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華能國際電力股份有限公司
HUANENG POWER INTERNATIONAL, INC.

(a Sino-foreign joint stock limited company incorporated in the People's Republic of China)

(Stock Code: 902)

**ANNOUNCEMENT ON REPLIES TO THE LETTER OF ENQUIRY FROM THE
SHANGHAI STOCK EXCHANGE**

Huaneng Power International, Inc. (“the Company”), on 14 April 2020, received a Letter of Enquiry regarding Information Disclosure of 2019 Annual Report of Huaneng Power International, Inc. (Shang Zheng Gong Han [2020] No. 0350) (the “Letter of Enquiry”) from the Shanghai Stock Exchange. Upon receiving the Letter of Enquiry, the Company proactively arranged with relevant parties to carry out diligent research as well as discussion and analysis on the issues raised in the Letter of Enquiry. In accordance with the requirements of the Letter of Enquiry, replies to relevant issues are as follows:

I. In relation to Assets Impairment with Significant Amount

According to the annual report, the Company accrued significant asset impairment of RMB5.886 billion at the end of the reporting period. To this, please supplement and explain each of the following items:

1. In relation to aggregate impairment amount of RMB3.818 billion for the 10 asset groups, including Huaneng Yushe Power Generation Co., Ltd., please further supplement and explain:

(1) List the main assets (such as generator units, buildings and erections, etc.) included in each asset group, the amount of asset impairment provided for in the past 3 years, and the net asset value after the asset impairment in the current period; for the impairment provision made due to the policy, please quote examples from other similar companies' with provision for impairment provision;

(2) For the provisions for impairment of Huaneng Yushe Power Generation Co., Ltd., Huaneng Zhanhua Co-generation Limited Company and Huaneng Jining High-tech Zone Co-generation Limited Company, please explain: the main content of the National Development and Reform Commission and other departments for promoting the optimization and upgrading of the coal power industry, including but not limited to the release time of the policy, the prescribed period of implementation, the standards of optimization and upgrades, etc.; the reasons for the three asset groups which need to be upgraded according to the policy; the possible losses arising from choosing the possible period for the shutdown and different periods for the shutdown, the factors to be considered for the Company's planned shutdown ahead of schedule and accrual impairment provisions in the current period, the basis and process for determining the amount of provisions in the current period;

(3) For the provisions for impairment of Shanghai Shidongkou No. 1 Power Plant, please explain: the specific content of equal-capacity replacement in 2022 in accordance with the requirements of the Shanghai Development and Reform Commission, the reasons why Shanghai Shidongkou No. 1 Power Plant should be included in the equal-capacity replacement; the impact on choosing the period of shutdown and different periods of shutdown of First phase Power Plant, the factors to be considered for the Company's planned shutdown ahead of schedule and accrual impairment provisions in the current period, the basis and process for determining the provisions for impairment in the current period with an amount of RMB381 million;

(4) For the provisions for impairment of Huaneng Qufu Co-generation Limited Company and Huangtai No.8 Generation Unit, please explain: the main content of the policy of introducing foreign power into Shandong, the current situation of introducing foreign power into Shandong; the proportion of the Company's power supply in the local power supply market, the specific manifestation of the adverse impact of the policy on the Company, the basis and the calculation standards for the decrease in the expected utilization hours of the Company; the reasons why the asset impairment appeared in the current period but not in other periods; the basis and process for determining the provisions for impairment with an amount of RMB763 million and RMB55 million, respectively;

(5) For the provisions for impairment of Huaneng Xinhua Power Generation Co., Ltd. and Huaneng Hegang Power Generation Co., Ltd., please explain: the operating status of coal price in Heilongjiang Province in the past 5 years, the expected operating trend and basis of coal price in a certain period in the future; relevant companies' market share in the local power generation market in the past 3 years, the expected trend and basis of market share changes in the following 2 years, the reasons for the expected decline; whether the relevant specific signs of impairment appeared in the previous periods, the reason for the large amount of impairment provision in the current period; the basis and process for determining the provisions for impairment with an amount of RMB620 million and RMB255 million, respectively;

(6) For the provisions for impairment of the generator units of Yunnan Diandong Yuwang Energy Co., Ltd., please explain: whether or not it is listed as the main impact on provincial reserve power supply to power generation enterprises, the time when the Company is listed in the reserve power supply; the key points of the capacity cooperation with Guizhou and the main impact on the power generation enterprises, the specific manifestation of the adverse effects of the delay on the Company, the period when those adverse effects occur, the reasons for the Company's large amount of impairment provision in the current period; the basis and process for determining the provisions for impairment with an amount of RMB367 million;

(7) For the provisions for impairment of Huaneng (Fujian) Port Limited Company please explain: the situation of the phase I of Jiangjunmao project, including but not limited to the construction period, the budgeted investment amount, the time of completion, the expected throughput, etc.; the analysis of the reasons for the differences between the actual and expected project progress and investment amount; the reasons for future throughput having difficulties to meet the expectations and its calculation basis; the basis for no indication of impairment in previous periods, the reasons for the provision for impairment in this period rather than in previous periods; the basis and process for determining the provisions for impairment with an amount of RMB485 million;

(8) Please compare the calculation of the provision for impairment with similar companies to explain the basis and rationale of the Company's pre-tax discount rate of 7.00% -10.90%.

Company's Reply:

(1) List the main assets (such as generator units, buildings and erections, etc.) included in each asset group, the amount of asset impairment provided for in the past 3 years, and the net asset value after the asset impairment in the current period; for the impairment provision made due to the policy, please quote examples from other similar companies' with provision for impairment provision.

The Company has accrued a total of RMB3.818 billion in impairment losses on 10 asset groups including Huaneng Yushe Power Generation Co., Ltd., whose breakdown is as follows:

Unit: RMB100 million

Name of company	Book value upon provision for impairment As 31 December 2019			Amount of provision for impairment (Throughout the year)		
	Buildings	Electric utility plant in service	Construction in progress, intangible assets and other assets	2019	2018	2017
Huaneng Yushe Power Generation Co., Ltd.	0.06	1.16	1.16	7.30	0.88	1.55
Huaneng Zhanhua Co-generation Limited Company	-	0.52	1.61	0.77	-	-
Huaneng Jining High-tech Zone Co-generation Limited Company	-	0.10	0.90	0.85	0.49	-
Huaneng International Power, Inc. Shanghai Shidongkou No. 1 Power Plant	0.14	6.94	1.96	3.81	-	-
Huaneng Qufu	0.01	0.82	1.07	7.63	-	-

Co-generation Limited Company						
Huangtai No.8 Generation Unit	-	-	0.55	0.55	-	-
Huaneng Xinhua Power Generation Co., Ltd.	0.01	0.72	0.85	6.20	-	-
Huaneng Hegang Power Generation Co., Ltd.	0.33	15.48	0.92	2.55	-	-
Yunnan Diandong Yuwang Energy Co., Ltd.	0.23	14.43	31.02	3.67	-	4.95
Huaneng (Fujian) Port Limited Company	0.32	-	14.81	4.85	-	-
Total	1.10	40.17	54.85	38.18	1.37	6.50

* Other assets of Yunnan Diandong Yuwang Energy Co., Ltd. mainly include: construction in progress of RMB2.233 billion and intangible assets of RMB865 million.

** Other assets of Huaneng (Fujian) Port Limited Company mainly include: port facilities of RMB1.336 billion, construction in progress of RMB0.11 billion and intangible assets of RMB27 million.

According to publicly disclosed information, we noted that other peers also made related provision for asset impairment in 2019. For instance, in 2019, China Resources Power Holdings Company Limited has made a provision for asset impairment of HK\$2.321 billion (2018: HK\$909 million; 2017: HK\$855 million), and Datang International Power Generation Co., Ltd. has made a provision for asset impairment of RMB1.658 billion (2018: RMB489 million; 2017: RMB529 million), GD Power Development Co., Ltd. has made a provision for asset impairment of RMB1.571 billion (2018: RMB3.682 billion; 2017: RMB1.333 billion), China Power International Development Limited has made a provision for asset impairment of RMB854 million (2018: RMB10 million; 2017: RMB1 million), and Huadian Power International Corporation Limited has made a provision for asset impairment of RMB782 million (2018: RMB121 million; 2017: RMB772 million).

(2) For the provisions for impairment of Huaneng Yushe Power Generation Co., Ltd., Huaneng Zhanhua Co-generation Limited Company and Huaneng Jining High-tech Zone Co-generation Limited Company, please explain: the main content

of the National Development and Reform Commission and other departments for promoting the optimization and upgrading of the coal power industry, including but not limited to the release time of the policy, the prescribed period of implementation, the standards of optimization and upgrades, etc.; the reasons for the three asset groups which need to be upgraded according to the policy; the possible losses arising from choosing the possible period for the shutdown and different periods for the shutdown, the factors to be considered for the Company's planned shutdown ahead of schedule and accrual impairment provisions in the current period, the basis and process for determining the amount of provisions in the current period.

On 8 March 2019, the National Development and Reform Commission and the National Energy Administration jointly issued the "Opinions on Further Promoting Supply-side Structural Reform to Further Eliminate Outdated Capacity and Promote the Optimisation and Upgrade of the Coal Power Industry" (Fa Gai Neng Yuan [2019] No. 431) (《關於深入推進供給側結構性改革進一步淘汰落後產能促進煤電行業優化升級的意見》(發改能源[2019]431 號)). The document pointed out that the people's governments of all provinces (autonomous regions and municipalities) should formulate shutdown plans for outdated coal power units in the region and annual shutdown plans, which would be, in principle, shut down during the "Thirteenth Five-Year Plan" period. The conditions for the coal power units to be eliminated and shut down include: 1) units that do not have the conditions for heating retrofits; 2) 300 MW pure condensing coal power units in service whose design life has expired, and do not have the conditions for extending life; 3) the coal power units without retrofit or whose power supply and coal consumption upon being retrofitted still cannot meet the requirements of the "Energy Consumption limits for conventional Coal Power Generating Units" (《常規燃煤發電機組單位產品能源消耗限額》) (GB21258-2017) and "Energy Consumption limits for Thermal Power Cogeneration Units" (《熱電聯產單位產品能源消耗限額》) (GB35574-2017); 4) the coal power units without retrofit or whose pollutant emission upon being retrofitted does not meet the requirements of national environmental protection; 5) the coal power units without retrofit or whose water consumption does not meet national standards; 6) the outdated small coal-fired thermal power units within a heating radius of 15 km for cogeneration units with a capacity of 300 MW or more among the key areas specified in the three-year anti-pollution action plan; 7) the units that shall

be shut down as required by relevant laws, regulations and standards, or as clearly required by relevant department of the State Council. According to the document, power generation enterprises should earnestly assume the main responsibility, actively implement the national industrial policies, fulfilling social responsibilities as well as taking the initiative to shut down the outdated production capacity.

Huaneng Yushe Power Generation Co., Ltd. ("Yushe Power Plant") was included in the list of the special governance tasks for key loss-making subsidiaries of central enterprises by the State-owned Assets Supervision and Administration Commission of the State Council ("SASAC") in 2019, requiring a 50% reduction in losses within three years. The losses of Yushe Power Plant in 2017, 2018 and 2019 were RMB232 million (excluding the impairment of RMB155 million), RMB187 million (excluding the impairment of RMB88 million) and RMB158 million (excluding the impairment of RMB730 million), respectively. In 2019, the coal consumption of power supply of Yushe Power Plant units was 347.73 g/kWh, which was much higher than the Company's average coal consumption of power supply of 307.21 g/kWh in 2019. Yushe Power Plant has been put into production for 15 years. If it is retrofitted, the investment amount is relatively large, and the unit efficiency cannot be significantly improved. The Company estimated that it is difficult to turn losses into profit through continuous operation, and to achieve the task of reducing losses required by the SASAC. Delayed disposal or shutdown of Yushe Power Plant would incur more losses. Therefore, the Company made a decision in the fourth quarter of 2019 in response to the document of Fa Gai Neng Yuan [2019] No. 431 to proactively eliminate outdated production capacity, and if the external disposal of the equity of Yushe Power Plant cannot be carried out at the end of 2020, it would be bankrupted and liquidated.

Huaneng Zhanhua Co-generation Limited Company ("Zhanhua Co-generation") has a coal consumption of 352.36 g/kWh in 2019, much higher than the Company's average coal consumption of 307.21 g/kWh in 2019. The units of Zhanhua Co-generation have been put into production for 14 years. If it is retrofitted, the investment amount is relatively large, and the unit efficiency cannot be significantly improved. In addition, Zhanhua Co-generation was included in the list of special governance tasks for key loss-making subsidiaries of central enterprises in the second half of 2019 by the SASAC, requiring a 50% reduction in losses for three years. The losses of Zhanhua Co-generation in 2017, 2018 and 2019 were RMB90 million, RMB121 million and RMB54 million

(excluding the impairment of RMB77 million), respectively. In the current operating situation, it is difficult for Zhanhua Co-generation to turn losses into profits, and to achieve the task of reducing losses required by the SASAC. Therefore, the Company made a decision in the fourth quarter of 2019 in response to the document of Fa Gai Neng Yuan [2019] No. 431 to proactively eliminate outdated production capacity, and if the equity of Zhanhua Co-generation cannot be disposed of at the end of 2020, it would be bankrupted and liquidated.

Huaneng Jining High-tech Zone Co-generation Limited Company ("Jining Co-generation") obtained the "Approval of Huaneng Jining Cogeneration Project" (Lu Fa Gai Neng Yuan [2015] No. 402) (《關於華能濟寧熱電聯產項目核准的批復》(魯發改能源[2015]402 號)) by the Shandong Development and Reform Commission in August 2015. According to the approval, Jining Co-generation plans to build a 2×350 MW “replacing small unites with larger ones” thermal power cogeneration project. The existing 2×30 MW extraction condensing and heating unit is used as Jining Co-generation’s 2×350 MW “replacing small unites with larger ones” thermal power cogeneration project. On the basis of “build first and then close”, that is, after the completion of the construction of the 2×350 MW “upper pressure and lower pressure” thermal power cogeneration project, the 2×30 MW extraction condensing and heating unit of Jining Co-generation would be shut down. In 2019, Jining Co-generation's 2×350 MW “replacing small unites with larger ones” thermal power cogeneration project has been fully put into operation. In order to ensure power supply and the people’s livelihood, the 2×350 MW thermal power cogeneration project would be put into operation as scheduled in October 2020. After the commissioning, Jining Co-generation's 2×30 MW condensing heating unit was shut down according to the provisions of Lu Fa Gai Neng Yuan [2015] No. 402, and the Company could not choose the period of shutdown. In view of the construction of the 2×350 MW project starting in 2019 and the plan to commission one unit in October 2020, the two units of Jining Co-generation are expected to be shut down by the end of 2020.

Due to certain changes in the future use of the above assets, an impairment test is required in accordance with "Accounting Standards for Business Enterprises No. 8 - Asset Impairment". The Company estimated the recoverable amounts based on the present value of the asset group’s expected future cash flows. The main parameters used in estimating

the recoverable amount of these asset groups include generating unit utilization hours, electricity sales price, and fuel price. The following table sets out the main parameters used in the impairment test in 2020:

	Generating unit utilization hours Unit: hours/year	On-grid tariff (excluding tax) Unit: RMB/MWh	Fuel price (Unit price of standard coal excluding tax) Unit: RMB/ton
Yushe Power Plant	5,000	271.68	448.43
Zhanhua Co-generation	3,752	345.47	685.25
Jining Co-generation	5,330	358.32	698.26

The Company estimated the future utilization hours of generating units mainly with reference to the local power market and future trend. In view of the increase in power generation of Shanxi Province in 2020 as compared to that in 2019, Yushe Power Plant expects the utilization hours to be slightly higher than the actual number in 2019 (4,583 hours); Zhanhua Co-generation, taking into account the trend of lower fuel prices, plans to reduce the sale of alternative power generation quota, and would increase revenue through self-generation, therefore, the expected utilization hours in 2020 are higher than the actual number in 2019 (3,447 hours); the utilization hours of Jining Co-generation generation unit in the future would decrease by 14.6% as compared to the actual number of 6,242 hours in 2019, mainly due to the continuous expansion of the “external power input to Shandong”, and the increase of the generation of clean energy such as wind power and photovoltaic power squeezing the thermal power market share.

The Company estimated the future electricity sales price with reference to the approval of electricity sales price and the market transactions. The future electricity sales prices of Yushe Power Plant, Zhanhua Co-generation and Jining Co-generation are basically the same as the actual average comprehensive electricity sales price (excluding tax) in 2019 of RMB279.85/MWh, RMB351.63 /MWh and RMB356.92/MWh.

