



## Wind Power Monthly

### July outputs continued to see higher growth from LYP

|                    | Ticker | Rec | Mkt cap  |     | Price | PT   | Up/<br>dn (%) | EPS growth (%) |       | PER (x) |       | PBR (x) |       |
|--------------------|--------|-----|----------|-----|-------|------|---------------|----------------|-------|---------|-------|---------|-------|
|                    |        |     | (USD mn) | Ccy |       |      |               | 2017E          | 2018E | 2017E   | 2018E | 2017E   | 2018E |
| Longyuan Power     | 916 HK | BUY | 6,096    | HKD | 5.93  | 7.51 | +27%          | 15.1           | 14.5  | 10.7    | 9.3   | 1.0     | 0.9   |
| Huaneng Renewables | 958 HK | BUY | 3,136    | HKD | 2.32  | 3.22 | +39%          | 6.1            | 17.8  | 7.0     | 6.0   | 0.9     | 0.8   |

Source: company data; CSCI Research estimates (prices as of 11 August 2017)

- Longyuan Power (LYP) and Huaneng Renewables (HNR) respectively reported a YoY increase of 18.1% and 2.3% in domestic wind power output for Jul-2017. In terms of monthly utilization, we estimate that LYP achieved an 8.2% rise while HNR remained largely unchanged YoY.
- Against the backdrop of industry-wide improvements in wind power dispatch, LYP continued to outshine HNR in that it is best positioned to benefit from easing curtailments, particularly in the Three-North areas, while HNR is more susceptible to lacklustre wind power outputs in particular provinces due to its relatively concentrated wind farm portfolio.
- We reiterate our BUY rating on LYP and HNR—both will announce interim results on 24<sup>th</sup> August.

**July power outputs continued 2Q17 trend to see higher growth from LYP.** In July, LYP generated power of 3,283GWh (up 16.2% YoY)—wind/coal/other renewables respectively accounted for 66%/33%/2% of its total power output, up 17.7%/13.7%/5.9% YoY respectively; HNR reported total power generation of 1,304GWh (up 2.8% YoY)—wind/solar power respectively accounted for 92%/8% of its total power output, up 2.3% and 9.2% YoY respectively.

**Industry-wide improvements in curtailment carried forward in 2Q17.** Industry-average utilization hours increased by 4.2% YoY in 2Q17 whilst the national curtailment rate dropped 5.8% YoY to 11.1%, which indicated that the reduction in unutilized wind power was attributable to fundamental improvements in wind power dispatch rather than weaker wind resources, in our view. LYP and HNR both reported lower YoY curtailment rates in July.

**LYP is best positioned to benefit from easing curtailments.** The Three-North areas contributed to LYP's wind power output growth in July, with Northwest, Northeast and Northern China respectively accounting for 52%, 38%, and 17% of its incremental output; Xinjiang, Liaoning and Hebei were the main growth drivers. Utilization in Xinjiang and Liaoning rose by 45% and 64% YoY respectively, thanks to ample wind resources and notable curtailment reductions. Hebei saw its power output surge from a low base last year when grid maintenance was carried out.

**HNR suffered larger impacts from specific provinces.** Liaoning and Jilin in Northeast China and Shaanxi in Northwest China contributed to most of HNR's incremental output with utilization lifted by 25%-37% YoY; however, the increase was largely offset by declines in Yunnan, Shandong and Shanxi where wind resource was weak in July. HNR is susceptible to unstable performance in specific provinces given its relatively concentrated wind farm portfolio, with the top 5 provinces accounting for 66% of HNR's total domestic wind power capacity vs. 49% for LYP. HNR has deployed projects in 15 provinces, compared with 27 provinces for LYP.

**Reiterate BUY on LYP and HNR (1H17 result announcements scheduled on 24<sup>th</sup> August).** LYP is currently trading at a 12-month forward PER/PBR of 9.9x/0.98x respectively, as against 6.5x/0.82x for HNR. Both are over 1SD below their historic average.

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**Figure 1: Monthly wind power generation – Longyuan Power (916 HK)**

