

Principles of Electricity Prices in China

A Transition Institute Study

by

Liu Zhi

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Abstract

Four regulatory principles should guide electricity prices: electricity price increases should be challengeable and cuts permitted; hearings should be held before the price increases are approved; no true price can be determined without an electricity market; and special government Funds (such as the Three Gorges Construction Fund) and other surcharges should not be embedded in electricity rates. In order to determine the full cost price of power and to ensure that sound investments in China's power sector are made, these electricity prices reforms must be instituted.

TABLE OF CONTENTS

INTRODUCTION	Page 1
PRINCIPLE 1: Electricity price increases should be subject to public scrutiny and price cuts permitted	Page 2
– Table 1: A comparison of electricity price between China and the US in 2010 (in cent/kWh)	Page 4
PRINCIPLE 2: Public hearings should be held before power prices are approved	Page 4
PRINCIPLE 3: Without a market in electricity, no true price of power can be determined	Page 6
PRINCIPLE 4: Eliminating special government "funds" and surcharges embedded in electricity prices	Page 8
ENDNOTES	Page 10

Introduction

The stages in the electricity sector from power generation to consumption include generation, transmission, distribution, and final sale to the consumer. Different prices for power prevail at each stage: the pool purchase price, transmission price, distribution price and retail price (this final price is also referred to as the catalogue price¹ in China).

Generally speaking, in nations with power markets, the transmission price and distribution price are determined and supervised by the government (in some places, the electricity grid is open and there is competition among suppliers), while the pool purchase price and the retail price are determined by market demand. China's power reform, which started in 2002, was aimed at breaking the state power monopoly by separating power sector enterprises from the government administration and by introducing competition and establishing an electricity market.

Unlike the one-step power sector reforms used in many countries, this reform was divided into three phases: first, power generators were separated from the transmission and distribution providers; next, secondary businesses² were severed from the main power companies; and lastly, the transmission companies were separated from the distribution companies.

The first and second phases of this power sector reform were completed in 2011. Under the current electricity pricing system, the pool purchase price and the retail price are regulated by the government and the transmission and distribution companies make a profit within that price range set by the government. This paper discusses the problems and necessary reforms for electricity pricing in China.

Principle 1: Electricity price increases should be subject to public scrutiny and price cuts permitted

Electricity prices in China have no economic significance because they are not derived from the true costs of inputs or by the interplay of supply and demand. Due to the absence of a market (and therefore competition) in the supply of power, and to the monopoly control by a single national grid, the price of electricity is essentially set by government fiat. For that reason, China's supply of electricity reflects little more than the distribution of costs and benefits among different interest groups. The government determines the distribution of profits to itself, electricity enterprises, and ordinary people. However, ordinary people, as electricity consumers, should have the right to protect their own interests. What is more, the electricity enterprises are, in essence, state-owned enterprises (SOEs), and the resources they rely on, such as coal and water, are not only owned by the state but are also exploited by the state-owned companies. Because the government and state-owned enterprises are running the electricity sector on behalf of the people, the right to oppose or approve any change in prices must ultimately reside with the people. The reason is simple: the resources and the companies belong to the people.

With respect to the coal industry, the government sets the price of coal, and requires that coal companies provide coal at a lower price to electricity generating companies. This fiat pricing for coal demonstrates how the government opts to manage its utilities and resources, without any regard to market pricing or sound economic theory. The way to correct the distortions is to investigate and expose special interests and hold decision-makers accountable, and to reform the power and coal industry by privatizing it and creating competitive markets. Even if the power sector is de-monopolized, privatized, and made competitive, if the coal industry remains a monopoly, excessive profits (rents) will continue to be charged to electricity consumers in the form of higher prices. The making of many billionaire coal company "bosses" is not the *result* of markets, but the *absence* of markets. The recent so-called reform of state-owned companies — “Guo jin min tui,” literally “the state advances as the private sector recedes” — is *promoting* state monopoly control of the economy at the expense of a private, market-driven economy.