The Company estimated the future fuel price with reference to the understanding of the coal market and related industrial policies. It is expected that the fuel price in 2020 would slightly decrease as compared to the actual fuel price in 2019, mainly due to the

following reasons: 1) on the supply side, as the pilot sector of supply-side structural reform, the coal industry has basically completed the "13th Five-Year Plan" capacity reduction task, and the large-scale coal mines that have been approved by the relevant national ministries and commissions for construction and addition with an approximate amount of 100 million tons are expected to be put into production in 2020, and the domestic coal supply would maintain steady growth. In addition, the environmental protection and safety production standards of domestic coal mines have been greatly improved. The impact of various inspections on the normal production of domestic coal mines has gradually weakened, and the domestic coal supply would be in a relatively sufficient state. In addition, the increase in the amount of imported coal also guarantees the supply level of the coal market; 2) on the demand side, the energy development in the PRC is currently in the double replacement period for oil and gas to replace coal and non-fossil energy to replace fossil energy, especially the incremental substitution effect on coal is obvious. Energy consumption structure in the PRC would be further optimized. The proportion of coal has fallen from a maximum of 72.5% in 2007 to 59% in 2018. It is expected that the proportion of coal may continue to decline in the future. Under the combined influence of the above reasons, coal prices would be fluctuating and going downward in 2019. It is expected that in the future, the coal market would transit from the supply and demand balance in 2019 to the loose supply and demand, while the focus of coal power prices would further move downward.

The Company used the above main parameters and took into account the disposal value of relevant assets to estimate the expected future cash flow of each asset group, then calculated its recoverable amount. According to the results of testing, in 2019, Yushe Power Plant, Zhanhua Co-generation and Jining Co-generation made the provisions for fixed asset impairment of RMB730 million, RMB77 million and RMB85 million, respectively. The Company engaged KPMG Advisory (China) Limited to independently estimate the recoverable amount of the above asset group and issue a report.

(3) For the provisions for impairment of Shanghai Shidongkou No. 1 Power Plant, please explain: the specific content of equal-capacity replacement in 2022 in accordance with the requirements of the Shanghai Development and Reform Commission, the reasons why Shanghai Shidongkou No. 1 Power Plant should be included in the equal-capacity replacement; the impact on choosing the period of shutdown and different periods of shutdown of First phase Power Plant, the factors

to be considered for the Company's planned shutdown ahead of schedule and accrual impairment provisions in the current period, the basis and process for determining the provisions for impairment in the current period with an amount of RMB381 million;

On 2 September 2019, Huaneng International Power, Inc. Shanghai Shidongkou No. 1 Power Plant ("Shidongkou No. 1 Plant") received the "Approval of Shanghai Development and Reform Commission on the Huaneng Shidongkou No. 1 Plant's Project of Replacing Coal Power with Equal Capacity of 2×650 MW" (《上海市發展改革委關於華能石洞口第一電廠 2×65 萬千瓦等容量煤電替代專案核准的批復》), pursuant to which it agreed to approve the Shidongkou No. 1 Plant's project of replacing coal with equal capacity of 2×650 MW, and the project construction owner is Huaneng Shanghai Shidongkou No. 1 Plant. According to the principle of "being closed before construction" mentioned in Article 3 of the document, Shidongkou No. 1 Plant shall be shut down and then put new units into operation in 2022. On 12 October 2019, the Company determined that the construction of the new unit would commence in 2020, and would be put into operation before the end of 2022.

The reasons for including the project in equal capacity replacement include: 1) The replacement project plans to use large-capacity, high-parameter, high-efficiency generating units, and select secondary reheated ultra-supercritical technology to achieve clean and efficient power generation of coal, and the construction of new units is beneficial to improve the subsequent profitability, which is in the interests of the Company's long-term development and in line with urban planning of Shanghai; 2) to ensure the safety of power supply and demand in Yanghang district, Shanghai, the installed capacity of Shidongkou No. 1 Plant is of significant support for the safety of power supply in Yanghang West district, and it cannot be withdrawn without replacement; 3) The replacement project uses thermal power deep peaking technology, which can achieve 80% deep peaking capacity, providing more adjustable peaking resources for Shanghai power grid; 4) The construction of the replacement project would help to ensure the safe operation of the Shanghai power grid in the high power reception ratio and the power supply safety of the Yangxingxi sub-regional power grid.

In view of the fact that the project shall be closed before construction as required by the "Approval of Shanghai Development and Reform Commission on the Huaneng

Shidongkou No. 1 Plant's Project of Replacing Coal Power with Equal Capacity of 2 × 650 MW" (《上海市發展改革委關於華能石洞口第一電廠 2×65 萬千瓦等容量煤電替代專案核准的批復》), the Company needs to shut down the old units while the new units are put into production. The new units are planned to be completed and put into production by the end of 2022, and accordingly the old units need to be shut down by the end of 2022. In the fourth quarter of 2019, the Company conducted a detailed research and made a decision on the investment plan and plan to utilize existing assets of the new units. Due to certain changes in the future use of the assets, an impairment test is required in accordance with "Accounting Standards for Business Enterprises No. 8 - Asset Impairment".

The Company estimated its recoverable amount based on the present value of the asset group's expected future cash flows. The main parameters used in estimating the recoverable amount of these asset groups include generating unit utilization hours, electricity sales price, and fuel price. The following table sets out the main parameters used in the impairment test:

	Generating unit utilization hours Unit: hours/year	Electricity sales price (excluding tax) Unit: RMB/MWh	Fuel price (unit price of standard coal excluding tax) Unit: RMB/ton
2020	3,415	359.29	606.66
2021	3,300	359.29	606.66
2022	3,300	359.29	606.66

The Company estimated the future utilization hours of generating units with reference to the power market in Shanghai and future development trend. The utilization hours of power generation of Shidongkou No. 1 Plant in the next three years remain stable as compared to the actual 3,333 hours in 2019. The utilization hours of power generation in 2020 have slightly increased as compared to the actual utilization hours in 2019. The main reasons are: Tesla and other large projects began to be put into operation in the second half of 2019, which led to an increase in the power consumption of the entire Shanghai power grid.

The Company estimated the future electricity sales price with reference to the approved of electricity sales price and the market transactions. The future electricity sales

prices are basically the same as the actual average comprehensive electricity sales price (excluding tax) of RMB364.17/MWh in 2019.

The Company estimated the future fuel price with reference to the understanding of the coal market and related industrial policies. It is expected that the future fuel price would slightly decrease as compared to the actual fuel price in 2019, mainly due to the following reasons: 1) on the supply side, as the pilot sector of supply-side structural reform, the coal industry has basically completed the "13th Five-Year Plan" capacity reduction task, and the large-scale coal mines that have been approved by the relevant national ministries and commissions for construction and addition with an approximate amount of 100 million tons are expected to be put into production in 2020, and the domestic coal supply would maintain steady growth. In addition, the environmental protection and safety production standards of domestic coal mines have been greatly improved. The impact of various inspections on the normal production of domestic coal mines has gradually weakened, and the domestic coal supply would be in a relatively sufficient state. In addition, the increase in the amount of imported coal also guarantees the supply level of the coal market; 2) on the demand side, the energy development in the PRC is currently in the double replacement period for oil and gas to replace coal and non-fossil energy to replace fossil energy, especially the incremental substitution effect on coal is obvious. Energy consumption structure in the PRC would be further optimized. The proportion of coal has fallen from a maximum of 72.5% in 2007 to 59% in 2018. It is expected that the proportion of coal may continue to decline in the future. Under the combined influence of the above reasons, coal prices would be fluctuating and going downward in 2019. It is expected that in the future, the coal market would transit from the supply and demand balance in 2019 to the loose supply and demand, while the focus of coal power prices would further move downward.

In addition, as the project is subject to in-situ reconstruction, the Company sorted out the existing assets that can be utilized in future. The amount of existing assets that can be utilized is RMB196 million. There is no impairment risk for these assets for the time being.

The Company used the above main parameters and considered the existing assets that can be utilized in future of RMB196 million to estimate the expected future cash flow of asset groups, then calculated its recoverable amount. According to the results of testing,

Shidongkou No. 1 Plant needs to make an impairment provision for fixed asset of RMB381 million. The Company engaged Yinxin Appraisal Co., Ltd. to independently estimate the recoverable amount of the above asset group and issue a report.

(4) For the provisions for impairment of Huaneng Qufu Co-generation Limited Company and Huangtai No.8 Generation Unit, please explain: the main content of the policy of introducing foreign power into Shandong, the current situation of introducing foreign power into Shandong; the proportion of the Company's power supply in the local power supply market, the specific manifestation of the adverse impact of the policy on the Company, the basis and the calculation standards for the decrease in the expected utilization hours of the Company; the reasons why the asset impairment appeared in the current period but not in other periods; the basis and process for determining the provisions for impairment with an amount of RMB763 million and RMB55 million, respectively;

In July 2018, the Shandong Provincial Government issued the "Notice on the Alternative Work Plan for Coal Consumption Reduction in Shandong Province from 2018 to 2020" (Lu Zheng Fa Zi [2018] No. 123), which proposed to vigorously implement "external power input to Shandong" policy to reduce the provincial coal consumption; strengthen the construction of smart grids, and further play the role of four UHV transmission channels from Ximeng to Jinan, Yuheng to Weifang, Shanghai Temple to Linyi, and Zhalute to Qingzhou. It aims to get support from the country, build a government cooperation platform with Shanxi, Shaanxi, Inner Mongolia, Xinjiang and other resource-rich provinces (regions), speed up the development and construction of supporting power sources, open up energy supply pipelines outside the province, and increase the proportion of renewable energy in "external power input to Shandong". By 2020, the province would have a capacity of 35,000 MW to transmit from outside the province. In 2019, Shandong Province received the external electricity of approximately 93.6 billion kWh, representing a year-on-year increase of 33.72%. In the first quarter of 2020, it received the external electricity of 21.1 billion kWh in total, representing a year-on-year increase of 8.55%. The power generation of public thermal power plants in Shandong Province decreased by 18.74% as compared to the same period last year.

In 2019, the power supply of Huaneng Qufu Co-generation Limited Company ("Qufu Co-generation") accounted for 0.7% of local direct-adjusted utility power

generation, and the power generation of Huangtai No.8 Generation Unit accounted for 0.4% of local direct-adjusted utility power generation.

The utilization hours of Qufu Co-generation in 2017 and 2018 were 4,796 and 5,345 hours, respectively. The utilization hours of power generation in 2019 decreased by 780 hours to 4,565 hours. The utilization hours have dropped significantly, which severely affected the profitability. Qufu Co-generation has 2 units of 225MW units with small capacity and high energy consumption. Shandong follows the principle of energy conservation and consumption reduction when arranging the operation of units, giving priority to large-capacity units with low energy consumption, and the utilization hours of small units with high energy consumption would be further compressed. In addition, Qufu Co-generation generation units have a small marginal contribution to power generation, and spot trading is not advantageous, which also further reduces the utilization hours of the units. It is expected that the utilization hours would decline to 3,800 hours in 2020. In view of the fact that factors such as "external power input to Shandong" and the increase in the share of new energy installed capacity would not be eliminated in the short term, the Company expected that the power generation utilization hours would be stayed at 3,800 hours in the future.

The power generation utilization hours of Huangtai No.8 Generation Unit in 2017 and 2018 were 5,033 and 5,559 hours, respectively. Due to the policy of "external power input to Shandong", unit maintenance and other reasons, the power generation utilization hours in 2019 decreased by 1,621 hours to 3,938 hours; the utilization hours have significantly dropped, which severely affected the profitability. According to the predictions of the Shandong Energy Bureau, the Control Center and other departments, the total utilization hours of thermal power in 2020 would be around 4,500 hours. The heat supply of Huangtai No.8 Generation Unit is relatively large, and the provincial government's electricity plan is generally higher than the average level. It is expected that the power generation utilization hours for 2020 and future would be stayed at 4,623 hours (the main reason for being higher than the actual in 2019 is that the No.8 Generation Unit in 2019 was overhauled and reserved for 125 days, which resulted in lower power generation utilization hours).

The policy of "external power input to Shandong" was announced in the second half of 2018. The impact of that year was not yet obvious. In 2018, the utilization hours of

Qufu Co-generation and Huangtai No.8 Generation Unit did not decrease. In 2019, due to the impact of this policy, the utilization hours of Qufu Co-generation generation decreased by 780 hours as compared to 2018. The utilization hours of power generation of Huangtai No.8 Generation Unit decreased by 1,621 hours as compared to 2018. The power generation hours of the units deteriorated significantly, which severely affected the profitability. With the indicators of asset impairment shown, an impairment test is required in accordance with "Accounting Standards for Business Enterprises No. 8 - Asset Impairment".

The Company estimated its recoverable amount based on the present value of the asset group's expected future cash flows. The main parameters used in estimating the recoverable amount of these asset groups include generating unit utilization hours, electricity sales price, and fuel price. The following table sets out the main parameters used in the impairment test for future period:

Abbreviation of unit	Generating unit utilization hours Unit: hours/year	Electricity sales price (excluding tax) Unit: RMB/MWh	Fuel price (unit price of standard coal excluding tax) Unit: RMB/ton
Qufu Co-generation	3,800	344.74	713.44
Huangtai No.8 Generation Unit	4,623	344.23	661.44

As mentioned above, based on the understanding of local market conditions and related industrial policies, the Company estimated the future utilization hours of generating units.

The Company estimated the future electricity sales price with reference to the approval of electricity sales price and the market transactions. The future electricity sales prices of Qufu Co-generation and Huangtai No.8 Generation Unit are basically the same as the actual average comprehensive electricity sales price (excluding tax) of RMB354.2/MWh and RMB347.77/MWh in 2019.

The Company estimated the future fuel price with reference to the understanding of the coal market and related industrial policies. It is expected that the future fuel price would slightly decrease as compared to the actual fuel price in 2019, mainly due to the following reasons: 1) on the supply side, as the pilot sector of supply-side structural

reform, the coal industry has basically completed the "13th Five-Year Plan" capacity reduction task, and the large-scale coal mines that have been approved by the relevant national ministries and commissions for construction and addition with an approximate amount of 100 million tons are expected to be put into production in 2020, and the domestic coal supply would maintain steady growth. In addition, the environmental protection and safety production standards of domestic coal mines have been greatly improved. The impact of various inspections on the normal production of domestic coal mines has gradually weakened, and the domestic coal supply would be in a relatively sufficient state. In addition, the increase in the amount of imported coal also guarantees the supply level of the coal market; 2) on the demand side, the energy development in the PRC is currently in the double replacement period for oil and gas to replace coal and non-fossil energy to replace fossil energy, especially the incremental substitution effect on coal is obvious. Energy consumption structure in the PRC would be further optimized. The proportion of coal has fallen from a maximum of 72.5% in 2007 to 59% in 2018. It is expected that the proportion of coal may continue to decline in the future. Under the combined influence of the above reasons, coal prices would be fluctuating and going downward in 2019. It is expected that in the future, the coal market would transit from the supply and demand balance in 2019 to the loose supply and demand, while the focus of coal power prices would further move downward.

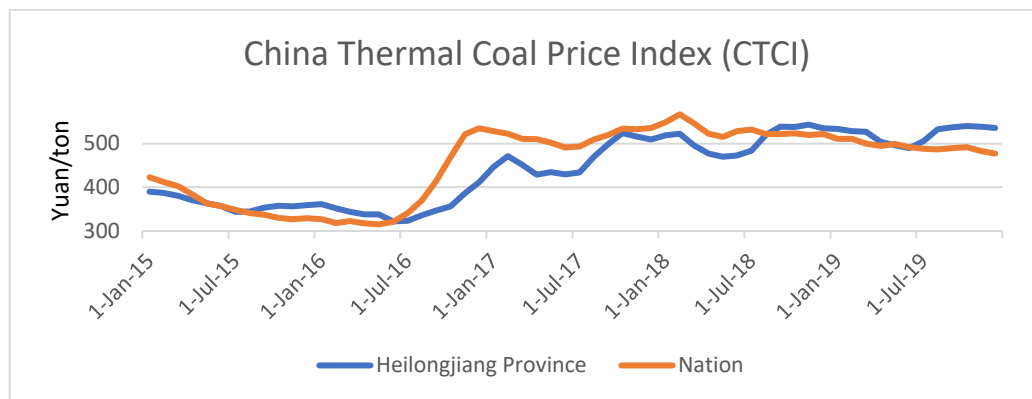
The Company used the above main parameters to estimate the expected future cash flow of each asset group, then calculated its recoverable amount. According to the results of testing, Qufu Co-generation made a provision for impairment of RMB763 million, while Huangtai No.8 Generation Unit made a provision for impairment of RMB55 million. The Company engaged KPMG Advisory (China) Limited to independently estimate the recoverable amount of the above asset group and issue a report.

(5) For the provisions for impairment of Huaneng Xinhua Power Generation Co., Ltd. and Huaneng Hegang Power Generation Co., Ltd., please explain: the operating status of coal price in Heilongjiang Province in the past 5 years, the expected operating trend and basis of coal price in a certain period in the future; relevant companies' market share in the local power generation market in the past 3 years, the expected trend and basis of market share changes in the following 2 years, the reasons for the expected decline; whether the relevant specific signs of impairment appeared in the previous periods, the reason for the large amount of impairment provision in the current period; the basis and process for determining

the provisions for impairment with an amount of RMB620 million and RMB255 million, respectively;

1) The past five-year coal price operation status in Heilongjiang Province, coal price operation trend expected in a certain period in the future and the basis therefor.