|                       |        | Curtailments |            | Grid-connected capacity (GW) |              |              | Power generation (GWh) |              |               | Utilization hour |            |             |
|-----------------------|--------|--------------|------------|------------------------------|--------------|--------------|------------------------|--------------|---------------|------------------|------------|-------------|
|                       |        | 2015         | 2016       | 2015                         | 2016         | %            | Jul-16                 | Jul-17       | YoY%          | Jul-16           | Jul-17     | YoY%        |
| Shanghai              | IV     |              |            | 0.05                         | 0.05         | 0.3%         | 6.6                    | 6.8          | 2.7%          | 140              | 144        | 2.7%        |
| Jiangsu               | IV     |              |            | 1.68                         | 1.73         | 10.0%        | 219.3                  | 168.4        | -23.2%        | 131              | 97         | -25.5%      |
| Zhejiang              | IV     |              |            | 0.23                         | 0.23         | 1.3%         | 34.5                   | 35.5         | 3.0%          | 151              | 156        | 3.0%        |
| Anhui                 | IV     |              |            | 0.59                         | 0.73         | 4.2%         | 106.4                  | 128.9        | 21.2%         | 155              | 176        | 13.2%       |
| Fujian                | IV     |              |            | 0.52                         | 0.67         | 3.9%         | 88.6                   | 64.3         | -27.4%        | 155              | 97         | -37.8%      |
| <b>Sub-total</b>      |        |              |            | <b>3.06</b>                  | <b>3.40</b>  | <b>19.7%</b> | <b>455.4</b>           | <b>403.9</b> | <b>-11.3%</b> |                  |            |             |
| Jiangxi               | IV     |              |            | -                            | 0.04         | 0.2%         | -                      | 11.1         | -             | -                | 278        | -           |
| Henan                 | IV     |              |            |                              |              | 0.0%         |                        |              |               |                  |            |             |
| Hubei                 | IV     |              |            |                              |              | 0.0%         | -                      | 6.6          | -             |                  |            |             |
| Hunan                 | IV     |              |            | -                            | 0.05         | 0.3%         | 11.5                   | 5.8          | -49.4%        | 240              | 122        | -49.4%      |
| Chongqin              | IV     |              |            | 0.15                         | 0.15         | 0.9%         | 34.7                   | 35.5         | 2.0%          | 232              | 237        | 2.0%        |
| Sichuan               | IV     |              |            |                              |              | 0.0%         |                        |              |               |                  |            |             |
| Tibet                 | IV     |              |            | 0.01                         | 0.01         | 0.0%         | 0.6                    | 0.7          | 17.6%         | 83               | 97         | 17.6%       |
| <b>Sub-total</b>      |        |              |            | <b>0.16</b>                  | <b>0.25</b>  | <b>1.4%</b>  | <b>46.9</b>            | <b>59.8</b>  | <b>13.3%</b>  |                  |            |             |
| Guangdong             | IV     |              |            | 0.03                         | 0.08         | 0.4%         | 2.4                    | 5.6          | 131.2%        | 94               | 74         | -21.4%      |
| Guangxi               | IV     |              |            | -                            | 0.10         | 0.6%         | 7.3                    | 7.2          | -1.2%         | 76               | 75         | -1.2%       |
| Hainan                | IV     |              |            | 0.10                         | 0.10         | 0.6%         | 6.0                    | 10.3         | 70.7%         | 61               | 104        | 70.7%       |
| Guizhou               | IV     |              |            | 0.54                         | 0.64         | 3.7%         | 64.9                   | 75.2         | 15.9%         | 101              | 117        | 15.9%       |
| Yunnan                | IV     | 3%           | 4%         | 0.62                         | 0.77         | 4.5%         | 68.6                   | 67.6         | -1.5%         | 111              | 88         | -20.7%      |
| <b>Sub-total</b>      |        |              |            | <b>1.28</b>                  | <b>1.68</b>  | <b>9.7%</b>  | <b>149.2</b>           | <b>165.8</b> | <b>11.1%</b>  |                  |            |             |
| Beijing               | IV     |              |            |                              |              | 0.0%         |                        |              |               |                  |            |             |
| Tianjin               | IV     |              |            | 0.13                         | 0.13         | 0.8%         | 12.8                   | 16.8         | 31.8%         | 97               | 127        | 31.8%       |
| Hebei                 | II/IV  | 10%          | 9%         | 1.17                         | 1.17         | 6.8%         | 48.7                   | 106.2        | 118.3%        | 42               | 91         | 118.3%      |
| Shanxi                | IV     | 3%           | 9%         | 0.65                         | 0.83         | 4.8%         | 80.6                   | 74.0         | -8.2%         | 125              | 89         | -28.5%      |
| Shandong              | IV     |              |            | 0.34                         | 0.39         | 2.3%         | 42.8                   | 46.0         | 7.5%          | 126              | 117        | -7.4%       |
| Inner Mongolia        | I/II   | 18%          | 21%        | 2.59                         | 2.64         | 15.3%        | 260.4                  | 256.5        | -1.5%         | 99               | 97         | -1.5%       |
| <b>Sub-total</b>      |        |              |            | <b>4.87</b>                  | <b>5.16</b>  | <b>29.9%</b> | <b>445.3</b>           | <b>499.5</b> | <b>12.2%</b>  |                  |            |             |
| Liaoning              | IV     | 10%          | 13%        | 1.00                         | 1.00         | 5.8%         | 107.3                  | 175.6        | 63.7%         | 107              | 175        | 63.7%       |
| Jilin                 | III/IV | 31%          | 30%        | 0.45                         | 0.55         | 3.2%         | 32.9                   | 56.1         | 70.6%         | 66               | 102        | 55.0%       |
| Heilongjiang          | III/IV | 21%          | 19%        | 1.23                         | 1.23         | 7.1%         | 116.3                  | 148.4        | 27.6%         | 94               | 120        | 27.6%       |
| <b>Sub-total</b>      |        |              |            | <b>2.69</b>                  | <b>2.79</b>  | <b>16.1%</b> | <b>256.5</b>           | <b>380.1</b> | <b>48.2%</b>  |                  |            |             |
| Shaanxi               | IV     |              | 7%         | 0.20                         | 0.44         | 2.5%         | 51.7                   | 63.6         | 23.0%         | 153              | 145        | -5.2%       |
| Gansu                 | II/III | 39%          | 43%        | 1.29                         | 1.29         | 7.5%         | 125.0                  | 165.2        | 32.1%         | 97               | 128        | 32.1%       |
| Qinghai               | IV     |              |            |                              |              | 0.0%         |                        |              |               |                  |            |             |
| Ningxia               | III    | 13%          | 13%        | 0.72                         | 0.72         | 4.2%         | 92.0                   | 125.9        | 36.8%         | 127              | 174        | 36.8%       |
| Xinjiang              | I/III  | 32%          | 38%        | 1.39                         | 1.54         | 8.9%         | 190.1                  | 276.3        | 45.4%         | 123              | 179        | 45.4%       |
| <b>Sub-total</b>      |        |              |            | <b>3.60</b>                  | <b>4.00</b>  | <b>23.1%</b> | <b>458.9</b>           | <b>631.0</b> | <b>37.5%</b>  |                  |            |             |
| <b>National total</b> |        | <b>15%</b>   | <b>17%</b> | <b>15.67</b>                 | <b>17.27</b> |              | <b>1,812</b>           | <b>2,140</b> | <b>18.1%</b>  | <b>115</b>       | <b>124</b> | <b>8.2%</b> |

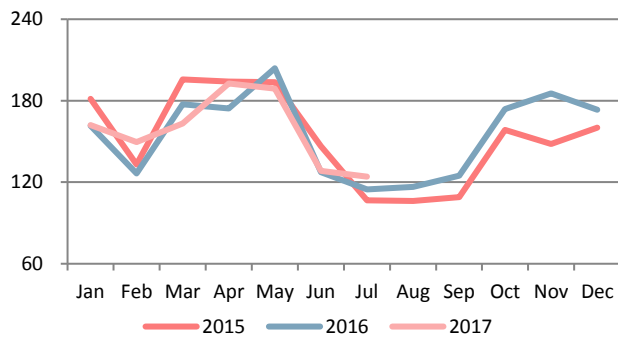
Source: CEC; Company, CSCI Research estimates

