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中國廣核電力股份有限公司 CGN Power Co., Ltd.

# CGN POWER CO., LTD 2019 Three Quarters Results

October 2019



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# Part I Corporate Introduction





## **Corporate Introduction**

### CGN Power (1816.HK & 3816.SZ)

- China General Nuclear Power Co., Ltd. (abbreviated as: CGN Power), the controlling shareholder is a large-scale enterprise group supervised by the State-owned Assets Supervision and Administration Commission of the State Council, China General Nuclear Power Group, which is composed of more than 10 affiliated companies.
- Incorporated on March 25, 2014, with a registered capital of RMB 35.3 billion.
- On December 10, 2014, CGN Power, the world's only listed company purely in nuclear power production business, officially began trading on the Hong Kong Stock Exchange.
- The A-share IPO was issued and officially started trading on the Shenzhen Stock Exchange on August 26, 2019. The company's total share capital is approximately 50.5 billion shares.
- We operate and manage nuclear power stations, sell electricity generated by these stations, manage and oversee the construction of nuclear power stations.





#### 善用自然的能量

China and world's energy has been becoming green and low-carbon, which is a solid foundation for CGN's sustainable development.



#### Excellence, Stability, Green& Growth

#### 善用自然的能量

- Sticking to high standards, pursuing stable operation performance and proceeding project construction as planned
- Promising stable finance performance, ensuring financial security and continuously reducing liability ratio
- Valuing shareholder returns, implement a long-term and stable dividend policy

• Keep improving safety performance by benchmarking with WANO standard

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- Promoting excellent operation and realizing lean management to reduce operating cost continuously
- Optimizing design and project management to reduce cost and shorten project duration.



- Dedicated to developing clean energy, focusing on nuclear power and nuclear energy utilization
- Improving resources utilization rate and reducing resources consumption
- Controlling emissions strictly and protecting the environment

- Pushing ahead with the approval and kick-off of new projects to maintain leadership in business scale
- Adopting innovation driven strategy, keep applying new technologies to promote sustainable development of the company
- Tracking international market and seizing proper opportunities

#### Accumulate Experience, Independent Innovation

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\*includes: Lingdong Unit 1&2, Hongyanhe Unit 1-4, Ningde Unit 1-4, Yangjiang Unit 1&2, Fangchenggang Unit 1&2.

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## 中广核 CGN Domestic Business

### 善用自然的能量

Nuclear Power Units in Operation 24 Units Capacity in Operation 27142MW Accounting for 55.69% of the total in operation in mainland China

Nuclear Power Units under Construction 4 Units Capacity under Construction 4598MW Accounting for 43.52% of the total under construction in mainland China

The third largest pure nuclear power producer worldwide and the largest in China The only platform of nuclear power generation for China General Nuclear Power Group

- Unit in operation with installed capacity about 1000MW
  - Unit under construction with installed capacity about 1000MW



## 中广核 G CGN NPPs in Operation& under Construction

Company	Shareholding	Units	Technology	COD	Installed Capacity (MW)
<u>Subsidiaries</u>					
Ling'ao	100.00%	Ling'ao Unit 1	M310	May,2002	990
		Ling'ao Unit 2	M310	Jan.,2003	990
Lingdong	93 14%	Lingdong Unit 1	CPR1000	Sept.,2010	1,087
Lingdong	00.1170	Lingdong Unit 2	CPR1000	Aug.,2011	1,087
GNPJVC	75.00%	Daya Bay Unit 1	M310	Feb.,1994	984
		Daya Bay Unit 1	M310	May,1994	984
Yangjiang	61.20%	Yangjiang Unit 1	CPR1000	Mar.,2014	1,086
		Yangjiang Unit 2	CPR1000	June,2015	1,086
		Yangjiang Unit 3	CPR1000	Jan.,2016	1,086
		Yangjiang Unit 4	CPR1000	Mar,2017	1,086
		Yangjiang Unit 5	ACPR1000	July,2018	1,086
		Yangjiang Unit 6	ACPR1000	July,2019	1,086
Taishan	51.00%	Taishan Unit 1	EPR	Dec.,2018	1,750
		Taishan Unit 2	EPR	Sept.,2019	1,750