The coal production in Heilongjiang Province in the past five years is as follows:



Source: National Development and Reform Commission
(<http://jgjc.ndrc.gov.cn/zgdmjgzs.aspx?clmId=syjpgzs6>)

As is shown in the table, the coal price in Heilongjiang has been on the rise in the past 5 years. The coal prices in Heilongjiang in 2018 and 2019 are significantly different from the national average. Since September 2018, the coal price in Heilongjiang has been higher than the level of the national average price, with the difference up to RMB59/ton. Based on this and taking into account the following factors, the Company predicted that the overall coal price in Heilongjiang would decline slightly in 2020 along with the decrease of national coal price, and would remain at this price level in the subsequent period: 1) On the supply side, with the increase in Heilongjiang's increased capacity reduction and safe production requirements in recent years, coupled with the depletion of some coal mine resources, coal production in the province has fallen sharply, and the supply of coal power has been tightened in recent years. Heilongjiang had a coal shortage of nearly 25 million tons in 2018 and the shortage of more than 13 million tons in 2019. It is expected that the coal shortage would continue; 2) On the demand side, the energy development in the PRC is currently in the double replacement period for oil and gas to replace coal and non-fossil energy to replace fossil energy, especially the incremental substitution effect on coal is obvious. Energy consumption structure in the PRC would be

further optimized. The proportion of coal has fallen from a maximum of 72.5% in 2007 to 59% in 2018. It is expected that the proportion of coal may continue to decline in the future. It is expected that the growth rate of coal demand in 2020 would decline from 0.48% in 2019 to 0.27%. Specifically, for Heilongjiang, except for the increase in demand of Xilin Steel for clean coal, the demand for thermal coal would not fluctuate too much.

2) Relevant companies' market share in the local power generation market in the past 3 years, and the trend and basis of market share changes in the next two years.

Huaneng Xinhua Power Generation Co., Ltd. ("Xinhua Power Generation") accounted for 10.91%, 10.67% and 9.61% of the power generation in Heilongjiang western power grid in 2017, 2018 and 2019, respectively. Huaneng Hegang Power Generation Co., Ltd. ("Hegang Power Generation") accounted for 14.7%, 13.7% and 14.61% of the power generation in Heilongjiang western power grid in 2017, 2018 and 2019, respectively. Affected by the increase in the share of clean energy installed capacity and the successive commissioning of two 600 MW thermal power units owned by the China Energy Group Baoqing in 2020, the market shares of Xinhua Power Generation and Hegang Power Generation may be squeezed in the next two years. However, in view of the increasing power consumption year by year and Xinhua Power Generation and Hegang Power Generation as important power plants to ensure the safe and stable operation of the local power grid, it is expected that the number of power generation utilization hours in the future would not decrease significantly.

3) Whether the relevant specific signs of impairment have occurred in the previous period, and the reason for the large amount of impairment provision in the current period.

The operation of high coal price in Heilongjiang resulted in an operating loss of RMB97 million in 2018 (a slight profit of RMB2.25 million in 2017), and Hegang Power Generation recorded an operating loss of RMB96 million and RMB92 million in 2017 and 2018, respectively. The above losses are indicators of impairment. The Company conducted an impairment test on Hegang Power Generation in 2017, and an impairment test on Xinhua Power Generation and Hegang Power Generation in 2018. After testing, in addition to the impairment provision of RMB238 million and RMB82 million provided for valuation premium and goodwill arisen from business combination in the International Financial Reporting Standards (IFRS) financial statement of Xinhua Power Generation and Hegang Power Generation in 2018, there is no need to make provision for impairment

in the financial statements under PRC standard in 2017 and 2018. When performing the impairment test before 2019, the management expected that the tight supply in the Heilongjiang coal market was only a short-term phased tension. In the future, coal prices would gradually fall back to a reasonable level as the supply increases, thus achieving profitability, due to the factors including: 1) By the end of 2018, the coal industry has basically completed the "13th Five-Year Plan" capacity reduction task, and the overall supply and demand of coal in the country is generally balanced. The Company expects that Heilongjiang will release local coal production volume to ease the shortage of coal supply; 2) The relevant government authorities begin to prepare various measures to increase coal procurement in eastern Inner Mongolia area and import of Russian coal at Suifenhe Port, for the purpose of increasing coal supply; 3) The local coal demand in Heilongjiang is expected to follow the downward trend of the demand growth of national coal, and there would not be a large increase.

In 2019, the Company found that the shortage of coal supply in Heilongjiang would continue, instead of short-term phased tensions. The reasons include: 1) The coal market in Heilongjiang was somewhat different from that of the country. The capacity reduction task of other provinces in 2018 has been basically completed, but Heilongjiang would continue to eliminate outdated production capacity in 2019, and the coal industry's special capacity reduction would continue until the end of 2020, resulting in a further decline in coal mine output in the province; 2) The coal shortage in Heilongjiang relies heavily on coal from outside the province, with a huge shortage of coal mine (approximately more than 13 million tons in 2019), coal supply continued to be tight. Therefore, the Company expected that the unit price (excluding tax) of standard coal in Heilongjiang would continue to maintain a high price level due to the supply shortage and the overall unchanged demand (Xinhua Power Generation: RMB619/ton; Hegang Power Generation: RMB724/ton), which was higher than the future price expectations in the impairment test was being conducted in 2018 (Xinhua Power Generation: RMB502 to 556 /ton; Hegang Power Generation: RMB540 to 627/ton). Therefore, the management of Xinhua Power Generation and Hegang Power Generation predicted that the operating profit of the Company would deteriorate and there was a huge risk of impairment in 2019. As Xinhua Power Generation and Hegang Power Generation continued to suffer from operating losses (Xinhua Power Generation suffered a loss of RMB97 million in 2018 and a loss of RMB142 million in 2019 (excluding the impairment of RMB620 million); Hegang Power

Generation suffered a loss of RMB96 million in 2017, a loss of RMB92 million in 2018 and a loss of RMB293 million in 2019 (excluding the impairment of RMB255 million)), which are the indicators of impairment. An impairment test is required in 2019 in accordance with "Accounting Standards for Business Enterprises No. 8 - Asset Impairment".

4) Basis for and process of determining the provision for impairment

The Company estimated its recoverable amount based on the present value of the asset group's expected future cash flows. The main parameters used in estimating the recoverable amount of these asset groups include generating unit utilization hours, electricity sales price, and fuel price. The following table sets out the main parameters used in the impairment test for future period:

	Generating unit utilization hours Unit: hours/year	Electricity sales price (excluding tax) Unit: RMB/MWh	Fuel price (unit price of standard coal excluding tax) Unit: RMB/ton
Xinhua Power Generation	4,245	324.0	619
Hegang Power Generation	3,667	332.48	724

The Company estimated the future generating unit utilization hours with reference to the understanding of the market condition and related industrial policies. It is estimated that the future utilization hours of generating units of Xinhua Power Generation and Hegang Power Generation will increase slightly from the actual 4,116 hours and 3,629 hours in 2019 due to the average increase in electricity consumption in society year by year.

The Company estimated the future electricity sales price with reference to the approval file of electricity sales price and the market transactions. The future electricity sales prices of Xinhua Power Generation and Hegang Power Generation are basically the same as the actual average comprehensive electricity sales price (excluding tax) of RMB324.71 /MWh and RMB327.31/MWh in 2019.

As mentioned above, the Company estimated the future fuel price based on the budget for the year 2020, the understanding of market conditions and related industrial policies. It is expected that the coal price will slightly reduced due to the impact of the

downward trend of national coal price, and will remain at this price level in subsequent periods.

The Company used the above main parameters to estimate the expected future cash flow of each asset group, then measured and calculated its recoverable amount. According to the results of testing, Xinhua Power Generation and Hegang Power Generation made provisions for fixed asset impairment of RMB620 million and RMB255 million in 2019, respectively. The Company engaged KPMG Advisory (China) Limited to independently estimate the recoverable amount of the above asset group and issue a report.

(6) For the provisions for impairment of the generator units of Yunnan Diandong Yuwang Energy Co., Ltd., please explain: whether or not it is listed as the main impact on provincial reserve power supply to power generation enterprises, the time when the Company is listed in the reserve power supply; the key points of the capacity cooperation with Guizhou and the main impact on the power generation enterprises, the specific manifestation of the adverse effects of the delay on the Company, the period when those adverse effects occur, the reasons for the Company's large amount of impairment provision in the current period; the basis and process for determining the provisions for impairment with an amount of RMB367 million.

Yunnan Diandong Yuwang Energy Co., Ltd. ("Diandong Yuwang") mainly has a power generation plant with 2 coal-fired generating units with an installed capacity of 600 MW and a coal mine under construction. According to the notice of the Yunnan Provincial Industry and Information Technology Commission on the issuance of the Implementation of 2016 Yunnan Electricity Market Transaction Plan (Yun Gong Xin Dian Li [2016] No. 23), all power plants that have been integrated into the operation of the Yunnan power grid were classified into priority power plants and non-priority power plants. The list of priority power plants is clarified in the appendix on page 33 of the notice. The list does not include the two units of Diandong Yuwang, and since then Diandong Yuwang has become a backup power source in Yunnan. The main impacts listed as backup power sources on power generation companies include: 1) Arrangement of no-base electricity plan for the whole year, due to the priority of hydropower transactions in the provincial electricity market, annual electricity plan is the unit's reserve confirmed electricity quota; 2) The reserve confirmed electricity sales price of

reserve power is lower than the benchmark electricity sales price of thermal power units in the province. The reduction in power generation and the reduced settlement electricity sales price will reduce the income of the power plant, thus affecting the profit of the power plant, and affected by which, Diandong Yuwang made a provision for asset impairment of RMB557 million in 2016.

In November 2017, Diandong Yuwang and Guizhou Wanfeng Electric Power Co., Ltd. (“Guizhou Wanfeng”) signed a capacity framework agreement. The main point of cooperation is to connect power plant units to the local power grid in Guizhou where Guizhou Wanfeng is located to increase the power generation of Diandong Yuwang power plant. In March 2019, during the period of handling the Guizhou Electric Power Business Permit issued by Diandong Yuwang in Yunnan Province, Yunnan Power Grid Company proposed that the inter-provincial commission of generating units of Diandong Yuwang may affect the safety and stability of the power grid. Based on safety considerations, the advancement of the project has been slowed down. In the fourth quarter of 2019, the progress of the project remained sluggish. The slowdown of commission will reduce the power plant's revenue and profit, resulting in a reduction in cash inflows in the future period. The impact period will be 2020 and later years. In 2019, Diandong Yuwang only completed the backup power generation task, with the power generation utilization hours only 392 hours, resulting in a loss of nearly 400 million for the whole year. Diandong Yuwang continued to suffer from operating losses, with a loss of RMB373 million in 2017 (excluding the impairment of RMB495 million), a loss of RMB362 million in 2018, and a loss of RMB398 million in 2019 (excluding the impairment of RMB367 million), which is an indicator of impairment. An impairment test is required in accordance with "Accounting Standards for Business Enterprises No. 8 - Asset Impairment".

The Company estimated the recoverable amount based on the present value of the expected future cash flows. The main parameters used in estimating the recoverable amount include generating unit utilization hours, electricity sales price, fuel price, internal coal mine production and raw coal price. The following table sets out the main parameters used in the impairment test:

	Generating	Electricity	Fuel price	Raw coal	External
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	unit utilization hours Unit: hours/year	sales price (excluding tax) Unit: RMB/MWh	(Unit price of standard coal excluding tax) Unit: RMB/ton	production Unit: ten thousand tons/year	sales price (excluding tax) of self-produced raw coal Unit: RMB/ton
2020	685	297	733.94	-	596.46
2021	900	280	663.99	30	596.46
2022	1,080	280	646.50	98	596.46
2023	1,260	280	646.50	195	596.46
2024	1,260	280	646.50	230	596.46
2025	1,260	280	646.50	230	596.46
2026	1,260	280	646.50	230	596.46
2027 and the subsequent periods	1,260	280	646.50	300	596.46

Based on the historical experience and the estimates of future market conditions as well as the progress of cooperation with Guizhou Wanfeng, the Company estimated the generation unit utilization hours in 2020, which are expected to increase by 293 hours as compared to the actual 392 hours in 2019, mainly due to: 1) The large-scale production of hydroelectric aluminum and hydroelectric silicon in Yunnan in 2020 will affect the large-scale growth of electricity consumption in 2020, while thermal power generation will increase accordingly; 2) In December 2019, the Guizhou Provincial Energy Bureau held the third session of Yungui-Sichuan-Chongqing Power Forum, which clearly encouraged cross-regional power transmission and proposed "government-led, enterprises with voluntary, in orderly advancement", so that the project of the power commission from Diandong Yuwang to Guizhou Wanfeng can be further promoted. The Company expected to transmit part of Guizhou Wanfeng Power's electricity in 2021. Based on consultations with Guizhou Wanfeng, it is initially estimated that the utilization hours in 2021 will reach 900 hours, and then increase year by year to and stabilize at 1,260 hours.

The Company estimated the electricity sales price in 2020 based on the actual average comprehensive electricity sales price (excluding tax) in 2019 of RMB297/MWh. The electricity sales price in 2021 and later is estimated to be 10% lower based on the benchmark electricity sales price excluding tax in Guizhou for the sales to Guizhou

Wanfeng, the reason for such decrease is mainly due to the fact that after the electricity market began competition, and in the consideration of the marginal contribution, the decrease of electricity sales price has a more competitive advantage, which is conducive to the realization of the commission.

As a coal-electricity integration project, the coal sources required for power generation of Diandong Yuwang Plant include coal produced by its own coal mines and coal from external purchase. The coal mine is expected to be put into operation in 2021, which produced 300,000 tons of coal that year, but the output was not sufficient to meet the needs of the power plant. The power plant still needs to purchase additional coal. Based on the local coal market environment and expectations of the future coal market, Diandong Yuwang estimated that in 2020 the unit price (excluding tax) of purchased coal is RMB733.94/ton, which is basically the same as that of purchased fuel in 2019. Starting from 2022, coal mine output has been sufficient to meet the needs of power plants, and power plants do not need to purchase additional coal. It is estimated that the unit price (excluding tax) of self-used coal provided by the coal mine to the power plant is RMB646.50 /ton, which is slightly lower than the unit price of coal for customers (external sales price (excluding tax) of raw coal is RMB596.46 /ton, which is equivalent to the unit price (excluding tax) of standard coal of RMB685.39 /ton). The internal settlement price of self-used coal is lower than the price of purchased coal. Therefore, the price of fuel consumed by Diandong Yuwang in 2021 and 2022 will decrease as the coal mine capacity increases.

On the basis of the mining capacity in the coal mine design plan, the Company formulated an annually production schedule in consideration of future market demand, which is used to estimate the future annual production and sales of raw coal. The designed production capacity of Diandong Yuwang No. 1 Well is 3 million tons. It is expected to be put into production in October 2021, and the output will increase year by year to and stabilize at the designed capacity.

The coal from the coal mine of Diandong Yuwang will be sold upon supplying for the power coal needed by the Diandong Yuwang Plant. Upon the washing and selection of the raw coal from the coal mine, the coal mine products include: clean coal for chemical industry, Pulverized Coal Inject (“PCI”) clean coal, thermal coal, and gangue. The Company estimated the output rate of the coal products based on the aforementioned four

categories as well as the average price of such products according to the market survey of the coal market in Yunnan-Guizhou areas from 2017 to 2018. It is estimated that the weighted average export unit price (excluding tax) of raw coal in the future will be RMB596.46/ton. On the basis of the following factors, the Company expects that the price of exported coal will in general remain stable in the future: 1) In June 2019, the provincial people's government issued the "Notice on the Three-Year Action Plan of High-Quality Development of Coal Industry in Yunnan Province" issued by the Yunnan Provincial People's Government Office (2019-2021)" (Yun Zheng Ban Fa [2019] No. 61) (《雲南省人民政府辦公廳關於印發〈雲南省煤炭產業高品質發展三年行動計畫（2019—2021年）〉的通知》（雲政辦發〔2019〕61號）), which pointed out that under the premise of strict control of coal production, total consumption and total pollutant emissions, the outdated production capacity and small coal mines, which fail to meet environmental standards and do not meet the requirements of industrial policy, shall be shut down whatsoever. By 2021, the raw coal output of the province will be controlled within 80 million tons, basically meeting the coal consumption needs of the province. Therefore, the total coal supply in Yunnan is limited; 2) With the advancement of hydropower aluminum and hydropower silicon integration projects in Yunnan in the next few years, it is expected that the power demand of Yunnan will increase, resulting in an increase in power coal demand, which offsets the impact of the decline in coal demand caused by the year-by-year decrease in the proportion of coal in the energy consumption structure.

The Company used the above main parameters to estimate the future cash flow, then calculated the recoverable amount. According to the results of testing, Diandong Yuwang made a provision for fixed asset impairment of RMB367 million in 2019. The Company engaged Yinxin Appraisal Co., Ltd. to independently estimate the above recoverable amount and issue a report.

(7) For the provisions for impairment of Huaneng (Fujian) Port Limited Company please explain: the situation of the phase I of Jiangjunmao project, including but not limited to the construction period, the budgeted investment amount, the time of completion, the expected throughput, etc.; the analysis of the reasons for the differences between the actual and expected project progress and investment amount; the reasons for future throughput having difficulties to meet the expectations and its calculation basis; the basis for no indication of impairment in

previous periods, the reasons for the provision for impairment in this period rather than in previous periods; the basis and process for determining the provisions for impairment with an amount of RMB485 million.