**Figure 2: Monthly wind power generation – Huaneng Renewables (958 HK)**

|                       |        | Curtailments |            | Grid-connected capacity (GW) |              |              | Power generation (GWh) |              |               | Utilization hour |            |             |
|-----------------------|--------|--------------|------------|------------------------------|--------------|--------------|------------------------|--------------|---------------|------------------|------------|-------------|
|                       |        | 2015         | 2016       | 2015                         | 2016         | %            | Jul-16                 | Jul-17       | YoY%          | Jul-16           | Jul-17     | YoY%        |
| Shanghai              | IV     |              |            | 0.11                         | 0.11         | 1.1%         | 10.5                   | 9.7          | -7.4%         | 97               | 90         | -7.4%       |
| Jiangsu               | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Zhejiang              | IV     |              |            | 0.03                         | 0.07         | 0.7%         | 4.9                    | 12.5         | 153.1%        | 143              | 167        | 17.2%       |
| Anhui                 | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Fujian                | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| <b>Sub-total</b>      |        |              |            | <b>0.14</b>                  | <b>0.18</b>  | <b>1.8%</b>  | <b>15.4</b>            | <b>22.2</b>  | <b>44.0%</b>  |                  |            |             |
| Jiangxi               | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Henan                 | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Hubei                 | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Hunan                 | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Chongqin              | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Sichuan               | IV     |              |            | 0.49                         | 0.49         | 4.8%         | 46.3                   | 45.7         | -1.3%         | 94               | 93         | -1.3%       |
| Tibet                 | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| <b>Sub-total</b>      |        |              |            | <b>0.49</b>                  | <b>0.49</b>  | <b>4.8%</b>  | <b>46.3</b>            | <b>45.7</b>  | <b>-1.3%</b>  |                  |            |             |
| Guangdong             | IV     |              |            | 0.50                         | 0.50         | 4.9%         | 63.5                   | 59.1         | -7.0%         | 126              | 118        | -7.0%       |
| Guangxi               | IV     |              |            | -                            | 0.05         | 0.5%         | -                      | 7.3          | -             | -                | 147        | -           |
| Hainan                | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Guizhou               | IV     |              |            | 0.73                         | 0.73         | 7.1%         | 91.9                   | 85.7         | -6.8%         | 126              | 118        | -6.8%       |
| Yunnan                | IV     | 3%           | 4%         | 1.12                         | 1.12         | 10.9%        | 138.1                  | 100.5        | -27.2%        | 124              | 90         | -27.2%      |
| <b>Sub-total</b>      |        |              |            | <b>2.35</b>                  | <b>2.40</b>  | <b>23.4%</b> | <b>293.5</b>           | <b>252.6</b> | <b>-13.9%</b> |                  |            |             |
| Beijing               | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Tianjin               | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Hebei                 | II/IV  | 10%          | 9%         | 0.36                         | 0.36         | 3.5%         | 31.8                   | 34.4         | 8.1%          | 88               | 95         | 8.1%        |
| Shanxi                | IV     | 3%           | 9%         | 0.69                         | 0.74         | 7.3%         | 74.8                   | 64.8         | -13.4%        | 108              | 87         | -19.1%      |
| Shandong              | IV     |              |            | 0.95                         | 1.00         | 9.8%         | 104.2                  | 87.5         | -16.1%        | 109              | 87         | -20.2%      |
| Inner Mongolia        | I/II   | 18%          | 21%        | 2.47                         | 2.47         | 24.1%        | 276.2                  | 273.2        | -1.1%         | 112              | 111        | -1.1%       |
| <b>Sub-total</b>      |        |              |            | <b>4.48</b>                  | <b>4.57</b>  | <b>44.6%</b> | <b>487.1</b>           | <b>459.9</b> | <b>-5.6%</b>  |                  |            |             |
| Liaoning              | IV     | 10%          | 13%        | 1.36                         | 1.40         | 13.7%        | 144.6                  | 204.8        | 41.6%         | 106              | 146        | 37.2%       |
| Jilin                 | III/IV | 31%          | 30%        | 0.40                         | 0.40         | 3.9%         | 41.7                   | 53.2         | 27.6%         | 105              | 134        | 27.6%       |
| Heilongjiang          | III/IV | 21%          | 19%        |                              |              |              |                        |              |               |                  |            |             |
| <b>Sub-total</b>      |        |              |            | <b>1.76</b>                  | <b>1.80</b>  | <b>17.5%</b> | <b>186.3</b>           | <b>258.0</b> | <b>38.5%</b>  |                  |            |             |
| Shaanxi               | IV     |              | 7%         | 0.06                         | 0.36         | 3.5%         | 50.8                   | 63.7         | 25.3%         | 142              | 178        | 25.3%       |
| Gansu                 | II/III | 39%          | 43%        |                              |              |              |                        |              |               |                  |            |             |
| Qinghai               | IV     |              |            |                              |              |              |                        |              |               |                  |            |             |
| Ningxia               | III    | 13%          | 13%        |                              |              |              |                        |              |               |                  |            |             |
| Xinjiang              | I/III  | 32%          | 38%        | 0.45                         | 0.45         | 4.4%         | 92.9                   | 97.2         | 4.6%          | 208              | 217        | 4.6%        |
| <b>Sub-total</b>      |        |              |            | <b>0.51</b>                  | <b>0.81</b>  | <b>7.9%</b>  | <b>143.7</b>           | <b>160.9</b> | <b>11.9%</b>  |                  |            |             |
| <b>National total</b> |        | <b>15%</b>   | <b>17%</b> | <b>9.72</b>                  | <b>10.25</b> |              | <b>1,172</b>           | <b>1,199</b> | <b>2.3%</b>   | <b>117</b>       | <b>117</b> | <b>0.0%</b> |