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Under the current regime in which prices of inputs and outputs are determined by government fiat, if state-owned electricity companies make a profit, it is technically a tax paid by ordinary citizens: As long as profits are made in the state-owned electricity sector, ratepayers have a right to ask for a reduction in the price of electricity, even to the extent of reducing profits to zero. Currently, the five central-generating companies are making a profit on their overall operations, which include power generation, and unrelated banking and transport operations. But they complain that they lose money on their power generation operations, especially on their thermal power generation, because, while the price of coal rose, the on-grid prices at which they could sell their power to the state grid companies remained low. These regulated price distortions led to crippling power shortages. So, the central power generating companies asked National Development and Reform Commission (NDRC) to raise the on-grid prices and retail prices. But the best way to protect power consumers is to allow power prices and, therefore the earnings by generators and distributors, to be determined by competitive markets. This would provide consumers with the most reliable electricity service at competitive prices and not just subject them to indiscriminate price increases.

In addition, it is no secret that power sector employees are paid high salaries and receive generous benefits packages, while rampant corruption plagues the industry. Because there is no market discipline, there is no incentive to improve service or to lower prices, and so prices continue to rise. Under these circumstances, the price of electricity is unduly high, even, in some cases, higher than U.S. prices. For example, in 2010, the price for residential electricity use in the U.S. was 11.6 (cent/kWh), for business it was 10.3 (cent/kWh), industrial electricity cost 6.8(cent/kWh), electricity used for transportation was 11.0 (cent/kWh). In contrast, electricity prices in China that year were: 0.475 (yuan/kWh) for residential, 0.812 for business, 0.771 for general industry, and 0.618 for major industrial users and even higher if the levies for special government funds (such as the Three Gorges Construction fund) are included.³ [Table 1](#) presents a comparison of these prices in U.S. dollars (USD). It is obvious that, with the exception of residential prices, power costs more in China than in the U.S.

**Table 1: A comparison of electricity price between China and the United States in 2010
(in cents/kWh)**

	China	United States
Residential	7.17	11.6
Transportation		11.0
Business	12.26	10.3
General Industry	11.64	6.8
Major Industry	9.33	

Note: 1) All rates given in USD

2) The exchange rate was 1 USD to 6.62 RMB on December 31, 2010

Hence, not only should domestic power consumers have the right to oppose increases in the price they pay for electricity, but they may even have a strong case to make for a price cut.

Principle 2: Public hearings should be held before power prices are approved

Several recent price increases have been introduced for non-residential electricity users in an attempt to deflect public opposition. (The price of residential power, meanwhile, remains unchanged.) Though hearings are usually held when residential power prices increase, no hearings were held when the non-residential prices increased. Why can non-residential power prices be increased without a hearing? Why are industrial and commercial enterprises helplessly exposed to price hikes?

Though hearings are usually held when residential power prices increase, no hearings were held when the non-residential prices increased. Why can non-residential power prices be increased without a hearing? Why are industrial and commercial enterprises helplessly exposed to price hikes?

From the point of view of equity, the rights of non-residential electricity users, like those of residential power consumers, to participate in the setting of power prices that affect them need to be respected and protected. Therefore, hearings for non-residential electricity price increases must also be guaranteed.

It appears that the NDRC is taking advantage of ambiguities in the Price Law in order to raise prices. According to Article 22 and Article 23 of the Price Law respectively:

Article 22: Before setting the price, the government department in charge of price, as well as other relevant departments, should conduct surveys and investigations of the price to consumers and cost to producers by listening to consumers, managers, and other relevant parties.

Relevant units should report the real situation, and provide necessary accounts, records, and other documents, to the government department in charge of price when it is doing the survey or investigation into costs and proposals for the price or guided price.

Article 23: A system for regulatory hearings should be established when determining the price and guided price products from public facilities provide a benefit to ordinary people, provide a public welfare service, and involve naturally monopolized commodities. The government department in charge of prices should chair the hearing and demonstrate the necessity and feasibility of prices by gathering opinions and suggestions from consumers, business operators, and interested parties.

