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2008 第四届中国(成都)分布式能源国际研讨会

——推广分布式能源，促进节能减排，加强区域能源供应安全

2008年10月30-31日 四川·成都

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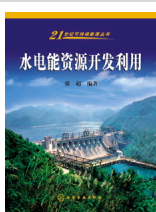
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来自三峡之都的缺电报告

徐新桥 [中国湖北省计委能源处] 2004-07-24

(一九九五年九月二十八日于新加坡)

女士们、先生们：
首先，允许我感谢这次电力情报大会主席--Michael Liew 先生邀请我参加这次盛会并演讲。

此刻，世界第一大电站三峡水电站的大坝和世界第一大河流长江正在我的家乡湖北省热吻。再过10年，我将邀请朋友们来举杯庆祝他们成功的结合而产生的光明硕果。

我今天主要想勾勒的是，湖北省电力严重短缺的灰色调，和与之相应的电力市场的灿烂光明。

一、电力短缺和电力建设对策

改革开放使中国的经济步入了快车道。预计即将过去的五年，中国腹地的湖北省国内生产总值平均每年增长12%，工业总产值平均每年增长20.5%。高速的经济增长拉动了能源的高需求。1994年，湖北省能源消费总量达4763万吨标准煤，比上年增长9.64%，其中电力消费383.97亿千瓦时，比上年增长9.64%，其中电力消费383.97亿千瓦时，比上年增长8.90%。电力消费占全部能源消费量的9.90%，原煤消费则占65.1%，而且72%的原煤从北方省份调入，造成了极大的运输和环境保护压力。电力消费供不应求，1994年，湖北省缺电量达40亿千瓦时。导致当年全省市级以上电力调度中心限电达6万多条次。1994年，湖北省人均用电量仅671千瓦时，只相当于发达国家的二十分之一左右，人均生活用电量57千瓦时，更低于世界水平。

有鉴于此，致力于电力发展是湖北能源建设方针的重点之一。素有“千湖之省”之称的湖北，长江、汉江、清江等大河贯流，“绿色水库”神农架等高山密布，因此，水力资源十分丰富，是湖北省能源资源特色。全省可开发的水电装机容量为30559兆瓦，其中94.6%为单站25兆瓦以上的大中型水电站。到1994年底止，已开发5964.9兆瓦，开发率约20%，这当中包括目前中国最大的水电站长江葛洲坝电站（2715兆瓦）。待开发的80%的水电资源中，除庞大的三峡电站（18200兆瓦）外，还有如清江水布亚电站（1600兆瓦）、潘口电站（510兆瓦）、碾盘山电站（250兆瓦）、高坝洲电站（250兆瓦），姚家坪电站（200兆瓦）等大中型水电站均将在未来五到十年内开发建设。另外，湖北省也在研究建设1000兆瓦级的抽水蓄能电站。

由于湖北省已拥有的1000兆瓦左右的电力装机中，占70%左右的水电装机受水位制约不能均衡供电，所以湖北省在枯水季节缺电更为严重。因此，适当发展火电也是必要之举。规划未来十年，需新增火电装机10000兆瓦以下，包括有300兆瓦级、600兆瓦级的火电厂，100兆瓦级甚至200兆瓦级的利用循环流化床锅炉燃用劣质煤的电厂。劣质煤也是湖北省的能源资源特色，年产量在1000万吨左右，灰分30%左右，硫分5%左右，发热量5000千卡左右。

在发展电力中，包括发展配套的输变电工程，也包括联络三峡水电站的输变电工程。

二、电力浪费和电力节约对策

一方面，湖北省能源缺乏，需要大力建设；另一方面，能源利用效率低、能源浪费十分严重，因此，节能、节电、需求侧管理，是湖北省能源工作的另一个重点。湖北省是中国的工业大省之一，正在实施的1000万吨钢的武汉钢铁集团公司、100万辆汽车的东风汽车公司、40万吨石油化工工程的荆门炼油厂等重要原材料、汽车、机械、化工基地均在湖北。另外还有一大批相配套的中小企业。湖北省工业用能属



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偏重型和费能型的工业结构，1994年，工业部门耗能占能源消费总量的79%。据调查，工业锅炉平均热效率、风机、水泵系统运行效率只有50%~60%左右，均比国外平均水平低30%以上；供电煤耗404克/千瓦时，比国外先进水平高出22%，吨钢综合能耗1.227吨，比国外先进水平高出50%，吨水泥熟料耗标煤165.95千克标煤，比国外平均水平114公斤标煤高出45%。等等。这说明，湖北省的节能工作十分重要，节能潜力很大。事实上，湖北省这些年在这方面做了一些工作。