Source: CEC; Company; CSCI Research estimates

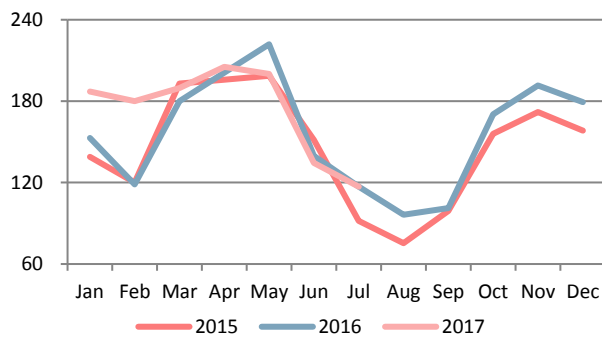
## Valuation at historic trough

**Figure 3: Estimated monthly utilization – LYP (916 HK)**


Source: Company; CSCI Research Estimates

**Figure 4: Historic PER band – LYP (916 HK)**


Source: Bloomberg; CSCI Research

**Figure 5: Estimated monthly utilization – HNR (958 HK)**


Source: Company; CSCI Research Estimates

**Figure 6: Historic PER band – HNR (958 HK)**


Source: Bloomberg; CSCI Research

**Figure 7: Peer valuation**

| Company                 | Ticker    | Close<br>(Local\$) | Mkt cap<br>(USD mn) | EPS Growth  |            | PER (x)     |             | PBR (x)    |            | ROE (%)    |            | Yield (%)   |             | Net Gear (%) |             |
|-------------------------|-----------|--------------------|---------------------|-------------|------------|-------------|-------------|------------|------------|------------|------------|-------------|-------------|--------------|-------------|
|                         |           |                    |                     | FY17E       | FY18E      | FY17E       | FY18E       | FY17E      | FY18E      | FY17E      | FY18E      | FY17E       | FY18E       | FY17E        | FY18E       |
| <b>Wind Power</b>       |           |                    |                     |             |            |             |             |            |            |            |            |             |             |              |             |
| Longyuan                | 916 HK    | 5.9                | 6,096               | 15%         | 15%        | 10.7        | 9.3         | 1.0        | 0.9        | 10%        | 10%        | 1.9%        | 2.1%        | 176%         | 166%        |
| Goldwind                | 2208 HK   | 8.7                | 5,708               | 12%         | 5%         | 8.0         | 7.6         | 1.2        | 1.1        | 15%        | 14%        | 3.3%        | 3.6%        | 79%          | 85%         |
| HN Renew                | 958 HK    | 2.3                | 3,136               | 6%          | 18%        | 7.0         | 6.0         | 0.9        | 0.8        | 12%        | 13%        | 2.1%        | 2.5%        | 202%         | 189%        |
| <b>Average</b>          |           |                    |                     | <b>11%</b>  | <b>13%</b> | <b>8.6</b>  | <b>7.6</b>  | <b>1.0</b> | <b>0.9</b> | <b>12%</b> | <b>12%</b> | <b>2.4%</b> | <b>2.7%</b> | <b>152%</b>  | <b>147%</b> |
| <b>Thermal Power</b>    |           |                    |                     |             |            |             |             |            |            |            |            |             |             |              |             |
| Huaneng Power           | 902 HK    | 5.0                | 13,796              | -61%        | 105%       | 19.5        | 9.5         | 0.8        | 0.7        | 4%         | 8%         | 2.7%        | 5.5%        | 264%         | 234%        |
| CR Power                | 836 HK    | 14.9               | 9,156               | -22%        | 33%        | 11.8        | 8.8         | 1.0        | 1.0        | 9%         | 11%        | 5.8%        | 5.9%        | 134%         | 132%        |
| Huadian Power           | 1071 HK   | 3.2                | 6,111               | -45%        | 100%       | 15.6        | 7.8         | 0.6        | 0.6        | 4%         | 9%         | 2.3%        | 5.0%        | 230%         | 206%        |
| China Power             | 2380 HK   | 2.6                | 2,427               | -22%        | 27%        | 8.8         | 7.0         | 0.6        | 0.6        | 7%         | 8%         | 4.4%        | 6.6%        | 164%         | 158%        |
| <b>Average</b>          |           |                    |                     | <b>-37%</b> | <b>66%</b> | <b>13.9</b> | <b>8.3</b>  | <b>0.7</b> | <b>0.7</b> | <b>6%</b>  | <b>9%</b>  | <b>3.8%</b> | <b>5.7%</b> | <b>198%</b>  | <b>182%</b> |
| <b>Renewable Energy</b> |           |                    |                     |             |            |             |             |            |            |            |            |             |             |              |             |
| Jingneng CE             | 579 HK    | 2.1                | 1,872               | 12%         | 8%         | 5.7         | 5.3         | 0.7        | 0.6        | 13%        | 12%        | 4.1%        | 4.6%        | 119%         | 103%        |
| Huadian Fuxin           | 816 HK    | 1.6                | 1,732               | 4%          | 19%        | 5.8         | 4.9         | 0.5        | 0.5        | 9%         | 10%        | 3.7%        | 4.6%        | 302%         | 287%        |
| Suntien                 | 956 HK    | 1.7                | 789                 | 34%         | 17%        | 7.2         | 6.2         | 0.6        | 0.6        | 9%         | 10%        | 5.2%        | 6.1%        | 187%         | 205%        |
| CGN New Energy          | 1811 HK   | 1.1                | 593                 | -7%         | 17%        | 8.1         | 6.9         | 0.8        | 0.7        | 9%         | 10%        | 2.0%        | 3.1%        | 230%         | 198%        |
| Concord                 | 182 HK    | 0.3                | 361                 | 9%          | 34%        | 4.8         | 3.6         | 0.4        | 0.4        | 10%        | 10%        | 4.9%        | 5.2%        | 71%          | 86%         |
| <b>Average</b>          |           |                    |                     | <b>11%</b>  | <b>19%</b> | <b>6.3</b>  | <b>5.4</b>  | <b>0.6</b> | <b>0.6</b> | <b>10%</b> | <b>11%</b> | <b>4.0%</b> | <b>4.7%</b> | <b>182%</b>  | <b>176%</b> |
| <b>Nuclear</b>          |           |                    |                     |             |            |             |             |            |            |            |            |             |             |              |             |
| CGN Power               | 1816 HK   | 2.0                | 11,860              | 14%         | 9%         | 9.6         | 8.8         | 1.2        | 1.1        | 13%        | 13%        | 3.3%        | 3.6%        | 203%         | 192%        |
| <b>Hydro Power</b>      |           |                    |                     |             |            |             |             |            |            |            |            |             |             |              |             |
| Yangtze Power           | 600900 CH | 15.1               | 49,892              | -3%         | -1%        | 16.5        | 16.7        | 2.5        | 2.3        | 15%        | 14%        | 4.4%        | 4.4%        | 80%          | 68%         |
| SDIC Power              | 600886 CH | 7.8                | 7,908               | 6%          | 6%         | 12.7        | 12.0        | 1.6        | 1.5        | 13%        | 13%        | 2.9%        | 3.0%        | 375%         | 339%        |
| Chuantou Energy         | 600674 CH | 9.8                | 6,451               | -1%         | -1%        | 12.3        | 12.4        | 1.9        | 1.7        | 16%        | 14%        | 2.9%        | 2.9%        | 17%          | 15%         |
| Guiguan Power           | 600236 CH | 5.4                | 4,920               | 0%          | 4%         | 12.7        | 12.2        | 2.1        | 1.8        | 18%        | 15%        | 3.1%        | 3.1%        | -            | -           |
| <b>Average</b>          |           |                    |                     | <b>1%</b>   | <b>2%</b>  | <b>13.5</b> | <b>13.3</b> | <b>2.0</b> | <b>1.8</b> | <b>15%</b> | <b>14%</b> | <b>3.3%</b> | <b>3.4%</b> | <b>157%</b>  | <b>141%</b> |

