

**For Information**

**LEGISLATIVE COUNCIL  
PANEL ON ECONOMIC DEVELOPMENT**

**Public Consultation on Future Fuel Mix for Electricity Generation**

**Introduction**

The Hon Fernando CHEUNG wrote to the Chairman of the Legislative Council Panel on Economic Development on 13 May 2014, asking the Administration to provide more information regarding importing electricity from the China Southern Power Grid (CSG). Relevant information are set out in the ensuing paragraphs.

The current and future fuel mix of the CSG

2. According to information provided by CSG, the share of non-fossil fuels such as hydro and nuclear power in its fuel mix increased from about 30% in 2009 to about 38% in 2013 (including about 32% hydro power, 5% nuclear power and 1% wind power and others). The remaining some 62% was fossil fuels (including coal and natural gas).

3. Looking ahead, it is expected that CSG will follow the national policy in using more cleaner energy. It is estimated that from 2020 onwards, non-fossil fuels will make up of more than 50% of the installed capacity of CSG, with a significant reduction in the share of coal.

The amount and price of electricity import in the Macao Special Administrative Region

4. The amount and price of electricity purchase by Macao during 2003 – 2012 are as follows:

|             | <b>Amount of purchase (from Mainland China) (GWh) <sup>1</sup></b><br><b>(a)</b> | <b>Amount of purchase (Macao Refuse Incineration Plant) (GWh) <sup>1</sup></b><br><b>(b)</b> | <b>Price of total electricity purchase (MOP in million) <sup>1</sup></b><br><b>(c)</b> | <b>Unit price of electricity purchase (including those from Mainland China and refuse incineration plant) <sup>2</sup></b><br><b>(MOP)</b><br><b>(c)/((a)+(b))</b> | <b>Unit price of electricity purchase (from Mainland China only) <sup>3</sup></b><br><b>(MOP)</b><br><b>(c)/(a)</b> |
|-------------|--|--|--|--|---|
| <b>2003</b> | 178  | 60   | 156  | 0.66   | 0.88  |
| <b>2004</b> | 148  | 62   | 130  | 0.62   | 0.88  |
| <b>2005</b> | 341  | 63   | 270  | 0.67   | 0.79  |
| <b>2006</b> | 965  | 62   | 656  | 0.64   | 0.68  |
| <b>2007</b> | 1 683  | 66   | 1 144  | 0.65   | 0.68  |
| <b>2008</b> | 2 311  | 61   | 1 663  | 0.70   | 0.72  |
| <b>2009</b> | 2 227  | 77   | 1 605  | 0.70   | 0.72  |
| <b>2010</b> | 2 786  | 94   | 2 092  | 0.73   | 0.75  |
| <b>2011</b> | 3 165  | 107  | 2 485  | 0.76   | 0.79  |
| <b>2012</b> | 3 855  | 113  | 3 252  | 0.82   | 0.84  |

#### Average customer minutes loss for CSG's customers

5. We note that there are concerns on the overall supply reliability of CSG. However, it should be noted that the service area of CSG covers five provinces and regions comprising major cities as well as towns and villages, which may have different requirement for electricity reliability. Hence, we consider it not appropriate to compare the overall reliability figure of CSG with that of Hong Kong. We consider that the case of Macao is a more suitable reference.

6. The table below compares the supply reliability of the urban and rural customers of CSG, Guangzhou, Shenzhen and Macao during 2009-2013<sup>4</sup>:

<sup>1</sup> Information is obtained from the annual reports of Companhia de Electricidade de Macau.

<sup>2</sup> It is assumed that the unit price of electricity purchase from the Mainland China is the same as that from the refuse incineration plant.

<sup>3</sup> We understand that the unit price of electricity purchase from the refuse incineration plant and that from the Mainland China are not the same. Electricity purchased from the incineration plant is excluded from this set of calculation to serve as a reference.

<sup>4</sup> Information on Macao is obtained from the annual reports of Companhia de Electricidade de Macau; the rest from social sustainability reports of CSG.

| <b>Annual average customer minutes loss of CSG's customers (Hour/customer)</b> | <b>2009</b>        | <b>2010</b>        | <b>2011</b>        | <b>2012</b>       | <b>2013</b>       |
|--|--------------------|--------------------|--------------------|-------------------|-------------------|
| <b>Guangzhou</b>   | 5.75<br>(99.934%)  | 5.29<br>(99.940%)  | 1.79<br>(99.980%)  | 1.79<br>(99.980%) | 1.47<br>(99.983%) |
| <b>Shenzhen</b>  | 2.80<br>(99.968%)  | 1.48<br>(99.983%)  | 1.28<br>(99.985%)  | 1.12<br>(99.987%) | 0.83<br>(99.991%) |
| <b>Macao</b>   | 0.09<br>(99.999%)  | 0.02<br>(99.999%)  | 0.04<br>(99.999%)  | 0.01<br>(99.999%) | Not available     |
| <b>Urban customers</b>   | 11.22<br>(99.872%) | 6.66<br>(99.924%)  | 5.20<br>(99.941%)  | 3.21<br>(99.963%) | 2.31<br>(99.974%) |
| <b>Rural customers</b>   | 22.64<br>(99.742%) | 14.87<br>(99.830%) | 12.07<br>(99.862%) | 7.99<br>(99.909%) | 5.77<br>(99.934%) |

Note: figures in brackets are relative supply reliability

**Environment Bureau  
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