

The Guangdong Electricity Market

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China Southern Power Grid

- 5 Provinces
 - Guangdong (GD), Guangxi, Yunnan, Guizhou and Hainan
 - Total area : 1.01 million sq.km
 - Total population : 223 million
 - By end 2003
 - Total installed capacity 71,480MW
 - Total consumption 328.7 billion kWh
- The State Electricity Regulatory Commission (國家電力監督委員會, SERC) plans to test run the South China market in 2005.
 - All transmission power grids in Guangdong are controlled by the China Southern Power Grid Company (中國南方電網有限公司).
 - Most generation assets in Guangdong are owned by Yudean Group (粵電集團有限公司). The 5 national IPP's have a few no. of power plants in Guangdong.

中國南方電網有限公司
The South China Power Grid Co., Ltd.

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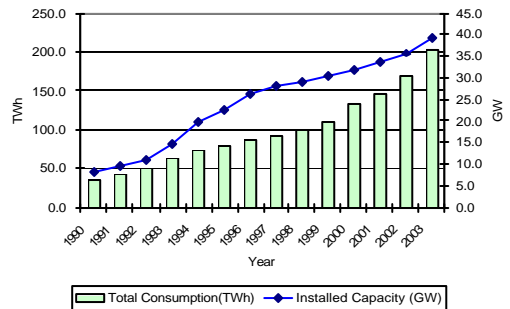
An Overview The Guangdong Electricity Market

- Total area : 177,900 sq.km
- 2004 total population : 83 million
- 2003 installed capacity : 39,200MW
- 2003 total consumption : 203.1TWh
- 2004 GDP : RMB 1,604 billion (14.2% year-on-year growth).
- 2005 Forecast:
 - Consumption growth 13.5%
 - Peak demand growth 13.4%
 - Planned : 5,166MW new capacity & 10,000MW import power
 - Capacity gap 2,900MW ~ 4,500MW
- Lower supply reliability as compared to Hong Kong
 - 99.96% for Guangzhou in 2002 versus 99.99+% for Hong Kong.

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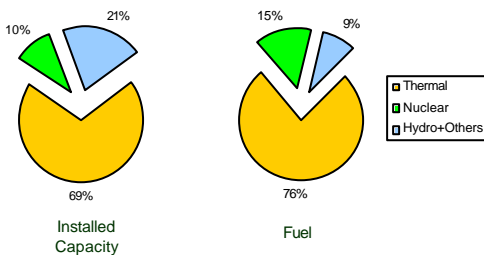
Installed Capacity and Consumption The Guangdong Electricity Market



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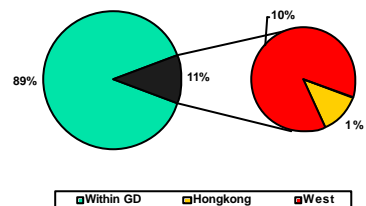
2003 Installed Capacity & Fuel Mix The Guangdong Electricity Market



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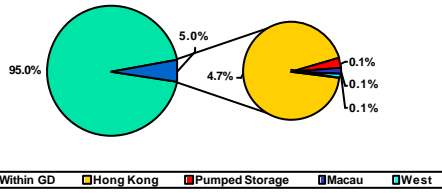
2003 Power Source The Guangdong Electricity Market



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2003 Output Distribution The Guangdong Electricity Market



Major Thermal Power Stations



Power Stations of Main Generator Yudean Group



Power Stations of Subsidiary Generator Guangdong Electric Power Development (Yudean's Subsidiary)



Guangdong Core Generation Projects



Small Thermal Plants The Guangdong Electricity Market

- Small municipal generators that are not controlled by the provincial system control centre accounts for about 40% of the provincial total generation capacity.
- Many of these small municipal generators that have been built to ease supply crunch are thermal power plants with low efficiency / high operating costs and poor environmental performance.
- According to the national policy, about 10,000MW of small polluting thermal plants in Guangdong shall be closed down by end 2003. However, because of the severe power shortage, many of these polluting plants are still in operation.

Concluding Remarks The Guangdong Electricity Market

- Despite extensive addition of plant capacity and increasing import from various sources, the shortfall between supply and demand is expected to continue in the short to medium term due to the fast growing economy of Guangdong.
- It is unrealistic to assume any surplus power available for exporting to Hong Kong from Guangdong.
- The planned South China market reform adds uncertainties to the operation of the Guangdong electricity market.
- Both the supply reliability and environmental performance of the Mainland power supplies are not at par with those in Hong Kong.

The Implications for Hong Kong

Supply Availability and Economics

- HEC agrees with the Government in its Stage I Consultation Paper that the Mainland will not have any surplus electricity to supply Hong Kong in the foreseeable future.
- Even if the supply constraints could be resolved in the longer term, the cost of electricity from the Mainland would unlikely be lower than that from local generation if the following costs are included:
 - longer transmission distance;
 - reinforcing the transmission networks; and
 - upgrading the environmental and reliability standards at par with those of Hong Kong.

Reliability and Regulatory Risks

- The network reliability of South China is not at par with that of Hong Kong. Importing power from Guangdong will jeopardize the high supply reliability presently enjoyed by customers in Hong Kong.
- The fact that the regulatory authorities in Hong Kong have no jurisdiction over generators and network operators in South China poses a regulatory risk.
- There may be under-investment in electricity infrastructure in Hong Kong due to uncertainties associated with:
 - Possible changes in regulation in the Mainland system that are unfavorable to the Hong Kong operators.
 - Lack of transparency of the operation of the electricity facilities in China.

Environment

(1/2)

- A large number of small polluting plants in Guangdong pose environmental threat to the whole Pearl River Delta region.
- To improve the overall environmental performance in the region, any new clean supply sources, if available, should be used to displace the dirty energy from the small polluting thermal plants in Guangdong rather than the cleaner energy from the power stations in Hong Kong.
- To maintain its high environmental performance, Hong Kong should rely on LNG and the latest environmental mitigation technology in power generation.

Environment

(2/2)

- It is premature to consider emission trading with Guangdong as a solution to the pollution problem in PRD region:
 - The power industry in Hong Kong is only responsible for a small portion of emissions in the whole PRD region.
"While it is true that under certain meteorological conditions, emissions from the two companies can directly cause high pollutant concentrations in Hong Kong, there is also clear evidence to show that under other, more common, conditions, higher concentrations and reduced visibility in Hong Kong are the result of pollutants from the delta region."
A blueprint for blue skies, SCMP, 3 May 2005
 - It is hard to benchmark emissions in PRD region due to their lack of continuous & reliable emissions monitoring equipment
 - A fair and transparent trading platform with mutually acceptable emissions inventory-taking procedure and rules is yet to be developed

Concluding Remarks

- **Conclusions have already been said...**

"The Advisory Council on the Environment... said reliance on power generated across the border through the burning of fossil fuels would simply exacerbate pollution problems on the mainland."

Importing coal-fired electricity 'not on', SCMP, 15 Mar 2005

"Long-term data shows clearly that the air quality in Hong Kong has deteriorated substantially over the past 15 years, despite a substantial cut in total emissions by the two power companies. The fact is that the total closure of any one source of pollution, or even all the coal-fired power plants in Hong Kong, will not result in clear blue skies."

A blueprint for blue skies, SCMP, 3 May 2005

Thank You