Data as of Aug.11, 2017

Source: CSCI Research Estimates; Bloomberg

## Longyuan Power (916 HK)

### Income statement (Rmb mn)

| Year end: Dec               | 2015          | 2016          | 2017E         | 2018E         | 2019E         |
|-----------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Revenue</b>              | <b>19,683</b> | <b>22,304</b> | <b>23,639</b> | <b>25,345</b> | <b>27,214</b> |
| Other net income            | 450           | 647           | 589           | 656           | 729           |
| Material costs              | (3,851)       | (5,328)       | (4,979)       | (4,730)       | (4,659)       |
| Service concession          | (662)         | (541)         | (433)         | (390)         | (351)         |
| General and administrative  | (1,795)       | (2,032)       | (2,148)       | (2,322)       | (2,487)       |
| Repairs and maintenance     | (531)         | (642)         | (709)         | (813)         | (881)         |
| Other operating expenses    | (584)         | (518)         | (473)         | (762)         | (703)         |
| <b>EBITDA</b>               | <b>12,710</b> | <b>13,890</b> | <b>15,486</b> | <b>16,985</b> | <b>18,862</b> |
| Depreciation & Amortization | (5,578)       | (6,342)       | (6,929)       | (7,537)       | (8,144)       |
| <b>EBIT</b>                 | <b>7,132</b>  | <b>7,548</b>  | <b>8,557</b>  | <b>9,448</b>  | <b>10,718</b> |
| Net interest                | (3,039)       | (2,774)       | (2,978)       | (3,078)       | (3,116)       |
| JVs and associates          | 576           | 376           | 321           | 357           | 417           |
| <b>Pretax profit</b>        | <b>4,669</b>  | <b>5,150</b>  | <b>5,901</b>  | <b>6,727</b>  | <b>8,019</b>  |
| Taxation                    | (601)         | (660)         | (756)         | (862)         | (1,028)       |
| Minority & perpetual note   | 1,189         | 1,074         | 1,212         | 1,363         | 1,599         |
| <b>Net profit</b>           | <b>2,878</b>  | <b>3,415</b>  | <b>3,933</b>  | <b>4,502</b>  | <b>5,392</b>  |
| Net profit (adjusted)       | 2,704         | 3,258         | 3,933         | 4,502         | 5,392         |
| Basic EPS (Rmb)             | 0.36          | 0.42          | 0.49          | 0.56          | 0.67          |
| Diluted EPS (Rmb)           | 0.36          | 0.42          | 0.49          | 0.56          | 0.67          |
| DPS (Rmb)                   | 0.07          | 0.09          | 0.10          | 0.11          | 0.13          |