There are important differences between Article 22 and Article 23: Article 22 states that the government department has a duty to listen to consumers, managers and other relevant parties, while Article 23 states that a hearing system should be established. The question is: what constitutes “listening to the voices?” Does it include listening to anybody, or certain parties? Is the government department concerned required to take any action after listening? Moreover, how “public facilities that provide a benefit to the ordinary people” defined? In reality, increases in non-residential power prices can also lead to increases in the price of commodities and consumer goods, which inevitably affect the basic interests of the ordinary people. Thus these ambiguities in the Price Law should be amended.

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Principle 3: Without a market in electricity, no true price of power can be determined

The most crucial and difficult part in the current electric power market reform is the separation of the transmission and distribution sectors. The official position is that, the most important exercise in splitting the electricity transmission from the distribution business is to first clarify the transmission and distribution tariffs. In 2010, NDRC issued the “*Notice on Conducting Transmission and Distribution Tariff Research and Calculation Work*” demanding that a transmission and distribution tariff research and calculation group be established in each province, that nation-wide transmission and distribution tariff research and calculation work be launched in June, 2010, and that an interim report be submitted in November, 2010, with the final report submitted in March, 2011. It was said, however, that “all of the provinces failed to accomplish the task and none of them managed to submit the report,” and that “the results of the calculations reported by different provinces were widely divergent. There were huge gaps in the figures, some estimating less than 0.1 yuan/KWh while others were indicating numbers higher, even much higher, than 0.2 yuan/KWh. Some provinces failed to finish the calculation work entirely, and other provinces reported that their price bureaus had simply handed the job over to the power grid enterprises.”

In fact, without a market for electricity, there is no way to calculate the price of electricity, because the price set by the government is not the real price in that it doesn't reflect true costs or demand. Recently, Mr. Zhang Weiying, a well-known economist in China, pointed out:

When conducting research on electricity price reform for my Master's thesis in the second half of 1983, I was surprised to find that almost all the government officials were convinced that the proper price could be calculated. But the big question was how. Could it be calculated on the basis of productive value? Very few people believed that it was possible to calculate the price.

The government was deeply convinced that the price could be calculated. To do so, the State Council established a Price Center in 1981 through the purchase of big and powerful computers and hired more than 50 researchers. They gathered to develop an input-output table with all the input and output data at hand.

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Allowing the grid enterprises to participate in setting the transmission and distribution tariff, as one State Electricity Regulatory Commission (SERC) official said, “like letting the wolf determine how many sheep to eat. Definitely, the answer would be the more, the better.” Therefore, it is obvious that before regulating the price of power, there must first be market reform in the electricity sector.

This seemed to be unbelievable, but everyone was devoted and firmly believed that they could figure out the appropriate price. Top leaders of the central government were waiting and expecting that reforms could be conducted with the new theoretical price. Still, many people knew that it was impossible to calculate and even if they came up with a result, nobody believed it. This was the basic situation at that time.

“From my own perspective, how could the price possibly be calculated? This was my first reaction at that time and I spent plenty of time pondering this issue. How could a correct price be determined? My conclusion was that, the price set by government should never be called a ‘price.’ I used a metaphor to illustrate. The price of power set by the government was like setting a temperature on a thermostat. Even if you had set the thermostat to the current outside temperature – say, minus eight degree Celsius – that temperature would have no meaning if it could not fluctuate to reflect changes in the temperature outside.”

Similarly, it is impossible to calculate the true price of transmission and distribution of power because the monopoly grid enterprises have not provided the necessary data that would allow the NDRC to do so. The purpose of this data is to reform the power sector by separating the economic interests of the transmission and distribution operations within the grid companies. But this reform would be detrimental to the grid companies, so the reform has been stalled by the grid enterprises’ failure to disclose data about their operations to the NDRC.