The phase I of the Jiangjunmao project of Huaneng (Fujian) Port Limited Company ("Haigang Company") was approved by the National Development and Reform Commission, and positioned as a public bulk cargo terminal with an estimated investment of RMB1.4 billion. The project commenced in 2009 with a planned construction cycle of 3 years. In 2015, the Company readjusted the planning of the Luoyuan Bay Port Electricity Storage Base, positioning the project as the auxiliary coal wharf project of the Luoyuan Power Plant featuring the function of transferring coal and equipped with relevant auxiliary facilities, with an annual throughput of 11.8 million tons upon the adjustment in design.

In April 2019, the project was converted into fixed assets and its trial operation has commenced, with an actual investment of RMB2.2 billion and a construction cycle of 11 years. The main reasons for the increase in investment include: 1) In 2006, the national environmental protection policy was relatively loose at the time when the project was approved. With the tightening of the national environmental protection policy, in order to ensure that the project can successfully obtain environmental protection acceptance and on the basis of an investment of RMB1.407 billion approved by the original Ministry of Communication, the additional investment of RMB438 million was added in environmental protection facilities, representing a significant increase from the original design plan; 2) Affected by certain factors such as changes in wharf positioning and design, the actual construction cycle of the project was nearly 11 years, with an increase in financial costs of approximately RMB210 million.

The phase I of the Jiangjunmao project is expected to be difficult to meet the expected throughput in the next few years. The main factors include: 1) Due to the adjustment of local government functional departments in recent years, the Jiangjunmao port has not been fully opened and imported coal cannot be handled by the project in a short time; 2) The construction of the Shugang highway undertaken by the local government is progressing slowly, and it is expected that the coal transfer business of Huaneng Fuzhou Power Plant as well as the loading and unloading business of raw materials provided for Iron and Steel Enterprises near the port will not be carried out in

the short term; 3) The power market in Fujian is now saturated. With the clean energy and nuclear power projects being put into operation continuously, the utilization hours of thermal power units show a downward trend, and the demand for coal freight transportation is limited.

Affected by the fact that the future throughput of the port is lower than expected, especially the Jiangjunmao port in 2019 failed to open as expected, making the profitability of the phase I of Jiangjunmao project under pressure, and it is expected that the present value of the future cash flow is not sufficient to cover the investment cost. There were indicators of impairment upon the transfer into fixed assets in 2019. An impairment test is required in 2019 in accordance with "Accounting Standards for Business Enterprises No. 8 - Asset Impairment".

The Company estimated its recoverable amount based on the present value of the asset group's expected future cash flows. The main parameters used in estimating the recoverable amount of these asset groups include cargo throughput and the unit price of comprehensive handling. The following table sets out the main parameters used in the impairment test:

	Cargo throughput Unit: ten thousand tons/year	Unit price of comprehensive handling (excluding tax) Unit: RMB/ton
2020	330	28.53
2021	375	28.53
2022-2026	705	29.47 to 30.42
2027-2035	805	30.42 to 33.25
2036-2040	955	33.25 to 34.19
2041-2045	1,005	34.19 to 35.13
2046-2050	1,055	35.13 to 36.08
2051-2069	1,105	36.08 to 38.91

The Company estimated the cargo throughput based on its understanding of market conditions and relevant industrial policies. Upon the expected completion of the opening of the Shugang highway in December 2020 and the settlement of the port import issues in 2021, the Company has fully considered the growth of local coal and steel transshipment, loading and unloading. It is estimated that cargo throughput will increase annually from 1.37 million tons after commissioning in May 2019 to the end of 2019.

The Company estimated the unit price of the comprehensive handling by calculating the unit price of the same service based on the current contract price. Among them, the unit price of comprehensive handling in 2020 and 2021 is expected to remain the same as the actual price in 2019. As the price of handling coal is generally higher than that of steel, the Company will continue to increase the proportion of coal handling service revenue in the future, resulting in an increase in the overall unit price of comprehensive handling year by year after 2022. The Company has taken into account the factors such as price discounts after the increase in throughput in the future when estimating the future unit price of comprehensive handling.

The Company used the above main parameters to estimate the expected future cash flow of each asset group, then calculated its recoverable amount. According to the results of testing, Haigang Company made a provision for fixed asset impairment of RMB485 million in 2019. The Company engaged Yinxin Appraisal Co., Ltd. to independently review the above impairment test and issue a review report.

(8) Please compare the calculation of the provision for impairment with similar companies to explain the basis and rationale of the Company's pre-tax discount rate of 7.00% -10.90%.

The Company determined the after-tax discount rate based on the weighted average cost of capital (WACC). The formula for calculating the WACC is as follows:

$$WACC = K_e \times (E / (D + E)) + K_d \times (1 - T) \times (D / (D + E)).$$

Of which:

K_e = Cost of equity capital

E = Market value of equity

K_d = Cost of debt capital

D = Market value of debt

T = Corporate income tax rate

Cost of equity capital is calculated using the capital asset pricing model ("CAPM"). In the CAPM, cost of equity capital is based on the return on investment in risk-free assets ("risk-free interest rate") plus a return premium that reflects the Company's risk ("Risk premium"), that is: $K_e = R_f + \beta \times ERP + \alpha$

Of which:

R_f = Return on investment of risk-free assets

ERP = Equity risk premium in which the risk premium of the market portfolio return is higher than the risk-free rate

β = Beta coefficient, for the purpose of measuring the systemic risk of a particular asset for all risk investment portfolios

α = Additional risk factor (“alpha”)

Set out below are the main assumptions and estimates of the Company

- 1) The basis for determining the risk-free interest rate: the long-term RMB bonds (due in June 2069) issued by the Chinese government obtained from the Capital IQ financial terminal, and the yield rate of the bonds on the valuation base date (being 31 December 2019) is 3.8%, and the estimated risk-free interest rate is 3.8%;
- 2) Basis for determining the leveraged beta: According to the valuation base date (being 31 December 2019) obtained from the Capital IQ financial terminal, the median of the average beta coefficient that can be observed every week within five years of comparable companies is 0.97. Among them, the basis for the determination of comparable companies: the asset groups based on this impairment test are all of the main business nature of the power generation business, and the companies whose main business is power generation among the A-share listed companies are mainly selected as comparable companies. The information of comparable companies and the results of Beta are as follows:

Comparable companies	Capital IQ	Country / Region	leveraged beta 1	D/E
Datang International Power Generation Co., Ltd.	SHSE:601991	China	1.02	303.8%
GD Power Development Co., Ltd..	SHSE:600795	China	0.84	175.2%
Huadian Energy Corporation Limited	SHSE:600726	China	0.97	532.5%
Huaneng Power International, Inc.	SHSE:600011	China	0.75	253.2%
Guangzhou Development Group Incorporated	SHSE:600098	China	1.25	70.2%
Zhejiang Zheneng Electric Power Co., Ltd..	SHSE:600023	China	1.00	45.9%
Anhui Province Wenergy Company Limited	SZSE:000543	China	0.93	71.6%
Minimum			0.75	45.9%
Maximum			1.25	532.5%
Mean			0.97	207.5%
Median			0.97	175.2%
Median			0.97	175.2%

- 3) The basis for determining the equity risk premium: According to the equity risk premium in the US market (6.0%) plus the Chinese equity risk premium in the national equity risk premium research report issued by Aswath Damodaran (0.79%), the equity risk premium is estimated to be 6.79%;
- 4) The basis for determining the scale risk premium: According to The Duff & Phelps Cost of Capital Navigator, a 3.39% scale risk premium is selected using the three-point method;
- 5) Basis for determining the special risk premium: According to the estimate of the uncertainty of the main assumptions in the financial forecast, a 5% special risk premium is used;
- 6) Basis for determining the cost of debt: According to the long-term borrowing rate issued by the People's Bank of China, the cost of claims is 4.9%;
- 7) Basis for determining the tax rate: According to the Chinese corporate income tax rate, the tax rate is determined to be 25%;
- 8) Basis for determining the capital structure: Based on the debt-to-equity ratio information from comparable companies as of the valuation base date (being 31 December 2019) obtained from the Capital IQ financial terminal, the capital structure is determined to be 60% claim and 40% equity;

- 9) The basis for determining the actual weighted average basic cost: Since the expected future cash flow used in this impairment test does not take into account the inflation rate, the nominal discount rate calculated needs to be converted into the actual discount rate. At the time of conversion, it is calculated based on the Fisher effect formula and taking into account the long-term inflation rate of China obtained from the Economist Intelligence Unit (EIU).

Upon the calculation of the after-tax discount rate, the pre-tax discount rate is determined through the iterative calculation loop in accordance with the assumption of "pre-tax cash flow present value = after-tax cash flow present value". After calculation, the Company adopted a pre-tax discount rate of 7.00% -10.90%.

We noted that other peers publicly disclosed the discount rate used in the 2019 impairment test. For example, Huadian Power International Corporation Limited used a pre-tax discount rate of 8.17%; Datang International Power Generation Co., Ltd. used a pre-tax discount rate of 8.05% -10.26%. The discount rate range used by peers for impairment test is relatively close to the Company's discount rate range.

The Company engaged KPMG Advisory (China) Limited and Yinxin Appraisal Co., Ltd. to independently estimate the recoverable amount of the asset group involved in the above impairment test and issue reports. The discount rate is an important parameter in the valuation calculation, which has been reflected in the above reports.

2. In relation to the impairment of assets to be scrapped with an amount of RMB1.437 billion, please further supplement and explain:

(1) For the scrapped losses of Huaneng Yunnan Diandong Energy Co., Ltd. Bailongshan Coal Mine Part I Area with an amount of RMB1.045 billion, please explain: the investment and construction of the mine, the reasons for not considering the relevant factors of the nature reserve when the project was put into construction, the release time of the government documents and the requirements to clean-up for the rectification; the assets constructed by the Company in the prohibited construction area and its investment amount; the approach in determining the scrapped amount of related assets; (2) For the scrapped assets of 4 companies (factories) including Huaneng Liaocheng Thermal Power Co., Ltd., please explain whether the scrapped assets have been used normally in the past 3 years, and the reasons for not being scrapped in the previous year, respectively.

Company's Reply:

The Bailongshan Coal Mine No. 1 Well of Huaneng Yunnan Diandong Energy Co., Ltd. (the "Diandong Energy") commenced construction in April 2004 with a designed production capacity of 3 million tons per year and a budget investment of RMB9.338 billion. In July 2013, according to the "Reply from the People's Government of Yunnan Province on agreeing to the General Plan of the Eighteenth Mountain Provincial Nature Reserve in Yunnan Province" (Yun Zheng Fu [2013] No.55) issued by the People's Government of Yunnan Province, a total of 12.13 square kilometers of the Eighteenth Mountain Provincial Nature Reserve has been approved, of which the core area is 5.017 square kilometers and the experimental area is 7.113 square kilometers. Since Bailongshan Coal Mine commenced construction before the area of the nature reserve was officially approved, the relevant factors of the nature reserve were not taken into consideration when the project was put into construction.

The Bailongshan Coal Mine No. 1 Well has been suspended since January 2017 due to part of the area of Bailongshan Coal Mine No. 1 Well overlapping with the eighteen mountains nature reserve. The Company has been actively communicating with the local government to push forward the construction of the coal mine with a view to realizing profits and recovering costs. On 3 September 2019, Diandong Energy received the "Reply from the Qujing Energy Bureau on Resumption of Construction of the Bailongshan Coal Mine No. 1 Well" (Qu Energy Safety [2019] No.65). The document stipulated that only the shafting and drifting engineering outside the nature reserve is allowed to resume, and the construction of projects within the nature reserve is prohibited. In the fourth quarter of 2019, after checking the list of assets in the red line, Diandong Energy will accrue total amount reduced-value allowance of the book value of RMB342 million in the roadways and other facilities located in the red line.

In the fourth quarter of 2019, Diandong Energy prepared a working resumption plan based on the approval of the Qujing Energy Bureau. According to the working resumption plan, the mining equipment originally purchased for this coal mine cannot meet the technical and performance requirements, and its maintenance cost is high or the repair is extremely difficult; in addition, as the aforementioned equipment has been installed underground, the equipment is obsolete and aging, and has no disposal value. A total of RMB703 million of impairment is accrued. Before receiving the approval for resumption

of work, the Company could not confirm whether the above equipment could meet the requirements for resumption of work, so no impairment was provided in previous years.

The asset retirement status of Huaneng Liaocheng Thermal Power Co., Ltd. and other 4 companies is shown in the following table:

Unit: RMB100 million

Company Name	Amount of scrapped assets	Reasons for impairment provision and previous usage
Assets such as demolition of desulphurization technology renovation in Huaneng Liaocheng Thermal Power Co., Ltd.	0.28	At the end of 2019, as the renovation of desulphurization technology has dismantled some assets, the assets dismantled had no utilization value. The above assets have been used normally in the past three years.
Assets such as dry coal shed in Huaneng International Power, Inc. Yuhuan Power Plant	0.26	In 2019, the coal yard was closed for renovation, and the dry coal shed and sludge sewage treatment equipment of the coal yard were dismantled. The assets dismantled had no utilization value. The above assets have been used normally in the past three years.
Assets such as steam turbine nozzle in Huaneng Hainan Power Generation Co., Ltd. Dongfang Power Plant	0.16	In 2019, it carried out renovation for the old and outdated equipment, and dismantled assets such as steam turbine nozzles. The assets dismantled had no utilization value. The above assets have been used normally in the past three years.
Assets such as demolition of DCS renovation, wastewater renovation and other projects in Huaneng International Power, Inc. Dezhou Power Plant	0.12	In 2019, part of the production equipment and facilities were dismantled due to technical renovation projects such as DCS renovation and wastewater renovation. The assets dismantled had no utilization value. The above assets have been used normally in the past three years.

3. Concerning the impairment of upfront fees with an amount of RMB530 million, please respectively explain: the names of the projects with the construction halt and projects with low possibility of continuing to advance; the time and reasons

of the construction halt, the estimated investment amount, the invested amount, the reasons for the impairment provision in the current period and the basis for determining the impairment amount; the reasons why it was estimated that possibility of continuing to advance was low, and the rationale of using the low possibility of continuing the advance as the basis for accruing the impairment, the period during which the factors that make it difficult to advance incurred, the reasons for accruing the impairment in the current period.

Reply:

The impairment provision of the upfront fees in 2019 is shown in the following table:

Unit: RMB100 million

Name of previous project	Downtime	Estimated investment amount	Amount invested	Provision for impairment in 2019
Capacity quota fee and upfront fees of No.5 and No.6 Generation Units of Huaneng Shantou Haimen Power Generation Co., Ltd.	2016	68.1	3.05	3.05
Upfront fees of coal power unit of Huaneng Yangpu Thermal Power Co., Ltd.	2016	40.0	0.38	0.38
Upfront fees of Huaneng Shanxi Taihang Power Generation Co., Ltd.	2017	49.9	2.92*	0.3
Extension project of Phase V in Tianjin Huaneng Yangliuqing Thermal Power Co., Ltd.	2014	46.74	0.22	0.22
Mangdangyang project in Huaneng (Longyan) Wind Power Co., Ltd.	2017	4.19	0.19	0.19
Phase III project of Huaneng Taicang Power Generation Co., Ltd.	2018	N/A	0.15	0.15
Baise Thermal Power Project in Huaneng International Co., Ltd. Guangxi Branch	2015	50.9	0.15	0.15
Danling River Basin	2014	N/A	0.11	0.11

Hydropower Project in Huaneng International Electric Power Co., Ltd. Chongqing Branch				
Subtotal of other small amount items			0.75	0.75
Total			7.92	5.30

** Huaneng Shanxi Taihang Power Generation Co., Ltd. has accrued an impairment of RMB262 million in years before 2019.*

The above-mentioned upfront fees are mainly the necessary pre-project expenditure for the Company to develop new thermal power and new energy power generation projects before the assets are ready for intended use, and will be consolidated together with the projects under construction after the project is ready for intended use. The Company regularly reviews the status, progress, possibility and plan for promotion of all pre-construction projects under suspension and postponement, and continuously invests in projects with development value to realize future profits. For projects that have been identified as less possible to continue to advance, due to the fact that they cannot generate cash flow in the future and there is no market for external disposal, impairment provision was fully accrued.

Please refer to the reply to Question II, “In relation to the Provision for Impairment of Capacity Quota” for the reasons of the low possibility of the expected advance of the capacity quota fee, the period during which it is difficult to advance and the reasons for impairment provision in this period of No.5 and No.6 Generation Units of Huaneng Shantou Haimen Power Generation Co., Ltd.

Huaneng Yangpu Thermal Power Co., Ltd.’s coal power unit project plans to build 2 350MW coal-fired units and 4 follow-up 660MW generation units, and was approved by Hainan Province to carry out preliminary work on 1 December 2015. In 2017, the Hainan Provincial CPC Committee issued the “Decision on Further Strengthening the Construction of Ecological Civilization and Building a Beautiful Hainan in China” (《關於進一步加強生態文明建設譜寫美麗中國海南篇章的決定》), which proposed “On the construction of a green energy island. We will vigorously promote ‘coal removal and oil reduction’ and speed up the construction dominated by clean energy system with clean energy electricity and natural gas and supplemented by renewable energy”. We will ban

new coal-fired power generation, safely promote nuclear power, and phase out existing coal-fired power plants." The project has been suspended since 2016. In view of the preliminary work prior to the documents issued in 2017, the Company has made multiple efforts to continuously promote the development of the project. Therefore, no impairment was accrued in previous years. On 16 September 2019, the Hainan Provincial Development and Reform Commission issued the "Hainan Provincial Industry Access Prohibition Restriction Catalogue (2019 Edition)" (《海南省產業准入禁止限制目錄(2019 年版) 》), which clearly established a negative industrial access list system, and banned coal-fired power generation in new thermal power generation. In the fourth quarter of 2019, after analysis and discussion, the Company believed that the project has no possibility of promotion. In view of the fact that there was no market for external disposal of project expenditures incurred in the previous period, the Company fully accrued impairment provision of RMB38 million in 2019.