## NPPs in Operation& under Construction (Cont'd)

Company	Shareholding	Units	Technology	COD Ir	nstalled Capacity (MW)
Subsidiaries					
Fangchenggang	36.60%	Fangchenggang Unit 1	CPR1000	Jan.,2016	1,086
		Fangchenggang Unit 2	CPR1000	Oct.,2016	1,086
		Fangchenggang Unit 3	HPR1000	under construction	on 1,180
		Fangchenggang Unit 4	HPR1000	under construction	on 1,180
Fujian Ningde	32.29%	Ningde Unit 1	CPR1000	Apr.,2013	1,089
		Ningde Unit 2	CPR1000	May,2014	1,089
		Ningde Unit 3	CPR1000	June,2015	1,089
		Ningde Unit 4	CPR1000	July,2016	1,089
<u>Associates</u>					
Liaoning Hongvanhe	38.14%	Hongyanhe Unit 1	CPR1000	June,2013	1,119
;;		Hongyanhe Unit 2	CPR1000	May,2014	1,119
		Hongyanhe Unit 3	CPR1000	Aug.,2015	1,119
		Hongyanhe Unit 4	CPR1000	June,2016	1,119
		Hongyanhe Unit 5	ACPR1000	under construction	on 1,119
		Hongyanhe Unit 6	ACPR1000	under construction	on 1,119

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中广核 () CGN Key Advantages

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#### I 、 Reliability

- Nuclear power, with large electricity generation per unit, is stable, reliable and almost unaffected by nature environment.
- With lower variable cost and less affected by fluctuations of the energy prices.
- An important base-load power source for the power grid; higher priority for access to grid compared with thermal power; higher annual utilization hours.



#### II、Clean

- No emissions of sulfur oxides, nitrogen oxides and greenhouse gases.
- Plays an irreplaceable role in reducing emissions and pollution.



Indirect Emissions Direct Emissions



#### III、Efficiency

- Nuclear power is a highly efficient energy source that is small in size and convenient for transportation and storage.
- An extremely efficient way of generating electricity; according to statistics published by the European Nuclear Energy Association, 1,000 grams of standard coal, mineral oil and uranium produce about 8 kWh, 12 kWh and 24 MWh respectively.



## - Capacity in Operation

 27.14 GW (Total)
 +20.33% yoy

 15.17 GW (Attributable to owners)
 +19.28% yoy

### Capacity under Construction

4.60 GW(Total) -49.93% yoy 1.72 GW(Attributable to owners) -58.79% yoy

## **On-Grid Power Generation**

 128,304GWh(Subsidiaries & Associates)
 +12.03% yoy

 105,859GWh(Subsidiaries)
 + 11.23% yoy

 Revenue

 RMB 43,139MM

 \* as restated of the 2018 data

— Profit Attributable	to Owners
RMB 8,298 MM	+22.4% yoy*
* as restated of the 2018 data	

— Profit Attributabl	e to Owners
RMB 8,018 MM	+19.29% yoy*
* as restated of the 2018 data; e recurrent gain and loss	xcluding the non-





## Part II Business Performance



#### **Steady On-Grid Power Generation Growth**



#### Narrowed Market Tariffs Gap



Note: The marketized power supply proportion and tariff both include the Guangdong province with the 'maximized generation with optimized tariff'

#### **WANO Indicator Keeps Improving**



#### **Good Safety Record**

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No operational events at level 1 or above of the International Nuclear Event Scale has occurred. Participated in the EDF Safety Performance Challenge. Compared with more than 60 nuclear power units of the same type from France, China, Germany and South Africa, the Daya Bay Nuclear Power Plant and Ling'ao Nuclear Power Plant received 39 cumulative champions from 1999 to 2019 Ling'ao Unit 1 has no non-planned shutdown for 14 consecutive years. As of October 31, 2019, it has been operating safely for 4,892 days, ranking first in the international similar units.

Note1 : WANO-World Association of Nuclear Operators, designs internationally accepted performance indicators for unified management and coordination, strengthening the exchange of nuclear power technology, experience and accident intelligence, and continuously improving the safety and reliability of nuclear power plants around the world. The organization has been in operation for 25 years.

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Unit	Civil Construction	Equipment Installation	Commissioning Grid Connection	Expected COD
<u>Hongyanhe Unit</u>				
Hongyanhe Unit 5		A.A.		2020H2
Hongyanhe Unit 6		<u>Lit</u>		2021
Fangchenggang Unit				
Fangchenggang Unit 3		<b>A</b> 14		2022
Fangchenggang Unit 4				2022

Note\*: Yangjiang Unit 6 and Taishan Unit 2 were commenced to operation on July 24 and September 7, 2019 respectively.

Note1 : The above table shows the progress of the unit project as of September 30, 2019

Note2 : 'Civil Construction' refers to activities within the construction phase, particularly the construction of various buildings and structures in accordance with the applicable blueprints.

