Czech

Republic, May 12, 1999
Contact: SyS - Symposium Servis, Prague
Ph.: +420-2-61220458, 499145;
Fax: +420-2-61220458

CZECHOTHERM

--heating, air conditioning, ventilation,
refrigeration, measurement and regulation,
the environment, energy conservation
České Budějovice, Czech Republic,
May 12 - 15, 1999
Contact: Výstaviště České Budějovice a.s.
Ph.: +420-38-7714155; Fax: +420-38-41620

ELEKTRA 99 + STAVOTECH

--industrial electrotechnology + construction and
technical trade fair
Hradec Králové, Czech Republic,
May 26 - 28, 1999
Contact: Omnis Expo s.r.o., Olomouc
Ph.: +420-68-5516155; Fax: +420-68-5232097;
E-mail: omnis@omnis.cz

FOR EKO

--exhibition of materials, products and
technologies that protect the environment and
conserve energy
Výstaviště PVA Letňany, Prague, Czech
Republic, May 26 - 30, 1999
Contact: Veletržní správa ABF, Prague
Ph.: +420-2-22891138; Fax: +420-2-22891198;
E-mail: veletrhy@abf.cz;
<http://www.forarch.cz/foreko/99/>

CLEAN COAL 2000

--international conference on environmentally
friendly utilization of coal in energy
Prague - Pyramida Hotel, Czech Republic,
May 31 - June 3, 1999
Contact: Conte-Eko s.r.o., Prague
Ph.: +420-2-6890516; Fax: +420-2-6890516;
E-mail: conte-eko@webhome.cz

EKOTECHNIKA

--international exhibition of environmental
protection and conservation technology
Bratislava, Slovakia, June 1 - 4, 1999
Contact: Incheba a.s., Bratislava
Ph.: +421-7-67271111; Fax: +421-7-5811655

AQUA-THERM KYJEV

--international professional trade fair of heating,
ventilation, plumbing and environmentally-fri-
endly technology
Kyiv, Ukraine, June 2 - 5, 1999
Contact: Progres Partners Advertising s.r.o.,
Prague
Ph.: +420-2-24218403, 24213905;
Fax: +420-2-24218312;
E-mail: info@ppadvert.cz