### Balance sheet (Rmb mn)

| Year end: Dec                      | 2015           | 2016           | 2017E          | 2018E          | 2019E          |
|------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Cash                               | 3,274          | 1,933          | 851            | 1,421          | 2,154          |
| Short term investments             | 866            | 635            | 635            | 635            | 635            |
| Accounts receivables               | 4,243          | 5,901          | 6,476          | 6,868          | 7,253          |
| Inventory                          | 1,081          | 1,040          | 862            | 819            | 807            |
| Other current assets               | 3,240          | 3,824          | 3,824          | 3,824          | 3,824          |
| <b>Total current assets</b>        | <b>12,704</b>  | <b>13,333</b>  | <b>12,647</b>  | <b>13,567</b>  | <b>14,672</b>  |
| PP&E                               | 98,997         | 105,598        | 112,488        | 118,804        | 124,541        |
| Intangible Assets                  | 10,702         | 10,997         | 11,081         | 11,100         | 11,058         |
| Associates and JVs                 | 4,822          | 4,483          | 4,804          | 5,161          | 5,578          |
| Other long term assets             | 6,643          | 4,250          | 4,250          | 4,250          | 4,250          |
| <b>Total long term assets</b>      | <b>121,164</b> | <b>125,328</b> | <b>132,624</b> | <b>139,315</b> | <b>145,427</b> |
| <b>TOTAL ASSETS</b>                | <b>133,867</b> | <b>138,661</b> | <b>145,271</b> | <b>152,882</b> | <b>160,099</b> |
| Short term debt                    | 44,977         | 44,511         | 44,511         | 40,064         | 36,061         |
| Accounts payables                  | 10,867         | 11,120         | 11,210         | 11,618         | 12,054         |
| Other current liabilities          | 156            | 176            | 176            | 176            | 176            |
| <b>Total current liabilities</b>   | <b>56,000</b>  | <b>55,807</b>  | <b>55,897</b>  | <b>51,858</b>  | <b>48,292</b>  |
| Long term debt                     | 29,970         | 31,788         | 33,981         | 40,685         | 45,512         |
| Deferred tax                       | 106            | 138            | 138            | 138            | 138            |
| Other long term liabilities        | 3,217          | 3,141          | 3,141          | 3,141          | 3,141          |
| <b>Total long term liabilities</b> | <b>33,293</b>  | <b>35,067</b>  | <b>37,260</b>  | <b>43,964</b>  | <b>48,791</b>  |
| <b>TOTAL LIABILITIES</b>           | <b>89,293</b>  | <b>90,874</b>  | <b>93,157</b>  | <b>95,822</b>  | <b>97,083</b>  |
| Shareholders' funds                | 35,145         | 37,899         | 41,148         | 44,864         | 49,356         |
| Perpetual medium-term note         | 2,991          | 2,991          | 2,991          | 2,991          | 2,991          |
| Minority Interests                 | 6,439          | 6,896          | 7,975          | 9,204          | 10,670         |
| <b>TOTAL LIAB AND EQUITY</b>       | <b>133,867</b> | <b>138,661</b> | <b>145,271</b> | <b>152,882</b> | <b>160,099</b> |
| Net cash / (debt)                  | (71,672)       | (74,366)       | (77,641)       | (79,327)       | (79,419)       |

Source: Company; CSCS Research estimates

### Cash flow statement (Rmb mn)

| Year end: Dec                    | 2015            | 2016            | 2017E           | 2018E           | 2019E           |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Pretax profit</b>             | <b>4,669</b>    | <b>5,150</b>    | <b>5,901</b>    | <b>6,727</b>    | <b>8,019</b>    |
| Depreciation & amortisation      | 5,578           | 6,342           | 6,929           | 7,537           | 8,144           |
| Net interest                     | 2,685           | 2,602           | 3,016           | 3,117           | 3,154           |
| Taxes paid                       | (526)           | (634)           | (756)           | (862)           | (1,028)         |
| Changes in working capital       | 4,128           | 483             | (307)           | 59              | 63              |
| Others                           | (227)           | (411)           | (359)           | (396)           | (455)           |
| <b>Cash flow from operations</b> | <b>16,307</b>   | <b>13,533</b>   | <b>14,422</b>   | <b>16,182</b>   | <b>17,897</b>   |
| Capex                            | (15,264)        | (13,990)        | (13,904)        | (13,871)        | (13,839)        |
| Acquisitions                     | (877)           | (68)            | (0)             | (0)             | (0)             |
| Disposals                        | 3               | 220             | -               | -               | -               |
| Others                           | (182)           | 2,630           | 111             | 98              | 132             |
| <b>Cash flow from investing</b>  | <b>(16,319)</b> | <b>(11,209)</b> | <b>(13,792)</b> | <b>(13,773)</b> | <b>(13,707)</b> |
| Dividends                        | (1,174)         | (1,306)         | (683)           | (787)           | (900)           |
| Issue of shares                  | 412             | 147             | -               | -               | -               |
| Change in debt                   | 4,870           | 1,322           | 2,193           | 2,257           | 824             |
| Others                           | (3,582)         | (3,447)         | (3,222)         | (3,309)         | (3,381)         |
| <b>Cash flow from financing</b>  | <b>525</b>      | <b>(3,284)</b>  | <b>(1,712)</b>  | <b>(1,839)</b>  | <b>(3,457)</b>  |
| <b>Change in cash</b>            | <b>513</b>      | <b>(961)</b>    | <b>(1,082)</b>  | <b>570</b>      | <b>733</b>      |
| Free cash flow                   | 1,043           | (458)           | 519             | 2,312           | 4,058           |

### Key ratios

| Year end: Dec            | 2015  | 2016  | 2017E | 2018E | 2019E |
|--------------------------|-------|-------|-------|-------|-------|
| <b>Operating ratios</b>  |       |       |       |       |       |
| EBIT margin (%)          | 36.2  | 33.8  | 36.2  | 37.3  | 39.4  |
| EBITDA margin (%)        | 64.6  | 62.3  | 65.5  | 67.0  | 69.3  |
| Effective tax rate (%)   | 12.9  | 12.8  | 12.8  | 12.8  | 12.8  |
| Revenue growth (%)       | 8.0   | 13.3  | 6.0   | 7.2   | 7.4   |
| Net income growth (%)    | 12.7  | 18.7  | 15.1  | 14.5  | 19.8  |
| EPS growth adj (%)       | 12.7  | 18.7  | 15.1  | 14.5  | 19.8  |
| DPS growth (%)           | 20.1  | 18.5  | 15.1  | 14.5  | 19.8  |
| <b>Efficiency ratios</b> |       |       |       |       |       |
| ROE (%)                  | 8.2   | 9.0   | 9.6   | 10.0  | 10.9  |
| ROCE (%)                 | 9.2   | 9.1   | 9.6   | 9.4   | 9.6   |
| Asset turnover (x)       | 0.1   | 0.2   | 0.2   | 0.2   | 0.2   |
| Op cash / EBIT (x)       | 2.3   | 1.8   | 1.7   | 1.7   | 1.7   |
| Depreciation / CAPEX (x) | (0.4) | (0.5) | (0.5) | (0.5) | (0.6) |
| Accounts receivable days | 98.8  | 83.0  | 95.6  | 96.1  | 94.7  |
| <b>Leverage ratios</b>   |       |       |       |       |       |
| Net debt / assets (%)    | 53.5  | 53.6  | 53.4  | 51.9  | 49.6  |
| Net gearing (%)          | 187.9 | 181.9 | 175.9 | 165.8 | 151.7 |
| Net debt / EBITDA (x)    | 5.6   | 5.4   | 5.0   | 4.7   | 4.2   |
| Interest cover (x)       | 2.7   | 2.9   | 2.8   | 3.0   | 3.4   |
| Current ratio (x)        | 0.2   | 0.2   | 0.2   | 0.3   | 0.3   |
| <b>Valuation</b>         |       |       |       |       |       |
| PER (x)                  | 14.6  | 12.3  | 10.7  | 9.3   | 7.8   |
| EV/EBITDA (x)            | 9.8   | 9.6   | 8.8   | 8.2   | 7.6   |
| PBR (x)                  | 1.2   | 1.1   | 1.0   | 0.9   | 0.9   |
| Dividend yield (x)       | 1.4   | 1.6   | 1.9   | 2.1   | 2.6   |