The Zuoquan low calorific value coal power generation project of Huaneng Shanxi Taihang Power Co., Ltd. was approved by the Shanxi Provincial Development and Reform Commission on 15 July 2015 to carry out preliminary work. On 26 July 2017, it was included in the list of projects to be suspended by the "Notice on issuing the 'Opinions on Promoting Supply-side Structural Reform and Preventing and Defusing the Risk of Coal Power Overcapacity'" (Fa Gai Energy [2017] No. 1404) (《印發〈關於推進供給側結構性改革防範化解煤電產能過剩風險的意見〉的通知》(發改能源[2017]1404 號)) jointly issued by 16 ministries and commissions. It has been suspended since 2017. The Company began to negotiate with suppliers to resolve the outstanding contracts, and made impairment provision of RMB248 million and RMB14 million in 2017 and 2018 respectively according to the negotiations. The closing of contracts was completed in 2019 to determine the contract settlement amount. Among them, in 2019, the Company and Alstom Beizhong Power (Beijing) Co., Ltd. ("Beizhong Company") reached a "Major Equipment Contract Supplemental Agreement" through several rounds of negotiations, and both parties agreed to terminate the original contract and agreed that Taihang Power Plant should pay RMB28 million for the termination fee of Beizhong Company. Taihang Power Plant will temporarily include the amount into the project under construction, taking into account the possibility of no income in the future and made provision for impairment. In 2019, the accumulative impairment provision was RMB30 million.

The extension project of Phase V in Tianjin Huaneng Yangliuqing Thermal Power Co., Ltd. was approved by Tianjin Development and Reform Commission to carry out preliminary work in August 2006. Affected by the gas source, gas price, gas turbine on-grid electricity sales price and heat price, the construction progress was slow and was temporarily shelved in 2014. In 2016, the gas turbine project was included in the Thirteenth Five-year Development Plan of Tianjin, and the Company made multiple efforts to continue to promote the development of the project, but the progress was slow due to the congenital deficiency in the "three prices and two quantities (三價兩量)" of the Tianjin gas turbine project, as well as the adjustment of the national energy policy, etc. In view of the fact that 2020 is the final year of the Thirteenth Five-year Plan, after comprehensive consideration, the Company made a decision in the fourth quarter of 2019 that the possibility of re-approval was extremely low, and there was no possibility for the project to move forward. In view of the fact that there is no market for external disposal of the previous project expenditure, the Company full accrued impairment provision of RMB22 million in 2019.

Mangdangyang project in Huaneng (Longyan) Wind Power Co., Ltd. was planned to install with a capacity of 44MW. The application for preliminary work of Phases I and II were approved by the Fujian Provincial Development and Reform Commission in December 2015 and December 2016, respectively, and the construction began on 25 December 2016. On 22 May 2017, the Leading Group Office of Key Projects in Fujian Province issued the “Letter on Further Research and Demonstration on the Feasibility of Longyan Mangdangyang Wind Power Project” (《關於請對龍巖茫蕩洋風電項目建設可行性進行進一步研究論證的函》), requiring the suspension of Longyan Mangdangyang wind power project. After the project was suspended by the government, the Company repeatedly reported and communicated with the provincial government and the provincial development and reform commission to actively strive for the resumption of construction, but due to the firm attitude of Fujian Province in strictly controlling onshore wind power, it was always unable to change the government's decision on the suspension of the project. On 22 March 2019, Fujian Forestry Bureau issued a decision to cancel forestry administrative license for Mangdangyang wind power project. After comprehensive consideration of the above factors in the fourth quarter of 2019, the Company considered that the Mangdangyang wind power project no longer met the resumption conditions, and there was no possibility for the project to move forward. In view of the fact that there is

no market for external disposal of the previous project expenditure, the Company fully accrued impairment provision of RMB19 million in 2019.

Phase III Project in Huaneng Taicang Power Co., Ltd. plans to build two 1,260MW ultra-supercritical coal-fired generating units. As the project has been approved by the Provincial Development and Reform Commission, it has not yet started construction. In 2018, Jiangsu Provincial Development and Reform Commission and Jiangsu Energy Bureau issued the “Notice on Implementing the Relevant Work Requirements for the Opinions on Accelerating the Transformation and Upgrading of Chemical, Steel and Coal Power Industries of Jiangsu Province” (Su Fa Gai Gong Ye Fa [2018] No. 931) (《關於貫徹落實加快全省化工鋼鐵煤電行業轉型升級高品質發展實施意見相關工作要求的通知》(蘇發改工業發〔2018〕931號)), which states “In Principle, only the coastal areas in Jiangsu Province should deploy large-scale coal-fired power generation projects due to power balance.” After receiving the relevant documents, the Company reported and communicated with the provincial government and the provincial development and reform commission for many times, actively striving for approval, but did not make significant progress. In the fourth quarter of 2019, the Company decided to suspend the project. In view of the fact that there is no market for external disposal of the previous project expenditure, the Company fully accrued impairment provision of RMB15 million in 2019.

Baise Thermal Power Project in Huaneng Power International, Inc., Guangxi Branch (“Baise Power Plant”) plans to construct a coal-fired generating unit with a capacity of 4×660,000 KW, of which the Phase I will be constructed as a 2×660,000 KW ultra-supercritical coal-fired generating units. In December 2009, the Development and Reform Commission of Guangxi Autonomous Region issued a document numbered “Gui Fa Gai Neng Yuan Han [2009] No. 1393”, which agreed that the Phase I of Baise Power Plant carry out preliminary work and be included in the “Twelfth Five-year” Energy Development Plan of Guangxi Autonomous Region. In June 2014, the People's Government of Guangxi Zhuang Autonomous Region, the People's Government of Yunnan Province and China Southern Power Grid Co., Ltd. entered into the “Medium-and Long-Term Cooperation Framework Agreement for Yunnan-Guangxi Electricity Transmission” in Kunming, Yunnan Province. During the “Twelfth Five-year” period, 3 million KW has been transmitted, and during the “Thirteenth Five-year” period, we will

strive to increase another 3 million KW. The Phase I of Baise Power Plant has no more capacity in the list of projects put into operation in 2017. On 20 May 2019, the Party Committee and the government office of the autonomous region continued to express their support for Baise Power Plant in the notice of "Implementation Plan for Guangxi to fully connect the Guangdong-Hong Kong-Macau Greater Bay Area (2019-2021)" (《廣西全面對接粵港澳大灣區實施方案(2019-2021)》). In September 2019, the Energy Bureau of Guangxi Autonomous Region began to prepare the "Thermal Power Project Plan of the Fourteenth Five-year Plan of Guangxi Autonomous Region" (《廣西「十四五」火電專案規劃》), and the "Request on Incorporating Related Power Projects into Planning" (《關於將有關電源專案納入規劃的請示》), which was reported to the National Energy Administration by the Development and Reform Commission of Guangxi Autonomous Region in December 2019, did not include the Phase I project of Baise Power Plant. As a result, there is no possibility of further promotion of the project, and provision for impairment of RMB15 million was fully accrued at the end of 2019.

Danling River Basin Hydropower Project in Chongqing Wuxi is planned to install 161,000 KW. In January 2013, Chongqing Development and Reform Commission issued the "Letter of Chongqing Development and Reform Commission on the Preliminary Work of Hydropower Resources Development in Daning River Basin" (Yu Fa Gai Neng Han [2013] No. 22) (《重慶市發展和改革委員會關於大寧河流域水電資源開發前期工作的函》(渝發改能函[2013]22 號)) agreed to carry out preliminary work. In October 2013, Chongqing Branch commissioned Chongqing Surveying and Design Institute of Water Resources and Electric Power to carry out the survey and design of the basin in the pre-feasibility study phase and the compilation of special reports, and the relevant results report was completed in 2014, with a total upfront fee of RMB11 million. As the Daning River is one of the three alternative water intake schemes for the middle route of the South-to-North Water Transfer Project, the study of the water intake scheme for the middle route has not been concluded. According to the overall requirements of the South-to-North Water Transfer Project, the project development needs to be combined with it. Therefore, the project development (high dam or low dam) scheme has not been determined. In 2019, "Notice on Strict Control of New Hydropower Projects" (Yu Fa Gai Energy [2019] No.517) (《關於嚴控新建水電項目的通知》(渝發改能源〔2019〕517 號)), the joint document issued by four departments including Chongqing Development

and Reform Commission Chongqing Water Conservancy Bureau, Chongqing Ecological Environment Bureau and Chongqing Energy Bureau, requires that, in addition to poverty alleviation projects coordinated with eco-environmental protection and approved by the State Council and its relevant departments and provincial people's governments, new commercially developed small hydropower projects shall be strictly controlled. As a result, there is no possibility of further promotion of the project, and provision for impairment will be fully accrued at the end of 2019, totaling RMB11 million.

4. In relation to the impairment of receivables, please explain: the electricity receivables of Shandong Ruyi and its period for the collection, the agreed time of the period and whether or not it should be entitled to a corresponding compensation, the criteria for the related impairment due to the delayed recovery; the entrusted loans and recovered amount for Shandong Long Island Wind Power Co., Ltd. and its de-registration time.

Reply:

Huaneng Shandong Ruyi (Pakistan) Energy (Private) Co., Ltd. (“Shandong Ruyi”) operates a thermal power project in Pakistan and sells all the electricity to the Pakistani Central Electricity Regulatory Authority. As of 31 December 2019, the accumulated balance of electricity receivable was RMB1.902 billion, and the Pakistani Central Electricity Regulatory Authority generally settles the electricity bills within 1-4 months. According to the electricity purchase and sale agreement, for electricity charges that have not been paid one month after the invoice as stipulated in the contract, the Pakistani Central Electricity Regulatory Authority shall pay deferred interest on electricity receivable to the Company at a rate of 200 basis points higher than the Pakistan interbank offered rate. By the end of 2019, the cumulative deferred interest on electricity charges recovered accounted for only 1.47% of the total deferred interest on electricity charges after commercial transmission, and as at 31 December 2019, the cumulative deferred interest receivable on electricity charges was RMB230 million. After negotiation with the Pakistan Central electricity Regulatory Authority, the repayment of deferred interest receivable on electricity charges will not be significantly accelerated in the future. According to the “Accounting Standard for Business Enterprises No. 22 — Recognition and Measurement of Financial Instruments”, taking the risk of default as the weight, the Company estimates the expected credit loss by considering the present value of the

difference between the cash flow receivable of the contract and the cash flow expected to be received. As part of the expected payback time is longer than 1 year, the time value calculated according to the expected payback time and the estimated discount rate of 14.55% of the loan interest rate in the same period affects the corresponding provision for impairment. An impairment with an aggregate amount of RMB68 million was accrued in 2019.

According to the request of the Changdao county government, Shandong Long Island Wind Power Co., Ltd. ("Long Island Wind Power") completed the demolition of 33 turbines in the Long Island Conservation Area by the end of 2017. In 2019, shareholders of Long Island Wind Power will reach a unanimous resolution that it will establish a liquidation group to conduct liquidation in accordance with the law. By the end of December 2019, the liquidation had been completed and Huaneng International would no longer merge Long Island Wind Power. Long Island Wind Power has been de-registered on 12 December 2019 after Huaneng Shandong Power Generation Co., Ltd., a subsidiary of Huaneng International, recovered the entrusted loan of RMB16 million according to the liquidation results. The Company will make full provision for impairment of the unrecoverable entrusted loan with a balance of RMB22 million.

II. In relation to the Provision for Impairment of Capacity Quota

As disclosed in the annual report, subject to the market, policies and other objective constraints in 2019, the power generation has been unable to continue to advance, and therefore provided full impairment of the capacity quota of RMB303 million. Please disclose the period or time of the capacity quota and further explain the specific changes of the market and policies in 2019, which led to the power generation project being impossible to continue to advance and the provisions for impairment made in 2019.

Reply:

Huaneng International Power, Inc. Haimen Power Plant ("Haimen Power Plant") originally planned to build six generating units with a capacity of 1 million KW continuously, of which four out of six were continuously built in the Phase I, and all of them have been put into production. In 2013, in accordance with the relevant requirements of the National Development and Reform Commission, in order to develop No.5 and No.6 Generation Units, Haimen Power Plant implemented the capacity target of

400,000 KW, and completed the preliminary feasibility study review in the same year. In June 2013, in order to support local economic development, the Company and the Shantou Municipal Government established Huaneng Shantou Haimen Power Generation Co., Ltd. ("Haimen Power Generation") according to the proportion of investment at 80:20, as the main development body of No.5 and No.6 Generation Units. From December 2013 to July 2014, Haimen Power Generation paid Shenzhen Nandian Energy Investment Co., Ltd. for a total of 400,000 KW capacity quota for replacing small-capacity units with large-capacity ones, with a total amount of RMB303 million.

Since 2016, the National Development and Reform Commission and the National Energy Administration have issued successively the "Notice on Further Eliminating Backward Capacity in the Coal Power Industry" (Fa Gai Energy [2016]No. 855) (《關於進一步做好煤電行業淘汰落後產能的通知》(發改能源[2016]855 號)), "Notice on Promoting the Orderly Development of Coal Power in China" (Fa Gai Energy [2016] No. 565) (《關於促進我國煤電有序發展的通知》(發改能源[2016]565 號)), "Notice of the National Energy Administration on Further Regulation of Coal Power Planning and Construction" (Guo Neng Dian Li [2016] No. 275) (《國家能源局關於進一步調控煤電規劃建設的通知》(國能電力[2016]275 號)), "Letter on Linking Up the Scale of Coal Power Production in the Thirteenth Five-Year Plan of Guangdong Province" (《關於銜接廣東省「十三五」煤電投產規模的函》) and other coal power capacity reduction policies, the State regulates coal power development, and the development process of No.5 and No.6 Generation Units of Haimen Power Generation has been affected due to policy guidance, resulting the suspension of the project. On 11 April 2018, the Guangdong Provincial Development and Reform Commission issued the "Guangdong Offshore Wind Power Development Plan (2017-2030) (revision)" (Yue Fa Gai Neng Xin [2018] No. 193) (《廣東省海上風電發展規劃(2017—2030 年)(修編)》(粵發改能新[2018]193 號)), which states that the installed capacity of thermal power in Guangdong Province in 2018 was 80.69 million KW, an increase of 2.9 million KW over the installed capacity of 77.79 million KW in 2017. Based on this, the Company judged that it is still possible for No.5 and No.6 Generation Units of Haimen Power Generation to be approved for construction, and continued to coordinate efforts to promote the project. Therefore, no impairment has been made before 2019.

On April 2019, Guangdong Province issued the “Notice of Department of Industry and Information Technology of Guangdong Province on Initiating Guangdong Province to Promote the Withdrawal of Outdated Capacity in 2019” (Guangdong Industry and Information Technology Planning Department Policy Letter [2019] No. 830) (《廣東省工業和資訊化廳關於引發廣東省 2019 年推動落後產能退出工作方案的通知》(粵工信規劃部政策函[2019]830 號)) it is clear that it will be in accordance with the national unified deployment, combined with the actual industrial development and structural adjustment needs of Guangdong Province, 12 industries are adjusted to eliminate backward production capacity and shut down in accordance with the rules and regulations. In the second half of 2019, the Guangdong Provincial Government successively issued a public notice on the shutdown of four batches of small thermal power units, totaling 1.364 million KW. According to the analysis of the Company, from the direction of the current national policy on energy structure adjustment, the thermal power development is still under strict control, it is less likely that No.5 and No.6 Generation Units will be approved for new construction. In addition, the Company learned through open channels that there was no actual capacity quota replacement transaction in Guangdong Province in 2019, so we judged that No.5 and No.6 Generation Units is difficult to transfer due to the capacity quota of 400,000 KW. In summary, the Company believes that it is less likely that No.5 and No.6 Generation Units will continue to be approved, and the capacity quota cannot be sold. Therefore, impairment provision of RMB303 million was fully accrued.

III. In relation to Fund Solvency

The asset-liability ratio of the Company is 71.64%; the current ratio is 0.43; and the quick ratio is 0.37. Considering that the Company's fixed asset renewal rate is less than 50%, it is indicated that the fixed assets renewal and transformation have a large demand for funds. Meanwhile, the Company has plenty of projects under construction and there are many large investment projects with significant investment amounts but up-to-date the current investment progress is less than 30% of the large investment projects. In addition, the Company has debt obligation of nearly RMB100 billion which is due to be payable within a year, and the pressure for fund by the Company, especially fund for short-term repayment, is relatively great. Please compare the main indicators of the solvency of similar companies, and by combining the Company's short-term and medium-term demands for funds, the

Company's operating conditions and profitability, etc., explain the measures to be taken to improve the solvency, especially the ability to repay short-term loans, of the Company.