“八五”期间（1991~1995），湖北省制订了全省第一个资源节约和综合利用五年计划，作为地方法规规定了五年的目标、指导方针、政策和措施。冶金、建材、化工等重耗能行业的产品单位能耗平均每年下降1.45~8.2%不等。建成了一批如联片集中供热、热电结合等节能节电示范项目，加上节能技术改造和技术进步、节能管理等措施，预计即将过去的五年，全省平均每年节约能源100万吨以上，节约电力5亿千瓦时以上，节能率4%左右。

未来，湖北省将加在节能节电的力度。主要方面是，在湖北省的重耗能行业—冶金、建材、化工、纺织等行业采用先进的工艺技术和装备，降低能耗，并对社会能源需求侧进行全面的科学管理。在电力行业，加强发电—供电—用电的科学调度。在电力需求侧管理方面，规划未来五年在电网上全面实行用户负荷控制，做到限电不拉闸，并变现时的单一电价为全面推行峰、谷以及丰、枯不同电价，调节均衡终端负荷，同时采取优惠政策推广应用各种节电产品，如电机变频调速器等。

三、欢迎您到湖北来

湖北省的电力建设项目热忱欢迎海外客商的合资、合作。目前，已有隔河岩水电站（1200兆瓦）与加拿大魁北克水电公司合作成功，利用日本政府贷款的鄂州火电厂（600兆瓦）、利用奥地利政府贷款的王甫洲水电站（109兆瓦）正在抓紧建设，其它还有十多个电力项目已分别与美国、法国、德国、新加坡、香港等国家和地区的客商签定了合资、合作意向书或协议书，正在申报国家批准。对合资合作电厂湖北省将负责其燃料、运输、供水等外部条件；所发电量亦将保证收购；上网电价的制订将保障投资方的合理利润，并且将随着电力成本因素的变化每年调整一次，湖北省也希望与先进国家的同仁们探讨电力需求侧管理的合作，借鉴您们成功的经验，采用您们先进的技术和装备，为人类合理利用能源资源携手努力。

欢迎您到湖北，在三峡大坝留下您的脚印，欢迎您到三峡之都的湖北省感受电力市场的灿烂景象。

我的发言完了，谢谢！

REPORT ON POWER-DEFICIENCY FROM THE CAPITAL OF THE THREE GORGES

Delivered by Mr. Xu xinqiao, Energy Division,
Hubei Provincial Planning Committee, P.R. china

Ladies and gentlemen:

First of all, please allow me to extend my special thanks to Mr. Michael Liew, Chairman of this Power Information Conference, Who is kind enough to invite me and offer me an opportunity to make a speech here.

At present, Three Gorges Dam---the largest dam all over the world and the Yangtze River---the second longest river of the world are ‘kissing’ each other in my hometown, Hubei province, People’s Republic of China. I believe that in ten years time I would be able to invite all of you to come to my hometown to celebrate the success of the construction of the Three gorges Dam.

What I would like to say here today is to give you a grey briefing on the serious shortage of power in Hubei, and at the same time, I will present to you a picture of the bright future in developing our power market.

I. Shortage of power and our countermeasure

The reform and opening-up policies have advanced China’s economy step into a fast track. It is estimated that in the past five years, the DNP of Hubei, and inland province of China, has been increased by 12% annually, and the industrial output increased by 20.5%. However, this rapid economic growth has created pressure on the development of energy industry. In 1994 alone, the total amount of coal consumption in Hubei added up to 47.63 million tons, 9.64% over the previous year, among which, the power consumption was 38.397 billion kwh, 8.9% over the previous year. So power consumption takes 9.9% of the total consumption of energy, and the raw coal consumption amounted to 65.1%. Because 72% of the raw coal had to be transported from northern part of China, it has

also brought pressure on transportation and environmental protection. In the past few years, the demand for power exceeded supply and in 1994, the shortage was 4 billion kwh in Hubei. As a result, power control centers over country level in Hubei had to cut off over 60,000 electricity lines. In 1994, per capital average consumption for power was 671 kwh, only about one-twentieths of that in advanced countries. Also the consumption for daily life was 57 kwh, which was much lower than the world level.

In view of this situation, the local government has paid great attention to the development of power industry. Hubei, known as "a province of a thousand lakes", enjoys rich water resource, possessing such big rivers as the Yangtze, Han River, Qing River, as well as high mountains like Shenlongjia, praised as "a green reservoir". In the whole province, the potential hydra-power installing-capacity is 30,599 MW, in which 94.6% could be used to build large and medium-sized hydropower stations, each with a capacity of over 25 MW. By the end of 1994, 5,964.9 MW had been developed, accounting for 20%, including Gezhouba Water Conservancy Project, the largest hydropower station completed in China so far with a capacity of 2715 MW. Out of the other 80% of hydropower resource, apart from the gigantic Three Gorges Dam (with a capacity of 18,200 MW), some other power stations will be set up, such as Shuibaya power station on Qingjiang River (1600 MW), Pankou power Station (510 MW), Zhanpanshan Power Station (200 MW), Gaobazhou power Station (250 MW), Yaojiaping Power Station (200 MW) and some other power station. All these stations are to be built in the next five to ten years. Besides, construction of some pump-storage power stations with capacity of 1000 MW are being considered in Hubei.