## Huaneng Renewables (958 HK)

### Income statement (Rmb mn)

| Year end: Dec               | 2015         | 2016         | 2017E         | 2018E         | 2019E         |
|-----------------------------|--------------|--------------|---------------|---------------|---------------|
| <b>Revenue</b>              | <b>7,357</b> | <b>9,239</b> | <b>10,507</b> | <b>11,661</b> | <b>12,905</b> |
| Other net income            | 435          | 322          | 289           | 320           | 354           |
| Material costs              | -            | -            | -             | -             | -             |
| Service concession          | -            | -            | -             | -             | -             |
| General and administrative  | (559)        | (626)        | (755)         | (863)         | (955)         |
| Repairs and maintenance     | (109)        | (189)        | (246)         | (273)         | (299)         |
| Other operating expenses    | (272)        | (375)        | (414)         | (459)         | (508)         |
| <b>EBITDA</b>               | <b>6,851</b> | <b>8,370</b> | <b>9,380</b>  | <b>10,386</b> | <b>11,496</b> |
| Depreciation & Amortization | (2,735)      | (3,462)      | (3,578)       | (3,935)       | (4,289)       |
| <b>EBIT</b>                 | <b>4,116</b> | <b>4,908</b> | <b>5,802</b>  | <b>6,451</b>  | <b>7,207</b>  |
| Net interest                | (2,073)      | (1,995)      | (2,447)       | (2,499)       | (2,560)       |
| JVs and associates          | (3)          | (3)          | (2)           | (3)           | (2)           |
| <b>Pretax profit</b>        | <b>2,041</b> | <b>2,910</b> | <b>3,353</b>  | <b>3,949</b>  | <b>4,645</b>  |
| Taxation                    | (141)        | (202)        | (232)         | (274)         | (322)         |
| Minority                    | 40           | 49           | 57            | 67            | 78            |
| <b>Net profit</b>           | <b>1,860</b> | <b>2,659</b> | <b>3,064</b>  | <b>3,609</b>  | <b>4,245</b>  |
| Net profit (adjusted)       | 1,616        | 2,614        | 3,064         | 3,609         | 4,245         |
| Basic EPS (Rmb)             | 0.19         | 0.27         | 0.29          | 0.34          | 0.40          |
| Diluted EPS (Rmb)           | 0.19         | 0.27         | 0.29          | 0.34          | 0.40          |
| DPS (Rmb)                   | 0.03         | 0.04         | 0.04          | 0.05          | 0.06          |

### Balance sheet (Rmb mn)

| Year end: Dec                      | 2015          | 2016          | 2017E         | 2018E         | 2019E          |
|------------------------------------|---------------|---------------|---------------|---------------|----------------|
| Cash                               | 4,504         | 2,570         | 3,537         | 1,984         | 1,525          |
| Short term investments             | -             | -             | -             | -             | -              |
| Accounts receivables               | 2,900         | 4,635         | 5,253         | 5,247         | 5,162          |
| Inventory                          | 43            | 33            | 33            | 33            | 33             |
| Other current assets               | 205           | 1,457         | 1,457         | 1,457         | 1,457          |
| <b>Total current assets</b>        | <b>7,652</b>  | <b>8,696</b>  | <b>10,281</b> | <b>8,722</b>  | <b>8,177</b>   |
| PP&E                               | 68,658        | 72,107        | 76,471        | 82,324        | 87,753         |
| Intangible Assets                  | 682           | 654           | 620           | 587           | 553            |
| Associates and JVs                 | 109           | 106           | 104           | 102           | 99             |
| Other long term assets             | 5,452         | 3,883         | 3,913         | 3,951         | 3,987          |
| <b>Total long term assets</b>      | <b>74,901</b> | <b>76,749</b> | <b>81,108</b> | <b>86,963</b> | <b>92,392</b>  |
| <b>TOTAL ASSETS</b>                | <b>82,553</b> | <b>85,445</b> | <b>91,389</b> | <b>95,685</b> | <b>100,569</b> |
| Short term debt                    | 19,223        | 22,998        | 23,458        | 23,927        | 24,405         |
| Accounts payables                  | 9,250         | 7,440         | 7,440         | 7,440         | 7,440          |
| Other current liabilities          | 60            | 80            | 80            | 80            | 80             |
| <b>Total current liabilities</b>   | <b>28,533</b> | <b>30,517</b> | <b>30,977</b> | <b>31,446</b> | <b>31,925</b>  |
| Long term debt                     | 32,695        | 29,955        | 30,554        | 31,165        | 31,789         |
| Deferred tax                       | 20            | 3,743         | 3,743         | 3,743         | 3,743          |
| Other long term liabilities        | 2,680         | 235           | 235           | 235           | 235            |
| <b>Total long term liabilities</b> | <b>35,395</b> | <b>33,933</b> | <b>34,533</b> | <b>35,144</b> | <b>35,767</b>  |
| <b>TOTAL LIABILITIES</b>           | <b>63,928</b> | <b>64,451</b> | <b>65,510</b> | <b>66,590</b> | <b>67,692</b>  |
| Shareholders' funds                | 17,798        | 20,137        | 24,966        | 28,115        | 31,819         |
| Perpetual medium-term note         | -             | -             | -             | -             | -              |
| Minority Interests                 | 827           | 857           | 913           | 980           | 1,059          |
| <b>TOTAL LIAB AND EQUITY</b>       | <b>82,553</b> | <b>85,445</b> | <b>91,389</b> | <b>95,685</b> | <b>100,569</b> |
| Net cash / (debt)                  | (47,414)      | (50,383)      | (50,475)      | (53,108)      | (54,669)       |