Note3 : 'Equipment Installation' refers to the entire process of placing and installing equipment in right position and equipment integrating during the construction phase.

Note4 : 'Commissioning' refers to the process of operating the installed systems and equipment and confirming whether their performance fulfils the requirements of their design and the applicable standards. This stage includes both tests without nuclear reactions and those with nuclear reactions.

Note5 : 'Grid Connection' refers to the connection of a power generating unit' s electricity transmission circuit to the electricity grid, and indicates that the power generating unit has the ability to transmit electricity from its internal systems.



#### **Strong Support from National Policies**

**Active Response to Power Marketing** 

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China continues to introduce policies to support nuclear power development and consumption



Guangdong • Good price, full power • On-grid electricity increased by 23.49% year-on-year	Guangxi <ul> <li>Incremental development, cross-regional power transmission</li> <li>On-grid electricity increased by 0.62% year-on-year</li> </ul>
1 Provinc	e,1 Policy
<ul> <li>Incremental development , exported to east China</li> <li>On-grid electricity decreased by 14.08%<sup>*</sup> year-on-year</li> <li>Fujian</li> </ul>	<ul> <li>exported to north China and Shandong Province</li> <li>On-grid electricity increased by 15.94% year-on-year Liaoning</li> </ul>

Note\*: Due to the influence of climatic conditions and the requirements of the grid, the decommissioning time of Ningde Nuclear Power Unit increased compared with the same period of last year.



Key Tasks in 2019	Performance of the 3Qs 2019
<ul> <li>To ensure that all in-service power units are operating safely and stably ; average utilization hours of the unit not lower than last year</li> <li>To implement the planned 17 refueling outages throughout the year of 2019 successfully</li> <li>To realize the commercial operation of Yangjiang Unit 6 and Taishan Unit 2</li> <li>Actively promote A-share IPO</li> </ul>	<ul> <li>In the first half of 2019, the average number of utilization hours was 5518, which is 1.18% lower than the same period of last year. The number of utilization hours was stable.</li> <li>As of September 30, 2019, 13 refueling outages have been completed.</li> <li>Yangjiang Unit 6 and Taishan Unit 2 were commenced to operation on July 24 and September 7, 2019 respectively.</li> <li>A-share IPO was completed and issued on August 26, 2019.</li> </ul>

Key Task	ks in 4Q 2019
To guarantee the safe and stable operation of all in- service power units and achieve average utilization hours in 2019 not lower than last year	To implement the rest refueling outages
To promote the construction of all units under construction	> To strive for better tariff and more users, to compete for the market and to seek more incremental development.





# Part III Financial Performance





### Major Non-Recurring Gain/Loss

Year	Gain/Loss of Disposal of Non-Current Assets	Government Subsidy Recorded in Current Gain/Loss	Others
2018	N/A	Government Subsidy Recorded in Current Gain/Loss	Other non- operating income and expenses
2019	Gain from Sale of Shanghai Company	Government Subsidy Recorded in Current Gain/Loss	Other non- operating income and expenses





## **I Interim Financial Performance**





Note: Data of 2018H1 has been restated.

Note1: Hongyanhe Nuclear is not included in the consolidated financial statements, therefore the revenue of Hongyanhe plant is not included in the Company' s revenue.



Note: Data of 2018H1 has been restated.

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Note 1: EBITDA=Total profit + Interest expenses recognized in profit or loss + Depreciation and amortization

Note 3: ROE(Excluding non-controlling interests)= Net profit attributable to shareholders of the parent company/Average equity attributable to shareholders of the parent company (the arithmetic mean of the opening and closing balances) \* 100%

Note 2: EBITDA margin= EBITDA/Revenue \* 100%

Note 4: ROA(Return on total assets)= (Total profit + Interest expenses recognized in profit or loss)/Average total assets (the arithmetic mean of the opening and closing balances) \* 100%

Note: Data of 2018H1 has been restated.



Note: Data of 2018H1 has been restated.

#### **Solid Debt Structure to Ensure Capital Security**

The company follows the principle of considering both cost and security, ensures financing security and controlling financing costs through building solid debt structure.



#### Long-term debt predominates



#### **RMB** debt predominates

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In 2019H1, we pay close attention to the changes in the financial market, timely issued medium-term notes, constantly optimized the debt structure and financing costs, and tried to reduce the impact of financial environment changes on the company's operations.



Note: Data of 2018H1 has been restated.

