

## **Meeting China's Energy Efficiency Goals Means China Needs to Start Building Efficiency Power Plants, (EPP)**

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China's leaders have set an ambitious goal of reducing the country's energy use per dollar of GDP by 20%. In doing so, leaders have recognized that current energy trends and the related environmental consequences are not sustainable and not consistent with China's long-term interests. Increased energy efficiency is now a top priority for China.

Meeting the ambitious goals will require a range of specific actions at the central, provincial, and local levels. A new concept called the "Efficiency Power Plant" (EPP) provides a way to address these barriers and make good progress in meeting China's 20% efficiency improvement goal.

Improving energy efficiency is highly cost-effective. But there are many barriers that prevent residential, commercial, and industrial customers from investing in more efficient appliances, buildings, motors, and processes. China needs to develop and implement new policies to overcome these barriers. China has made good progress in many areas but still needs to integrate energy efficiency policies in power sector reform. The EPP concept is designed to let energy efficiency compete against new power plants in meeting China's growing electricity demand.

### **What is an Efficiency Power Plant (EPP)**

Everyone is familiar with conventional power plants (CPP). A CPP in China may be a 300 MW coal-fired power plant that operates for 6000 hours a year.

For each kWh (the amount of electricity needed to run microwave oven for 1 hour) generated, a CPP:

- burns 350 grams of coal,
- emits 3, or more, grams of sulfur dioxide, and similar amounts of nitrogen oxides, and
- costs between 35 and 40 fen.

EPPs, on the other hand, fill the same power need by saving kWhs instead of producing them. An EPP is a bundle of investments in energy saving technologies, such that a 300 MW EPP substitutes directly for a 300 MW CPP.

Each kWh saved by the EPP:

- burns no fuel,
- emits no pollution, and
- costs about 10 fen

An EPP provides China with the equivalent of a CPP in terms of capacity and energy—and does so faster, at lower cost, and with no pollution. With the right policies and actions by the government, an EPP can be financed and paid for in the same way as a CPP.

### **How many EPPs are there and how much will they cost?**

International experts have been working for over a year with Jiangsu government officials and Jiangsu's DSM experts from the State Grid Company to develop a full portfolio of energy efficiency options. Thus far they have identified more than 15,000 MWs of savings, enough to build 50 EPPs just in Jiangsu. The cost of these EPPs is about ¼ the cost of CPPs.

In Jiangsu, the alternative to an EPP is to add another 300 MW conventional power plant. New coal plants in Jiangsu cost about 38 fen/kWh. New power plants fueled by LNG or natural gas cost over 40 fen/kWh, and new nuclear plants cost even more. EPPs are far less costly and with an EPPs, the air will be cleaner, coal supply will be less strained, and power shortages will be less likely.

### **What prevents EPPs from moving ahead?**

Government officials at the central and provincial levels have expressed support for the EPP concept. Although EPPs are low cost, they are not free and must be paid for.

Under current policies if a grid company buys power from a CPP for 40 fen/kWh there are clear policies that allow the grid company to include the cost of the power in prices it charges consumers for electricity. But, if the same grid company buys efficiency from an EPP for 10 fen/kWh there are no established policies allowing the grid company to recover the cost. This gives the grid company no choice except to meet demand with the more expensive, more polluting CPP option.

The lack of a stable, predictable, and adequate energy efficiency funding mechanism is the major impediment to large-scale energy efficiency implementation in China.

International experience provides two basic options for paying for an EPP:

1. **Public Benefits Fund (PBF):** A PBF is collected through a small surcharge on electricity prices or electricity generators. In most states and countries that use PBFs, they are simply a mechanism to collect revenues in an equitable manner. Funds collected through a PBF can be used to pay for EPPs and other energy efficiency efforts.
2. **Grid company cost recovery:** Many utilities in the US and other countries treat energy efficiency costs as just another element of the cost of electricity service – like salaries, generation costs, and wires. For example, California recently adopted a planning process that requires utilities to buy all available energy efficiency that costs less than 3 cents/kWh, which is about 50% of the cost of conventional power supply. Utilities are allowed to include these costs in the prices they charge consumers.

### **Other needed energy efficiency policies**

Supporting the construction of EPPs can go a long way toward meeting China's 20% efficiency goal. But EPPs are only one of several steps to improve China's energy efficiency. Other complimentary steps include:

- **Establish stringent energy efficiency standards.** Energy efficiency standards for appliances, equipment, and buildings are being used extensively in China. These standards need to be strengthened, broadened to cover more electricity uses, and enforced.
- **Use tax and fiscal policies to encourage energy efficiency.** Taxing inefficient users and products, and providing tax incentives for clean and efficient users and products, can effectively improve energy efficiency.
- **Incorporate environmental costs in electricity prices and investment decisions.** China needs to fully implement its "polluter pays" principle. Pollution levies are now assessed on polluters, but collection rates are low and the level of the fees are less than 10% of the cost the polluters are imposing on society. These low fees make polluting plants profitable and cause clean plants appear to be too expensive to build or run.

China has an opportunity to become an international leader in energy efficiency. Senior leaders have adopted an aggressive target: 20% improved energy efficiency over the next five years. Efficiency Power Plants can help install modern, energy-saving technologies at a fraction of the cost of building conventional power plants. Expediting EPPs nationally will put China's energy efficiency goals on track to succeed.