Reply:

Compared with the three listed power generation companies in the same industry, the Huadian Power international's current ratio is 0.40 and the quick ratio is 0.35; GD Power's current ratio is 0.39 and the quick ratio is 0.34; Datang Power Generation's current ratio is 0.42 and the quick ratio is 0.37; while Huaneng International's current ratio and quick ratio are in a relatively superior level. The power generation industry is a capital-intensive industry. Electricity revenue is settled every other month and cash is paid for fuel purchases in the month. As a result, the current ratio and quick ratio of listed companies in the power generation industry are mostly lower than the average of listed companies in other industries. The Company's current operating conditions are good; future profit expectations are positive; and it actively deals with short-term debt repayment risks. Specific measures include: 1) Strengthening the overall management of financing. The Company improves overall fund dispatching, optimizes the fund emergency guarantee mechanism, and ensures that the capital supply of all units of the system is in continuous chain and there is no risk of debt default. It also focuses on monitoring the units with financial difficulties and effectively solves their capital needs; 2) Optimizing the debt structure. The Company further reduces the financing cost and improves the risk resistance; 3) Ensuring the smooth flow of the main credit channels. The Company deepens cooperation between banks and enterprises, strengthens "Headquarter to Headquarter" strategic cooperation with large financial institutions to ensure the credit source. By putting emphasis on changing trend of the capital market, the Company actively expands cooperation with other financial institutions on the basis of consolidating the main financing channels, and makes comprehensive use of various financing methods such as financial lease. The Company also completes the bank credit in advance to ensure smooth loan channels and sufficient credit lines; 4) Actively carry out bond financing. The Company flexibly arranges the releasing and variety, striving to release more and in a full way. Through the above measures, the Company can ensure repay principal and interest when the debt is due, and reduce the risk of cash liquidity.

IV. In relation to Operating Assets of the Company

1. As disclosed in the annual report, at the end of the reporting period, the daily working capital totaled at approximately RMB716 million was advanced by the receivables of Huangtai No.8 Generation Unit, while the Company only possesses 30% of its property rights. The Company is requested to make additional disclosures regarding: (1) the operation mode, current construction or operation status of the unit; (2) the way in which each holders of the property right get paid for the unit; (3) reasons for the large-amount advancement of daily working capital while the Company only possesses 30% of the property rights, and whether other property rights holders advance the working capital in the same proportion and/or the reasons for not advancing; (4) the recovery method of such advance and whether to collect the fund occupation fee; (5) shareholders' names and share ratios of other property rights holders, and whether they are related to the Company.

Reply:

Pursuant to the equity transfer contract entered into between Huaneng Shandong Power Generation Co., Ltd. ("Shandong Power Generation", a subsidiary of China Huaneng Group Co., Ltd. ("Huaneng Group")) and Shandong Luneng Development (Group) Co., Ltd. ("Shandong Luneng") in December 2008, and the relevant reply of the SASAC in February 2009 (Guo Zi Chan Quan [2009] No. 70), the 30% equity of Huangtai No.8 Generation Unit held by Shandong Power Generation were acquired from Shandong Luneng at a consideration of approximately RMB110 million. The other 70% equity is held by Shandong International Trust Co., Ltd. ("Shandong International Trust"). On 14 October 2016, Huaneng International and Huaneng Group entered into an "Agreement on the Transfer of Certain Equity of Companies Between China Huaneng Group Co., Ltd. and Huaneng Power International, Inc.", Huaneng Group transferred 80% of its equity in Shandong Power Generation to Huaneng International. Since then, 30% equity of Huangtai No.8 Generation Unit have been consolidated into the scope of Huaneng International. Since the acquisition of Huaneng International in 2016, Huangtai No.8 Generation Unit has achieved a cumulative profit of RMB65 million.

Huangtai No.8 Generation Unit, with a capacity of 330,000 KW has been greatly improved its heating capacity upon completion of high back pressure transformation in 2014, which has become the main heat source of Jinan. On 19 January 2020, the Shandong Energy Supervision Office of National Energy Administration reissued the

"Electric Power Business License", of which Huangtai No.8 Generation Unit's useful life has been extended to June 2031.

Although Huangtai No.8 Generation Unit is independently accounted for, it does not have the qualification of legal person and does not form a developed corporate governance structure in accordance with the modern enterprise system. In addition, it is still in a cumulative loss since it was put into operation (RMB284 million by the end of 2019). The parties with property rights did not receive any remuneration such as dividends in No.8 Generation Unit.

Huaneng Jinan Huangtai Power Generation Co., Ltd. ("Huangtai Power Generation"), a subsidiary of Shandong Power Generation, actually carries out the operation and management of Huangtai No.8 Generation Unit. Huangtai No.8 Generation Unit has no independent bank account because it does not have the qualifications of legal person. It receives and disburses working capital through the bank account of Huangtai Power Generation to form current payment with Huangtai Power Generation. This part of the current payment can only be recovered through the daily operation of Huangtai No.8 Generation Unit, which is continuously recovered with the net cash inflow. In 2019, Huangtai Power Generation recovered a total of RMB41 million in advance funds. Since the acquisition of Huaneng International in 2016, it has accumulatively recovered RMB181 million in advance funds. The financial expenses and interest expenses incurred by Huangtai Power Generation are allocated to Huangtai No.8 Generation Unit at certain proportion. The capital occupation fee of RMB10 million is collected in 2019, and the accumulative occupation fee of advance funds of RMB43 million has been recovered since Huaneng International's acquisition in 2016.

Due to historical reasons, Shandong International Trust believes that there is no evidence to prove that it has a property right relationship with Huangtai No.8 Generation Unit, so it will not advance working capital in accordance with the initial recognized investment proportion. The said current payment can only be recovered through the daily operation of Huangtai No.8 Generation Unit, which is continuously recovered with the net cash inflow. In view of the Huangtai No.8 Generation Unit can operate for another 12 years, and is one of the main heat sources of Jinan, there is no risk of shutdown in the short term. It is expected that this part of the advance funds can be fully recovered.

Founded in March 1987, Shandong International Trust is a non-bank financial institution approved by the People's Bank of China and the People's Government of Shandong Province. It's currently a councillorship of China Trustee Association and has no related relationship with Huaneng International.

2. As disclosed in the annual report, Huangtai Power, a subsidiary of Shandong Power, has shut down No.5 and No.6 Generation Units in the previous year, and its long-term capital occupancy of RMB261 million has been fully accrued for bad debt provisions. Please further disclose: (1) the relationship between the Company and No.5 and No.6 units; (2) the reason for the Company's large advance payment; (3) the relationship with No.8 unit and the differences in the operation mode; (4) considering the aforementioned situation, please clarify whether No.8 unit has a similar shutdown risk.

Reply:

The Huangtai No.5 and No.6 Generation Units were installed with 2×100 MW, whose construction started in March 1982 and put into operation in September and December 1983, respectively. It was managed by the former Shandong Power Industry Bureau before 2002. After the power reform in 2003, SASAC of Shandong Province clearly stated that it will be managed by Shandong Luhua Energy Company, a subsidiary of Shandong Luneng, and its actual operation has been managed by Huangtai Power Generation. At the end of 2008, Shandong Power Generation acquired part of Shandong Luneng's power generation assets (including Huangtai Power Generation) in Shandong, and Huangtai No.5 and No.6 Generation Units continued to be managed by Huangtai Power Generation, which became a subsidiary of Shandong Power Generation as a result of the acquisition. Shandong Power Generation and Huangtai Power Generation do not have any interest in Huangtai No.5 and No.6 Generation Units.

Although Huangtai No.5 and No.6 Generation Units are independently accounted for, they do not have the qualification of legal person and do not have bank account. Like Huangtai No.8 Generation Unit, they receive and disburse working capital through the bank account of Huangtai Power Generation. Huangtai No.5 and No.6 Generation Units' operating losses results in the occupation of funds for Huangtai Power Generation. According to the shutdown plan of small thermal power units in the "Eleventh Five-year" Plan of the State and Shandong Province, Huangtai No.5 and No.6 Generation Units were

shut down in April 2010. With the shutdown, Huangtai Power Generation fully accrued provision for bad debts at the end of 2009 for the remaining capital balance of RMB261 million occupied by Huangtai No.5 and No.6 Generation Units. In 2016, Huaneng International acquired Shandong Power Generation, and the above impairment had no impact on the Company's financial statements.

Huangtai No.5 and No.6 Generation Units, like Huangtai No.8 Generation Unit, do not have the qualification of legal person and do not have bank account, as they receive and disburse working capital through the bank account of Huangtai Power Generation. Huangtai No.8 Generation Unit has been greatly improved its heating capacity upon completion of high back pressure transformation in 2014, which has become the one of main heat sources of Jinan. On 19 January 2020, the Shandong Energy Supervision Office of National Energy Administration reissued the "Electric Power Business License", of which Huangtai No.8 Generation Unit's useful life has been extended to June 2031. There is no similar shutdown risk for Huangtai No.8 Generation Unit.

V. In relation to Target Company of the Previous Acquisitions and Goodwill

1. As disclosed in the annual report, the Company acquired 5 subsidiaries including Shandong Power from Huaneng Group in 2016. Due to the poor performance of the target companies, according to the profit compensation agreement, the Company shall be compensated based on the shortfall of accumulated actual net profit of RMB1.009 billion from year 2018 to 2019. By combining the changes in the main factors affecting the profit forecast and the operation of similar company with the target companies (in the same region, with the same type of business), please explain the reasons for the huge difference between the actual profit of the acquisition and the forecasted one. Based on the current operating conditions, external environment, and others of the target companies, explain the future operating trends of these companies, and whether the related party acquisition involves high pricing and prejudice the interests of listed companies.

Company's Reply:

On 14 October 2016, the Company entered into an equity transfer agreement and the Profit Forecast Compensation Agreement with Huaneng Group. Pursuant to these

agreements, Huaneng Group undertook to compensate the Company in cash for the difference between the accumulated actual net profit at the end of each year and the accumulated net profit forecast at the end of the year of five subsidiaries of Shandong Power during the compensation period, i.e. from 2017 to 2019. The following table set out the differences between actual profit and profit forecast in 2018 and 2019.

Unit: RMB100 million

		Laiwu Power	Jiaxian g Power	Canal Power	Liaoch ng Therma l Power	Yantai Power	Total
In 2018							
Profit forecast	(1)	5.77	0.49	1.71	0.73	0.49	9.19
Actual profit/(loss) less non-recurring items	(2)	2.48	0.02	(0.97)	(0.26)	(0.15)	1.12
Difference in 2018	(3)=(1)-(2)	3.29	0.47	2.68	0.99	0.64	8.07
In 2019							
Profit forecast	(4)	5.93	0.38	1.66	0.71	0.56	9.24
Actual profit/(loss) less non-recurring items	(5)	2.33	(0.25)	(0.04)	0.05	0.17	2.26
Adjustment of net profit of absorbing and merging units	(6)	-	-	-	0.04	-	0.04
Difference in 2019	(7)=(4)-(5)-(6)	3.60	0.63	1.70	0.62	0.39	6.94
Differences in total	(8)=(3)+(7)	6.89	1.10	4.38	1.61	1.03	15.01
Shareholding ratio of the Company	(9)	64%	40%	79%	60%	80%	
Amount to be compensated	(10)=(9) *(8)	4.41	0.44	3.46	0.97	0.81	10.09

The main factors affecting the profits of thermal power plants include the volume of electricity sold, electricity price and fuel price.

In 2019, except for Canal Power, the actual completion on electricity sold and tariff indicators of other four companies were better than profit forecast. With electric power enterprises from other provinces tapping into Shangdong market, although Canal Power made achievements on striving for external system power, thermal coal, and peak load and frequency regulation reward under the circumstance that the government significantly decreased the electric quantity at the beginning of the year, the actual completion of electricity sold and electricity revenue indicators lagged behind the profit forecast.

The main reason for the difference between the profit forecast and the actual profit in 2018 and 2019 was that the fuel price was significantly higher than expected when the profit forecast was prepared in 2016. In the first half of 2016, the thermal coal prices in Shandong were at a low level, and began to rise in the second half of the year. When preparing the profit forecast, the fuel price forecast was based on the actual situation in the first half of 2016 and the forecast for the whole year. It was considered that the possibility of a substantial increase in the future was unlikely. Therefore, from 2017 to 2019, the annual increase was calculated at 1%. But in fact, since 2017, major changes have taken place in national policies and fuel markets, leading to a sharp and rapid increase in fuel prices in 2017, and fuel prices maintained at a high level in 2018 and 2019. The main reasons for the sharp increase in fuel prices include: 1) With the deep implementation of supply-side reform of China in 2017, coal enterprises shut down outdated production facilities. Large coal enterprises have strengthened in terms of market control and concentration, making supply relatively short, and leading to a significant increase in coal prices; 2) Major changes occurred in transportation. Affected by the enhancement of China's environmental protection policy, the overloading of transportation vehicles was strictly controlled, and the fuel price increased at the same time, resulting in the rise of freight costs; 3) With the rise of international coal prices, domestic fuel prices went up accordingly; 4) Although China has introduced measures such as the "green price range of thermal coal", with an effort to adjust the price of thermal coal to a reasonable level, the performance was not ideal. The following table shows the differences between the estimated unit price of standard coal (tax exclusive) and the actual coal price when the Company prepared the profit forecast:

Unit: RMB per ton

	Unit price of standard coal in 2017 (tax exclusive)		Unit price of standard coal in 2018 (tax exclusive)		Unit price of standard coal in 2019 (tax exclusive)	
	Forecast price	Actual price	Forecast price	Actual price	Forecast price	Actual price
Laiwu Power	428	762	432	752	436	706
Jiaxiang Power	439	696	447	701	456	693
Canal Power	438	708	443	724	447	711
Liaocheng Thermal Power	399	684	403	703	407	644

Yantai Power	480	727	484	763	490	734
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For the five power generation companies above, the actual unit price of standard coal consumed in 2018 rose by an average of RMB299 per ton than the predicted price, making the net profit of five power generation companies lower than the forecast by RMB1.597 billion. The actual unit price of standard coal consumed in 2019 rose by an average of RMB256 per ton than the predicted price, making the net profit of five power generation companies lower than the forecast by RMB1.403 billion.

The following table shows the thermal coal price index from 2017 to 2019. The fuel price change trends of the above five power generation companies are consistent with the changes in thermal coal price index.

Unit: RMB per ton

	Shandong thermal coal price index	China thermal coal price index
2017	605.32	515.99
2018	605.31	531.04
2019	559.98	493.88

Data source: National Development and Reform Commission of the People's Republic of China (<http://jgjc.ndrc.gov.cn/zgdmjgzs.aspx?clmId=syjgzs6>)

The thermal coal price index is the delivery price converted according to the calorific value of 5,000 kcal/kg, therefore it is lower than the unit price of standard coal (converted according to the calorific value of 7,000 kcal/kg).

Since there are no publicly disclosed fuel prices of other power plants of the similar companies in the same region, the following table only lists some of the power plants of the Company in Shandong. The changes in the fuel prices of the above five power companies are consistent with these companies.

Unit: RMB per ton

	Unit price of standard coal of Dezhou power plant, Huaneng Power International, Inc. (exclusive of tax)	Unit price of standard coal of Rizhao power plant, Huaneng Power International, Inc. (exclusive of tax)	Unit price of standard coal of Huaneng Weihai Power Generation Limited Liability Company (exclusive of tax)
2017	643.70	745.06	708.52
2018	670.52	783.96	755.57
2019	653.88	712.20	685.94

When preparing the profit forecast in 2016, it was impossible to predict the unfavorable factors that caused the coal price to rise sharply, resulting in a large difference between the actual completion and the predicted value, but this price fluctuation was industry-wide. The coal price change in the five companies' profit forecast unit was consistent with the trend of the similar enterprise.

In 2019, the net profit of Laiwu Power, Jiaxiang Power, Canal Power, Liaocheng Thermal Power and Yantai Power were RMB236 million, RMB56 million, RMB4 million, RMB7 million and RMB18 million, respectively. Based on the prediction of the electricity market and fuel prices, the Company believes that the profitability of the five power generation companies in 2020 is expected to improve as compared with that of 2019, for the following reasons:

1) Demand for electricity: In 2020, electricity consumption in Shandong will continue to grow steadily. It is expected that the electricity consumption of the whole society will grow by 4% year-on-year, an increase of 20.3 billion kWh year-on-year. However, due to factors such as the policy of transmission from outside to Shandong and the formal operation of the spot market, the utilization hours of thermal power units show a downward trend. In 2020, the Energy Administration of Shandong Province issues a provincial schedule to determine power by heat with the priority generation plan of 51.964 billion kWh. With the capacity unchanged, the power determined by heat supply units grows by 37.738 billion kWh year-on-year, an increase of 265.27% year-on-year. New heating facilities of Laiwu Power and Jiaxiang Power are put into production. Liaocheng Thermal Power, Yantai Power and Canal Power continue to develop the thermal market. The above-mentioned companies make full use of the advantages of thermal power and make up for the effect of external power and spot market operation on utilization hours, and also increase the heating efficiency.

2) Fuel market: As for the expected supply of fuel in 2020, with the impact of “external power input to Shandong” and the rise of new energy power, the demand for thermal coal in the Shandong market has decreased. Additional production capacity of China's coal resources has been continuously released, and the railway transportation

capacity is sufficient, with a loose situation of overall coal supply. The unit price of standard coal consumed by the five companies is expected to decrease by RMB20 to RMB50 per ton year-on-year.