Limited by the water level, among all the generators (with capacity of 10,000 MW), about 70% are sometimes unable to produce electricity normally. As a result, during the dry season, the shortage of power in Hubei becomes more serious. Therefore, it is also necessary to develop thermal power stations in Hubei. It is planned that in the next ten years, over 10,000 MW thermal generators need to be installed, including 300 MW and 600 MW thermal power stations, 100 MW and even 200 MW thermal power stations, which will consume poor-quality coal by utilizing cycle fluid-bed boiler. Poor-quality coal is also one of the characteristics in Hubei's energy resource, whose annual output is about 10 million tons, containing 30% of ash content and 5% of sulphur, with capacity of producing 5000 kilocalorie of heat. In the course of developing our power industry, we must also develop our transmission and transformer stations, including the transmission and transformer projects linking up with the Three Gorges Dam.

II. Measures on power waste and power economization

On the one hand, Hubei is short of energy and efforts must be made to develop its energy industry; on the other hand, we did not maximize the utilization of our energy and energy waste is a serious problem.

Therefore, it is an urgent task for us to improve our management on energy, and we should pay more attention to the issues of energy/power economization and rationalize relations between demand and supply.

Hubei is one of industrial bases in China. Several large enterprises are located in Hubei such as Wuhan Iron and Steel Corporation, which is planning to produce 1000 tons of iron and 1000 tons of steel annually, Dongfeng Automobile Corporation, whose annual output will be 10 million trucks and sedans in the future, Jingmen Oil Refinery Plant, which is capable of refining 400,000 tons of petroleum, and other important enterprises. Besides, there are many medium-sized and small enterprises. In terms of industrial structure, the industries in Hubei. Take industrial boilers for example. According to investigations, the effective operation rates for heating, blowers, and pumping system are only 50%-60%, 30% lower than the average level in advanced countries. Other examples: coal consumption for power supply is 404g/kwh, 22% higher than advanced international level; consumption of coal for per ton of cement is 165.95 kg, 45% higher than advanced level. All this indicates that much effort should be made to save energy and there exists great potentials for the energy-economization. As a matter of fact, we have

done a lot of work in this regard in the past. During the Eighth Five Year Plan period(1991-1995), Hubei worked out the first five-year plan on resource-saving and comprehensive-utilization. As a local regulation, it laid out our target, guiding ideas, policies and measure. As a local regulation, it laid out our target, guiding ideas, policies and measure. As a result, the annual energy-consumed level on average in some areas was decreased by 1.45%---8.2%, such as metallurgical, building material, and chemical industries. In addition, some model projects were set up, which economized energy by grouping them together so that they could be supplied with energy together at a certain time. Also, efforts were made to strengthen technical modernization and improve our management. It is estimated that in the past five years, on average, Hubei have saved more than 1 million tons of energy, saved power of over 500 million kwh, and the saving rate is about 5%.

In the future, Hubei will make greater efforts to save energy. In those energy-consuming industries such as metallurgy, building materials, chemicals and textile, we will adopt advanced technology and equipment to reduce energy consumption, and conduct more scientific management on social demand and supply for energy. In power industry, we will improve the dispatching management system of generating---supply---consumption. In terms of demand and supply, we are planning that in the next five years, customers' load switch will be adopted on the electric network, so that we can ensure the automatic control of power consumption without cutting off a whole line. We will also adopt different prices according to different prices according to different seasons and time. We will work out preferential policies to extend those energy-saving products, like electric-motor frequency transformer and speed regulator.

III. You are welcome to come to Hubei

We sincerely welcome investors all over the world to come to Hubei to help us develop our power industry. At present, Geheyan hydropower station(1200 MW) has been successfully completed and the partner is a hydra-power company from Quebec, Canada. Ezhou Thermal Power Station(by using Japanese government' s loan, the capacity is 600 MW), and Wangpuzhou Hydra-power Station(by using loan from Austria government, the capacity is 109 MW)are under the construction. Over ten power projects have been signed agreements or contracts with investors from the U.S., France, Germany, Singapore, and Hong Kong, and report has been submitted to the central government for approval. For the joint ventures, Hubei is responsible for providing fuel, transportation, water supply and other external conditions, ensuring to purchase their products(electricity), and formulation of the electricity price will guarantee foreign investors' reasonable profit, and the price will be adjusted once a year according to the changes of the cost. Hubei also welcomes cooperation with foreign counterparts in the area of management on power demand and supply. We are eager to learn from your successful experience, utilize your advanced technology and equipment so that we could make greater contribution to rational utilization of energy of the mankind.

Welcome you to come to Hubei Welcome you to leave your footprint on the Three Gorges Dam. Welcome you to come to Hubei, the capital of the Three Gorges, to explore their power market!

That' s all I' d like to say.

Thank you!

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