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In regards to market reform, there are many cases from abroad which China can learn from, such as the UK’s price cap (RPI-X) model. The price cap mechanism, which is designed to give incentives to the regulated firms to improve efficiency and reduce costs, sets an annual price cap (determined by the Retail Prices Index) which is adjusted for inflation and scheduled to decrease

Principle 4: Eliminating special government "funds" and surcharges embedded in electricity prices

Because China's economy has been centrally planned and prices determined by fiat, extra charges have been slapped on to current electricity prices willy-nilly, making the current rate structure extremely complicated. For example, there are at least five special fees added to current electricity charges: the National Major Water Conservancy Project Construction Fund, Reservoir Resettlement Support Fund, Rural Electrification Fund, Supplementary Fee for Urban Public Utilities, and Supplementary Renewable Energy Electricity Prices. The additional fees vary in terms of types and amounts for different provinces. In 2010, the annual average government fees (for various funds) embedded in the consumer price of electricity reached 37.05 yuan/kWh, and accounted for up to 6.49% of the sales price as a whole and accounted for nearly 7% of the price of power.

The imposition of these funds and surcharges is ill-advised policy on many counts, and should be eliminated.

From an economic perspective, these funds distort price signals, socialize private risks, and create moral hazards that lead to bad investments. For example, the Three Gorges Project Construction Fund, a charge to all electricity consumers in China whether they consume Three Gorges power or not, was abolished on January 1st, 2010, but was replaced by the National Major Water Conservancy Project Construction Fund. Those who do not benefit from the Three Gorges Dam Project and other major water conservancy projects should not be required to contribute to the Fund. Furthermore, the companies building the dam projects are not strictly government agencies any more, but are now enterprises that are required to make profits (most of them are SOEs). For example, the China Three Gorges Corporation, a state-owned enterprise that owns and operates the Three Gorges' turbines and generators, is making billions of yuan in profits. On what grounds does the government impose the Three Gorges Construction Fund levy? Moreover, hydropower companies that displace people from their homes should internalize the cost of their resettlement rather than passing the costs on to all electricity consumers in China by levying charges for the Reservoir Resettlement Support Fund. As for the additional fees for public utilities, the public has already been taxed for the provision of public services and should not be double-taxed because they are at the mercy of electricity companies. Last, but not least, is it appropriate to charge the public additional fees for renewable energy in order to subsidize these enterprises? The answer to this and many other omnibus charges that are attached to electricity rates is a clear, "no."

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Additionally, the administrative process by which these government funds and additional fees are levied is unrestrained and unregulated. A decision to impose additional fees is an administrative decision with lower level government administrators applying to the Ministry of Finance for approval. However, though these fees are included in the national budget, under China's separated income and expenditure management system, the levying of government funds and additional fees does not require the approval of China's only representative institution, the National People's Congress. In other words, the government charges tariffs without public oversight and accountability. Furthermore, it is difficult for the public to oversee the operation of government funds and additional fees. Some citizens have requested and even sued for disclosure of the revenues and expenditures of the Three Gorges Construction Fund, but the government has failed to do so or even respond to this request.

Because the process is so flawed, it lends itself to exploitation, increasing the likelihood of more arbitrary government charges being levied. As an indication of how these abuses can mushroom, in 2002 the Ministry of Finance cancelled 277 government funds in which government administrators had exceeded their authority in creating funds. Government funds and surcharges violate the rule by law and the principles of a market-oriented economy and should be eliminated from electricity rates.

Electricity price reform is called the heart of electricity sector reform in China. Furthermore, reforms to China's current electricity pricing problems should be conducted according to the above principles. The grid enterprises, operating as monopolies, and the government, which regulates prices at all levels from the generation of power to the transmission of power, should be held accountable for electricity shortages and pricing problems. The main cause for these problems is the absence of an electricity market in China. Rather than pinning the blame on coal suppliers and their thermal power plants or on the electricity generation companies, the grid companies and the government should be held responsible and should provide complete explanations and solutions. It seems that the only advantage of a state-owned monopoly is that it is easier for the public to identify the source of the problem and the one who bears responsibility for problems in the electricity sector.

Endnotes

¹ The "catalogue price" refers to the tariff standard determined by the State Council based on the categories of industries.

² Secondary business units include, for example, survey, design, construction, and machinery, equipment and grid maintenance companies. The reforms aimed to separate those business units from provincial power enterprises under both the State Grid Corporation and China Southern Power Grid Company.

³ 0.571RMB = 0.62USD