The acquisition does not involve high pricing or prejudice the interests of listed companies after verification. The reasons are as follows:

1. The procedures of decision-making and approval on the acquisition are in compliance with laws and regulations.

The Proposal Regarding the Acquisition of the Equity Interests of Shandong Power, the Jilin Power, the Heilongjiang Power and the Zhongyuan CCGT was considered and passed at the 21th meeting of the eighth session of the board of directors of the Company convened on 14 October 2016, to agree the Company to acquire 80% equity interests in Shandong Power, 100% equity interests in Jilin Power, 100% equity interests in Heilongjiang Power and 90% equity interests in Zhongyuan CCGT held by Huaneng Group at a price of RMB15,113,825,800. Connected directors of the Company, being Cao Peixi, Guo Junming, Liu Guoyue, Li Shiqi, Huang Jian and Fan Xiaxia had abstained from voting on the resolution in respect of the acquisition pursuant to the Listing Rules of the Shanghai Stock Exchange and the Stock Exchange Listing Rules.

According to the relevant laws and regulations such as the Guidelines of the Shanghai Stock Exchange for the Implementation of the Connected Transactions of Listed Companies, income approach was adopted to value five subsidiaries of Shandong Power and the valuation results were over 100% of the book value. According to the Profit Forecast Compensation Agreement entered into between Huaneng Group and the Company, Huaneng Group undertook to compensate the Company in cash for the difference between accumulated actual net profit at the end of the period in each year and the accumulated forecast net profit at the end of the period of the aforementioned companies during the compensation period.

The board of directors (and independent directors) of the Company are of the view that the Transfer Agreement and the Profit Forecast Compensation Agreement are entered into: (1) on normal commercial terms (on arm's length basis or on terms no less

favourable to the Company than terms available from independent third parties); (2) on terms that are fair and reasonable and in the interests of the Company and its shareholders as a whole; and (3) in the ordinary and usual course of business of the Company. The transaction price of this transaction is determined based on the asset valuation results of Shandong Power, Jilin Power, Heilongjiang Power, and Zhongyuan CCGT as of 31 May 2016, and income approach valuation results are adopted for some subsidiaries of Shandong Power as the valuation conclusion and the basis for pricing this transaction. The board of directors (and independent directors) of the Company believe that, based on the valuation report and the description of the valuation approach provided by the valuation agency, the important valuation parameters and basis such as valuation value analysis principle, calculation model and expected revenue, revenue period, discount rate used by the valuation agency are correct, and the valuation method and valuation conclusion are reasonable.

The independent directors of the Company, being Li Zhensheng, Yue Heng, Geng Jianxin, Xia Qing and Xu Mengzhou have already approved the acquisition in advance and expressed their independent opinions: (1) the voting procedures of the Board of Directors of the Company in respect of the connected transactions under the Proposal Regarding the Acquisition of the Equity Interests of Shandong Power, the Jilin Power, the Heilongjiang Power and the Zhongyuan CCGT comply with the provisions of the Company's articles of association and the Listing Rules of the Shanghai Stock Exchange; (2) transactions under the Proposal Regarding the Acquisition of the Equity Interests of Shandong Power, the Jilin Power, the Heilongjiang Power and the Zhongyuan CCGT are fair to the Company and the shareholders as a whole, and are in line with the Company's interests; and (3) the Company has appointed an asset valuation agency with securities business qualification to evaluate the target assets. The asset valuation agency has no actual and expected interests or conflicts with the Company, China Huaneng Group and the target company, and the valuations is in accordance with the principles and requirements of objectiveness, fairness, and independence, and is fully independent and professional. The premise and assumption of this valuation are reasonable. The selected

valuation method fully considers the purpose of the transaction and the actual situation of the valuation object. The valuation method is appropriate, and the valuation results are fair and reasonable. The transaction price of the target assets in this transaction is based on the valuation results determined by the valuation report issued by an asset valuation agency with securities business qualifications, and is determined through negotiation between all parties. The pricing principles and methods of this transaction are appropriate and fair, and there is no situation that harms the interests of the Company and the minority shareholders.

The audit committee issued a written review opinion on the acquisition and considered that: (1) The pricing of the connected transactions under the Proposal Regarding the Acquisition of the Equity Interests of Shandong Power, the Jilin Power, the Heilongjiang Power and the Zhongyuan CCGT was based on the asset valuation results, and was determined through repeated negotiations between the parties to the transaction, which was fair to the Company and shareholders as a whole and in the interests of the Company; (2) it agreed with the connected transactions under the Proposal Regarding the Acquisition of the Equity Interests of Shandong Power, the Jilin Power, the Heilongjiang Power and the Zhongyuan CCGT and agreed to submit it to the Company's board of directors for consideration.

According to the Stock Exchange Listing Rules, the Company appointed an independent financial advisor to issue an independent financial advisory opinion letter on the acquisition for reference by the independent board committee and independent shareholders.

The Company convened an extraordinary general meeting on 30 November 2016 and approved the relevant content of the acquisition.

To sum up, necessary decision-making and approval procedures have been performed for the acquisition in accordance with the relevant laws and regulations such as the Listing Rules of Shanghai Stock Exchange, Stock Exchange Listing Rules, and the Guidelines of the Shanghai Stock Exchange for the Implementation of the Connected Transactions of Listed Companies.

2. The acquisition is reasonably priced.

The acquisition of part of Shandong Power's equity interest by the Company implements Huaneng Group's commitment to avoid business competition with the Company. This is conducive to further expanding scale, increasing the market share and improving the competitiveness of the Company. In this acquisition, ZhongHe Appraisal Co., Ltd. was appointed to issue an asset valuation report for which state-owned asset valuation filing procedures have been fulfilled in accordance with the laws. In pricing this acquisition, factors such as the production and operation and financial status, and future development plans of the target assets, as well as strategic synergies with the Company were considered, and comprehensive consideration was given to capital market trends, valuation levels of companies in the same industry, and past transaction valuations, asset valuation results of each target company, etc. In addition, in accordance with the relevant laws and regulations such as the Guidelines of the Shanghai Stock Exchange for the Implementation of the Connected Transactions of Listed Companies, income approach was adopted to value the five subsidiaries of Shandong Power of which the valuation results were over 100% of the book value. According to the Profit Forecast Compensation Agreement entered into between Huaneng Group and the Company, Huaneng Group undertook to compensate the Company in cash for the difference between accumulated actual net profit and the accumulated forecast net profit at the end of the current period of the aforementioned companies during the compensation period.

(1) Explanation of rationale of assumptions for income approach valuation

According to the valuation report of ZhongHe Appraisal Co., Ltd., the core assumptions adopted in the income approach to value the 17 subsidiaries of Shandong Power are as follows:

1) On-grid tariffs

The on-grid tariffs applied in this revenue forecast are based on the latest benchmark of on-grid tariffs (before the date of the issuance of the report) as announced by Shandong Provincial Price Bureau, taking into account the effect of desulphurization, denitration, deducting tariff, and ultra clean emission tariff (each tariff subject to the prevailing

national policies on the valuation base date) that obtained after reconstruction and acceptance during the income forecast period, and except the above factors, the effect of other factors on the tariffs will not be taken into consideration;

According to the “Notice in relation to Reducing the On-grid Tariffs for Coal Power Generation and the Price of Electricity for General Industrial and Commercial Use” (Fa Gai Jia Ge [2015] No. 3105) issued by the National Development and Reform Commission and the benchmark tariff for Shandong Province, since 2016, the benchmark on-grid tariff (including desulfuration, denitration and dust elimination) was RMB0.3729/KWhr (inclusive of tax). The price for the generators conforming to ultra-low emission standards was RMB0.3829/KWhr (inclusive of tax). The actual on-grid benchmark tariffs and green electricity tariffs of each power plant are based on the tariff approved by Shandong Provincial Price Bureau:

a) Notice Regarding Lowering the On-grid Tariffs and Retail Tariffs (Lu Jia Ge Yi Fa [2015] No. 131);

b) Notice Regarding the Implementation of Green Electricity Tariff for Coal-fired Generating Units with Environmental Protection Facilities Accepted in December 2015 (Lu Jia Ge Yi Han [2016] No. 4);

c) Notice Regarding the Implementation of Improving the Tariff Policy of Onshore Wind and Photovoltaic Power Generation (the document of Fa Gai Jia Ge [2015] No. 3044) (Lu Jia Ge Yi Fa [2016] No. 7);

d) Notice Regarding the Implementation of Green Electricity Tariff for Coal-fired Generating Units with Environmental Protection Facilities Accepted in January 2016 (Lu Jia Ge Yi Han [2016] No. 8);

e) Letter Regarding the Implementation of Ultra-low Emission Tariff for Certain Coal-fired Generating Units (Lu Jia Ge Yi Han [2016] No. 43);

f) Letter Regarding the Implementation of Ultra-low Emission Tariff for Coal-fired Generating Units Accepted by the Provincial Environmental Protection Authorities in the First Quarter of 2016 (Lu Jia Ge Yi Han [2016] No. 48);

g) Notice Regarding the Implementation of Green Electricity Tariff for Coal-fired Generating Units with Environmental Protection Facilities Accepted in February and March 2016 (Lu Jia Ge Yi Han [2016] No. 49);

h) Reply Regarding the On-grid Tariffs for Renewable Energy Generation Projects Including Yinan Linuo Solar Energy Power Engineering Co., Ltd. (Lu Jia Ge Yi Fa [2016] No. 59);

i) Reply Regarding the On-grid Tariffs for Coal-fired Generating Units Including No. 7 Generating Unit of Huaneng Laiwu Power Plant (Lu Jia Ge Yi Fa [2016] No. 97).

2) Utilization hours

The 500 KV Xin-Liao double-line completed on 1 March 2005 realized the interconnection between Shandong Power Grid and North China Power Grid, and that supply was greater than demand in the power industry, the power generation volume was reduced compared against 2014. According to the latest business directives for assessed companies, the power generation volume in 2016 is forecasted to continue to reduce. It is forecasted that the generation hours may reduce slightly in 2018 and gradually stabilise from 2019 onwards. The trend for the generation hours for each power plant is the same, save for variations as a result of partial grid adjustments etc.

3) Fuel cost

Coal consumption for power generation is one of the important assessment indicators for thermal power plants. Each power plant continuously conducts technical improvement, with a decrease in coal consumption each year in the past years. Some of the power plants have coal consumption levels better than the industry average and are in leading positions.

The forecast for the coal consumption during the forecast period for the assessed companies mainly made reference to the historical coal consumption levels.

Coal price is affected by market prices and fuel coal price. In recent years, the price of coal had continuously stayed low, and the procurement costs for power plants have been reducing each year. Affected by factors in 2016 such as the reduction in production capacity of the coal and charcoal industry, the prices of coal and charcoal showed a rising trend. This forecast is based on the financial forecasts from companies in recent years and

recent procurement data, with the rise in coal and charcoal prices considered. The coal price during the forecast period of June 2016 to December 2016 is based on the coal prices upon arrival at each respective power plant during January 2016 to August 2016 and the loss on entering the furnace, and with an increase rate of 1% per year for the years following until stabilisation.

The forecast for other costs such as inspection and maintenance costs, management costs etc. all made reference to the historical levels of these companies.

Based on the above analysis, at the time of the acquisition, the valuation assumptions have been reasonably predicted based on the historical operation of the target companies and the upstream and downstream market conditions, and there is no case of deliberately raising the valuation results.

(2) The valuation level of the acquisition in line with that of comparable companies and comparable transactions

The comparison between the valuation level of the acquisition and that of comparable companies and comparable transactions is as follows:

Name	P/E ratio	P/B ratio
1. Comparable companies		
Huaneng Power International A Share	7.8	1.3
Huaneng Power International H Share	4.6	0.8
A share listed thermal power company		
Mean	14.9	1.6
Median	14.7	1.5
2. Comparable transactions		
Median	9.3	1.5
Minimum	4.7	1.0
Maximum	59.0	5.9
3. The acquisition	10.0	2.4
Among them: Shandong Power	8.7	2.3

Among them, the thermal power industry in the power sector under public utilities in the Shenwan industry classification is selected as the classification standard for the comparable companies, and except for the abnormal companies, a total of 21 listed

companies in the same industry are obtained. The calculation is based on WIND's stock prices on 30 September 2016 and the 2015 annual report data published by the companies.

Samples selected as comparable transactions are transaction cases of A-share listed companies acquiring thermal power assets from 2010 to the implementation of the acquisition. Acquisition of thermal power assets by the listed companies in thermal power classification under power sector in the public utilities in the Shenwan industry classification and the listed companies in the power, thermal production and supply industry under the CSRC industry classification are mainly selected. At the same time, cases of some non-electric power companies to acquire thermal power assets are supplemented to form the overall sample of this comparative analysis.

The P/E ratio and P/B ratio of the acquisition in 2015 were 10.0 and 2.4 times, respectively. The P/E ratio of the acquisition is basically the same as the range of P/E ratio of the previous comparable transactions, but is lower than that of comparable companies. The P/B ratio of the acquisition is higher than that of comparable transactions and comparable companies mainly attributable to the following reasons: 1) Shandong province has a developed economy and a power mix that mainly relies on thermal power, whose installed capacity secures a strong competitive edge in the market in terms of both scale and market share; 2) Shandong Power owns some important power plants under unified management within the Shandong power grid and over half of its installed capacities are cogeneration units, which makes it a major heat supplier with good economic benefits on the local market. The valuation results of income approach can more objectively reflect the market value of the entire equity interest of the shareholders of the assessed companies on the valuation base date; 3) The target of the acquisition is an unlisted company, with single financing channel, and relatively high financial leverage. It has a lower proportion of equity capital than the mature listed power generation group and low level of net asset. Therefore, the valuation of the P/B ratio corresponding to the acquisition is relatively high.

Based on the above analysis, an appraisal agency has been appointed for the acquisition to issue an asset valuation report which has fulfilled the state-owned asset

valuation filing procedures as required by laws. The relevant valuation assumptions are reasonable. The valuation level of the acquisition is basically in line with that of comparable companies and comparable transactions. There is no situation where the price of the connected acquisitions is too high and damages the interests of the listed company.

2. In 2008, the Company acquired Singapore Tuas Power, obtaining a lot of goodwill and intangible assets. As at the end of 2019, the balance of goodwill related to Tuas Power amounted to RMB11.191 billion; the balance of intangible assets was RMB4.149 billion. By combining the relevant valuation, profit forecast at the time of the Company's acquisition, and the actual operation and performance of the target company since the acquisition, please supplement and further disclose the process in which the Company makes the impairment test on goodwill, and explain the rationale of not impairing the goodwill by the Company.

Reply:

1) Explanation of the difference among the target valuation, profit forecast and actual operation and performance at the time of Tuas Power's acquisition

In 2008, the Company participated in the international bidding for Tuas Power Limited project in Singapore on the basis of fulfilling the national approval process and the internal decision-making procedures of Huaneng Group. According to the results of due diligence, the enterprise value of Tuas Power Limited ("Tuas Power") was estimated to be SGD3.8 to SGD4.35 billion with the update of gas units as the basic valuation plan. As the tight delivery time requirements of the seller Singapore Temasek Holdings (Private) Limited ("Temasek") and the long approval process of the listed company, Huaneng Group acted as the acquirer for bidding upon study, therefore, SinoSing Power Pte. Ltd. ("SinoSing Power") was specially established, and the acquisition of 100% equity interests in Tuas Power owned by Temasek was completed on 24 March 2008, at the consideration of SGD4.235 billion. Upon approval by the Ministry of Commerce on 27 June 2008, Huaneng Group transferred the equity interests in Tuas Power to the Company at fair price.

Since the acquisition in 2008, Tuas Power has maintained a stable personnel, operation and production level, and achieved better operating results. As an important part

of the Company's asset portfolio, in addition to diversifying the geographical and fuel risks in respect of the Company's operations, Tuas Power project also plays an important role in strengthening brand image of Huaneng, promoting the enhancement of the Company's management, training international talents and boosting the development of the Company's international businesses. From 2008 to 2014, Tuas Power project made continuous profits after the acquisition, which significantly improved the Company's overall operating results. Since 2013, with the successive commissioning of new units in the power market of Singapore and the increase in supply capacity after the commissioning of the LNG terminals in Singapore, the power market in Singapore has entered an oversupply state, and the gross profit from electricity sales by power producers has decreased. Despite Tuas Power still maintains safe and stable production, due to the combined impact of lower-than-expected growth in power demand, excess natural gas contracts from producers and adjustments in power policy, the profitability of the project has declined, and started to report operating loss from 2015. However, the earnings before interest, taxes, depreciation and amortization ("EBITDA") is always profitable. The following table set out the comparison between the forecasted profit in the future year and the realization of profit at the time of acquisition in 2008.