Note1 : Asset to debt ratio=(Total liabilities / Total assets)\*100%

Note2 : Debt to equity ration=Net debt (the total amount of bank and other borrowings less cash and cash equivalents and other deposits over three months)/Total shareholders' equity\*100%

Note3 : Interest coverage=(Total profit + Interest expenses recognized in profit or loss)/(Interest expenses recognized in profit or loss + interest expenses capitalized)



## **II 3Qs Financial Performance**





Note: Data of 2018 has been restated.

Note1: Hongyanhe Nuclear is not included in the consolidated financial statements, therefore the revenue of Hongyanhe plant is not included in the Company' s revenue.



Note: Data of 2018 has been restated.

Note1: ROE(Excluding non-controlling interests) = Net profit attributable to shareholders of the parent company/Average equity attributable to shareholders of the parent company \* 100%

Note 2: ROA= (Total profit + Interest expenses recognized in profit or loss)/Average total assets (the arithmetic mean of the opening and closing balances) \* 100%

Note3 : Asset to debt ratio=(Total liabilities / Total assets)\*100%

Note3 : Asset to debt ratio=(Total habitities / Total assets) 10070 Note4 : Interest coverage=(Total profit + Interest expenses recognized in profit or loss)/(Interest expenses recognized in profit or loss + interest expenses 31 capitalized)





The Board and management attach great importance to the safe and stable operation of nuclear power generating units and strive to achieve the stable growth of the Company's overall operation. <u>The</u> <u>Company will provide a reasonable growing dividend per share during 2019-2020 based on</u> 2018 level, and will provide a long term steady and reasonable growing dividend returns.



Note 1: Dividend distribution for 2018 has been completed on May 31th, 2019. Note 2: Dividend period of 2014 was from 10th Dec to 31st Dec.



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# Part IV Q&A







## Appendix Commonly Used Models in Nuclear Power Industry



### the Life Cycle of Nuclear Power Projects

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• Refueling : Nuclear power plants must replace part of the fuel at the end of fuel life cycle
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Major	<ul> <li>Test : According to regulatory requirements in-service inspection and periodic testing of</li></ul>
Tasks	equipment should be implemented.
ruono	<ul> <li>Maintenance : Preventive maintenance and corrective maintenance to improve the unit's ability to operate in the next fuel cycle</li> </ul>

• **Modification:** Modifications of the system or equipment will be implemented during the refueling outage to eliminate and solve the defects in the design and installation of the unit, equipment aging problems, technology upgrades, etc.

Туре	Cycle	Duration	Estimate Cost
Annual refueling outage	One NPP Unit Refueling Cycle(12/18 Months)	30-45Days	<ul> <li>Outage fee : [0.1-0.15] billion RMB</li> <li>Nuclear Fuel : [0.5-0.7] billion RMB</li> </ul>
First refueling outage	The first NPP Unit Refueling Cycle (usually 12 Months)	60-90Days	<ul> <li>Outage fee : [0.14-0.18] billion RMB</li> <li>Nuclear Fuel : [0.5-0.7] billion RMB</li> </ul>
10-year refueling outage	Ten NPP Unit Refueling Cycles or ten years	60-90Days	<ul> <li>Outage fee : [0.14-0.18] billion RMB</li> <li>Nuclear Fuel : [0.5-0.7] billion RMB</li> </ul>

### The Outage Arrangement of the NPP (Cont'd)

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Factors	<ul> <li>Technical specification requirements</li> </ul>
taken into	<ul> <li>Fuel utilization</li> </ul>
account	<ul> <li>Need of the electricity market</li> </ul>

Internal unit outages implemented

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#### 中广核の②CGN the Capacity Factor and Load Factor of NPP Units

Capacity Factor	<ul> <li>the ratio of the available generating capacity in a given time period and the rated generating capacity in the same period, expressed as a percentage</li> <li>It reflects the electricity generating capacity in a specified time period</li> <li>It is mainly affected by the unit status and outage arrangement.</li> </ul>	
Load Factor	<ul> <li>The ratio of the actual generating capacity of the units in a specified time period and the rated generating capacity in the same period, expressed as a percentage</li> <li>It reflects the actual power generation utilization rate of the unit in a specified time period .</li> <li>It is mainly affected by the capacity factor and grid dispatch.</li> </ul>	
Comparable Equivalent Installed Capacity	is equal to the rated installed capacity of the unit* (given time – outage time) / given time	

Avoid excessive attention to short-term load factor compared to the same period

- The characteristics of nuclear power determine that its short-term utilization rate is greatly affected by outage arrangements.
- It is more reasonable to focus on the load factor changes of the year, and avoid excessive attention to the short-term (such as one quarter) load factor changes, resulting in large deviations in the judgment of the year.