### Cash flow statement (Rmb mn)

| Year end: Dec                    | 2015            | 2016E          | 2017E          | 2018E          | 2019E          |
|----------------------------------|-----------------|----------------|----------------|----------------|----------------|
| <b>Pretax profit</b>             | <b>2,041</b>    | <b>2,910</b>   | <b>3,353</b>   | <b>3,949</b>   | <b>4,645</b>   |
| Depreciation & amortisation      | 2,735           | 3,462          | 3,578          | 3,935          | 4,289          |
| Net interest                     | 2,197           | 2,090          | 2,447          | 2,499          | 2,560          |
| Taxes paid                       | (126)           | (179)          | (232)          | (274)          | (322)          |
| Changes in working capital       | 967             | (844)          | (618)          | 6              | 85             |
| Others                           | (132)           | (101)          | 2              | 3              | 2              |
| <b>Cash flow from operations</b> | <b>7,682</b>    | <b>7,338</b>   | <b>8,530</b>   | <b>10,118</b>  | <b>11,260</b>  |
| Capex                            | (12,644)        | (7,877)        | (7,940)        | (9,793)        | (9,720)        |
| Acquisitions                     | (144)           | (16)           | 0              | 0              | -              |
| Disposals                        | (324)           | -              | -              | -              | -              |
| Others                           | 598             | 524            | 30             | 27             | 17             |
| <b>Cash flow from investing</b>  | <b>(12,514)</b> | <b>(7,370)</b> | <b>(7,910)</b> | <b>(9,766)</b> | <b>(9,703)</b> |
| Dividends                        | (214)           | (316)          | (399)          | (460)          | (541)          |
| Issue of shares                  | 39              | 35             | 2,163          | 0              | 0              |
| Change in debt                   | 4,396           | 632            | 1,059          | 1,080          | 1,102          |
| Others                           | (2,443)         | (2,209)        | (2,477)        | (2,526)        | (2,577)        |
| <b>Cash flow from financing</b>  | <b>1,778</b>    | <b>(1,858)</b> | <b>347</b>     | <b>(1,905)</b> | <b>(2,016)</b> |
| <b>Change in cash</b>            | <b>(3,054)</b>  | <b>(1,889)</b> | <b>967</b>     | <b>(1,553)</b> | <b>(459)</b>   |
| Free cash flow                   | (4,962)         | (538)          | 591            | 326            | 1,540          |

### Key ratios

| Year end: Dec            | 2015  | 2016  | 2017E | 2018E | 2019E |
|--------------------------|-------|-------|-------|-------|-------|
| <b>Operating ratios</b>  |       |       |       |       |       |
| EBIT margin (%)          | 56.0  | 53.1  | 55.2  | 55.3  | 55.9  |
| EBITDA margin (%)        | 93.1  | 90.6  | 89.3  | 89.1  | 89.1  |
| Effective tax rate (%)   | 6.9   | 6.9   | 6.9   | 6.9   | 6.9   |
| Revenue growth (%)       | 19.6  | 25.6  | 13.7  | 11.0  | 10.7  |
| Net income growth (%)    | 65.9  | 43.0  | 15.2  | 17.8  | 17.6  |
| EPS growth adj (%)       | 54.2  | 43.0  | 6.1   | 17.8  | 17.6  |
| DPS growth (%)           | 50.0  | 36.7  | 6.1   | 17.8  | 17.6  |
| <b>Efficiency ratios</b> |       |       |       |       |       |
| ROE (%)                  | 10.4  | 13.2  | 12.3  | 12.8  | 13.3  |
| ROCE (%)                 | 7.6   | 8.9   | 9.6   | 10.0  | 10.5  |
| Asset turnover (x)       | 0.1   | 0.1   | 0.1   | 0.1   | 0.1   |
| Op cash / EBIT (x)       | 1.9   | 1.5   | 1.5   | 1.6   | 1.6   |
| Depreciation / CAPEX (x) | (0.2) | (0.4) | (0.5) | (0.4) | (0.4) |
| Accounts receivable days | 143.9 | 183.1 | 182.5 | 164.3 | 146.0 |
| <b>Leverage ratios</b>   |       |       |       |       |       |
| Net debt / assets (%)    | 57.4  | 59.0  | 55.2  | 55.5  | 54.4  |
| Net gearing (%)          | 266.4 | 250.2 | 202.2 | 188.9 | 171.8 |
| Net debt / EBITDA (x)    | 6.9   | 6.0   | 5.4   | 5.1   | 4.8   |
| Interest cover (x)       | 1.9   | 2.3   | 2.4   | 2.6   | 2.8   |
| Current ratio (x)        | 0.3   | 0.3   | 0.3   | 0.3   | 0.3   |
| <b>Valuation</b>         |       |       |       |       |       |
| PER (x)                  | 10.7  | 7.5   | 7.0   | 6.0   | 5.1   |
| EV/EBITDA (x)            | 11.3  | 9.4   | 8.5   | 7.7   | 7.0   |
| PBR (x)                  | 1.1   | 1.0   | 0.9   | 0.8   | 0.7   |
| Dividend yield (%)       | 1.5   | 2.0   | 2.1   | 2.5   | 3.0   |

Source: Company; CSC Research estimates



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## Company Rating Definition

The Benchmark: Hong Kong Hang Seng Index; Time Horizon: 12 months

|             |  |
|-------------|--|
| <b>Buy</b>  | 12-month absolute total return: $\geq 10\%$            |
| <b>Hold</b> | 12-month absolute total return: $> -10\%$ but $< 10\%$ |
| <b>Sell</b> | 12-month absolute total return: $\leq -10\%$           |

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