SGD100 million	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Forecasted net profit	1.00	1.00	0.90	1.00	0.70	1.40	1.60	1.90	2.40	2.70	2.70
Actual net profit	0.25	1.51	2.72	2.28	0.34	0.32	(0.41)	(0.50)	(1.05)	(1.67)	(1.12)
EBITDA	0.88	3.82	5.43	4.86	2.63	2.61	1.77	1.60	0.97	0.10	0.79

In recent years, Tuas Power's actual profit is lower than profit forecasts mainly due to 1) the overall oversupply of the power market in Singapore. Affected by the high returns of power producers at an earlier stage and the government's stimulus policies on power investment, approximately 4 million KW of new units have been successively put into operation in Singapore since the second half of 2012. After the financial crisis, as the slow recovery of world economy, lower-than-expected growth in power demand and oversupply of the market, the power market would take time to achieve the rebalance of

supply and demand; 2) adjustments in power market policy in Singapore. The Energy Market Authority of Singapore will gradually reduce the percentage of fixed contractual electricity quantity determined by the long run marginal cost (LRMC) from 55% in 2008 to 20% in the first half of 2019, and approximately 16% in the second half of 2019 to 2023; 3) an oversupply of natural gas contracts as a result of the lower-than-expected demand in the power market, and the limitation of the flexibility of power producers in bidding by the fixed-price pressure for natural gas contracts, resulting in a significant decrease in the profit margin contribution of electricity quantity from electricity pool and retail contracts.

2) Explanation on impairment test on goodwill

The aforesaid acquisitions obtained goodwill of SGD2.225 billion and intangible assets of power generation licenses with no fixed useful life of SGD802 million (as of 31 December 2019, equivalents of RMB4.149 billion). In 2013, the Company made a provision for impairment on goodwill of SGD62 million (equivalents of RMB392 million). As of 31 December 2019, the balance of goodwill was SGD2.163 billion (equivalents of RMB11.191 billion).

In accordance with the relevant provisions of the “Accounting Standards for Business Enterprises No. 8-Asset Impairment”, the Company allocates the goodwill obtained from the acquisition of Tuas Power to the asset group of Tuas Power Generation Pte. Ltd. (“Tuas Power Generation” or “TPG”), the power licenses included in the asset group, and carries out impairment tests on an annual basis. On 31 December 2019, the recoverable amount of asset group of Tuas Power Generation (SGD4.552 billion) was higher than the book value of the asset group (SGD3.823 billion, of which long-term assets such as equipment and facilities amounted to SGD858 million, goodwill amounted to SGD2.163 billion and power generation licenses amounted to SGD802 million), no provision of impairment is required. Under the current basic assumptions, there is no impairment on goodwill in Tuas Power Generation. The main parameters used in estimating the recoverable amount of the asset group using the discounted future cash flow method include electricity sales volume, profit margin contribution of electricity sales, perpetual cash flow growth rate and discount rate.

	Electricity Sold Unit: GWh	Profit margin contribution of electricity sales
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		Unit: SGD/MWh
2020	10,200	9.4
2021	10,676	15.8
2022	10,880	28.5
2023	11,088	33.3
2024	11,301	38.5

The Energy Market Authority (“EMA”) of Singapore forecasted that power demand will increase by 1.5% to 2.1% over the next decade (2020-2030). The power market outlook report in Singapore released by the EMA on 29 October 2019 stated that, after considering the impact of population, climate and economy, it is expected that the power demand growth will increase by 1.50% to 2.1% in the next five years. According to the 2019 report of the EMA, the compound annual growth rate of the power market in 2008-2018 was approximately 2.4%. Tuas Power’s share of Singapore’s power market has remained basically stable, and the proportion of such share in 2017, 2018 and 2019 was 21.9%, 21.1% and 20.7%, respectively. As such, Tuas Power Generation expects its electricity sale volume from 2020 to 2024, and estimates the perpetual growth rate after five years will be 2%.

In 2019, the profit margin contribution of electricity sales of Tuas Power Generation was SGD12.41/ MWh. In the next five years, based on the judgment that the Singapore’s power market must have sustainable development capabilities, the power market will resume its reasonable return, the marginal contribution of electricity sales will steadily increase, for reasons including: 1) According to the requirements of the government of Singapore, Singapore’s power reserve requires 30% extra capacity to ensure power safety. According to the latest market outlook report of the EMA of Singapore (considering the decommissioning of units), and based on the statistics of power generating units reported by various power producers, from 2021, the power reserve capacity ratio will be lower than the requirement of 30% to 25%, and will continue to decline slightly during the next five years. In order to meet the requirements of Singapore’s power reserve capacity ratio, the market is required to restore long-term profit margin before and after 2024 (unit construction usually takes 2 years) to attract investment. Considering that the market recovery is a gradual process, Tuas Power Generation believes that from 2020 to 2024, the profit margin contribution of electricity sales will gradually rise back to the reasonable standard (the current marginal standard of fixed contracts is at an average of SGD47/MWh); 2) the long-term natural gas contracts signed by major power producers in

Singapore will expire in 2024, and the power producers will rationally sign the minimum purchase volume in the new long-term contract, since then the competition situation in the power market is expected to change in a positive manner; 3) The old oil engines and low-efficiency single-cycle gas turbines of Singapore's power producers have been decommissioned year by year due to their lack of market competitiveness and the decline in number of spare units in the market. With the increase in the motor age of high-efficiency combined cycle units with a capacity proportion of 77% (approximately 97% of power generation proportion), the output of the units has declined slightly year by year. Based on the current supply and demand relationship in the power market and information from power producers, it is estimated that there will be no new large-scale combined cycle units are put into production from 2020 to 2024. Therefore, the oversupply of Singapore's power market is gradually improved. It is estimated that the balance of supply and demand will be reached around 2022-2024, and the supply will gradually tighten, and the marginal contribution of the power pool will gradually recover, which will promote the increase in gross profit of retail tariff with proportion of 75-80%, its marginal contribution will gradually approaching the long-term marginal cost, that is, the marginal contribution of existing fixed contracts (approximately SGD47/MWh currently).

The Company estimates the after-tax discount rate based on the weighted average cost of capital (WACC) mentioned in (8) under the Reply I. The major parameters for the calculation of after-tax WACC consists of: 1) the risk-free return rate (at return rate of 30-year SGD Treasury bond rates due in 2046) is 2.21%; 2) the cost of debt capital is 4.03%; 3) the cost of equity capital is 8.74%. After calculating the after-tax discount rate, the pre-tax discount rate is determined through iterative loop calculation according to the assumption of "pre-tax cash flow present value = after-tax cash flow present value". After calculation, the Company adopted a pre-tax discount rate of 7.33%.

The EBITDA recorded by Tuas Power Generation in 2019 was outperformed the forecast for EBITDA in 2019 in conducting the impairment test in 2018.

According to the information disclosed in the 2018 annual report, in the impairment test for goodwill, another two power generation companies in Singapore (i.e. PowerSeraya Limited ("PowerSeraya") and Senoko Power Pte. Ltd. ("Senoko")) forecasted that the growth rate of electricity sales for PowerSeraya and Senoko would be

2% and 2.5%, respectively. For the pre-tax discount rate, PowerSeraya and Senoko used 5.9% and 6.5 %, respectively, which is basically consistent with the assumption used by Tuas Power.

VI. In relation to Related Party Procurement

As disclosed in the annual report, during the reporting period, among the five largest suppliers of the Company, the procurement of related parties amounted to RMB26.76 billion, accounting for 17.95% of the total procurement amount of the year with an increase of RMB11.5 billion or 43% compared to the same period last year. Meanwhile, the power generation decreased by 6% year-on-year. Combined with the Company's decline in power generation and total procurement during the reporting period, please explain the reasons for the large increase in related procurement year-on-year.

Company's Reply:

In 2019, China Huaneng Group Fuel Co., Ltd. ("Huaneng Fuel Company"), a related party of the Company, increased its supply capacity and market competitiveness, and its supply price was lower than the market price. The Company has increased its cooperation with Huaneng Fuel Company from the perspective of further reducing fuel purchase prices and thus costs. The annual purchase amount from Huaneng Fuel Company has increased significantly year-on-year.

In 2019, the domestic power generation of the Company was 405.06 billion kWh, a year-on-year decrease of 5.91%; a total of 183 million tons of coal was purchased throughout the year, and the average purchase price of raw coal was RMB505.1 per ton, of which:

A total of 56.11 million tons of raw coal was purchased from Huaneng Fuel Company, with a purchase amount of RMB26.76 billion, within the annual cap for connected transactions as approved by the board of directors and the shareholders' general meeting. The average raw coal price to the plant was RMB476.9 per ton, which was lower than the Company's average purchase price of RMB28.2 per ton, equivalent to the closing price of RMB517.2 per ton in the northern port, which was lower than the average value of the closing price of the northern port in 2019 (CCI index) of RMB74.9 per ton. This presented a great competitive advantage compared with the market price.

Prior to the foregoing, Huaneng Fuel Company established Huaneng Supply Chain Platform Technology Co., Ltd. in September 2018 to increase market influence and competitiveness. Since 2019, its coal supply capacity has increased significantly, with greater market influence and right of speech. In terms of pricing principle, the coal supply price is more favourable than the price offered by an independent third party for the Company's purchase.

As one of the Company's market suppliers, Huaneng Fuel Company enjoys the same treatment as other third-party suppliers, and participates in the Company's fuel supply in accordance with the market principle of being open, equal and fair under the same market competition conditions.

VII. According to the annual report, the Company and its subsidiaries obtained their power generation licenses due to the acquisition of Tuas Power Limited, which was initially measured at the fair value at the time of acquisition. Tuas Power operates its power plants under a license issued by the Energy Market Authority of Singapore, with a term of 30 years (2003 to 2032). In 2011, the term of the license was extended to 2044 with minimal cost, and can be further extended. The Company and its subsidiaries are expected to abide by the relevant rules and regulations during the extension process based on the existing market framework. Based on the assessment of the useful life of the power generation license, the Company and its subsidiaries believe that the useful life is uncertain and therefore will not be amortized. In this regard, please explain: (1) The basis for the Company to consider that the useful life is uncertain (2) The basis for the Company to recognize the power generation license acquired as an asset, and the business nature of the acquisition.

Company's Reply:

(1) The basis for the Company to consider that the useful life is uncertain.

Relevant provisions of the standards

Article 16 of "Accounting Standards for Business Enterprises No. 6 - Intangible Assets" stipulates that "Enterprises shall analyze and estimate the useful life of intangible assets when acquired. As for the intangible assets with limited useful life, the enterprise shall estimate the years of its useful life, or the amount of the output or any other similar measurement unit, which constitutes its useful life. If it is unable to forecast when the

intangible asset can bring economic benefits to the enterprise, it shall be regarded as an intangible asset with uncertain useful life”. Article 4 of the Guidelines for the Application of the Standards stipulates that "the useful life of intangible assets derived from contractual rights or other legal rights shall not exceed the duration of contractual rights or other legal rights; if the contractual rights or other legal rights are extended due to the expiration of the contract, and there is evidence that enterprises do not need to pay a large amount of cost for renewal, the renewal period shall be included in the useful life.”

Analysis of specific matters

In 2008, SinoSing Power, a subsidiary of the Company, acquired Tuas Power and obtained its power generation license, which was initially measured at the fair value at the time of acquisition, and the main basis for the power generation license to be regarded as intangible assets with uncertain useful life include:

- When acquired by SinoSing Power, Tuas Power was one of the three largest power generation companies in the Singapore power market, and these three companies accounted for approximately 90% of the Singapore power market. The Singapore power market implemented a strict access system. The Energy Market Authority ("EMA") of Singapore restricts new power generation companies from entering the power generation market based on the issued power generation licenses. The failure to renew the licensed power generation licenses after expiration will greatly affect the stability of the power generation of the Singapore power market, so the power generation license of power generation company can be extended after the expiration according to the existing market management structure. Until 2019, there has been no substantial change in the management structure of the Singapore power market.
- The initial term of the power generation license issued by EMA to Tuas Power is 30 years (i.e. 2003 to 2032). According to the supervision of the local electricity market in Singapore, the renewal of a power generation license requires only a programmatic processing rather than a substantial approval, and the cost of renewal is low. In 2011, the expiration date of the power generation license of Tuas Power was successfully extended to 2044 without any renewal fees, and it can be further extended. The Company expects that, based on the existing market management structure, it will

abide the relevant rules and regulations during the extension process, and will not need to pay a large amount of cost in the process of extending the expiration date of the power generation license, and there are no restrictions on the times of renewal.

- When acquiring Tuas Power in 2008, the Company engaged an international independent third-party asset appraisal company, Vigers Appraisal & Consulting Limited, to conduct a fair value assessment on the acquired intangible assets (i.e. power licenses). The model used is also based on the fact that the power license can be renewed in the Singapore power market.

To sum up, according to the relevant requirements of the Accounting Standards for Enterprises, based on the fact that the contractual obligations and rights of the power generation license do not require a large amount of cost when renewed and there are no restrictions on the times of renewal, the Company and its subsidiaries consider that the useful life of Tuas Power's power generation license is uncertain, so it will not be amortized, but annual impairment test is required.

(2) The basis for the Company to recognize the power generation license acquired as an asset, and the business nature of the acquisition.

Relevant provisions of the standards

Rule 14 of the “Accounting Standards for Business Enterprises No. 20 – Business Combinations” provides: The " fair value of the identifiable net assets of the acquiree" refers to the balance of the fair value of the identifiable assets acquired from the acquiree in a business combination minus the fair value of the liabilities and contingent liabilities. The identifiable assets, liabilities and contingent liabilities which meet the following conditions shall be recognized separately: As for any intangible asset acquired in a combination, if its fair value can be measured reliably, it shall be separately recognized as an intangible asset and shall be measured in light of its fair value.

Meanwhile, the “Interpretation No. 5 of the Accounting Standards for Business Enterprises” has additional provisions for the acquirer to recognize the intangible assets acquired in the business combination: “In a business combination not under the common control, when the acquirer initially recognizes the acquiree's assets obtained in the business combination, it shall sufficiently identify and reasonably determine the intangible assets possessed by the acquiree but not confirmed in its financial statements,

and the assets satisfying one of the following conditions shall be recognized as intangible assets: 1. Being derived from any contractual right or other statutory rights; 2. Being able to separate or divide from the acquiree and being able to be sold, transferred, licensed, rented or exchanged independently or along with the relevant contracts, assets or liabilities.”

Analysis of specific matters

The power generation license on the Company's book is a single intangible asset recognized when acquiring Singapore Tuas Power. SinoSing Power acquired Tuas Power in 2008, which constitutes a business combination not under common control of the “Accounting Standards for Business Enterprises No. 20 – Business Combination”. In the initial recognition of the relevant identifiable assets of Tuas Power acquired under the business combination not under common control, based on the analysis of the local electricity market and regulatory environment in Singapore, and fully identify and reasonably judge the intangible assets it owns but are not recognized in its financial statements, SinoSing Power identified that its power generation license should be recognized as a single identifiable asset. The relevant basis and business nature are analyzed as follows:

- The power generation license of Tuas Power was issued by Singapore Energy Market Authority (EMA), Singapore's electricity market regulatory agency. According to the relevant policies of EMA and the access system of Singapore electricity market, EMA grants power generation license to power generation company, and only after obtaining power generation license can power generation company be allowed to carry out commercial operation of units and electricity sales, thereby realizing inflow of economic benefits. The power generation license is derived from the EMA's statutory license as a regulatory agency and belongs to a certain legal right owned by Tuas Power.

- In the electricity market management structure of Singapore, power generation license was issued to power generation company rather than individual units. When the generation units of the power generation company are retired due to the end of service, the power generation license will be inherited by the new generator units of the power generation company. Therefore, the power generation

license is not attached to specific assets and liabilities, but can be separated from other identifiable assets and liabilities of the acquiree, and can be used in the future power generation business together with related assets and liabilities.

- In the above acquisition, the Company appointed international independent third-party asset valuation company Vigers Appraisal & Consulting Limited to conduct a fair value assessment on the acquisition date of the identified intangible assets (i.e. power generation license), with an estimated value of SGD802 million. The part of the consideration that is higher than the fair value of the identifiable net assets (including the fair value of the power generation license) is recognized as goodwill formed by the acquisition.

Based on the above, Tuas Power's power generation license meets the conditions for the recognition of single identifiable assets in the business combination standards as intangible assets, so it is accounted as intangible assets in the consolidated financial statements.

According to the requirements of the Letter of Enquiry, the annual audit accounting firm of the Company issued a special opinion on the above accounting related issues. For details, please refer to "Replies of Ernst & Young Hua Ming LLP to the Related Issues Requiring Accountants' Opinions in the 'Letter of Enquiry Regarding the Supervision of Information Disclosure of the 2019 Annual Report of Huaneng Power International, Inc.'" disclosed on the website of Shanghai Stock Exchange on the same day.

By Order of the Board
Huaneng Power International, Inc.
Huang Chaoquan
Company Secretary

As at the date of this notice, the directors of the Company are:

Zhao Keyu (*Executive Director*)
Huang Jian (*Non-executive Director*)

Wang Yongxiang (*Non-executive Director*)
Mi Dabin (*Non-executive Director*)

Guo Hongbo (*Non-executive Director*)
Cheng Heng (*Non-executive Director*)
Lin Chong (*Non-executive Director*)

Yue Heng (*Independent Non-executive Director*)
Xu Mengzhou (*Independent Non-executive Director*)
Liu Jizhen (*Independent Non-executive Director*)
Xu Haifeng (*Independent Non-executive Director*)
Zhang Xianzhi (*Independent Non-executive Director*)

Beijing, the PRC

22 April 2020