Adopt comparable equivalent installed capacity to value the utilization rate

- If using a short-term year-on-year comparison, the electricity generation/comparable equivalent installed capacity can be adopted to avoid deviations caused by outage arrangements.
- If the proportion of the increase in electricity generation during the same period is greater than that of the comparable installed capacity during the same period, the actual power generation situation has improved.

#### **Bilateral Annual Contract**

it is negotiated directly by the NPP and the users to determine the trading volume, trading objects and prices once a year.

#### **Price Difference**

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For the areas not allowed to be individually approved transmission and distribution prices, the buyer and the seller will quote according to the price difference principle (the price reduction ratio compared with the benchmark electricity price), the bidding will be agreed when the seller's reduction range is lower than the buyer's.

#### **Direct Pricing**

For areas individually approved transmission and distribution prices, after deducted from the transmission and distribution price (including line loss) and the additional price, the buyer's quotation is converted to the power generation side. If it is higher than the seller's quotation, the transaction will be completed.

#### **Monthly Concentrated Bidding**

The regional grid determines the transaction scale on a monthly basis, and implements a monthly concentrated bidding 中广核 **GOCGN** Construction and Capital Expenditure Model







## Tax type

	1
	<ul> <li>Based on the Notice on Relevant Issues Concerning the Tax Policy of the Nuclear Power Industry (Cai Shui [2008] No. 38) jointly released by the Ministry of Finance and the State Administration of Taxation , that nuclear enterprises producing and selling electric power products can benefit from VAT levy and retreat policy within 15 years from the official commercial operation</li> </ul>
VAT	<ul> <li>in the five years from the official commercial launch, the return rate is 75% of the tax paid</li> </ul>
	• from the 6 to 10 years since the official commercial launch, the return rate is 70% of the tax paid
	• From the 11 to 15 years from the official commercial launch, the return rate is 55% of the tax paid.
	<ul> <li>After 15 years from the official commercial production, the VAT refund policy will no longer be implemented.</li> </ul>
Corporate	According to the Regulations on the Implementation of the Enterprise Income Tax Law of the People's Republic of China (Decree No. 512 of the State Council), the income of enterprises engaged in the investment and operation of public infrastructure projects supported by the state will benefit from
income tax	<ul> <li>1st to 3rd year, exemption from enterprise income tax.</li> </ul>
	<ul> <li>4th to 6th years, half of the enterprise income tax.</li> </ul>
Land use tax	<ul> <li>Other urban land tax rather than nuclear island, conventional island, auxiliary plant and communication facility shall be exempted from urban land use tax.</li> <li>Urban land use tax shall be levied on taxable land of nuclear power plants by half during the period of construction.</li> </ul>

### Category

	<ul> <li>Definition: the nuclear fuel discharged from a nuclear reactor after a cycle of use that contains many valuable substances and has recyclable value.</li> </ul>		
	Fund collection: Interim Measures for the Administration of Collection and Use of Spent Fuel Treatment and Disposal Fund for Nuclear Power Plant released at July 2010 jointly promulgated by the Ministry of Finance, the NDRC, MIIT		
Spent fuel	<ul> <li>Purpose: to undertake all investments in the transportation, storage, treatment and disposal of spent fuel.</li> </ul>		
disposal fund	<ul> <li>Scope: PWR nuclear power units which have been put into commercial operation for more than five years.</li> </ul>		
	<ul> <li>Criteria: charge 0.026 yuan per KW.h for spent fuel disposal fund by the electricity sold on the grid(embedded in the electricity cost)</li> </ul>		
	Payment : pay by year, before January 10 each year.		
	Fund status: 11.7 billion yuan of fund had been collected as of Dec. 31, 2016.		
NDD	<ul> <li>Definition: Expenses incurred by decommissioning of nuclear facilities uses for ecological restoration and environmental protection and .</li> </ul>		
NPP	<ul> <li>Collection: according to national laws, regulations and international conventions</li> </ul>		
expense	<ul> <li>Criteria: 10% of the original value of fixed assets on-line in final accounts of NPP completion (nuclear island, conventional island, equipment, production house)</li> </ul>		
	<ul> <li>Accounting treatment: including fixed asset costs, amortization by stages, and is recognized as estimated liabilities.</li> </ul>		

NDRC: National Development and Reform Commission MIIT: Ministry of Industry and Information Technology



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